



UHD1200

12G UHD Video & Audio Processor with HDR/SDR Mapping

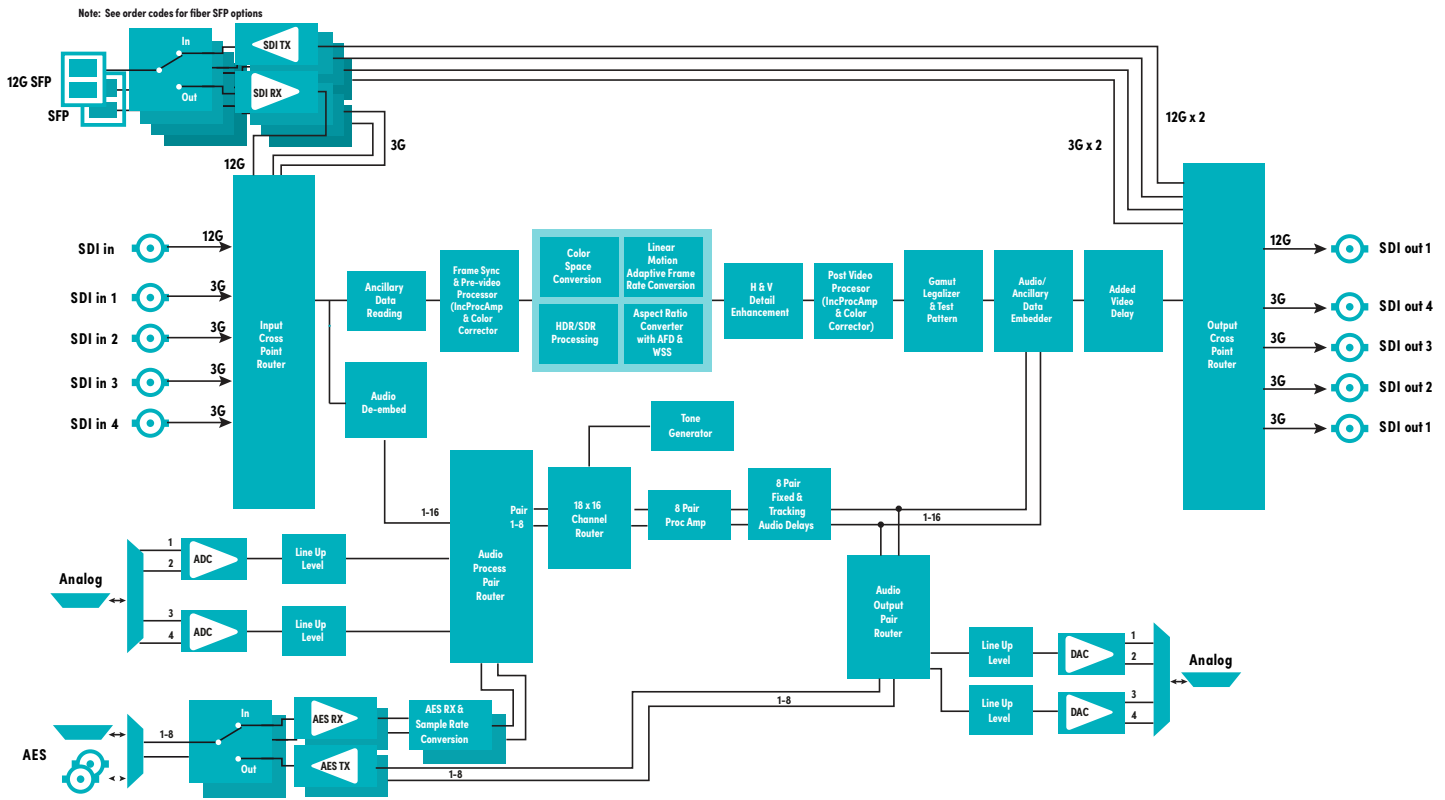
UHD1200 is a flexible 12G or quad-link 4K UHD processing unit including high dynamic range and wide color gamut mapping along with converting to or from 4K UHD and 3G/HD/SD. Such advanced processing provides a compact solution ideal for multiformat HDR/SDR production applications, as well as covering all common video and audio processing tasks.

Key Features

- SD/HD/3G/4K UHD up/down/crossconversion with clean cut feature
- Frame synchronization and additional video delay including continuous output on input standard changes
- HDR (PQ, HLG, S-Log3) scene-referred and display-referred conversions with BT709, P3-D65 color space, and BT2020 wide color gamut support
- 3D user LUT loading with full support for BBC type I, II & III 1.5 version LUTs
- Pre- and post-scaler video proc amp and RGB color correction support allows incoming signals to be fixed, and output artistic adjustments to be made
- RGB Legalizer with Black Level adjustment limits
- Linear motion adaptive frame rate conversion for all supported standards, including UHD-UHD 50/59.94/60p, along with video processing and powerful picture enhancement tools, edge enhancement and noise reduction
- 16-channel embedded audio processing and PCM channel-based audio delay compensation
- Metadata support including closed caption, WST, timecode, SMPTE ST 2020 handling and an ancillary data bridge to allow transfer of up to seven different ANC packet types around the converter
- Easy to use control options including front panel with video confidence display and control lock, and remote via HTML5 web interface and GV Orbit®
- Automatic aspect ratio conversion with signaling support (SMPTE ST 2016, L23 ETSI, L23 AFD, VI SMPTE, VI AFD)
- Balanced AES and analog audio I/O
- Support for fiber Tx and Rx via SFP
- Dual PSU as standard

Applications

- Repurpose existing HD content – upconvert for distribution over 4K UHD channels
- Service existing HD channels – downconvert 4K UHD content for simulcast on mainstream HD services
- Integrate HDR (PQ, HLG, S-Log3) signals into SDR work-flows, translate between HDR standards, or map SDR signals for use in HDR productions utilizing the built-in feature set or by downloading user 3D LUTs
- Cover color space requirements with BT709, P3-D65 and BT2020 translation features
- 4K UHD signal processing – synchronize, adjust and enhance, or process audio with UHD1200's comprehensive control features



Specifications

Signal Inputs

Serial digital 1x 75Ω SD/HD/3G/12 Gb/s/4K UHD-1 serial digital with embedded audio

Serial digital 4x 75Ω SD/HD/3G/4K UHD-1 serial digital with embedded audio

Input standards:

- 12 Gb/s 4K UHD-1 single link to SMPTE ST 2082
- 4K UHD-1 Quad-link-SDI, SMPTE ST 203
- 3 Gb/s HD-SDI, SMPTE ST 425 level A, dual-link level B
- 1.5 Gb/s HD-SDI SMPTE ST 292/SMPTE ST 299
- 270 Mb/s SD-SDI SMPTE ST 259

Reference: 1x loop-through HDTV Tri-sync/SD Bi-sync (blackburst) SMPTE ST 240/SMPTE ST 274

Audio AES: Up to 8x balanced AES inputs – via 25-way D-type or 8x unbalanced AES inputs via BNC

Note: AES audio connectors may be configured as input or output.

Analog audio: 2x stereo analog inputs via 25-way D-type

Fiber signal input:

Inputs SFP 3, 4: Up to 2

- Optical: 12 Gb/s UHD-SDI, 3 Gb/s HD-SDI, 1.485 Gb/s HD-SDI or 270 Mb/s SD-SDI
- Connector/format: LC singlemode
- Standard: SMPTE ST 297-2006

Inputs SFP 1, 2: Up to 2

- Optical: 3 Gb/s HD-SDI, 1.485 Gb/s HD-SDI or 270 Mb/s SD-SDI
- Connector/format: LC singlemode
- Standard: SMPTE ST 297-2006

Signal Outputs

Serial digital 1x 75Ω SD/HD/3G/12G/4K UHD-1 serial digital with embedded audio

Serial digital 4x 75Ω SD/HD/3G/4K UHD-1 serial digital with embedded audio

Fiber signal output:

Outputs SFP 3, 4: Up to 2

- Optical: 12 Gb/s UHD-SDI, 3 Gb/s HD-SDI, 1.485 Gb/s HD-SDI or 270 Mb/s SD-SDI
- Connector/format: LC singlemode Conforms to: SMPTE ST 297-2006

Outputs SFP 1,2: Up to 2

- Optical: 3 Gb/s HD-SDI, 1.485 Gb/s HD-SDI or 270 Mb/s SD-SDI
- Connector/format: LC singlemode Conforms to: SMPTE ST 297-2006

Output standards:

- 12 Gb/s 4K UHD-1 single link to SMPTE ST 2082
- 4K UHD-1 Quad-link, SMPTE ST 2036
- 3 Gb/s HD-SDI, SMPTE ST 425 level A, dual-link level B
- 1.5 Gb/s HD-SDI SMPTE ST 292/SMPTE ST 299
- 270 Mb/s SD-SDI SMPTE ST 259

Audio AES: Up to 8x balanced AES outputs – via 25-way D-type or 8x unbalanced AES outputs via BNC

Note: AES audio connectors may be configured as input or output.

Analog audio: 2x stereo analog outputs via 25-way D-type

Input Standards

(auto detect) 525, 625

720 50/59.94/60p

1080 50/59.94/60i

1080 50/59.94/60p (Levels A and B)

720/1080/2160 23.98/24/25/29.97/30p

1080 23.98/24/25/29.97/30PsF, with film detection and processing

2160 50/59.94/60p (Levels A and B)

Output Standards

525, 625

720 50/59.94/60p

1080 50/59.94/60i

1080 50/59.94/60p (Levels A and B)

720/1080/2160 23.98/24/25/29.97/30p

1080 23.98/24/25/29.97PsF, with film detection and processing

2160 50/59.94/60p (Levels A and B)

Specifications (cont.)

Video Functions

Up/down/crossconversion with clean cut feature
 Square division to/from 2SI conversion
 SD/HD/3G to/from 4K UHD-1 linear standards conversion and 4K UHD-1 to 4K UHD-1 linear standards conversion

Enhancement:

Filter: Vertical and horizontal filters with preset normal, narrow or wide settings

Nonlinear enhancer:

- Frequency band selection: Med, high
- Six preset enhancement modes

Pre- and post-scaler color corrector:

- RGB lift: +200 to -200 mV in 0.8 mV steps
- RGB gain: +6.0 to -6.0 dB in 0.2 mV steps

Noise reducer: Multiband

Edge enhance: Horizontal & vertical

Video delay:

- 8 frames in steps of 1 frame for progressive sources
- 8 fields in steps of 1 field for interlaced sources

HDR Processing:

HDR flags input detection

HDR bypass support

External HDR processing:

- User LUT (33-cube 3D LUTs) loading support (32 entries), with full BBC Type I, II & III LUT support

Internal HDR processing:

- Conversion type: Scene referred/display referred
- SDR/HDR modes: SDR, HLG, PQ, S-Log3
- Colorimetry: Auto, BT709, P3-D65, BT2020
- Clipping: Hard/soft
- White clip level: Manual, Narrow, Full
- Scale and gamma adjust
- SDR enhancement

Manual or Automatic ARC:

AFD (SMPTE ST 2016), VI (RP186), WSS (L23)

SD input format: Normal 4:3, Anamorphic 16:9, Letterbox 14:9, Letterbox 16:9

SD output format: Normal 4:3, Anamorphic 16:9, Letterbox 14:9, Letterbox 16:9 Auto zoom: On/Off

Manual zoom: Zoom ±20%

Safe area marker: Off, 16:9, 4:3

Manual controls: Size, aspect, pan, tilt

Wide range of ARC presets including 702 sample line mode

Metadata:

Closed caption CEA608 <> CEA708

Timecode:

- Source: LTC, VITC
- Processing: Follow input, generate
- Timecode loss: Freeze, freerun

WST/SMPTE RDD08/SMPTE ST 2031 conversion

SMPTE ST 2020 embed/de-embed

Ancillary data bridge to allow transfer of up to seven different ANC packet types around the converter

Audio Functions

Analog Audio:

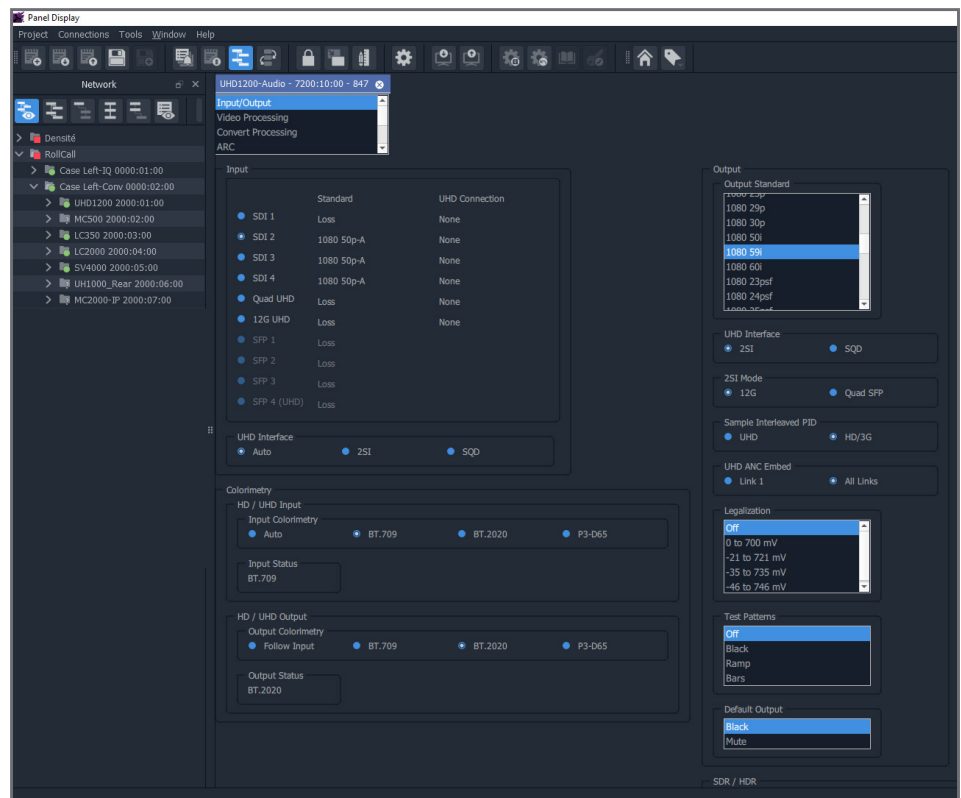
- Two pairs of analog inputs are individually available to the processing channel
- Headroom +24 dBu; balanced connection

AES Audio:

- AES audio is accessible via 8 bidirectional ports which can be configured as inputs or outputs
- AES input is auto-detected as PCM (32-96 kHz) or non-PCM (48 kHz locked to relevant video input)

Embedded Audio:

- 16-channel embedded audio processing
- PCM audio processing includes channel level gain and delay compensation, as well as channel level routing/shuffle with audio phase inversion
- Non-PCM processing features pair level routing and delay compensation
- Dolby E data is passed with a delay to match the video and with co-timed audio frame drop or repeat (Note: not available when frame rate converting)



GV Orbit control GUI for UHD1200

Specifications (cont.)

System

Pattern Off, Black, Ramp, Bars

Default output: Black, Mute

Pre- and Post-scaler Proc Amp:

- Black Level: +100 to -100 mV (0) in 0.8 mV steps
- Contrast: -6 dB to +6 dB (0) in 0.2 dB steps
- Saturation: -6 dB to +6 dB (0) in 0.2 dB steps
- Y Gamma: 0.4 to 1.7 (1) in 0.1 steps

Genlock: Reference lock, Input lock (same format), Follow input (same frame rate), Free run

Memories: 16 user memories

Adjustable Legalizer with Black Level adjustment limits included

EDH support

Front panel lock

Communications

Remote control via HTML5 web interface, GV Orbit and SNMP

Power (Primary and Secondary)

Input voltage range: 100 – 240 VAC, 50/60 Hz 1.5A (max.) via three-pin IEC power socket

Mechanical

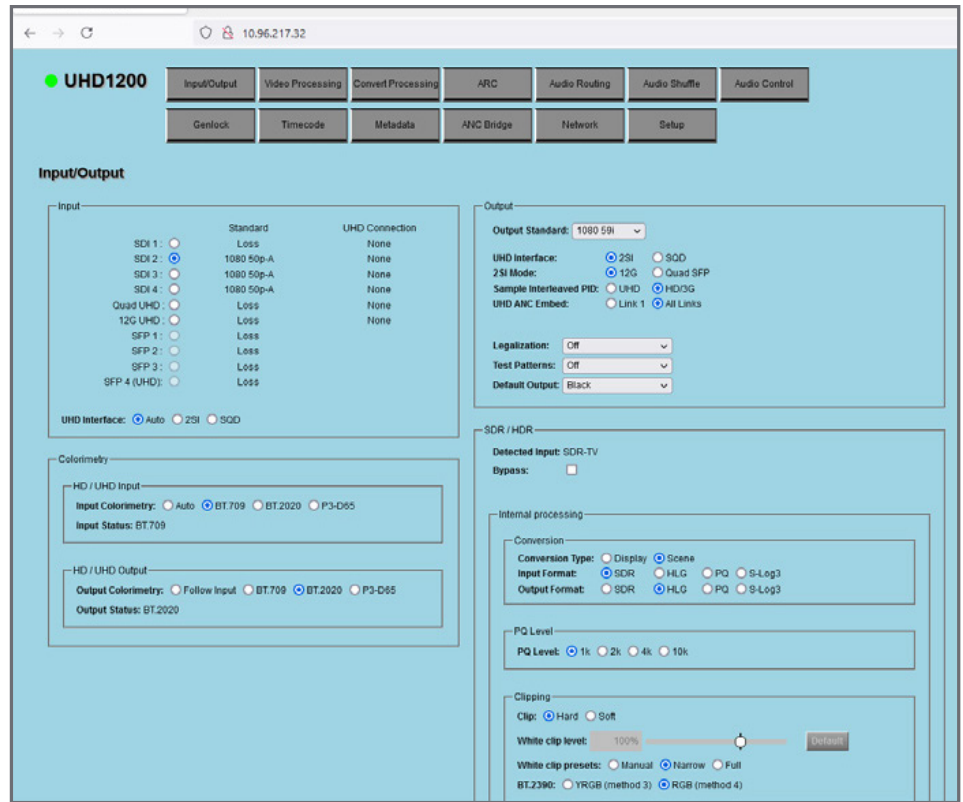
Temperature range: 0 to 45° C (32° to 113° F) operating

Cooling: Internal fan, side venting

Weight: Approximately 2.4 kg (5.3 lbs.)

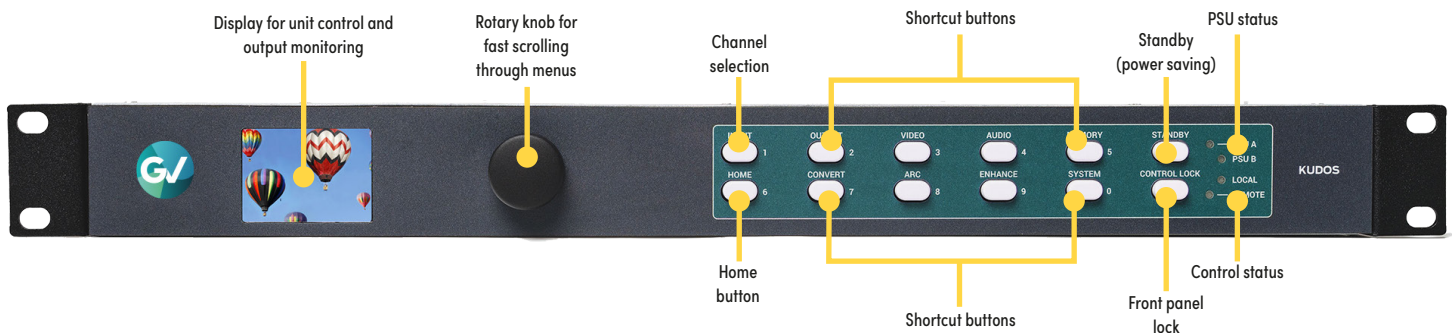
Case type: 1 RU, rack mounting

Dimensions: 44 x 430 x 170 mm (1.7 x 16.9 x 6.7 in.) (HxWxD)

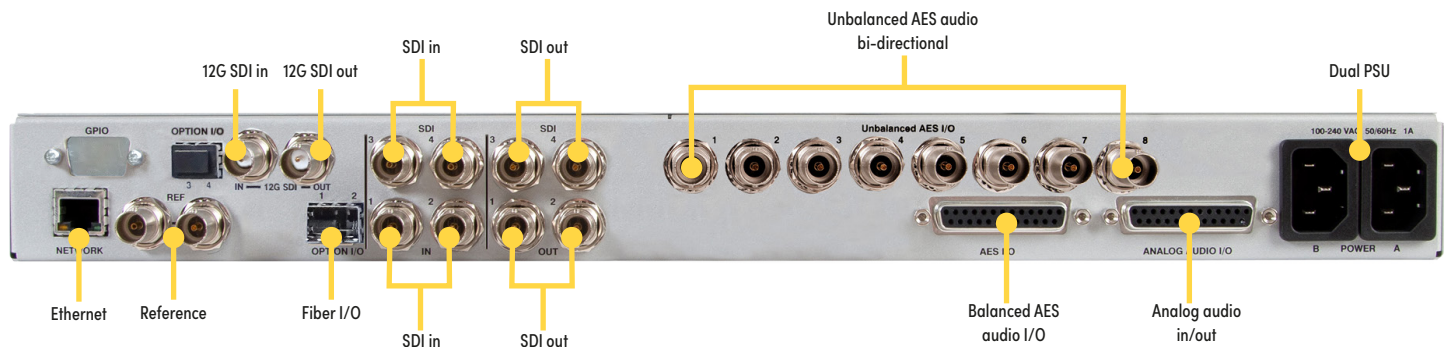


HTML5 web interface for UHD1200

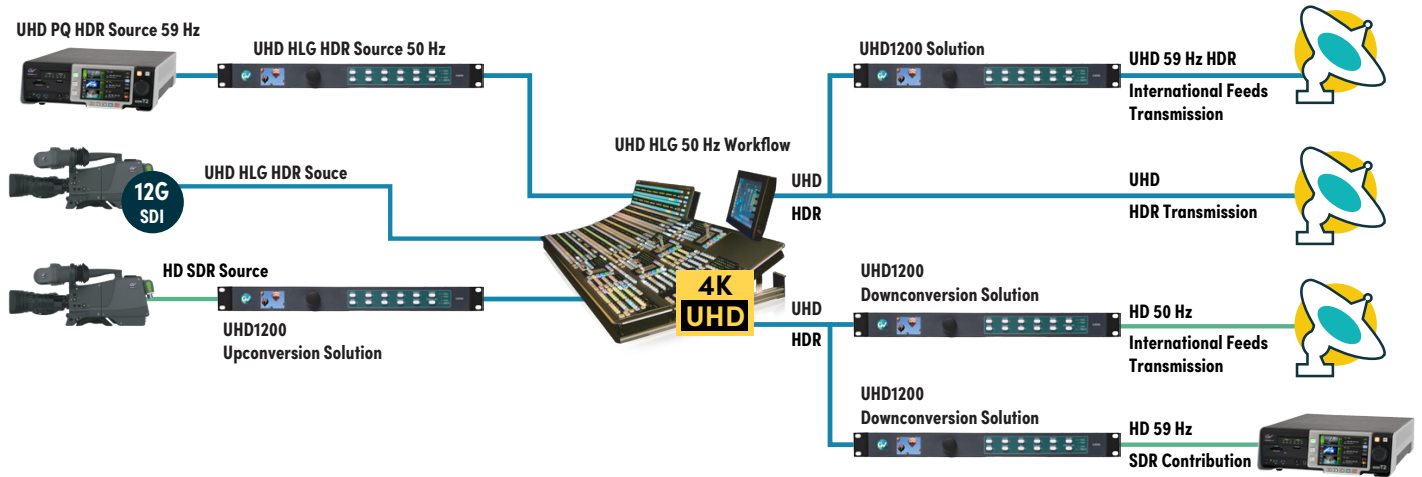
UHD1200 Front Panel



UHD1200 Rear Panel



Applications



Suitable for mixed-format HDR and SDR workflows, UHD1200 packs all the tools required to ensure the best image manipulation to suit all requirements.

SD/HD/3G/UHD up-, down- and crossconversion with linear frame-rate conversion ensures content can be repurposed in any broadcast format for both local and international distribution.

HDR/SDR re-mapping enables all signals to be compatible with the required production color space with support for user LUT loading compatible with BBC type I, II and III LUTs for scene or display referred and wide or narrow formats.

Multiple adjustments are available for color correction and gain, both pre-scaling to “fix” any input issues and post scaling to accommodate any artistic output requirements.

Further HDR/SDR features include hard and soft clipping to balance roll-off and round-tripping requirements, tone mapping for viewing HDR material on an SDR monitor, and SDR enhancement to selectively boost SDR content when mapping to any HDR mode.

Ordering

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UHD1200

Single-channel 4K UHD-1 video & audio processing unit with 12G SDI (BNC or fiber), AES and analog audio I/O, remote or front panel control and dual PSUs.

SFP Option 1/2 and 3/4

FC1-13TR

Transceiver 1310 nm/Rx

FC1-13T1

Single 1310 nm Tx

FC1-13T2

Dual 1310 nm Tx

FC1-R1

Single Rx

FC1-R2

Dual Rx

FC1-HDBT2

HD-BNC Dual Tx

FC1-HDBR2

HD-BNC Dual Rx

FC1-HDMI2

HDMI 1.4 Tx

FC1-HDMIR

HDMI 1.4 Rx

Additional 12G-Compatible SFPs for SFP Option 3/4

FC1-R2-12G

2x 12G Fiber Rx

FC1-HDBR2-12

2x Rx HD-BNC – 12G

FC1-13T2-12G

2x 12G Fiber Tx

FC1-HDBT2-12

2x Tx HD-BNC – 12G

Note: Fiber SFP type must be ordered in addition to the unit.

This product may be protected by one or more patents. For further information, please visit: www.grassvalley.com/patents

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