

# BrightEye 72 & 72-F

## 3G/HD/SD SDI Electrical or Optical to HDMI Converter



### High-End Display Applications

Pay a tenth of the cost for your monitors. Combine BrightEye 72 with any HDMI monitor for high-end display applications in live event and post. BrightEye 72 accepts an SD, 1.5 Gb/s HD or 3 Gb/s HD SDI digital signal and outputs HDMI. Plus it displays open captions, timecode and audio presence.

Front panel controls include: complete proc amp, built-in test signals for use in aligning the monitor, graticule, H/V pulse delay, on screen audio VU meters, timecode burn in, AFD indicator and open caption decoding.

BrightEye 72 can display open captions on any HDMI video monitor. 608 or 708 caption data is decoded and displayed on-screen.

Horizontal and vertical split modes provide an easy way to see data in the vertical and horizontal intervals, including audio and closed caption data blocks.

A special Mirror Flip Output mode can be enabled, causing the output image to be flipped left to right for use with on-stage talent. Open captions are displayed correctly when Mirror mode is selected.

Use BrightEye 72 in applications where you need to adjust the color temperature of on-set monitors so they look right on-camera.

For set-ups using 3G, the issue of monitoring the signal becomes a challenge. The BrightEye 72 provides a convenient way to monitor any type of digital video signal.

Order the BrightEye 72-F if you need an optical input.

### SDI Embedded Audio, HDMI and Surround Sound

Audio presence is reported and on-screen VU meters show all 16 audio channels. If audio or Dolby E are embedded on the SDI input, audio is passed through on the HDMI output.

The HDMI spec supports 8 channels of audio. The BrightEye 72 monitors 16 channels of SDI embedded audio, but outputs 8 channels per the HDMI specification. The first 8 channels of the SDI audio stream are output to HDMI.

You can connect the HDMI output to a surround sound speaker system by maintaining a specific channel order. This ensures that the correct audio signals are sent to the proper speakers.

### Output Mapping of HDMI Audio

The output mapping of the BrightEye 72 HDMI audio is as follows:

- CH 1 Front Left
- CH 2 Front Right
- CH 3 Low Frequency Effects
- CH 4 Front Center
- CH 5 Left Rear
- CH 6 Right Rear

For those using 7.1 surround:

- CH 7 Left Rear Center (or Left Front Center)
- CH 8 Right Rear Center (or Right Front Center)

## Features

- Turn Any Monitor into a High-End Q/C Monitor
- Use with HD or SD Monitors, VTRs and Projectors
- HDMI Output – Monitor Any Digital Feed, Even 3G
- Use with HD or SD SDI Signals
- 3G HD, Level A Supported
- Caption Decoding - Open Caption Display for 608 and 708 Closed Caption Data
- Color Corrector – Adjust On-Set Monitors
- AFD Indicator
- Timecode Burn In
- On-screen Controls
- Audio Level Meters for 16 Channel Monitoring
- H & V Shift for Easier Trouble Shooting
- Graticule Overlay
- Mirror Output Mode for On-Stage Talent
- Analog Audio Outputs
- Use in Post with 4:4:4 Material
- Optical input available on BrightEye 72-F



# Camera Color Correction

## Using the BrightEye 72 for Adjusting the Color Temperature of a Monitor

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### The Need for Color Correction

When working in an environment that has poor lighting or a mix of color temperatures, the camera may need color correction. The camera may also need contrast and brightness adjustments that cannot be made through the camera controls or codec. Similarly, putting a television monitor on set where it will appear in the scene on camera presents a difficult challenge. It is easy to make the monitor too bright.

After the scene is lit and the camera is white balanced to the studio lighting, the on-camera talent will look correct. But unless the color temperature of the monitor matches the studio lighting, the color in the images on the monitor will be incorrect when in the camera shot.

The face of the monitor is an actual source of light, while everything else in the set is reflecting light from the lighting instruments. If you hold a white card in front of the monitor next to the 100% white flag in color bars, you can adjust the monitor until they match.

### Chroma, Hue, Brightness, Contrast

Using the BrightEye 72's Color Corrector, you can color balance any HDMI monitor without ever touching a single control on the monitor itself. You can make both gross and fine adjustments to chroma, hue, brightness, contrast and other settings, such as mirror and test patterns. The BrightEye 72 has a Processing Amp that allows for substantial adjustment to the camera images.

Note that the controls are all accessible through the front panel of the BrightEye 72 using the On Screen Display. Or you can use BrightEye Mac or PC software to connect to the BrightEye 72's USB port.

### Example of Adjustment Process

Take the HD SDI signal from the camera and send it to the BrightEye 72. Then take the HDMI output from the BrightEye 72 and send it back to the codec.

Select the 20/80 Test Pattern from the BrightEye 72's test signal generator. The 20% Gray and Black regions will be used to set black balance. The 80% Gray (nearly white) is used to adjust the gain of each of the Red, Green, and Blue channels.

With the camera, compose a shot of the monitor with the 20% region filling the screen. There are full screen 20% and 80% patterns as well if you are working with small monitors.

Viewing the camera output on a vectorscope, adjust the RGB offsets to collapse the chroma to a single dot. This is best done using just Red and Blue, leaving Green as the reference.

Next, frame the shot on the 80% segment. Repeat the adjustment procedure to collapse the chroma, this time using the RGB Gain controls.

Select the 10 step grayscale chipchart or SMPTE Bars on BrightEye 72's internal test signal generator. While viewing the monitor through the camera, use BrightEye 72's Proc Amp controls (Brightness, Contrast, Chroma) to achieve proper exposure.

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### Serial Digital Input for BrightEye 72

Number	One
Type	1.485 Gb/s HD Serial Digital (SMPTE 274M, 292M or 296M) 2.97 Gb/s HD Serial Digital (SMPTE 424M, 425M), Level A SD Serial Digital (270 Mb/s SMPTE 259M)
Impedance	75 Ω
Return Loss	>15 dB to 2.97 GHz
Max Cable Length	300 meters for 270 Mb/s 100 meters for 1.485 Gb/s 70 meters for 2.97 Gb/s (Belden 1694A)
Automatic Input Cable Equalization	

### Optical Input for BrightEye 72-F

Number	One
Connector	LC/UPC
Type	270 Mb/s (SMPTE 297M, optical equivalent of 259M) 1.485 Gb/s Gb/s HD Serial Digital (SMPTE 274M, 272M or 296M) 2.97 Gb/s HD Serial Digital (SMPTE 424M, 425M)
Wavelength	830 to 1610 nm
Receiver Sensitivity	-18 dBm
Max Cable Length	20 km (For greater distances, or higher power and larger loss budgets, please contact the factory)
Fiber Type	Single Mode Multi-mode compatible with attenuation at transmit end

### SDI Standards Supported

1080i (SMPTE 274M -4,5,6)	50, 59.94 or 60 Hz
720p (SMPTE 296M -1,2,3)	50, 59.94 or 60 Hz
1080p (SMPTE 274M -9,10,11)	23.98, 24, 25 Hz
1080sF (RP211 -14,15,16)	23.98, 24, 25 Hz
1080p (SMPTE 424M, 425M)	50, 59.94, 60, Level A
525i, 625i (SMPTE 259M)	

### HDMI Output

Number	One
Type	HDMI 1.3
Format	Follows input

### Serial Digital Output

Number	One, loopback
Type	Follows input
Delay	< 5 μSec
Impedance	75 Ω
Return Loss	>15 dB to 2.97 GHz
Max Cable Length	300 meters for 270 Mb/s 100 meters for 1.485 Gb/s 70 meters for 2.97 Gb/s (Belden 1694A)

### Analog Audio Output

Number	8 channels
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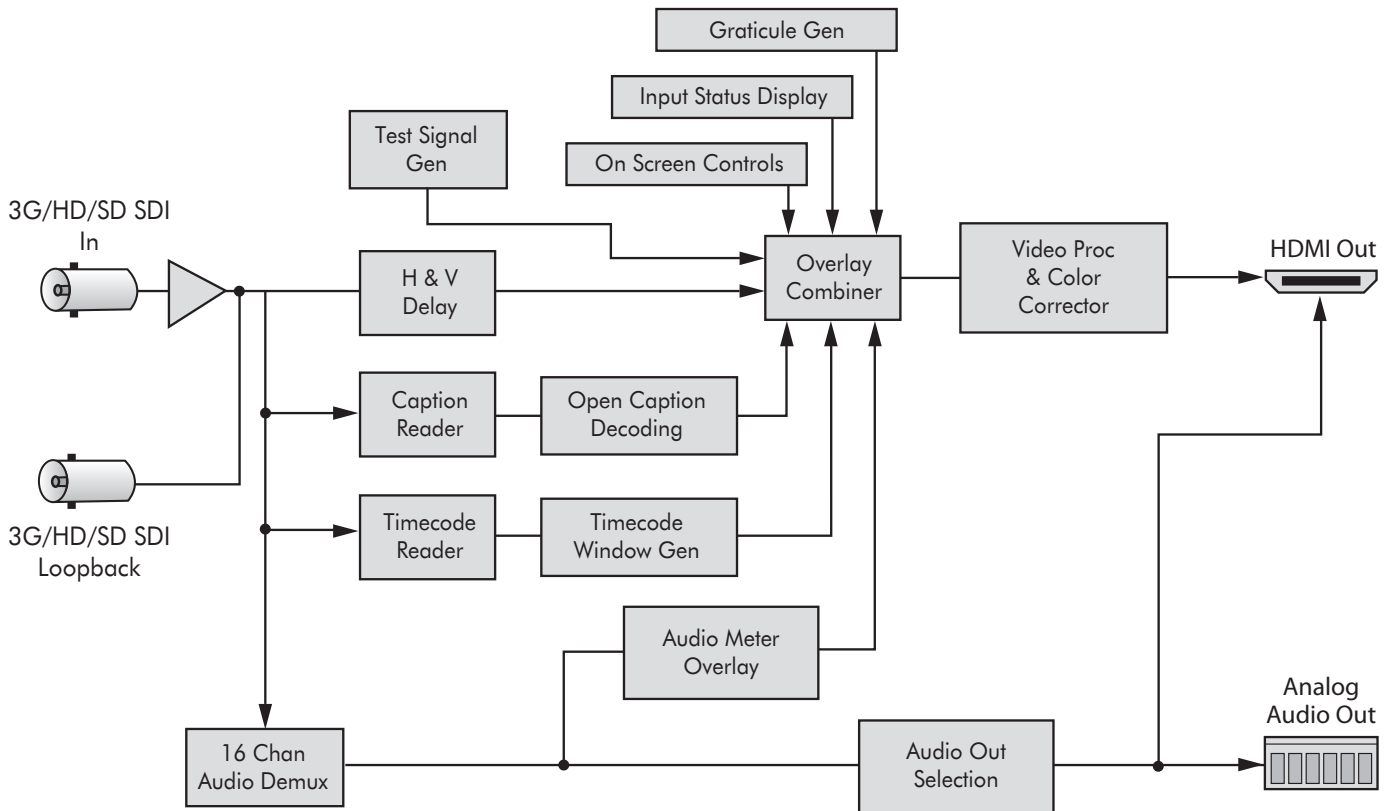
### General Specifications

Size	5.625"W x 0.8" H x 5.5"D (143 mm x 20 mm x 140 mm) including connectors
Weight	14 oz
Power	12 volts, 7 watts (100-230 VAC modular power supply)
Temperature Range	0 to 40° C ambient (all specs met)
Relative Humidity	0 to 95%, non-condensing
Altitude	0 to 10,000 ft.

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