AJA ColorBox Release Notes - v2.0

Firmware for ColorBox

Introduction

ColorBox v2.0 is a feature release that introduces an add-on license to expand ColorBox's Colorfront Engine™ video processing options with all-new TV Mode and Live Mode. Along with adding support for the latest v1.6 BBC HLG LUTs, the release also includes an ORION-CONVERT update with a gamma compensation function to ensure compatibility between different color conversion philosophies. Additional free customer requested features are also included in the release, such as support for overlaying frame lines or other graphics, and five additional built-in test patterns.

Be sure to consult the user manual for detailed information about features and configuration guidelines. The most current documentation can always be found on the ColorBox Support Page.

Fixes, Changes and Improvements in v2.0

- New Colorfront Engine - TV Mode
  - TV Mode contains the free transforms that are included with ColorBox for SDR BT.709, HLG BT.2020, and PQ BT.2020 plus the new Dyn Range&Gamut OUT, PQ BT.2020 ContrainP3.
  - The following parametric controls are available with the optional Colorfront License add-on:
    - Select from 4/5 Dynamic Range & Gamut input/output settings including the new Dyn Range&Gamut IN and OUT, Sony Slog3 BT.2020
    - Brightness: Adjusts the overall brightness of the picture.
    - Highlight: Adjusts the brightness from midtones to highlights of the picture.
    - Super Highlight: Adjusts the extreme highlights in a managed roll off.
    - Colorfulness: Overrides the colorfulness compensation in the perceptual model.
    - Roundtrip: For SDR to HDR and back to SDR to maintain a roundtrip technical match on the extreme gamut edges with a slight reduction in remap quality.
    - Color Corrector: Lift, Gamma, Gain, Saturation
    - Camera Correction: Exposure, Color Temp, Tint
- New Colorfront Engine - Live Mode
  - The following parametric controls are available with the optional Colorfront License add-on:

- ■ Select from 16/11 Dynamic Range & Gamut input/output settings including various camera Log formats.
- ■ HDR Amount: Adjusts the algorithm's color volume expansion.
- ■ Ambient Light Comp: Adjusts the signal based on the intended ambient light settings of the viewing environment
- ■ HDR Log Look: Adjusts the look between dramatic (cinema) and broadcast (television)
- ■ SDR Softness: Adjusts how SDR highlights are mapped into highlights of the 1000 Nit HDR output range
- ■ Color Corrector: Lift, Gamma, Gain, Saturation
- ■ Camera Correction: Exposure, Color Temp, Tint
- ■ PQ Output Nit Level: Sets the maximum output Nit level for a PQ signal
- ■ P3 Colorspace Clamp: Limits the PQ output video data to be within the P3 gamut
- ■ BT.2408 Mode: Provides a transform that meets the targets defined in the ITU publication ITU-R BT.2408
- ● ORION-CONVERT adds Gamma Compensation: Applies the optional OOTF (as described in section 5.1 of ITU-R BT.2408-5) to compensate for the subjective change in appearance between SDR and HDR
- ● Updates BBC HLG LUTs to v1.6 with two added LUTs and the following benefits:
  - ○ LUT 9 improves the color reproduction and detail of highlights.
  - ○ LUT 8 replaces previous LUT 8 with a new CAM (Color Appearance Model) based down-mapping conversion.
  - ○ LUT 21 is a new HLG to SDR BT.2020 (wide color gamut) display-light downmapping conversion.
  - ○ LUT 22 is a new "combination" LUT for shading SDR BT.709 cameras in live "single stream" HDR production.
- ● Updates NBCU LUT 1 from v1.0 to v1.1 to include a "fix for negative values"
- ● Adds User Overlay feature to Overlay
  - ○ User Overlay can recall .png (with alpha) to be overlaid on processed output
  - ○ New Overlay library, stores 16 .png files
- ● Adds five new Test Patterns:
  - ○ Circle
  - ○ BT.2111 HLG Narrow
  - ○ BT.2111 PQ Narrow
  - ○ BT.2111 PQ Wide
  - ○ NBCU Fancy Bars
- ● General improvements to optional WiFi configuration including adding ability to set region
- ● Adds Remote Restart control
- ● Factory reset now has a 3 second delay
- ● New 3rd party integrations include Light Illusion ColourSpace display calibration software, Portrait Displays Calman display calibration software, and QTAKE Video Assist software.

Fixes, Changes in v1.0.1

- Improves handling of source signal changes during Frame Grab processing requests from 3rd parties.

Features in v1.0

- Independent selection of video and audio sources.
- 12G-SDI in/out for 4K/UltraHD 60p 10-bit YCbCr 4:2:2 or 30p 12-bit RGB 4:4:4.
- HDMI 2.0 out for 4K/UltraHD 60p 10-bit YCbCr 4:2:2 or 30p 12-bit RGB 4:4:4.
- Ultra low latency, less than ½ a video line.
- Five Color Processing Pipelines including licensable options ORION-CONVERT and BBC HLG LUTs.
- Web user interface with Video Preview.
- 4K/UltraHD Frame Capture and Recall.
- Test Pattern Generator up to 4K/UltraHD.
- Overlay information on output.
- Preset Management, 10 per Pipeline plus Startup Preset.
- ANC metadata pass-through.
- Compact size: Weighs 1 lb. each, four units fit in 1RU.
- 3rd party integrations for real-time control with Pomfort, Assimilate, SKAARHOJ, and CyanView.

Technical Support

AJA Technical Support is free and available to help you answer questions or resolve issues with any of your AJA products.

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