BLUSTREAM→
4-Way HDBaseT™ / HDMI Input Switch

▶ SW41HDBT
User Manual

Thank you for purchasing this product.

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

Surge Protection Device Recommended

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

Contents

Introduction

Our SW41HDBT is a 4-Way HDMI 2.0 4K 60Hz 4:4:4 HDBaseT™ switch utilising CSC technology to deliver HDMI and HDBaseT™ inputs to the simultaneous HDMI / HDBaseT™ output.

The SW41HDBT provides enhanced features including PoC to power Blustream transmitter and receiver products, web-GUI for control and configuration, source and display control via CEC, manual or automated source selection, RS-232 pass-through and control via front panel, IR, RS-232 and TCP/IP. The SW41HDBT is an ideal product for your boardroom, classroom or huddle-space application when used with our Blustream HDBaseT™ wall plate solutions.

FEATURES:

- Features 2 x HDMI 2.0 and 2 x HDBaseT™ inputs which can be switched to the simultaneous HDBaseT™ and HDMI outputs
- Advanced HDBaseT™ technology offering distribution of video and audio over a single CAT cable
- Colour Space Conversion (CSC) supports HDMI 2.0 18Gbps specification including HDR
- Automatic downscaling of up to 4K 60Hz 4:4:4 video input to 4K 30Hz 4:4:4/4K 60Hz 4:2:0 or 1080p on HDBaseT™
- HDBaseT™ input supports 4K UHD video up to 40m (3840 x 2160 @30Hz 4:4:4, 4096 x 2160 @24Hz 4:4:4, and 4K @60Hz 4:2:0), HDBaseT™ output supports 4K UHD video up to 40m (3840 x 2160 @60Hz 4:4:4) with compatible CSC receiver*
- Extends HDMI 1080p up to a distance of 70m from the transmitter to SW41HDBT, and up to 70m from SW41HDBT to the receiver
- Supports all known HDMI audio formats including Dolby TrueHD, Dolby Atmos, Dolby Digital Plus and DTS-HD Master Audio transmission
- Supports PoC when used with compatible 12V HDBaseT™ transmitters and receivers*
- Compatible with all Blustream HDBaseT™ transmitters and receivers*
- Audio breakout to analogue L/R audio and Toslink (S/PDIF) digital outputs concurrently
- Web interface module for control and configuration of switch
- Manual or auto source selection with control via front panel, IR, RS-232 and TCP/IP
- Auto source selection supported by compatible Blustream HDBaseT™ transmitters only*
- HDCP 2.2 compliant with advanced EDID management

Technical performance is subject to the features supported on the connected HDBaseT™ transmitter / receiver. Please see Blustream website or documentation for a list of compatible products, and ensure that the PoC (Power over Cable) scheme matches for TX and RX end points.

Panel Description - Front Panel
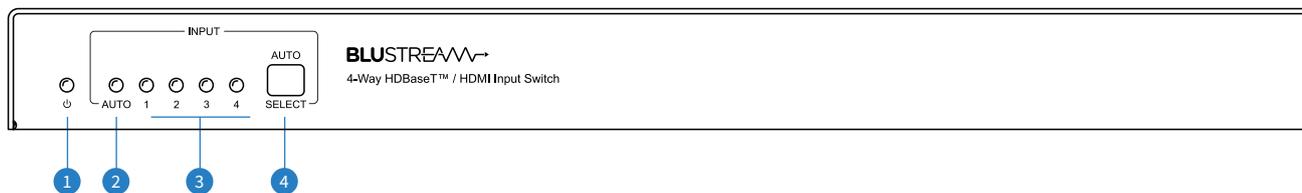
❶ Power status indicator

❷ Auto signal sense switching enabled indicator

❸ Input signal selection indicators

❹ Auto / Select button - short press to manually change between inputs (1 - 4), long press to enable / disable auto signal sense switching

Panel Description - Rear Panel
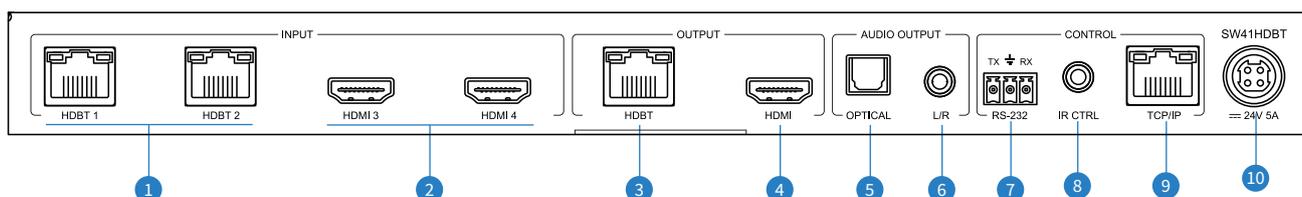
❶ HDBaseT™ Inputs (1-2) - connect to Blustream HDBaseT™ transmitters

❷ HDMI Inputs (3-4) - connect to source device

❸ HDBaseT™ Output - connect to Blustream HDBaseT™ receiver for remote display equipment

❹ HDMI Output - connect to local display equipment

❺ Optical Audio Output - de-embedded audio from selected input

❻ Analogue Audio Output - 3.5mm stereo jack, de-embedded audio from the selected input. Source input must be PCM 2 channel audio only

❼ RS-232 - 3-pin Phoenix connector for RS-232 pass-through, or switching inputs

❽ IR CTRL - connect to Blustream 5V 3.5mm IR receiver, or 3rd party control processor via IR-CAB cable for control of switching

❾ TCP/IP (RJ45) – connect to LAN for web GUI or TCP/IP control

❿ Power Port – use included 24V/5A DC adaptor to power the unit

EDID Control

EDID (Extended Display Identification Data) is a data structure that is used between a display and a source. This data is used by the source to find out what audio and video resolutions are supported by the display. 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 EDID settings can be acheived in one of the following ways:

1   Using the web browser interface (see section on web GUI operation)
2   Using API commands via RS-232 or Telnet (see below)

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)

      zz=01: HDMI 1080p@60Hz, Audio 5.1ch DTS/DOLBY

      zz=02: HDMI 1080p@60Hz, Audio 7.1ch DTS/DOLBY/HD

      zz=03: HDMI 1080i@60Hz, Audio 2ch PCM

      zz=04: HDMI 1080i@60Hz, Audio 5.1ch DTS/DOLBY

      zz=05: HDMI 1080i@60Hz, Audio 7.1ch DTS/DOLBY/HD

      zz=06: HDMI 1080p@60Hz/3D, Audio 2ch PCM

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

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

      zz=09: HDMI 4K@30Hz 4:4:4, Audio 2ch PCM

      zz=10: HDMI 4K@30Hz 4:4:4, Audio 5.1ch DTS/DOLBY

      zz=11: HDMI 4K@30Hz 4:4:4, Audio 7.1ch DTS/DOLBY/HD

      zz=12: HDMI 4K@60Hz 4:2:0/4K@30Hz 4:4:4, Audio 2ch PCM

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

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

      zz=15: HDMI 4K@60Hz 4:4:4, Audio 2ch PCM

      zz=16: HDMI 4K@60Hz 4:4:4, Audio 5.1ch DTS/DOLBY

      zz=17: HDMI 4K@60Hz 4:4:4, Audio 7.1ch DTS/DOLBY/HD

      zz=18: DVI 1280x1024@60Hz, Audio None

      zz=19: DVI 1920x1080@60Hz, Audio None

      zz=20: DVI 1920x1200@60Hz, Audio None

      zz=21: HDMI 1920x1200@60Hz, 2ch/6ch PCM

      zz=22: Copy User EDID 1

      zz=23: Copy User EDID 2

      zz=24: EDID Passthrough(Copy From HDBT OUT Sink)

      zz=25: EDID Passthrough(Copy From HDMI OUT Sink)

HDBaseT™ Distance / Connection Guide

The SW41HDBT has been designed to be used in projects where the source devices are not all centrally located, allowing for these remote signals to be brought to a central location, and further distributed out to either a local display (via HDMI), or to a remote location e.g. a projector (via HDBaseT™)

- **The HDBaseT™ inputs** support up to a maximum distance of 70m at 1080p (40m at 4K 60Hz 4:2:0 8-bit) between a Blustream transmitter (connected to the source) and the SW41HDBT.

- **The HDBaseT™ output** supports up to a distance of 70m at 1080p (40m at 4K 60Hz 4:4:4 8-bit) between the SW41HDBT and a Blustream HDBaseT™ receiver (connected to the display).

Due care and attention must be taken to the quality of CAT cabling used when pushing both input and output HDBaseT™ distances with this product to ensure a stable signal path from source to sink where multiple HDBaseT™ runs are used inline. Maximum distances will be affected where joins, or a lesser quality CAT cable is used.

Auto Switching / Signal Sensing

The SW41HDBT can automatically switch input sources when a signal is connected or disconnected either via TMDS or 5V from the source device. It is designed to work with all Blustream HDBaseT™ transmitters however when using the HEX31WPW-TX wall plate, special consideration must be taken.

As both the SW41HDBT and HEX31WPW-TX have the ability to automatically switch sources connected to them, if both units are set to auto-switch mode, the HEX31WPW-TX auto-switch mode will have priority and in turn will trigger the SW41HDBT when a source is connected or active source is disconnected from it (if the source is inactive on the HEX31WPW-TX, disconnecting it will not affect auto switching).

The HEX31WPW-TX must also have the following command sent to it via RS-232 or Telnet to support auto-switching to the SW41HDBT: *TRGPOCPWR*

Power over Cable (PoC)

Please Note: the PoC (Power over Cable) output on this product is 12V. Please check your HDBaseT™ receiver supports 12V PoC before connecting a HDBaseT™ device to this Switcher.

The Blustream HEX11WPW-TX and HEX31WPW-TX HDBaseT™ Transmitters and HEX11WPW-RX HDBaseT™ receiver are recommended for use with this Switcher as they support all features of this Switcher including auto-switching.

There are 2 ways to enable/disable PoC on this product:

1. Using the web browser interface (see section on Web GUI operation)
2. Using API commands via Telnet / RS-232 (see Telnet API section towards the end 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, or for 4K signal distribution. 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 recommend using RJ45 connectors that are recommended for use with the choice of CAT cable.

RJ45 Wiring - T568B
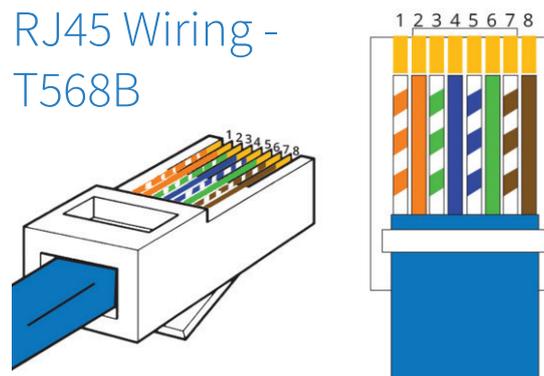
Understanding the HDBaseT™ Status LED's

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

Understanding the Status Lights - SW41HDBT

- The yellow HDBaseT™ status link light will be OFF when there is no HDBaseT™ link established with a Blustream HDBaseT™ receiver
- The yellow HDBaseT™ status link light will be ON when there is a HDBaseT™ link established with a Blustream HDBaseT™ receiver
- The green HDBaseT™ link light will be OFF when there is no video signal being transmitted between the Switcher and Blustream HDBaseT™ receiver
- The green HDBaseT™ link light will be ON when a there is a HDCP enabled video signal being transmitted between the Switcher and Blustream HDBaseT™ receiver
- The green HDBaseT™ link light will BLINK when there is a video signal with no HDCP being transmitted between the Switcher and HDBaseT™ receiver

The link lights will only serve as an indication to the connectivity between Switcher and HDBaseT™ receiver unit.

The LED's will not indicate a termination, bandwidth, interference or cable length issues on a CAT cable run. Blustream always recommend qualifying / verifying / certifying a CAT cable run for suitability prior to the installation of HDBaseT™ equipment.

Infrared (IR) Control

The Blustream range of products include 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	IR Receiver - Stereo 3.5mm	IR Control Cable - IRCAB
Blustream 5V IR receiver to receive an IR signal for control of the Switcher.		Blustream IR Control cable 3.5mm Mono to 3.5mm Stereo for linking third party control solutions to Blustream products.

IR Receiver - Stereo 3.5mm labels: Signal / 5V / Ground

IR Control Cable - IRCAB:
Compatible with 3rd party 12V IR products.

Please Note: cable is directional as indicated.
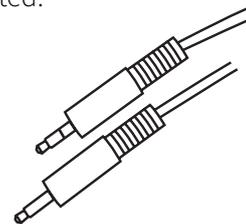
CEC Control

The Switcher features the ability to control source devices and displays over CEC (Consumer Electronic Comand) via the products Web GUI or RS-232. It is possible to send CEC commands such as power on / off, input selection as well as volume 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 Switcher.

Web GUI Control

The following pages outline the operation of the Swichers Web GUI. Connect the TCP/IP RJ45 socket to the local network in order to access the products Web GUI.

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

Default IP Address is: 192.168.0.200   Default Username is: blustream   Default Password is: @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 switch sources. Guest access can be changed by the Admin, limiting inputs or outputs as necessary.

User Accounts - 7 x 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 Switcher as well as assigning users with permissions.

Login

The Login Page allows a User or Admin to login and access additional functionality.
This page also displays the current firmware version of both the Switcher's MCU and GUI.
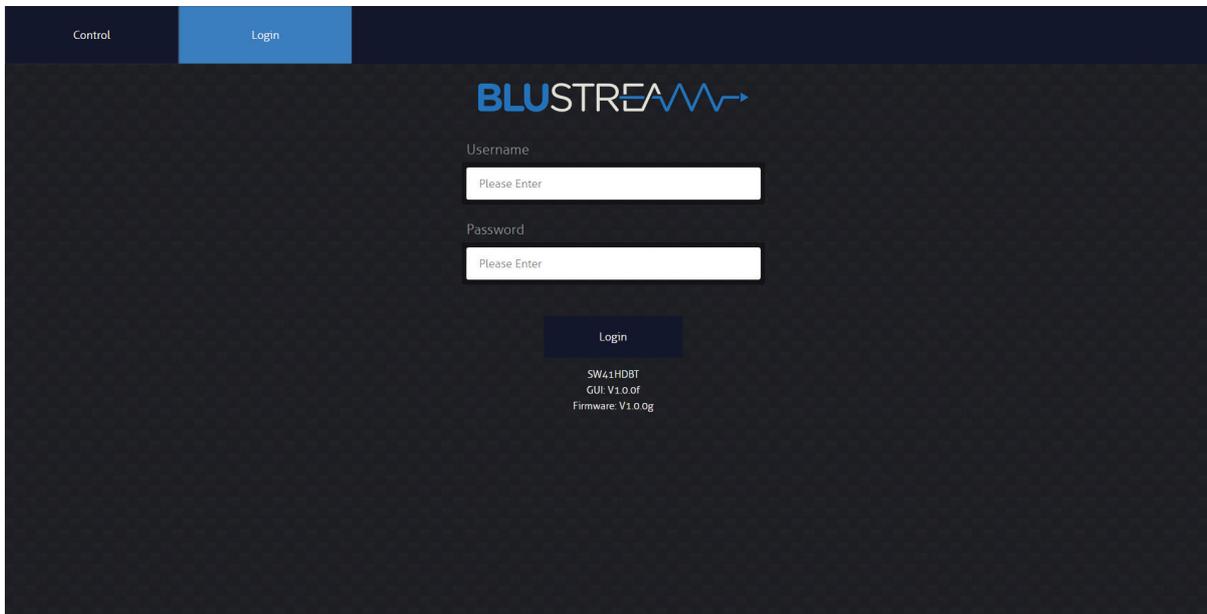
Guest Control

The Guest Control Page allows a Guest to change the selected input without needing to be logged into the Switcher. Simply click the square that corresponds with the input needing to be displayed. Auto-switching of the input signal can be enabled or disabled via the "Auto" button. There is a Power toggle button in the lower right corner to turn the Switcher on or off.
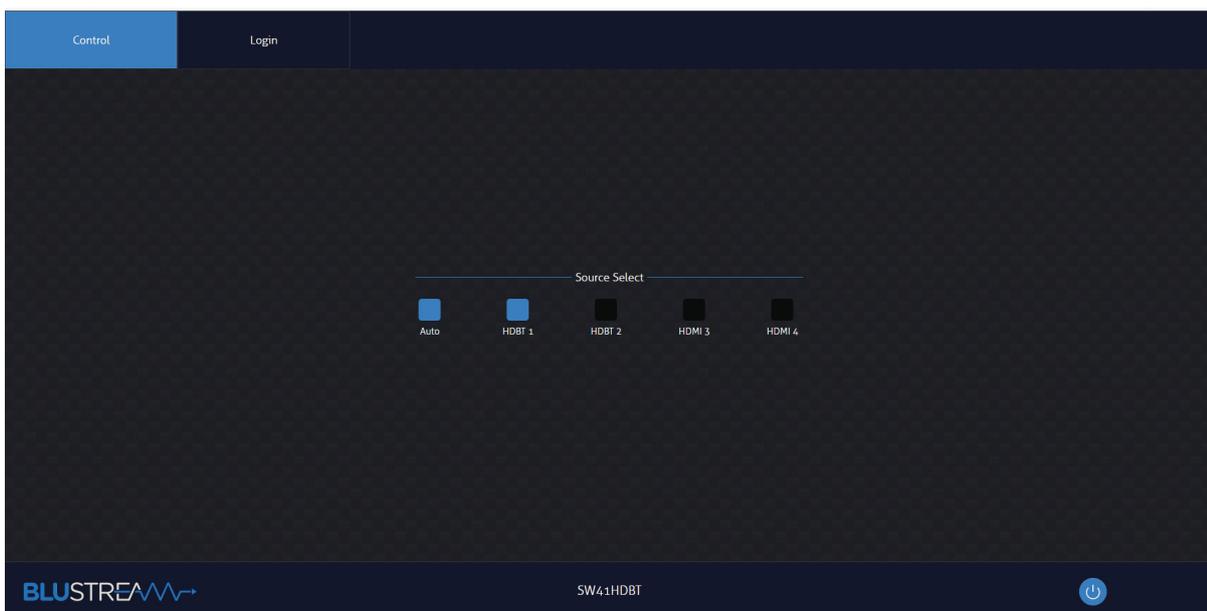
User Control

Once a User or Admin is logged into the Switchers GUI, more menu options appear along the top of the screen. Depending on the permissions given by the Admin to the User, more or less menu options will be available. The example below is the full menu suite for the Admin:
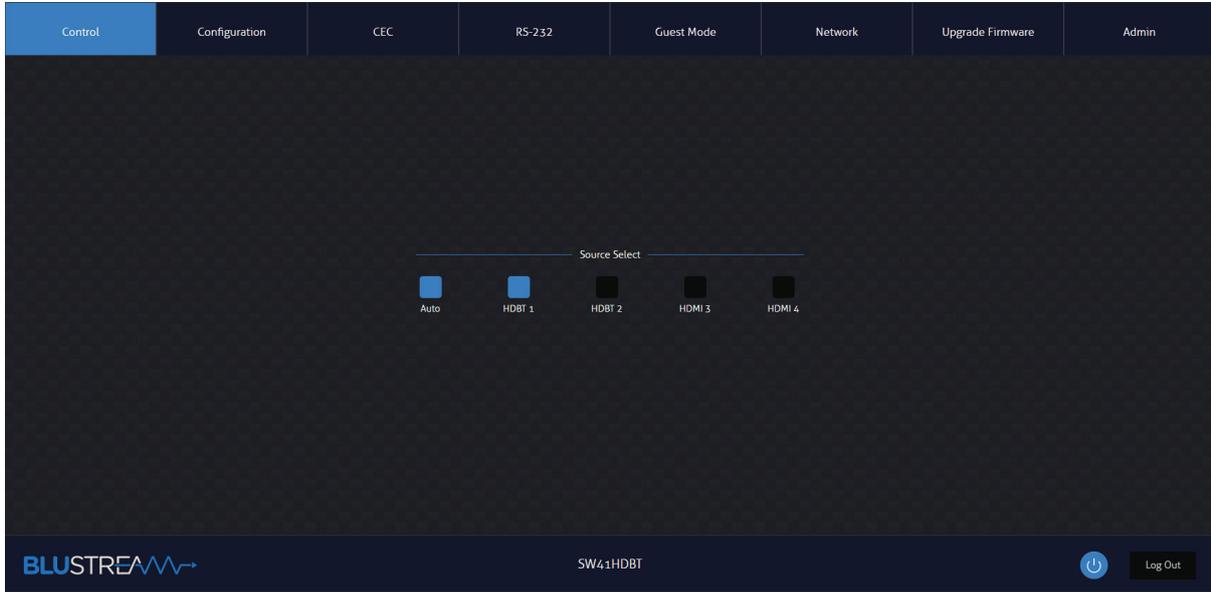
Configuration (Inputs)

With the 'Input' button selected (top middle of the page) - this page allows the user to set-up or amend settings specific to the inputs of the Switcher.

The name of each input / source device, the EDID of each input, as well as enable or disable CEC to the input can be configured from this page.

The Input Trigger Method provides two options for how the Switcher detects a new source device being added or powered on for auto-switching. 5V detects the 5V hot plug that is pasxsed from a source device to initiate a handshake on connection of a HDMI cable. TMDS (Transition-Minimised Differential Signaling) is the physical video and audio data passed by a source device over a HDMI cable once the handshake has been completed. Select the most appropriate method for auto-switch trigger as per the system the Switcher is being included into.
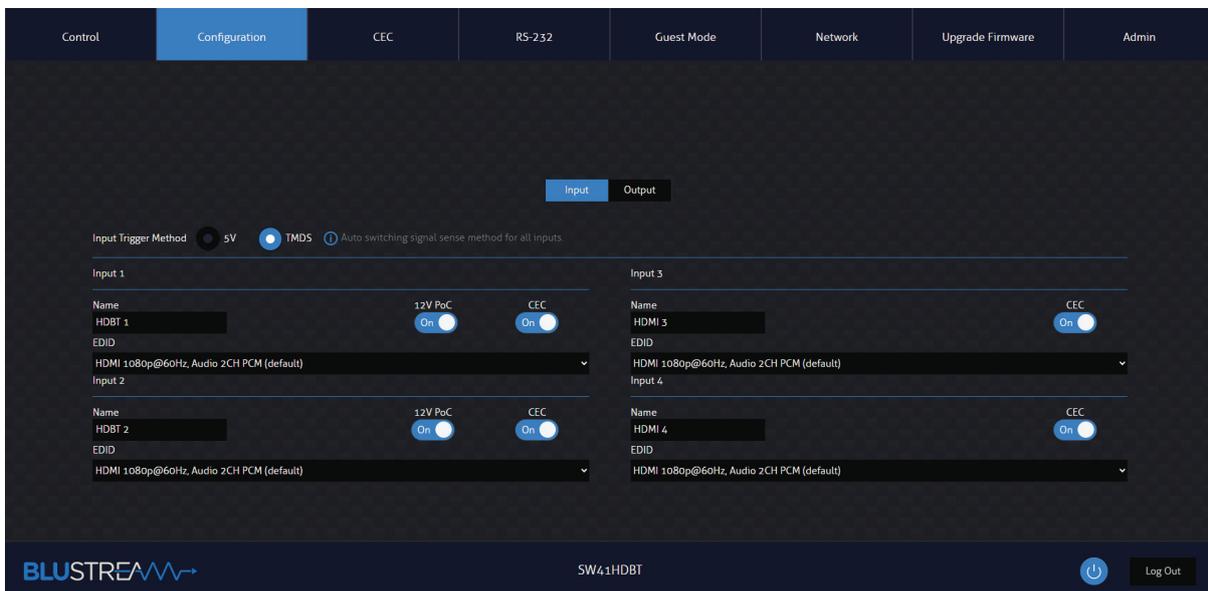
Configuration (Outputs)

With the 'Output' button selected (top middle of the page) - this page allows for PoC, CEC and automatic 4K downscaler functions to be adjusted. The SW41HDBT has the option to auto-downscale a 4K image to a lower (1080p) resolution should the display not support 4K imagery. This option would generally only be used where the Switcher is used in a system where the displays may change, and the supported resolutions of the displays may differ. This allows for the EDID of the inputs to be set and left, whilst the output can dynamically amend based on the EDID response from the sink.
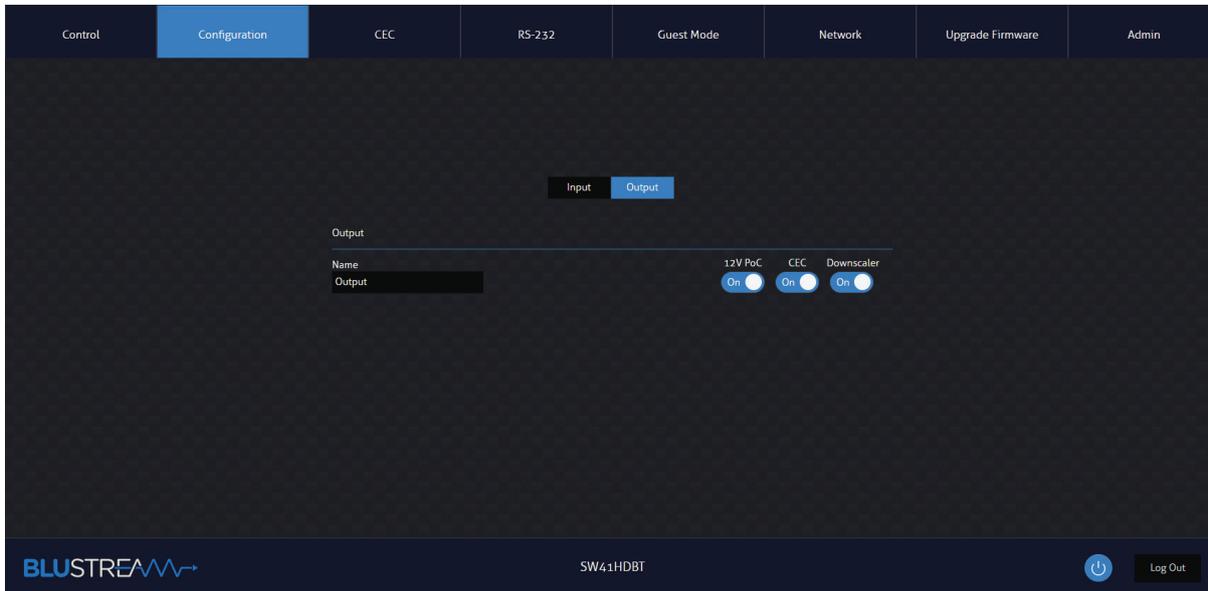
CEC Page - Input

The CEC Page allows for pre-defined CEC commands to Inputs or Outputs of the Switcher to be sent. The User has the choice 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 in advance of sending any commands. Simply click the icon of the command to be sent and this will be transmitted to the source device connected to the specified input via HDMI.

Please Note: CEC is subject to the support of the sources and displays connected to the Switcher.
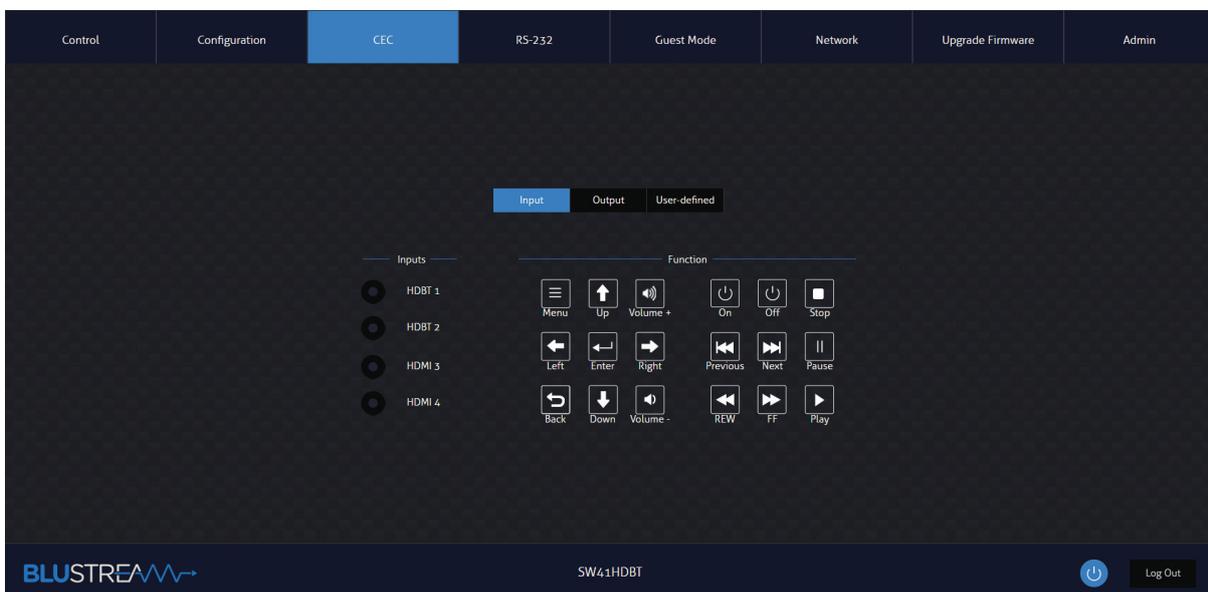
CEC Page - Output

On the CEC Output Page, the output to send the CEC command out of must be selecxted in advance of sending any comands. Simply click the icon of the command to be sent and this will be transmitted to the display device connected to the selected output via HDBaseT or HDMI.

Please Note: CEC is subject to the support of the sources and displays connected to the Switcher.
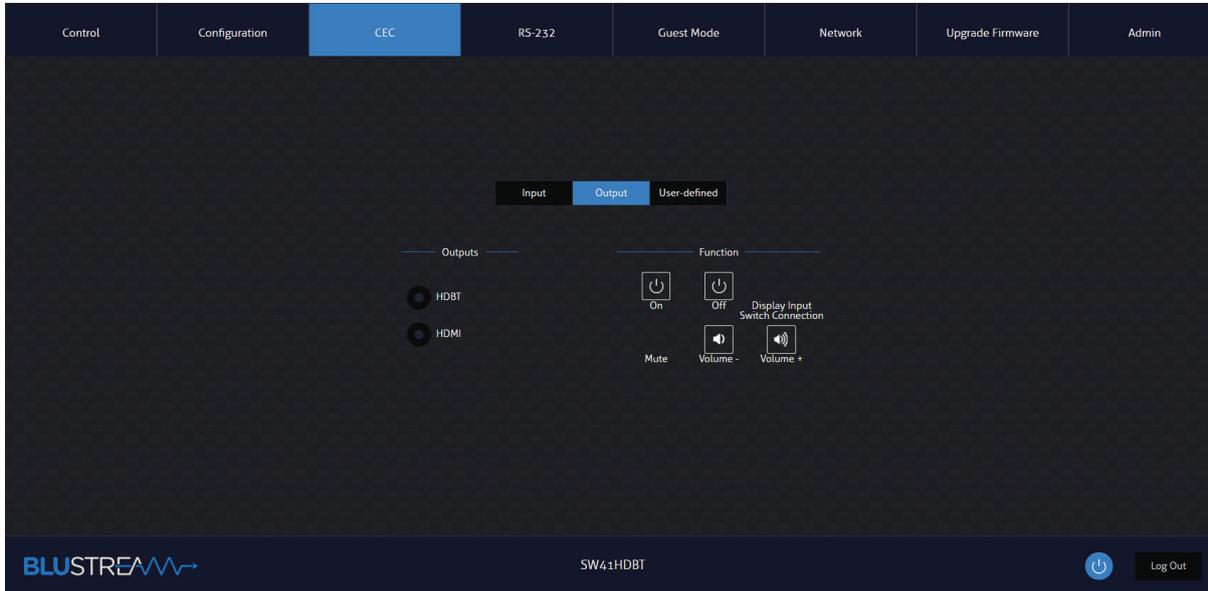
CEC Page - User-defined

The CEC User-defined Page allows for custom CEC commands to be sent to any Input or Output connected to the Switcher. Simply enter the custom CEC command into the 'Trigger' field before clicking 'Send'.

Please Note: CEC is subject to the support of the sources and displays connected to the Switcher.
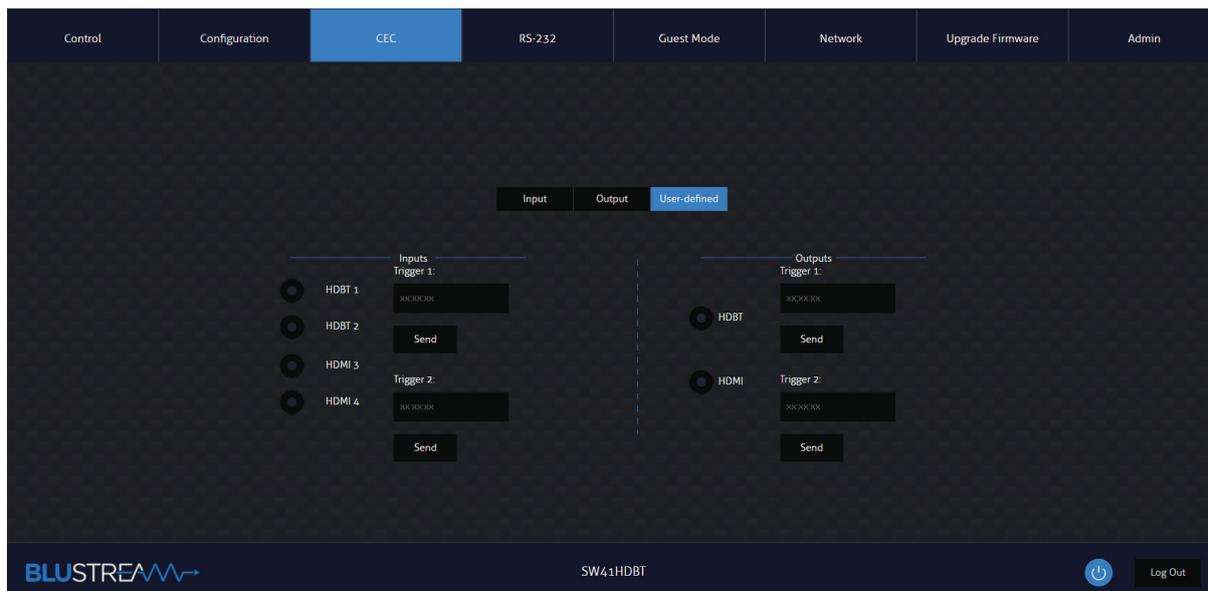
RS-232 Page - Local

The RS-232 Page allows commands to be sent out of the local RS-232 port on the Switcher, or, via HDBaseT to a compatible HDBT Receiver connected to a 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 Switcher to a connected device. Baud rate and terminator command as well as HEX or ASCII can be selected. Sending an RS-232 command via the Switcher can be useful in assisting with debugging and fault finding an RS-232 device connected to the Switcher.
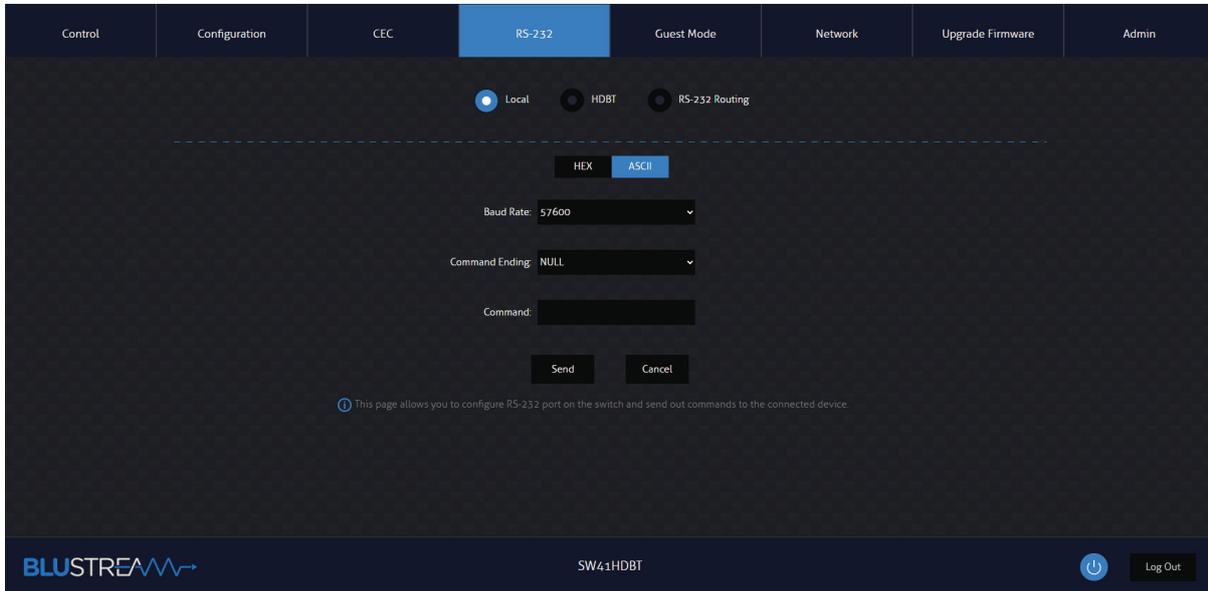
RS-232 Page - HDBT

The RS-232 HDBT Page allows for remotel control of devices connected via DB9 serial at the remote HDBT Receiver. It is then possible to automate the display on, input select, or display off process via RS-232 for the HDBT output, when the Switcher is turned on or off.

If RS-232 On is enabled, the Display on, Display Input Select, User Command 1 and User Command 2 are all sent out in sequence out of the HDBT Receiver, when the Switcher is turned on. If RS-232 Off is enabled, the User Off Command will be sent out of the corresponding HDBT Receiver, when the Switcher is turned off.

The Baud Rate and Command Ending (eg: new line, carriage return) can be specified to the match the RS-232 device connected to the HDBT Receiver.
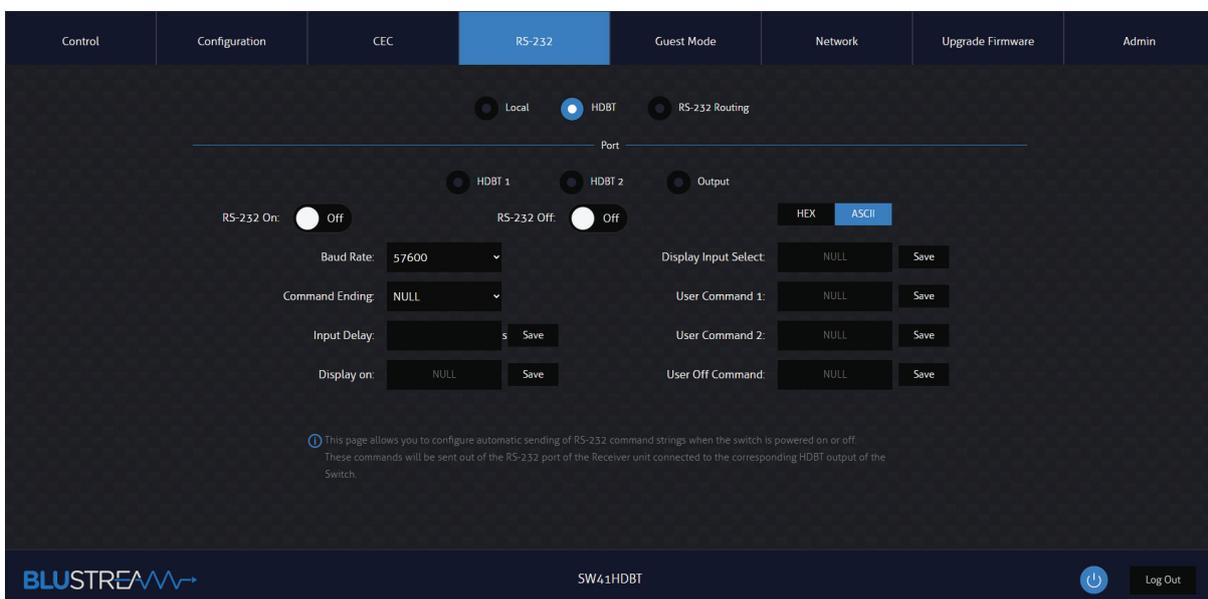
RS-232 Page - RS-232 Routing

The RS-232 Routing Page allows for the routing of RS-232 through the Switcher:

- Local Control - For direct control of the SW41HDBT unit
- TX <-> RX - RS-232 will be routed bi-directionally to/from HDBaseT™ Transmitter and Receiver
- TX <-> SW1HDBT - RS-232 will be routed bi-directionally from the HDBaseT™ Transmitter to the SW41HDBT unit
- RX <-> SW41HDBT - RS-232 will be routed bi-directionally from SW41HDBT to the HDBaseT Receiver™

The RS-232 Routing Page allows for the routing of RS-232 through the Switcher:
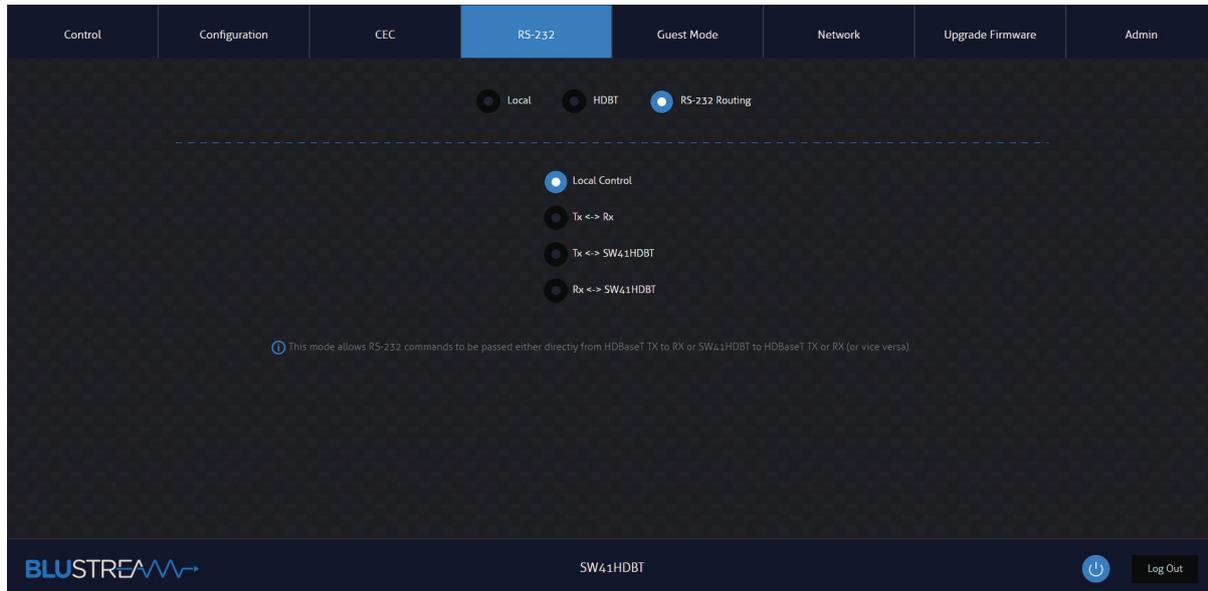
Guest Mode Page

The Guest Mode Page allows RS-232 and IR commands to be sent via Telnet to the two HDBT transmitters and the one HDBT receiver. Toggle the Status to enable or disable the Telnet port, for the corresponding HDBT port. Additional settings for RS-232 can be configured: Baud Rate, Encoding, Direction and Delay.

RS-232 & IR Test Command can be used to send a command to quickly test if the RS-232 and IR commands are being sent to the transmitters and receiver.

The Telnet commands can be found in the RS-232 Configuration and Telnet Commands section of this manual.
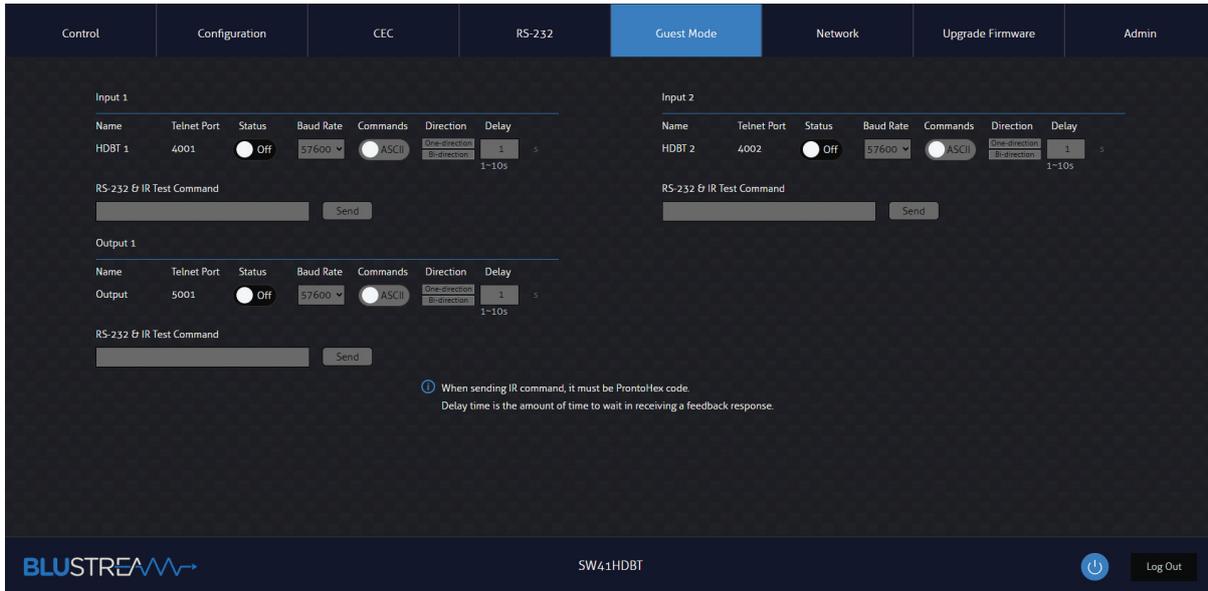
Network Page

The Network Page allows for the TCP/IP network port settings to be specified. 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.
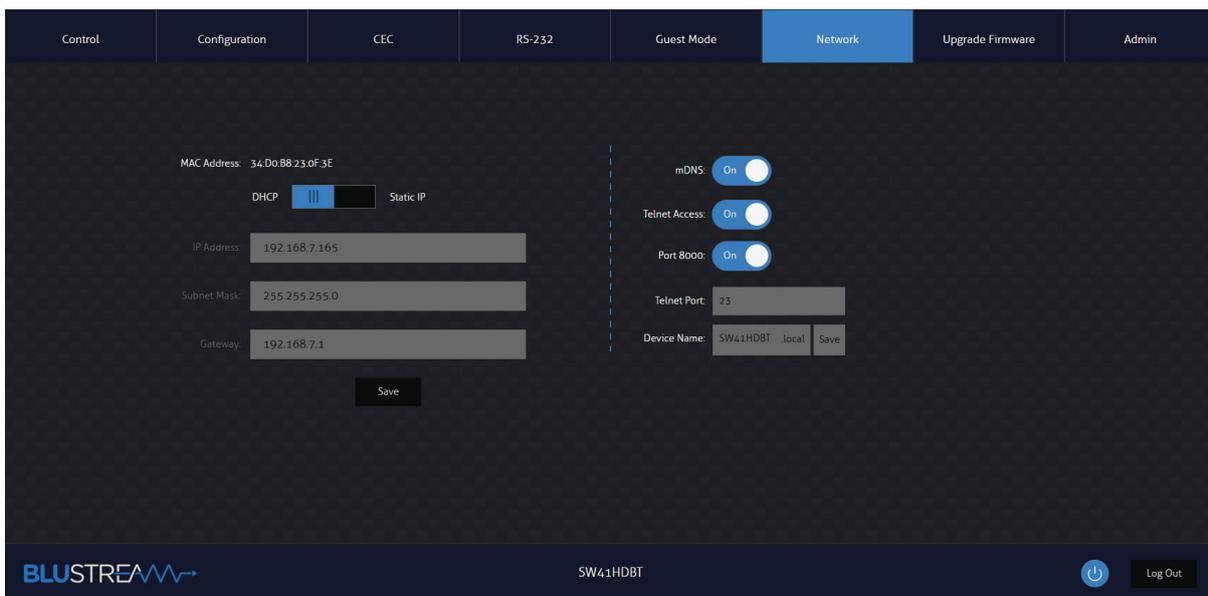
Upgrade Page

The Upgrade Page will shows the current firmware version of the Switcher, including the web-GUI version and the MCU firmware version.
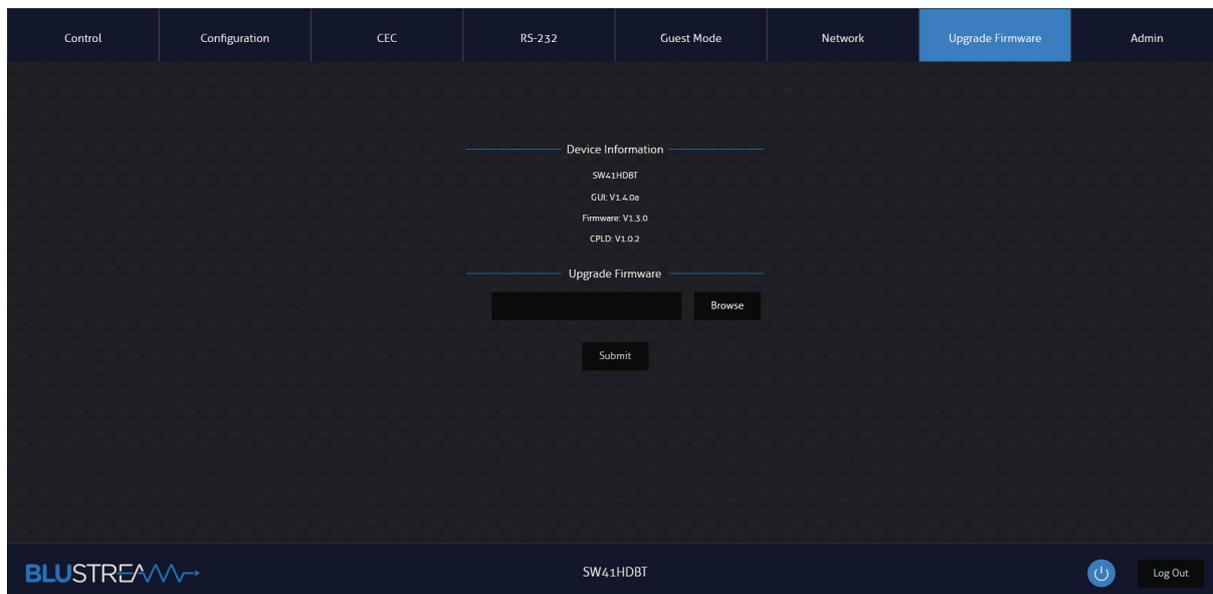
Admin Page

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

The Admin, or Users, who have been given Admin permissions, are able to allocate permissions to further Users. These permissions include allowing or disallowing access to each page in the web-GUI, as well as allowing or disallowing access to each input or output in the Switcher.

The Admin Page also allows the Front Panel Buttons or Front Panel IR of the Switcher to be disabled, as well as Factory Reset of the Switcher.

IR Commands

NEC Customer Code = 1898
Advanced Switcher features are not available via IR commands

COMMAND	NEC	HEX
POWER	14	0000 006D 0000 0022 0157 00AC 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 003F 0016 0016 0016 0016 0016 003F 0016 0016 0016 003F 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 003F 0016 0016 0016 003F 0016 003F 0016 003F 0016 0689
OUTPUT 1	09	0000 006D 0000 0022 0157 00AC 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 003F 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 003F 0016 003F 0016 003F 0016 003F 0016 0689
OUTPUT 2	1D	0000 006D 0000 0022 0157 00AC 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 003F 0016 003F 0016 003F 0016 0016 0016 0016 0016 0016 0016 0016 0016 003F 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 003F 0016 0689
OUTPUT ALL	17	0000 006D 0000 0022 0157 00AC 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 003F 0016 003F 0016 003F 0016 003F 0016 0016 0016 0016 0016 003F 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 003F 0016 0016 0016 003F 0016 003F 0016 003F 0016 0689
OUTPUT PTP	12	0000 006D 0000 0022 0157 00AC 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 003F 0016 0016 0016 003F 0016 0016 0016 0016 0016 0016 0016 003F 0016 0016 0016 0016 0016 0016 0016 003F 0016 0016 0016 003F 0016 003F 0016 0016 0016 003F 0016 003F 0016 003F 0016 0689
INPUT 1	50	0000 006D 0000 0022 0157 00AC 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 003F 0016 0016 0016 0016 0016 0016 0016 0016 0016 003F 0016 0016 0016 003F 0016 0016 0016 003F 0016 003F 0016 003F 0016 003F 0016 0016 0016 003F 0016 0016 0016 003F 0016 0689
INPUT 2	55	0000 006D 0000 0022 0157 00AC 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 003F 0016 0016 0016 003F 0016 0016 0016 003F 0016 0016 0016 0016 0016 003F 0016 0016 0016 003F 0016 0016 0016 003F 0016 0016 0016 003F 0016 0689
INPUT 3	48	0000 006D 0000 0022 0157 00AC 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 003F 0016 0016 0016 0016 0016 0016 0016 003F 0016 0016 0016 0016 0016 003F 0016 0016 0016 003F 0016 003F 0016 003F 0016 0016 0016 003F 0016 003F 0016 0016 0016 003F 0016 0689
INPUT 4	4A	0000 006D 0000 0022 0157 00AC 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 003F 0016 003F 0016 0016 0016 0016 0016 003F 0016 0016 0016 003F 0016 0016 0016 0016 0016 003F 0016 0016 0016 0016 0016 003F 0016 0016 0016 003F 0016 0016 0016 003F 0016 0016 0016 003F 0016 0016 0016 003F 0016 0689
INPUT DOWN	07	0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041 0016 0679
INPUT UP	40	0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0016 0041 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016 0016 0041 0016 0679

Specifications

- **Video Input Connectors:** 2 x HDMI Type A, 19-pin female,
  2 x HDBaseT™ RJ45 connector

- **Video Output Connectors:** 1 x HDBaseT™ RJ45 connector,
  1 x HDMI female, Type A

- **Audio Output Connectors:** 1 x Optical Toslink (S/PDIF),
  1 x 3.5mm analogue audio jack

- **RS-232 Serial Port:** 1 x 3-pin Phoenix connector

- **TCP/IP Control:** 1 x RJ45 female

- **IR Input Ports:** 1 x 3.5mm stereo jack

- **Product Upgrade:** 1 x USB Type A, female

- **Power Input:** 1 x 24V/5A DC 4-pin DIN connector

- **Casing Dimensions (W x H x D):** 305mm x 28mm x 220mm

- **Operating Temperature:** 32°F to 104°F (-5°C to +55°C)

- **Storage Temperature:** -4°F to 140°F (-25°C to +70°C)

- **Shipping Weight:** 3.0kg

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

Package Contents

- 1 x SW41HDBT
- 1 x 24V/5A DC Power Supply
- 1 x IR Receiver
- 1 x IR Control Cable - 3.5mm - 3.5mm
- 1 x RS-232 Control Cable
- 1 x Mounting Kit
- 1 x Quick Reference Guide

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 Switcher 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 Switcher 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 other 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. 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
?/HELP	Print Help Information
STATUS	Print System Status And Port Status
INSTA	Print All Input Status
OUTSTA	Print All Output Status
CTRLSTA	Print All Control Status
FWVERSION	Print FW version
PON/OFF	Set System Power On Or Off
KEY ON/OFF	Set System Key Control On Or Off
IR ON/OFF	Set System IR Control On Or Off
OUT xx GUEST ON/OFF	Set System Guest Mode xx On Or Off xx = 00: All HDBT output xx = 01: HDBT output 1
IN xx GUEST ON/OFF	Set System Guest Mode xx On Or Off xx = 00: All HDBT input xx = 01: HDBT input 1 xx = 02: HDBT input 2
OUT xx IRHEXSEND b	Send Pronto Hex Code To Remote End xx = 00: All HDBT output xx = 01: HDBT output 1 b = IR Value(Hex Format)
IN xx IRHEXSEND b	Send Pronto Hex Code To Remote End xx = 00: All HDBT input xx = 01: HDBT input 1 xx = 02: HDBT input 2 b = IR Value(Hex Format)
RESET	Reset System To Default Setting (Type Yes To Confirm, No To Discard)
POC IN xx ON/OFF	Set POC Input xx On/Off xx = [00]: All HDBT Input Ports, [01...02]: HDBT Input Port
POC OUT xx ON/OFF	Set POC Output xx On/Off xx=[00...01]: HDBT Output Port
OUT xx FR yy	Set Output xx From Input yy xx = 00: All Outputs xx = 01: All Outputs yy = 01: HDBT input 1 yy = 02: HDBT input 2 yy = 03: HDMI input 3 yy = 04: HDMI input 4

COMMAND	ACTION
OUT xx SWITCH yy	Set Output xx Switching To yy xx = 00: All Output Ports xx = 01: All Output Ports yy = AUTO: Auto Switching On - Auto Mode yy = MAN: Auto Switching Off - Manual Mode
AUTOTRG x	Set The Trigger Method x On Input To Perform Auto Switching x = 1 - HDMI (5V) x = 2 - HDMI (TMDS)
OUT xx SCALING ON/OFF	Set Output xx Scaling On Or Off xx = [00...01]: HDBT Output Port
EDID xx CP yy	Set Input xx EDID Copy From Output yy xx = [00]: All Input Ports, [01...04]: Input Port yy = [01]: Output 1 (HDBT) yy = [02]: Output 2 (HDMI)
EDID SAVE zz	Save EDID File From PC Into User Slot zz zz=22: User EDID 1 zz=23: User EDID 2
EDID xx DF zz	Set Input xx EDID To Default EDID zz xx=[00]: All Input Port, [01...04]: Input Port zz=00: HDMI 1080p@60Hz, Audio 2CH PCM(default) zz=01: HDMI 1080p@60Hz, Audio 5.1CH DTS/DOLBY zz=02: HDMI 1080p@60Hz, Audio 7.1CH DTS/DOLBY/HD zz=03: HDMI 1080i@60Hz, Audio 2CH PCM zz=04: HDMI 1080i@60Hz, Audio 5.1CH DTS/DOLBY zz=05: HDMI 1080i@60Hz, Audio 7.1CH DTS/DOLBY/HD zz=06: HDMI 1080p@60Hz/3D, Audio 2CH PCM zz=07: HDMI 1080p@60Hz/3D, Audio 5.1CH DTS/DOLBY zz=08: HDMI 1080p@60Hz/3D, Audio 7.1CH DTS/DOLBY/HD zz=09: HDMI 4K@30Hz 4:4:4, Audio 2CH PCM zz=10: HDMI 4K@30Hz 4:4:4, Audio 5.1CH DTS/DOLBY zz=11: HDMI 4K@30Hz 4:4:4, Audio 7.1CH DTS/DOLBY/HD zz=12: HDMI 4K@60Hz 4:2:0/4K@30Hz 4:4:4, Audio 2CH PCM zz=13: HDMI 4K@60Hz 4:2:0/4K@30Hz 4:4:4, Audio 5.1CH DTS/DOLBY zz=14: HDMI 4K@60Hz 4:2:0/4K@30Hz 4:4:4, Audio 7.1CH DTS/DOLBY/HD zz=15: HDMI 4K@60Hz 4:4:4, Audio 2CH PCM zz=16: HDMI 4K@60Hz 4:4:4, Audio 5.1CH DTS/DOLBY zz=17: HDMI 4K@60Hz 4:4:4, Audio 7.1CH DTS/DOLBY/HD zz=18: DVI 1280x1024@60Hz, Audio None zz=19: DVI 1920x1080@60Hz, Audio None zz=20: DVI 1920x1200@60Hz, Audio None zz=21: HDMI 1920x1200@60Hz, 2CH/6CH PCM zz=22: Copy User EDID 1 zz=23: Copy User EDID 2 zz=24: EDID Passthrough(Copy From HDBT OUT Sink) zz=25: EDID Passthrough(Copy From HDMI OUT Sink)
OUT xx CEC ENABLE	Enable CEC Control On Output xx

RS-232 Configuration and Telnet Commands

COMMAND	ACTION
OUT xx CEC DISABLE	Disable CEC Control On Output xx
OUT xx CEC VOLUP	Send CEC Volume Up To Output xx
OUT xx CEC VOLDOWN	Send CEC Volume Down To Output xx
OUT xx CEC MUTE	Send CEC Mute Toggle To Output xx
OUT xx CEC INPUT	Send CEC Input Selection To Output xx
OUT xx CEC POFF	Send CEC Power Off To Output xx
OUT xx CEC PON	Send CEC Power On To Output xx xx = 00: All Outputs xx = 01: HDBT Output xx = 02: HDMI Output
OUT xx CEC yy:yy:…	Send User-defined CEC Command To Output xx xx = 00: All Outputs xx = 01: HDBT Output xx = 02: HDMI Output yy = CEC Command Data
IN xx CEC ENABLE	Enable CEC Control On Input xx
IN xx CEC DISABLE	Disable CEC Control On Input xx
IN xx CEC VOLUP	Send CEC Volume Up To Input xx
IN xx CEC VOLDOWN	Send CEC Volume Down To Input xx
IN xx CEC UP	Send CEC Up To Input xx
IN xx CEC DOWN	Send CEC Down To Input xx
IN xx CEC LEFT	Send CEC Left To Input xx
IN xx CEC RIGHT	Send CEC Right To Input xx
IN xx CEC MENU	Send CEC Menu To Input xx
IN xx CEC RETURN	Send CEC Return To Input xx
IN xx CEC OK	Send CEC OK To Input xx
IN xx CEC POFF	Send CEC Power Off To Input xx
IN xx CEC PON	Send CEC Power On To Input xx
IN xx CEC STOP	Send CEC Stop To Input xx
IN xx CEC PLAY	Send CEC Play To Input xx
IN xx CEC PAUSE	Send CEC Pause To Input xx
IN xx CEC REWIND	Send CEC Rewind To Input xx
IN xx CEC FF	Send CEC Fast Forward To Input xx
IN xx CEC FWD	Send CEC Forward To Input xx
IN xx CEC BWD	Send CEC Backward To Input xx xx=[00]: All Input Port, [01…04]: Input Port
IN xx CEC yy:yy:…	Send User-defined CEC Command To Input xx xx=[00]: All Input Port, [01…04]: Input Port yy = CEC Command Data

COMMAND	ACTION
RS232BAUD z	Set RS232 Baud Rate To z z = 1 2400, 2 4800, 3 9600, 4 19200, 5 38400, 6 57600 (default), 7 115200
IN xx RS232SEND yy:z:a:b	Send b To RS232 Port xx And Wait yy Seconds For Feedback xx = 01: HDBT input 1 RS232 Port xx = 02: HDBT input 2 RS232 Port yy = [00-10]: Wait For The Feedback dd 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
RS232MODE z	Set RS232 Working Mode To z z = 1 Local RS232 Port Control Device z = 2 Bypass Between Local RS232 Port And Tx Device's RS232 Port z = 3 Bypass Between Local RS232 Port And Rx Device's RS232 Port z = 4 Bypass Between Tx Device's RS232 Port And Rx Device's RS232 Port
RS232ONOUT xx c:y:z:a	Send y Type Of Command a Stored In Slot c With Baud Rate z To Output xx xx = 00 All Output Ports xx = 01 HDBT Input 1 RS232 Port xx = 02 HDBT Input 2 RS232 Port xx = 03 HDBT Output RS232 Port c = 1 Send RS232 User Command 1 c = 2 Send RS232 User Command 2 c = 3 Send RS232 User Command 3 c = 4 Send RS232 User Command 4 y = a ASCII, h HEX z = 1 2400, 2 4800, 3 9600, 4 19200, 5 38400, 6 57600 (default), 7 115200 a = RS232 Command
RS232OFFOUT xx y:z:a	Send RS232 Off Command a Of y Type With Baud Rate z To Output xx xx = 00 All Output Ports xx = 01 HDBT Input 1 RS232 Port xx = 02 HDBT Input 2 RS232 Port xx = 03 HDBT Output RS232 Port y = a ASCII, h HEX z = 1 2400, 2 4800, 3 9600, 4 19200, 5 38400, 6 57600 (default), 7 115200 a = RS232 command
RS232ONOUT xx DISABLE	Disable Automatic RS232 Commands When Detecting Signal
RS232OFFOUT xx DISABLE	Disable Automatic RS232 Commands When Not Detecting Signal
RS232DLYOUT xx ttt	Set The Sending Interval Time In ttt Second(s) Between RS232 Ons To Output xx (Default 3s, Range From 1s To 30S)
NET DHCP ON/OFF	Set Auto IP(DHCP) On Or Off
NET IP xxx.xxx.xxx.xxx	Set IP Address
NET GW xxx.xxx.xxx.xxx	Set Gateway Address

RS-232 Configuration and Telnet Commands

COMMAND	ACTION
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
NET TN ON/OFF	Set Telnet Port On or Off
NET TN8000 ON/OFF	Set Telnet Port 8000 On or Off

Web-GUI Firmware Update

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

As the web-GUI is used to update the main Switcher 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 you have accessed the web-GUI menu interface, expand the 'Administration' file in the menu tree by clicking the small '+' icon next to the file.

3) Select 'Upload Firmware':
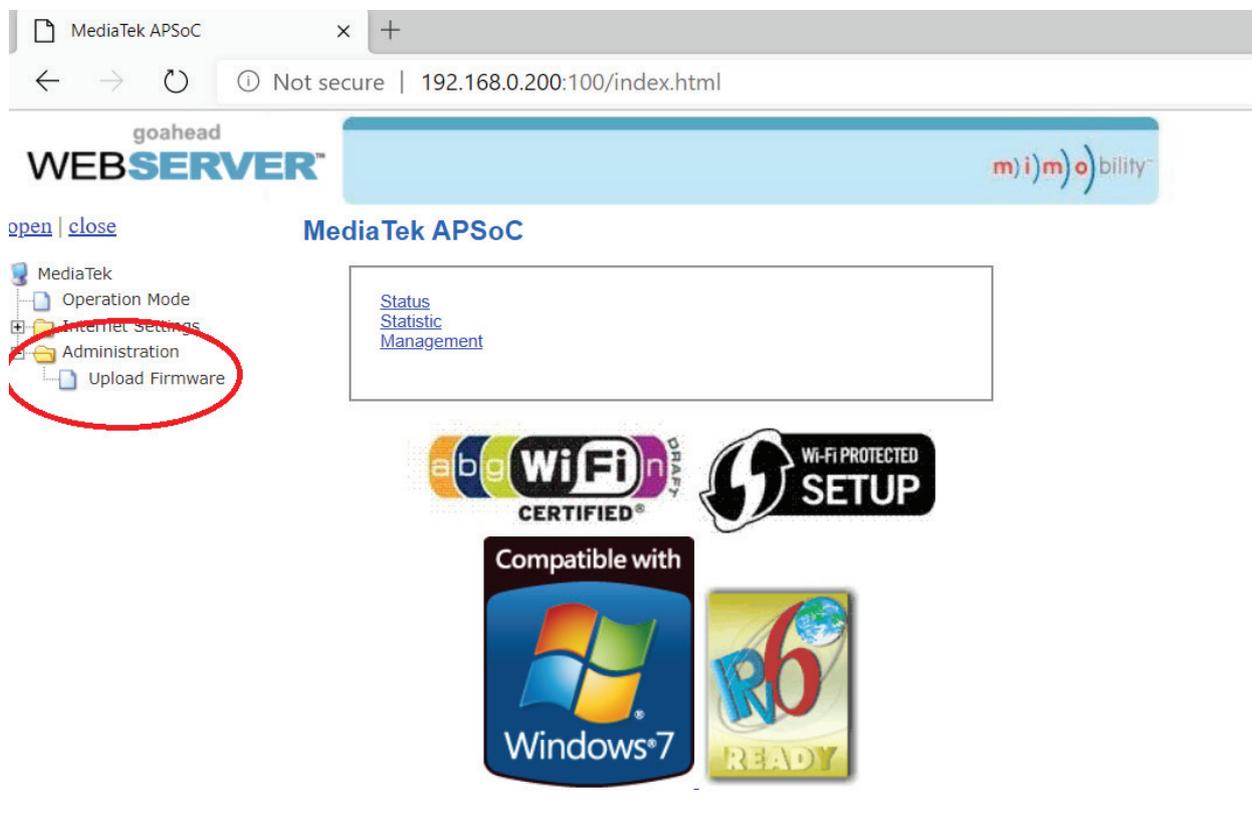
4) Click 'Choose File' and select the web-GUI/MediaTek firmware file downloaded from the Blustream website. This will be a .bin file:
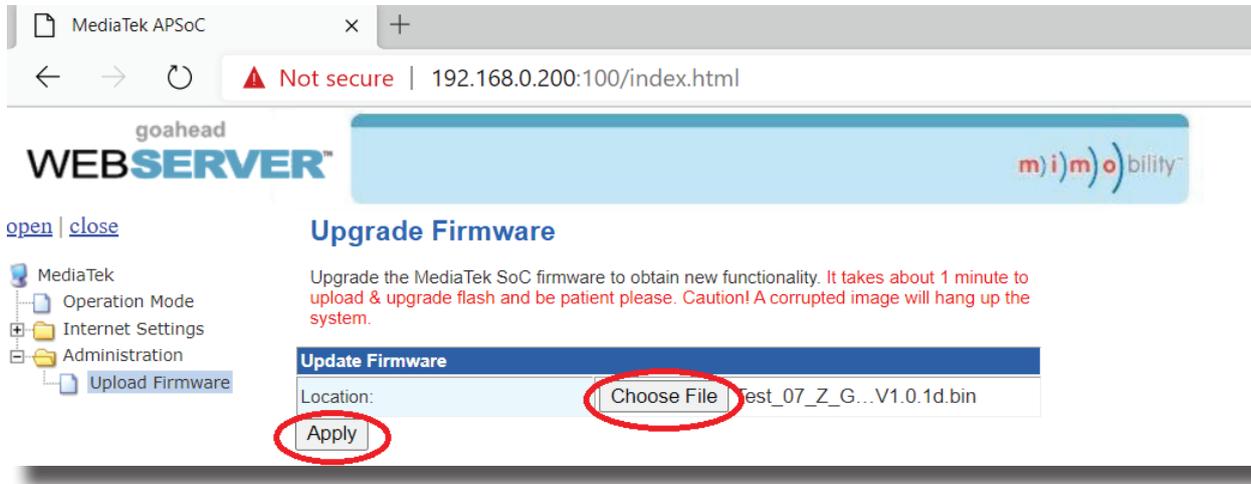
5) Press 'Apply' to begin the firmware update process.

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.
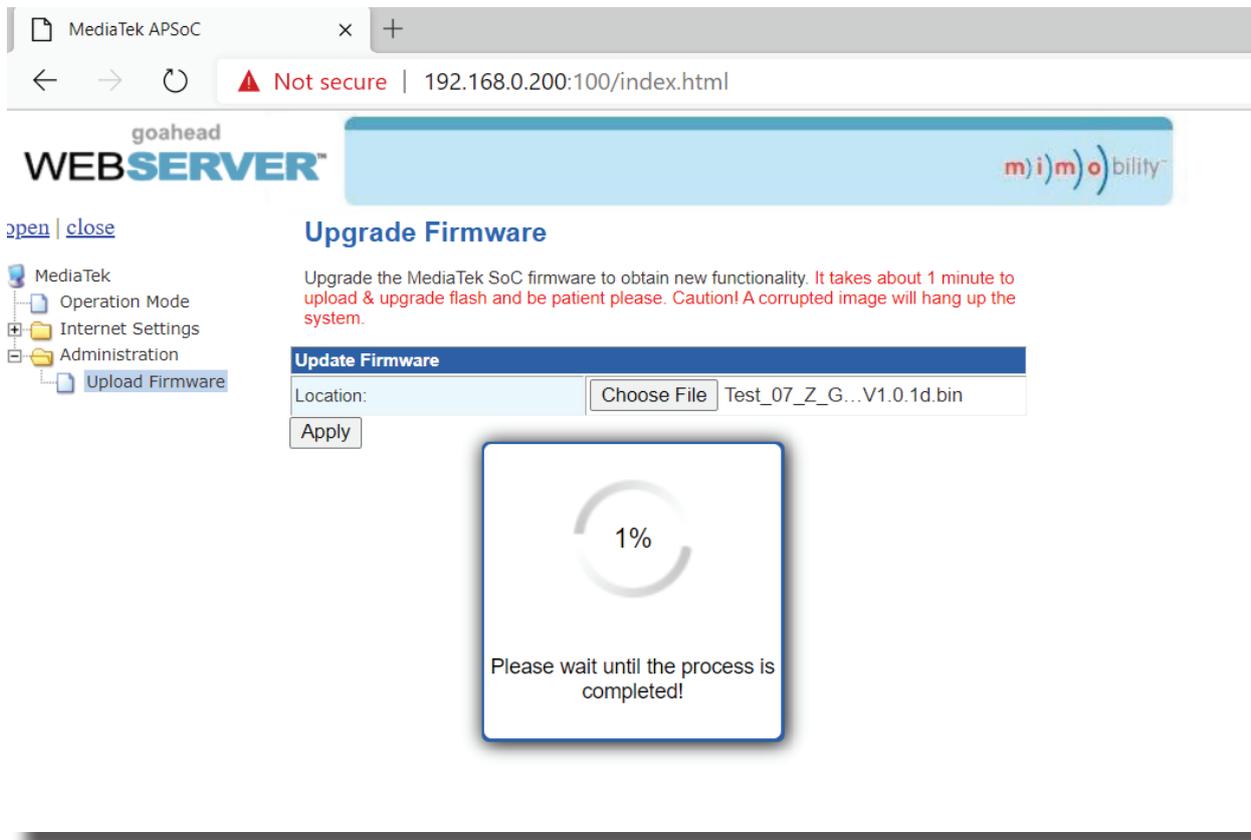
Schematic
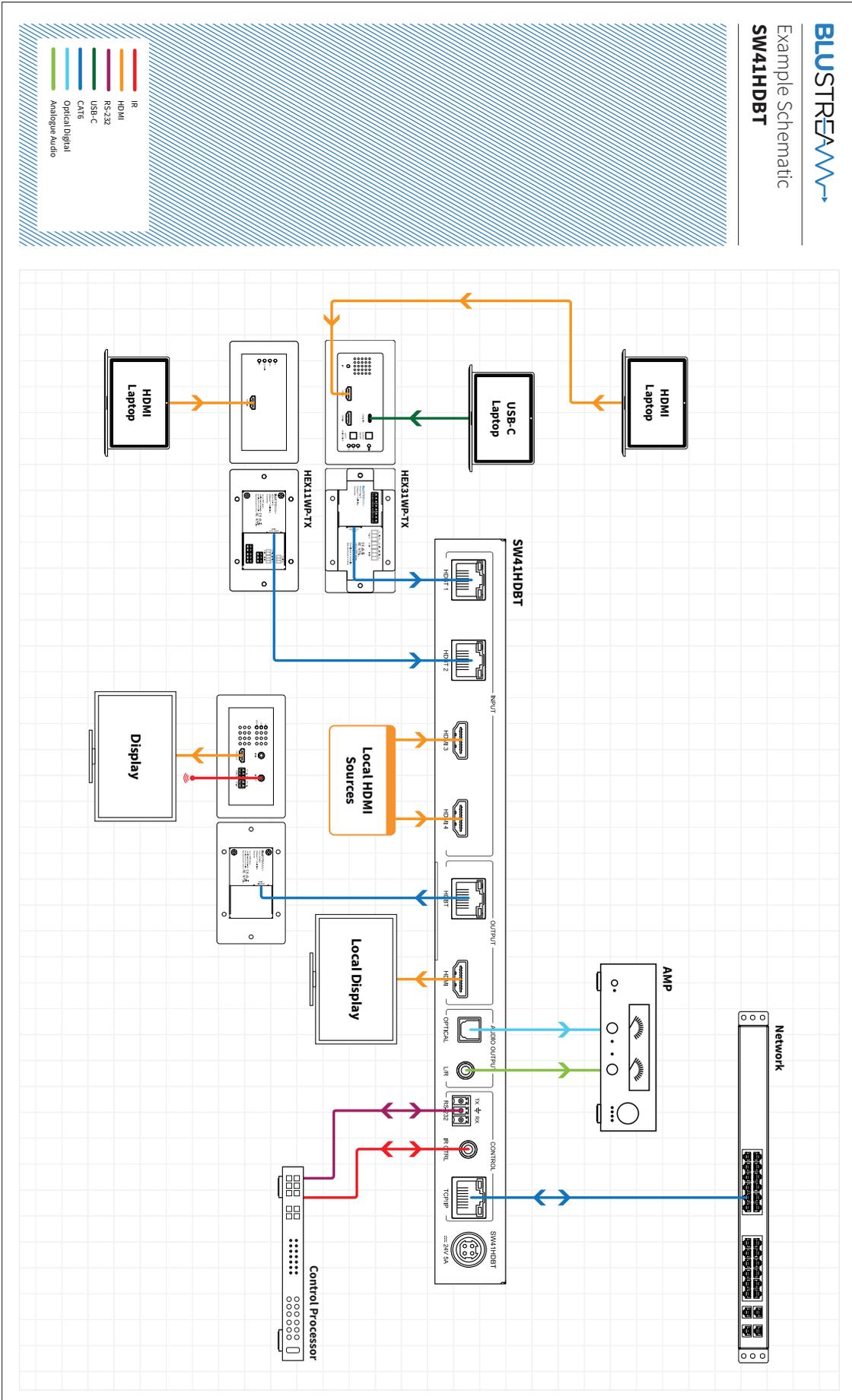
Certifications

FCC Notice

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

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

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

CANADA, INDUSTRY CANADA (IC) NOTICES

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

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

CANADA, AVIS D'INDUSTRY CANADA (IC)

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

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

CORRECT DISPOSAL OF THIS PRODUCT

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

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