# Blustream PLA88CS Installation and Usage Guide

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# Contents

# Overview

This driver is designed to work with the BluStream PLA88CS Matrix Switch and similar products

The PLA88CS is a 4K HDMI 2.0 8x8 Matrix, distributing HDMI, ARC, LAN, Bi-directional IR / 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 4K resolutions including 4K 60Hz 4:4:4 colour space, and 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 UHD resolution on the higher-definition displays.

The Matrix also provides advanced features including independent Dolby Audio (Atmos) & 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), Optical (S/PDIF) audio delay for lip sync correction, bi-directional IR and RS-232 pass-through, and a 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
- 4x 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) using LRM (Long Range Mode)
- Features 8x HDMI inputs which can be independently routed to 4x HDBaseT™, and 4x HDBaseT™ / HDMI outputs
- 2x HDBaseT™ CSC inputs for connectivity to remote video sources not located locally to the Matrix
- Independent video scaling on all HDBaseT™ outputs
- Independent Dolby Audio & DTS Audio down mixing on HDMI and audio outputs
- Up to 24x16 Audio Matrix independently controllable from video:-
- 2x analogue L/R and 2x Optical (S/PDIF) audio inputs which can be routed to audio outputs, or embedded onto HDBaseT™/ HDMI outputs
- HDMI audio breakout to Optical (S/PDIF) digital, or analogue L/R audio outputs with variable pre-amp line level control
- Supports ARC (Audio Return Channel) via HDMI or Optical (S/PDIF) digital inputs from compatible RX150CS Receivers
- Supports full Dolby Audio and DTS Audio 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 the Matrix
- Control of Matrix via TCP/IP
- Supports 24V PoC (Power over Cable) to power compatible RX150CS or RX70CS Receivers
- HDCP 2.2 compliant with advanced EDID management
- 2U Design for 19" rack mount integration - mounting kit included
- Recommended receiver: RX150CS (where 18Gbps CSC, Long Range Mode, LAN, Audio Return, and 24V PoC support is required)
- Optional receiver: RX70CS (where 18Gbps CSC, Audio Return, and 24V PoC support only is required) - max distance 70m at 1080p, 40m at 4K 60Hz 4:4:4

# Quick Start Guide

1. Ensure the PLA88CS is running GUI 1.2.0f / Firmware V2.2.0d or later. Earlier firmware will not work correctly
2. Control4 OS 3.4.0 or later must be installed on the Controller
3. Add Matrix driver to project
4. If you plan on using ARC audio please set up the ARC Type in the driver's properties (From either Optical or HDMI).
5. Click on Connections
6. Bind any Audio or Video connections to the appropriate devices. Note that Control4 does not officially support HDMI ARC. As such these connections are represented as digital coax and stereo inputs. Most TV drivers have either digital digital coax or stereo outputs so please bind these if you plan to utilise ARC.
7. If you plan to utilise the audio outputs please bind the audio and video's audio endpoints.
8. For control If you are using serial bind it here otherwise If you are using IP click on Network and enter the IP address in.
9. If Control via CEC is required
    1. Add 1x CEC Source or Output Driver for each connection and bind to the correct HDMI binding
    2. Configure the commands to be shown on the devices
    3. Ensure CEC is enabled on the devices being controlled. Please note, device manufacturers may use different names for CEC
    4. Please note, due to the nature of CEC, custom commands may be required in some cases, or CEC may not be compatible.
10. Refresh Navigators

## Additional Functionality

- If you want you can also set the unit to power down/up if no rooms are active. This is done through the properties. Alternatively you can program this via an action on events such as security system armed or disarmed so that you save some power whilst away from home.

# Custom CEC Commands

Blustream Supports a range of Custom User CEC Commands for control, which can be utilised by our CEC Control driver. The format of this command is **DevID Addr opcode Operand[MAX]>** and follows the following format:

- DevID: Hex value of the target control device
- 00: Controls all CEC Input Ports
- 01-08: Controls the specified CEC Input Port (Input 1-8)
- F0: Controls all CEC Output Ports
- F1-F8: Controls the specified CEC Output Port (Output 1-8)
- Addr: 8 bit Hex value of the target CEC device Address
- Opcode: 8 bit Hex value of the CEC Command Opcode
- Operand: 8 bit Hex value of the CEC Command Operand

As an example:
- F0404441 (ALL OUT CEC VOLUP)
- F0404442 (All OUT CEC VOLDOWN)

# Setup

## Blustream PLA88CS Driver (blustream_pla88cs_matrix.c4z)

### Actions
- Force Input Mode: Force Input Mode to HDMI or HDBT


### Commands
- Embed Audio: Replaces Audio stream from specific output with Audio from specified Input
- Output Audio Delay: Adjusts Audio Delay for specified output
- Output Scaling: Enables or Disables Output Scaling for specified output
- Power Off HDBT Receiver: Powers Off HDBT Receiver
- Power Off HDBT Transmitter: Powers Off HDBT Transmitter
- Power Off Matrix: Power off the Matrix Switch
- Power On Matrix: Power on the Matrix Switch
- Power On HDBT Receiver: Powers On HDBT Receiver
- Power On HDBT Transmitter: Powers On HDBT Transmitter
- Preset Apply: Applies a prestored Preset #
- Preset Clear: Clears/Deletes a prestored Preset #
- Preset Save: Saves Settings as a Preset #


### Properties
- Driver Version: The version of the driver
- Control4 MAC Address: The MAC address of the Control4 controller
- Debug Mode: Enable or disable debug logging
- Debug Level: The level of debug logging to enable

Driver Information:

- Allow unit To power Down: Allows Matrix Switch to power down when no output's are active
- Power On Delay Seconds: Power On Delay Time before performing Matrix Switch Commands
- Power Off Delay Seconds: Power Off Delay Time before turning off Matrix Switch
- Volume Ramp Delay Milliseconds: Delay to wait before sending volume command
- ARC # Type: The Type of input to use for ARC (HDMI or Optical)

Device Status:

- Connected To Network: Indicates if Control4 has successfully connected to the matrix unit using network
- Receiver # Commands Connected: Indicates if Control4 has successfully connected to the Guest Mode Port for Input #. Must be manually configured

- Transmitter # Commands Connected: Indicates if Control4 has successfully connected to the Guest Mode Port for Output #. Must be manually configured

# BluStream CEC Output Control Driver (blustream_pla88cs_cec_control_output.c4z)

## Actions
- N/A

## Commands
- Send Custom CEC Command: Sends a Custom CEC Command to the Matrix Switch. Refer to Custom CEC Commands documentation for more information

## Properties:
- Driver Version: The version of the driver
- Control4 MAC Address: The MAC address of the Control4 controller
- Debug Mode: Enable or disable debug logging
- Debug Level: The level of debug logging to enable

Set Commands

- [Command] Send: Select which CEC command to send to the Matrix Switch for each command, or Select "Custom". To hide the button, select "Hide"
- [Command] Custom Command: If Custom Command is selected, enter the Custom CEC Command to send to the Matrix Switch. refer to CEC Commands Documentation

Device Status:

- Connection Status: Displays the connection / Binding status of the driver

# BluStream CEC Source Control Driver (blustream_pla88cs_cec_control_source.c4z)

## Actions
- Send Command: Sends a Native Command on the matrix switch.
- Send Custom CEC Command: Sends a Custom CEC Command to the Matrix Switch. Refer to Custom CEC Commands documentation for more information

## Commands
- Send Control4 Command: Sends a Command as the Control4 UI interface would send it.

- Send Command: Sends a Native Command on the matrix switch.
- Send Custom CEC Command: Sends a Custom CEC Command to the Matrix Switch. Refer to Custom CEC Commands documentation for more information

## Properties:

- Driver Version: The version of the driver
- Control4 MAC Address: The MAC address of the Control4 controller
- Debug Mode: Enable or disable debug logging
- Debug Level: The level of debug logging to enable

Set Commands

- [Command] CEC Send: Select which CEC command to send to the Matrix Switch for each command, or Select "Custom". To hide the button, select "Hide"
- [Command] CEC Custom Command: If Custom Command is selected, enter the Custom CEC Command to send to the Matrix Switch. refer to CEC Commands Documentation

Device Status:

- Connection Status: Displays the connection / Binding status of the driver
- Last Command: Contains the last command triggered and the CEC command sent.

# FAQ

## How much does this driver cost?

- This driver is sponsored by Blustream and is FREE of charge

## What are the system requirements?

- Control4 OS 3.4.0 or later. HC Series Controllers are not supported
- PLA88CS Firmware V2.2.0d or later and GUI 1.2.0f is the minimum supported firmware
- The blustream unit must be connected to a stable network connection (control via RS232 is not supported)

## Who do i contact for driver support?

Please email support@blustream.com.au for technical support queries.

Find out more about the Blustream PLA88CS

# Support

Website: https://www.blustream.com.au/

Email: support@blustream.com.au (all technical support queries)

Find out more about the Blustream PLA88CS: https://www.blustream.com.au/pla88cs

# Change Log

## Version 20240118 - 18-JAN-2024

- Initial release