HD11CTRL-V2

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 HD11CTRL-V2 HDMI in-line controller is an automated room control solution including display on / off control via CEC, RS-232, IR or IP when a HDMI signal is sensed on the input. External relay inputs allow third party triggers for integration with devices such as sensors or switches.

The HD11CTRL-V2 will also help with HDMI compatibility, HDCP 2.2, clock stretching, EDID and handshaking issues that can cause problems when distributing HDMI signals, especially 4K. The HD11CTRL-V2 supports full HDMI 2.0 and HDCP 2.2, with video resolutions up to and including 4K @ 60Hz 4:4:4, and features a web-GUI for control and configuration.

FEATURES:

• Automated in-line HDMI control module supporting up to 10 macros, with up to 10 command functions per macro

• Supports HDMI 2.0 18Gbps specification including HDR

• Supports resolutions up to 4K UHD 60Hz 4:4:4

• Supports bitstream passthrough of multichannel surround sound including object-based audio formats in line with HDMI specifications

• Features Smart-Scale technology to convert 4K input signal to 1080p output (**Note:** 4:2:2 colour space not supported)

• Can help to solve most HDMI EDID, HDCP, compatibility, and handshaking issues

• Automatic display control via CEC, RS-232, IR or IP

• IR learning up to 30 IR commands

• Relay control for interface to third party devices such as projector screens

• Signal sense input for connection from third party devices such as sensors or switches

• HDCP 2.2 compliant with advanced EDID management

• In-built web-GUI for configuration and control

Front Panel
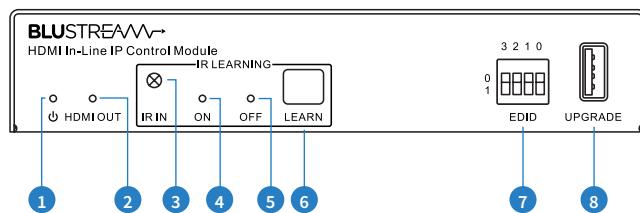
① Power LED Indicator - Illuminates when the device is powered

② HDMI Output LED Indicator - Illuminates when the device has an active connection to a display

③ IR Learning IR In - IR receiver used for learning IR commands to be used with auto on / off trigger

④ IR Learning IR On LED - Flashes blue when device is in IR learning mode - refer to User Manual for IR learning function

⑤ IR Learning IR Off LED - Flashes blue when device is in IR learning mode - refer to User Manual for IR learning function

⑥ IR Learning Learn Button - Press to enable IR learning mode - refer to User Manual for IR learning function

⑦ EDID DIP Switches - Adjust the EDID setting for the source input - refer to the EDID management dip switch table

⑧ USB Upgrade Port - USB connector used for firmware upgrades

Rear Panel
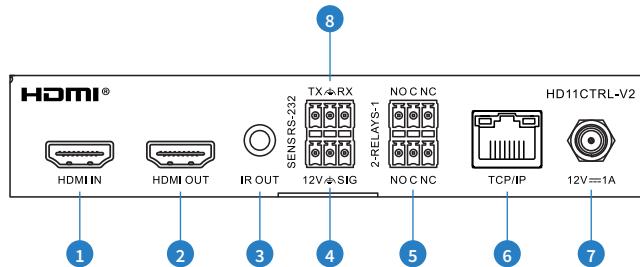
① HDMI Input - Connect to HDMI source device

② HDMI Output - Connect to HDMI display device (supports CEC)

③ IR Output - 3.5mm mono jack provides IR output to a device

④ Signal Sense Input (12V) - 3 pin Phoenix connector to connect to external sensor or switch

⑤ Relay 1 ~ 2 - 3-pin Phoenix connector to allow relay control of a device such as a projector screen

⑥ TCP/IP - RJ45 connector for TCP/IP and web-GUI control of the Matrix

⑦ Power Port - Use included 12V/1A DC adaptor to power the device

⑧ RS-232 Serial Port - 3-pin Phoenix connector for control of device by third party control system

EDID Management Dip-switches

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 then from this information the source will determine what the best resolution is to output.

To change the EDID settings, move the EDID dip-switches as required on the front panel of the unit. Please see table below for settings.

The Software EDID preset allows EDID selection via the devices web GUI, or for a custom EDID to be loaded into the HD11CTRL-V2. This is used for sources that may output non-standard resolutions or video formats.
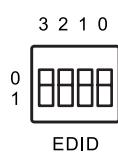
3	2	1	0	EDID Type
Combination of DIP positions				
0	0	0	0	1080p 60Hz 2.0ch
0	0	0	1	1080p 60Hz 5.1ch
0	0	1	0	1080p 60Hz 7.1ch
0	0	1	1	1080i 60Hz 2.0ch
0	1	0	0	1080i 60Hz 5.1ch
0	1	0	1	1080i 60Hz 7.1ch
0	1	1	0	4K 60Hz 4:2:0 2.0ch
0	1	1	1	4K 60Hz 4:2:0 5.1ch
1	0	0	0	4K 60Hz 4:2:0 7.1ch
1	0	0	1	4K 60Hz 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 1920x1080@60Hz
1	1	0	1	DVI 1920x1200@60Hz
1	1	1	0	EDID Pass-through
1	1	1	1	Software Management

Automatic System On / Off Control

The HD11CTRL-V2 is designed to automate basic control of AV equipment within a room without the need for a 3rd party control system. It can control devices via CEC, RS-232, IR, relay and signal sense. Its key function is to turn the system on when a HDMI signal is sensed, and turn it off when that signal is lost.
Configuration of this functionality can be completed via RS-232 - see pages 6-7 for RS-232 information.

System On:
When the controller detects video signal (via TMDS or 5V) or the signal sense input is triggered, the system will start and automatically perform the following actions at the same time:
- Send CEC Power On command (enabled by default), then fixed delay, then send user defined CEC input command once configured via RS-232.
- Send RS-232 On Command, then delay (between 1~180s, default 3s), then send user defined RS-232 command once configured via RS-232.
- Send IR On Command, then delay (between 1~180s, default 3s), then send user defined IR commands.
  IR commands must be learnt in to enable this function. Refer to IR learning on the following page.
- Toggle the state of relay 1 for a predetermined time (enabled by default, between 3~180s, default 10s).

Note when setting video signal trigger to TMDS or 5V, please ensure the System On and System Off settings match or the feature may not operate correctly.

System Off:
When the controller detects the video signal is lost, and does not receive a signal sense trigger within the delay time (between 5~180mins, default 10mins), the system will turn off and automatically perform the following actions:
- Send CEC Power Off command (enabled by default).
- Send RS-232 Off Command, then delay (between 1~180s, default 3s), then repeat the command once configured via RS-232.
- Send IR Off Command, then delay (between 1~180s, default 3s), then repeat the command.
  IR commands must be learnt in to enable this function. Refer to IR learning on the following page.
- Toggle the state of relay 2 for a predetermined time (enabled by default, between 3~180s, default 10s)

CEC Control:
By default, CEC Power On and Off is enabled (subject to display device compatibility). The CEC functionality can be enabled or disabled via RS-232. It is also possible to send other CEC commands such as input selection as well as volume up or down. Please see the RS-232 command list at the end of this document for a full list of CEC commands available. Note CEC is subject to the support of the display connected to the HD11CTRL-V2.

Relay Control:
The HD11CTRL-V2 features two relays. Relay 1 is triggered during System On, Relay 2 is triggered during System Off as follows:
System On: Relay 1 NO closes and NC opens. After the delay time, NO opens and NC closes.
System Off: Relay 2 NO opens and NC closes. After the delay time, NO closes and NC opens.
The time for which the relay stays open can be adjusted via RS-232. To use the relay control as a 5V/12V trigger, set the delay to time "00" which will result in 'NO' remaining as an open circuit whilst a video signal is present. An example wiring diagram is as follows:
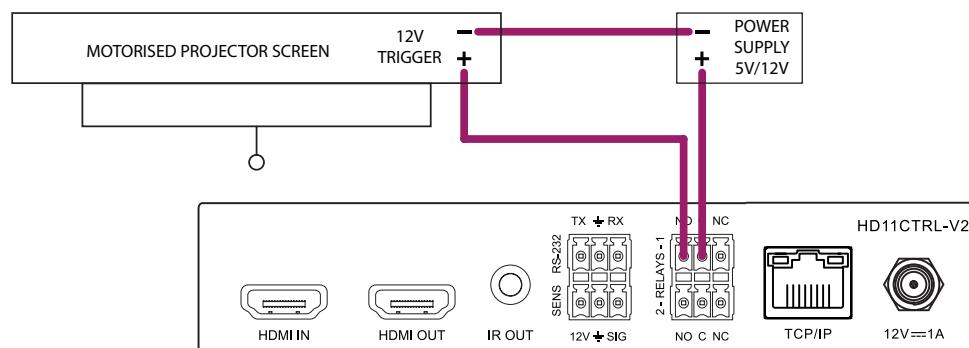
IR Learning

The HD11CTRL-V2 can send out up to 5 IR commands automatically when a signal is sensed or lost. These commands are learnt into the product via the following procedure:

1) Press the "Learn" button to scroll through the 5 x IR commands in which custom IR commands can be learnt. The LED's will indicate what position is selected as follows:

COMMAND / POSITION	LED	
	ON	OFF
Display On	Illuminated	Off
Input Select	Flashing	Off
Display Off	Off	Illuminated
User Command 1	Off	Flashing
User Command 2	Flasing	Flashing

2) Point the IR remote control at the IR In sensor and press the respective button on the IR remote control.
3) Both LEDs will remain illuminated to indicate that an IR command has been learnt.
4) The IR Learning mode will end after 10 seconds of inactivity and both LED's will turn off.

Signal Sensing

The HD11CTRL-V2 also has the ability to be triggered via signal sense from a device feeding it a voltage such as a PIR sensor. The sensor port features +12V DC and ground to power a PIR sensor, as well as a signal input that triggers when the circuit is closed or grounded. Please note the max +12V DC output is 50mA.
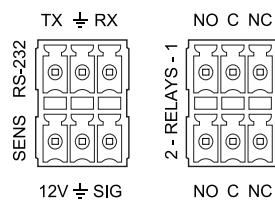
Smart Scale

The HD11CTRL-V2 features Smart Scale technology where by a 4K signal can be down-scaled to 1080p for compatibility with 1080p displays. Downscaling is automatic based on the EDID of the display connected. This feature can be enabled (default) or disabled via RS-232. The downscaling functionality is shown below:

#	INPUT SIGNAL RESOLUTION	REFRESH	COLOUR SPACE	OUTPUT RESOLUTION
1	3840 x 2160	60Hz	4:4:4	1080p@60Hz 4:4:4
2	3840 x 2160	30Hz	4:4:4	1080p@30Hz 4:4:4
3	3840 x 2160	24Hz	4:4:4	1080p@24Hz 4:4:4
4	3840 x 2160	60Hz	4:2:0	1080p@60Hz 4:2:0
5	3840 x 2160	30Hz	4:2:0	1080p@30Hz 4:2:0
6	3840 x 2160	24Hz	4:2:0	1080p@24Hz 4:2:0
7	3840 x 2160	60Hz	4:2:2	Not supported
8	3840 x 2160	30Hz	4:2:2	Not supported
9	3840 x 2160	24Hz	4:2:2	Not supported

Web-GUI Control

This following pages take you through the operation of the HD11CTRL-V2's Web-GUI. You must connect the TCP/IP RJ45 socket to your local network in order to access the products Web-GUI.

By default the HD11CTRL-V2 is set to DHCP, however if a DHCP server (eg: network router) is not installed the IP address will revert to below details:

Default IP Address is: 192.168.0.200   Default Username is: blustream   Default Password is: 1234

* Please note: Due to new UK cyber security requirements, the default password has been updated for the below

firmware versions (and above) to default password: **@Bls1234**

HD11CTRL-V2: firmware version: V1.3.0 onwards

New password regulations requires new passwords being set for products to be a minimum of **8 characters** and contain a minimum of: **1x uppercase letter, 1x lowercase letter, 1x symbol and 1x number.**

Login Page

The Login Page allows a user or admin to login and access additional functionality.
This page also shows you the current firmware version of both the matrix and web GUI.
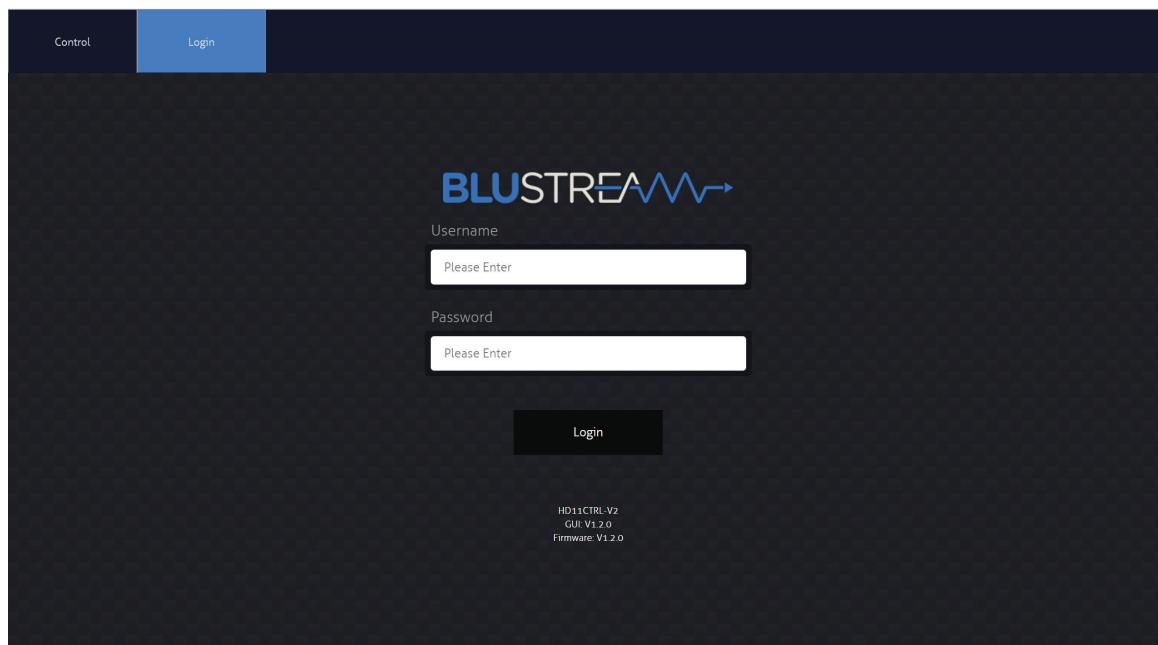
Guest Control Page

The Guest Control Page allows a guest to recall pre-defined macros that have been configured.
Simply select the square that corresponds with the macro you wish to recall.
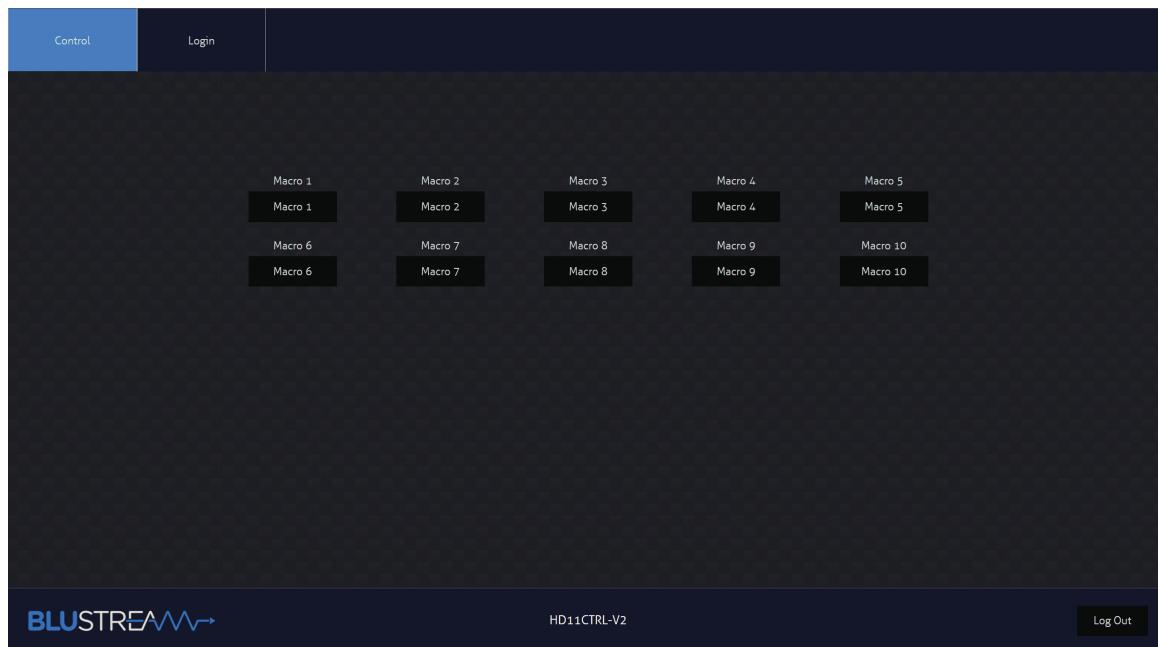

Configuration Page

The Configuration Page allows a user to see the status of the relays as well as enable or disable the front panel hard keys, enable or disable the automtic output image scaler, as well as set the EDID for the HDMI input.
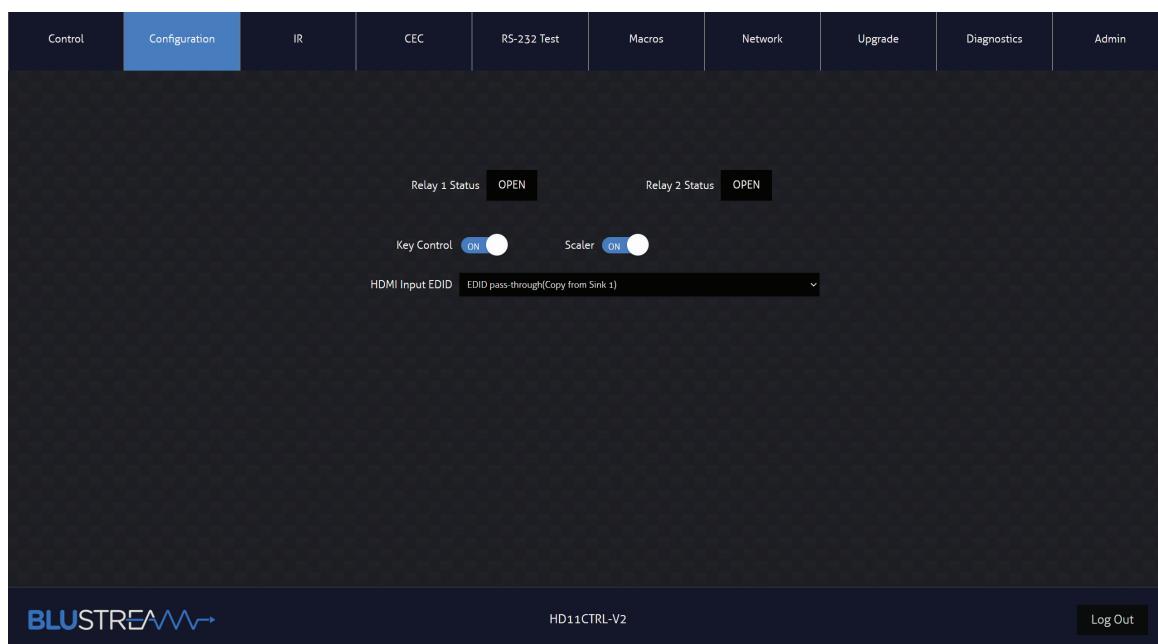
Infrared (IR) Page

The Infrared (IR) Page allows for control and configuration of IR functions relating to the HD11CTRL-V2.
On this page you can enable or disable IR control and specify IR functions such as delay between sending commands and repeat intervals. The HD11CTRL-V2 also allows for up to 30 IR commands to be learned and stored in internal memory. IR commands can also be manually entered in Pronto Hex format, as well as sent out of the unit to test to ensure it correctly controls the connected IR device.

CEC Page

The CEC Page allows a user to send CEC commands to connected HDMI devices. The user can select between the input HDMI source device our the output HDMI display device. It is also possible to send user defined CEC commands.

RS-232 Test Page

The RS-232 Test Page allows for sending our an RS-232 command via the HD11CTRL-V2. Commands can be sent out in either ASCII or HEX format, and the baud rate can be adjusted accordingly. Please note this page is purely to test the functionality of the HD11CTRL-V2 RS-232 port and the connected RS-232 device.

Macros Page

The Macros Page allows configuration of up to 10 macros with up to 10 commands within each macro. Macros can be renamed as well as be triggered off input signal detect

Network Page

The Network Page allows you to specify the TCP/IP network port settings. You can 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.
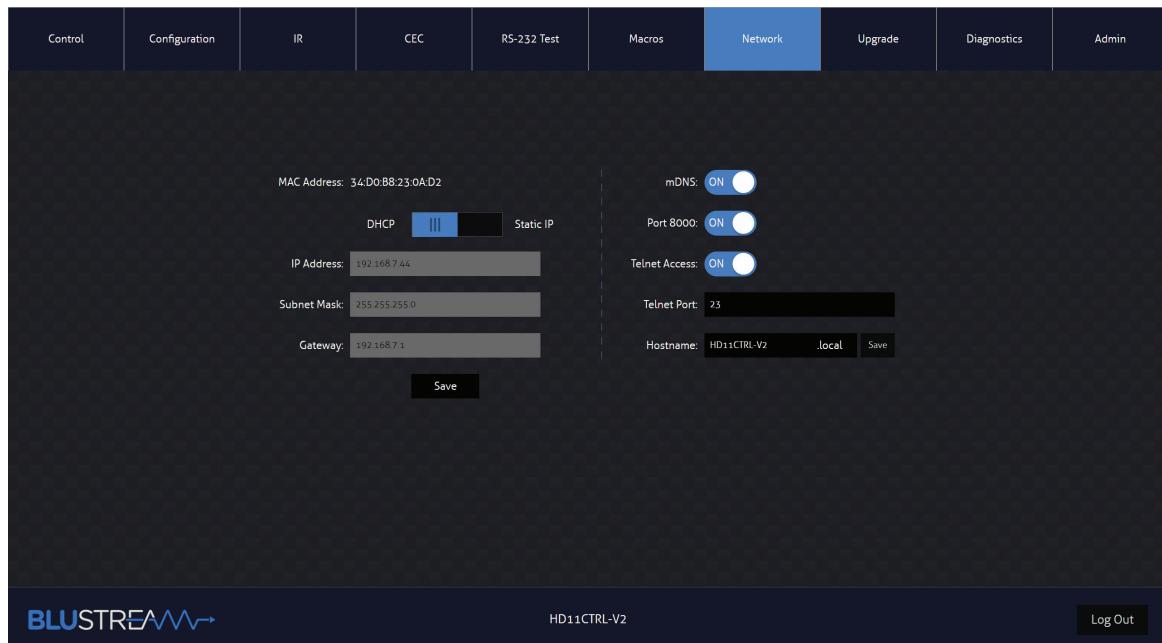
Upgrade Page

The Upgrade Page will show you the current firmware version of the HD11CTRL-V@, including the Web GUI version and the MCU firmware version. It also allows you to upgrade the firmware of the MCU. Simply browse for the firmware update file, and press Submit.
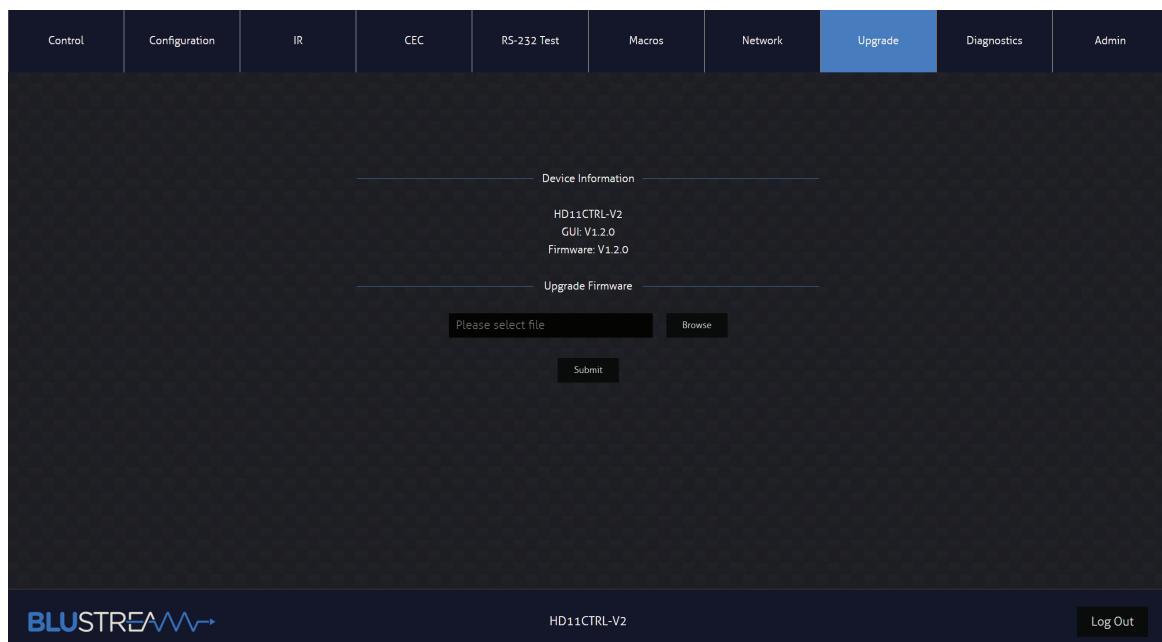
Diagnostics Page

The Diagnostics Page provides document
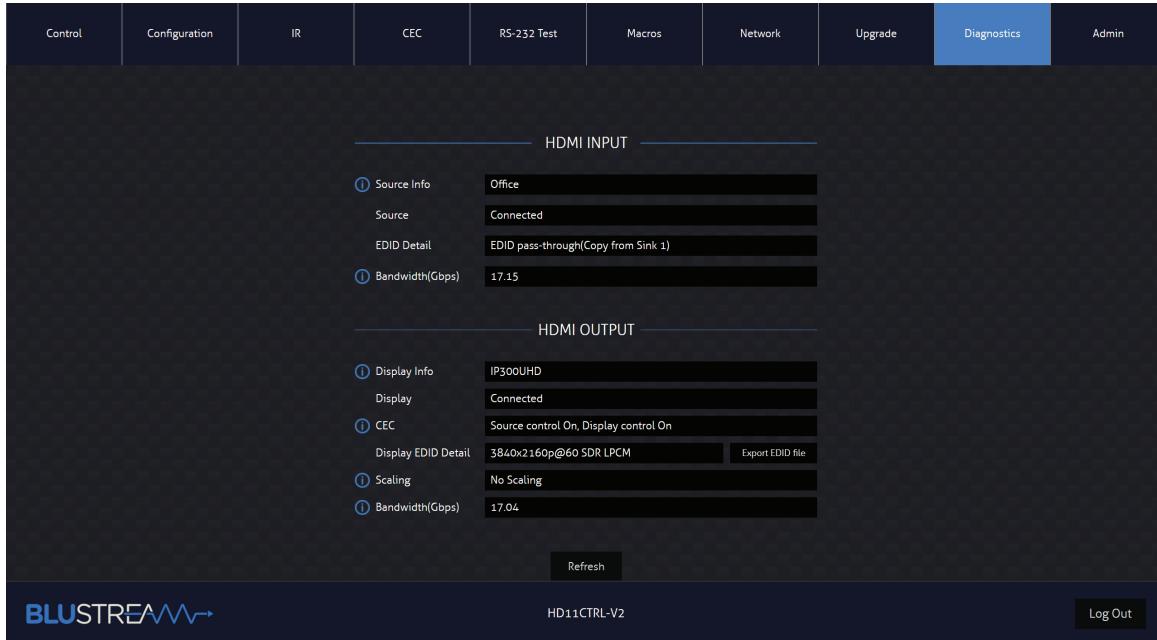
Admin Page

The Admin Page allows the admin to configure up to 8 users. 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 Users. These permissions include allowing or disallowing access to each page in the Web GUI. The Admin Page also allows the device to be reset to the factory default settings.

RS-232 Control Port

The HD11CTRL-V2 can be controlled and configured via a 3-pin Phoenix to serial RS-232 cable (supplied). All RS-232 commands must be terminated with a carriage return <CR> or \r. The communication settings and commands are as follows:

**Baud Rate:** 57600 bps   **Parity:** None   **Flow Control:** None
Data Bit: 8-bit   **Stop Bit:** 1-bit

RS-232 COMMAND	DESCRIPTION
?	Print Help Information
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
KEY ON/OFF	Set System Key Control On Or Off
IR ON/OFF	Set System IR Control On Or Off
NOSIGDLY xxxxx	Set No Signal Delay Timeout To xxxxx Second(s)
NOSENSORDLY xxxxx	Set System Off Time To xxxxx Second(s) (Default 600s, Range From 0s To 10800s) When No Sensor Signal Has Been Detected, The System Will Turn Off After The Set Time
RESET	Reset System To Default Setting (Type "Yes" To Confirm, "No" To Discard)

TRGON x	Set The Trigger Method x To Perform System On
	   x = 1 - Sensor Only
	   x = 2 - HDMI Only (5V)(default)
	   x = 3 - HDMI Only (TMDS)
	   x = 4 - Sensor Or HDMI (5V)
	   x = 5 - Sensor Or HDMI (TMDS)

TRGOFF x	Set The Trigger Method x To Perform System Off
	   x = 1 - No Sensor Only
	   x = 2 - No HDMI Only (5V)(default)
	   x = 3 - No HDMI Only (TMDS)
	   x = 4 - No Sensor And HDMI (5V)
	   x = 5 - No Sensor And HDMI (TMDS)

SCALER ON/OFF	Set Scaler On or Off

EDID xx DF zz	Set Input xx EDID To Default EDID zz (EDID Dip Switch Must Be Switched To EDID Software)
	 xx = 00: Select All Input Port
	 xx = 01: Select One Input Port
	 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 4:4:4/4K@60Hz 4:2:0, Audio 2ch PCM
	   10: HDMI 4K@30Hz 4:4:4/4K@60Hz 4:2:0, Audio 5.1ch DTS/DOLBY
	   11: HDMI 4K@30Hz 4:4:4/4K@60Hz 4:2:0, Audio 7.1ch DTS/DOLBY/HD
	   12: HDMI 4K@60Hz 4:2:0, Audio 2ch PCM
	   13: HDMI 4K@60Hz 4:2:0, Audio 5.1ch DTS/DOLBY
	   14: HDMI 4K@60Hz 4:2:0, 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
	   24: EDID Passthrough

EDID xx CP yy	Copy EDID From Output yy To Input xx

RS-232 COMMAND	DESCRIPTION
EDIDSAVE xx	Load the custom external EDID from USB, then save it into slot xx xx = 22: User EDID 1 xx = 23: User EDID 2
RELAY1 xxx	Set The Relay 1 Delay Time To xxx (Default 10s, Range From 3s To 180s, 00=Fixed Open)
RELAY2 xxx	Set The Relay 2 Delay Time To xxx (Default 10s, Range From 3s To 180s)
IRLEARN x	Learn IR Command Into Slot x x = 1 Learn IR Display On x = 2 Learn IR Display Input Select x = 3 Learn IR Display Off x = 4 Learn IR User Command 1 x = 5 Learn IR User Command 2
IRDEL x	Delete IR Command In Slot x x = 1 Delete IR Display On x = 2 Delete IR Display Input Select x = 3 Delete IR Display Off x = 4 Delete IR User Command 1 x = 5 Delete IR User Command 2
IRSEND x	Send IR Command In Slot x x = 1 Send IR Display On x = 2 Send IR Display Input Select x = 3 Send IR Display Off x = 4 Send IR User Command 1 x = 5 Send IR User Command 2
IRDLY xxx	Set Sending Interval Time To xxx Second(s) Between IR Commands (Default 3s, Range From 1s To 180s)
IROFFRPT 1x	Set x Number Of Times IR Off 1 Command Is Repeated (Default 1 Time, Range 1 To 2 Times)
IROFFRPT 2x	Set x Number Of Times IR Off 2 Command Is Repeated (Default 1 Time, Range 1 To 2 Times)
IROFFRPTDLY xx	Set Sending Interval Time To xx Second(s) Between IR Off Commands
AUTOONCECINPUT yy	Enable CEC input select for Auto ON Macro to input yy yy = 00: Off yy = [01-04]: Input Select
OUT CEC ENABLE	Enable CEC
OUT CEC DISABLE	Disable CEC
OUT CEC INPUT yy	Send Output CEC Input yy Command
OUT CEC PON	Send Output CEC Power On Command
OUT CEC POFF	Send Output CEC Power Off Command
OUT CEC VOLUP	Send Output CEC Vol Up Command
OUT CEC VOLDOWN	Send Output CEC Vol Down Command
OUT CEC MUTE	Send Output CEC Mute Command
RS232BAUD z	Set RS232 Baud Rate To xx. z = 1 2400, 2 4800, 3 9600, 4 19200, 5 38400, 6 57600 (Default), 7 115200
RS232ON x:y:z:a	Send y Type Of Command a Stored In Slot x Whose Baud Rate Is z - Note: will disable other RS232 feedback x = 1 Send RS232 Display On x = 2 Send RS232 Display Input Select x = 3 Send RS232 User Command 1 x = 4 Send RS232 User Command 2 y = a ASCII, h HEX z = 1 2400, 2 4800, 3 9600, 4 19200, 5 38400, 6 57600 (Default), 7 115200 a = RS232 Command - Note: to insert a carriage return in a command use \r
RS232ON DISABLE	Disable Auto RS232 Commands When Detecting A Signal
RS232OFF y:z:a	Set RS232 Off Command a Of y Type Whose Baud Rate Is z - Note: will disable other RS232 feedback y = a ASCII, h HEX z = 1 2400, 2 4800, 3 9600, 4 19200, 5 38400, 6 57600 (deDault), 7 115200 a = RS232 command - Note: to insert a carriage return in a command use \r
RS232OFF DISABLE	Disable Auto RS232 Commands When Not Detecting A Signal
RS232DLY xxx	Set Sending Interval Time In xxx Seconds Between RS232 Commands
RS232RPT x	Set x Number Of Times RS232 OFF Command Is Repeated
RS232RPTDLY xx	Set Sending Interval Time In xx Second(s) Between RS232 OFF Commands (Default 2s, Range From 1s To 10s)

Schematic
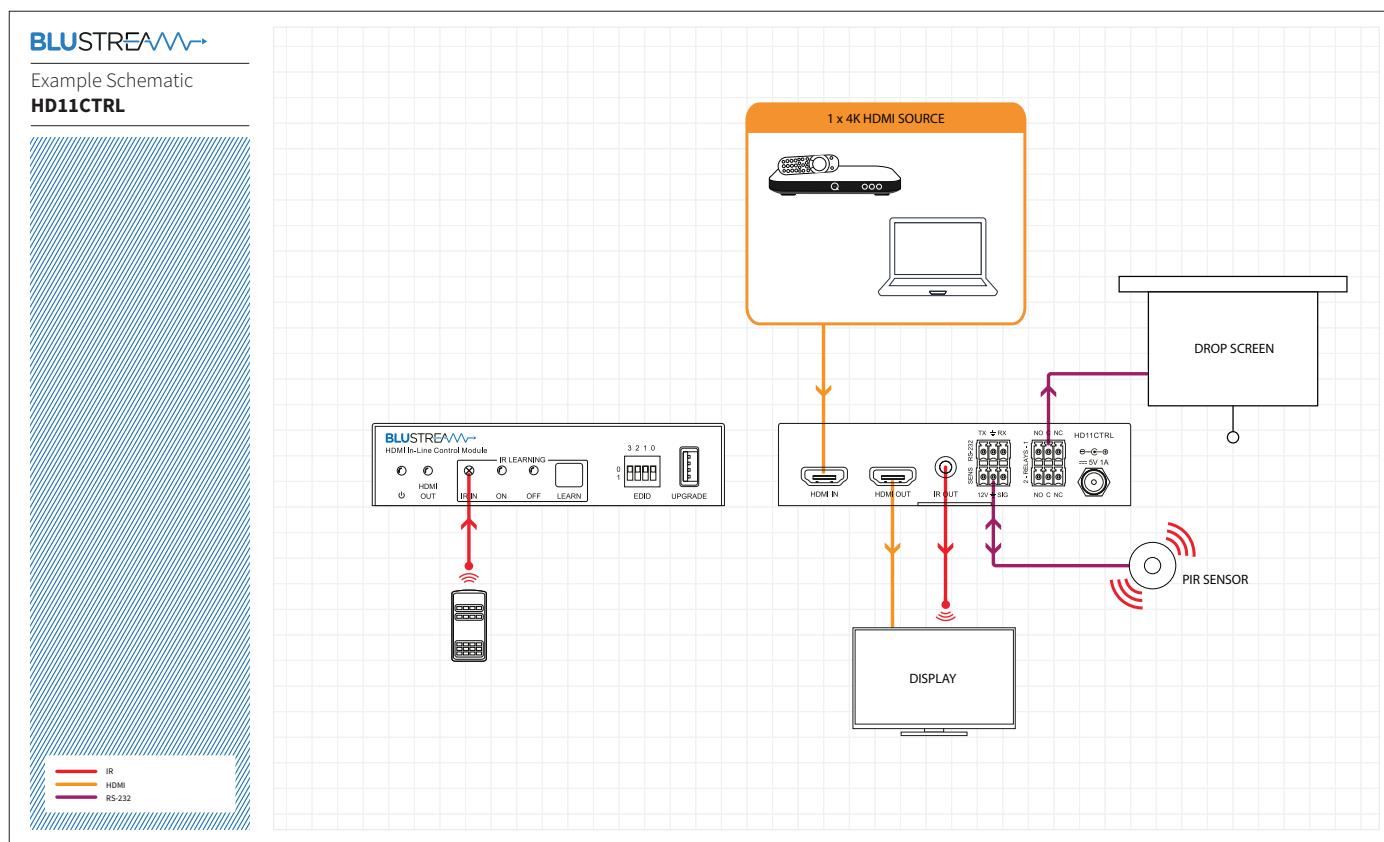
Specifications

HD11CTRL-V2

Video Input Connectors: 1 x HDMI Type A, 19-pin, female

Video Output Connectors: 1 x HDMI Type A, 19-pin, female

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

TCP/IP Control Port: 1 x RJ45, female

IR Output Port: 1 x 3.5mm mono jack

Relay Control: 2 x 3-pin Phoenix connector

Sensor Input: 1 x 3-pin Phoenix connector

EDID Selection: 4-pin DIP Switch

Product Upgrade: 1 x USB Type A, female

Dimensions (W x H x D): 145mm x 28mm x 84mm

Shipping Weight: 1.0kg

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: 12V/1A DC

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

Package Contents

HD11CTRL-V2

- 1 x HD11CTRL-V2
- 1 x 12V/1A DC Power Supply
- 1 x IR Emitter
- 1 x RS-232 Control Cable
- 1 x Mounting Kit
- 1 x Quick Reference Guide

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.