

ALCHEMIST LIVE

Motion Compensated Frame-rate Conversion for Live Media Streams



Perfection
in Motion

Alchemist, now in its seventh generation, is recognized throughout the world as the undisputed gold standard of motion compensated frame-rate standards conversion.

Alchemist Live from Grass Valley builds on this legacy and offers the very best motion compensated frame-rate conversion, providing transparent, artifact-free conversion for seamless global distribution of live media.

Available in two operational modes: as a single channel for 4K UHD conversions or three channels for HD/3G conversions, Alchemist Live can also support either SDI workflows or IP SMPTE ST 2110/2022-6 applications with 10/40 GbE or 25/100 GbE interfaces. Supported IP features include PTP timing to SMPTE ST 2059, single stream 4K HD, SMPTE ST 2110-20 narrow sender with RS-FEC, SMPTE ST 2110-30/31, SMPTE ST

2110-40, and NMOS IS04/05 device discovery. SMPTE ST 2110-30/31 audio support includes a configurable output channel count, 4x SMPTE ST 2110-30/31 input audio streams, and 125 μ s, 250 μ s, 500 μ s and 1 ms packet times supported at the input and output.

Along with 4K UHD, HDR mapping is also included with built-in HDR conversion algorithms supporting HLG, PQ and S-Log3 transfer functions and BT.709 and BT.2020 color gamuts, plus a custom LUT loading feature for using .cube tables, and a range of user-configurable gamma, SDR/HDR range, clip and gain controls.

Alchemist Live will process up to 16 channels of audio with a delay to match the processing, and gain, shuffling and extended delay controls. A Dolby® E Transcoding option is also available to handle embedded Dolby E streams ensuring that the guard band is maintained.

Supplied as a certified COTS turnkey solution, Alchemist Live has a number of remote control and monitoring options from GV Orbit, a built-in HTML5 web interface, SNMP integration for third-party network management systems and Alchemist Live IP now supports NMOS.

Alchemist Live Web Service

Motion-Compensated Framerate Conversion for Live Media Streams



Processing Channel Configuration: 1x Alchemist Live (upto UHD)

Alchemist Live Channel 1:

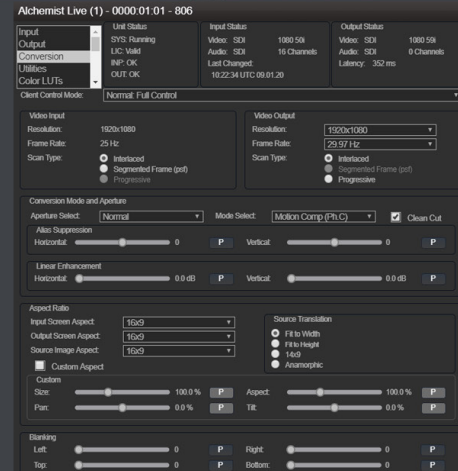
Launch Channel Menus

GV Live System Host

Status

Agents Running : 1
Agents Disabled : 0
Agents Failed : 0
License Server OK

Launch System Host Menus



HTML5 web interface for remote control of Alchemist Live

Key Features

- World-class motion compensated frame-rate conversion – new technology optimized to deliver stunning image quality, however complex the source
- Supports live IP or SDI media streams, either 1x 4K UHD channel or 3x HD/3G channels
- SD, HD, 1080p, 4K UHD & 4K DCI native support
- IP support for SMPTE ST 2110-20/30/31/40, SMPTE ST 2022-6/7, PTP timing to SMPTE ST 2059, RS-FEC support, NMOS IS04/05 device discovery and connection management (Alchemist Live IP only)
- SMPTE ST 2110-30/31 support includes 4x SMPTE ST 2110-30/31 input audio streams, configurable output channel count, and 125 μ s, 250 μ s, 500 μ s and 1 ms packet times
- HDR handling for HLG, PQ and S-Log3, including custom LUTs
- Video processing including frame synchronizer, ARC control, logo insertion, proc amp and legalizer
- Graphics-friendly low Ph.C mode, and Ph.C Mask feature to exclude Ph.C motion processing from defined screen areas during processing
- Closed caption support and ancillary data bridge
- 16-channel audio processing with gain, shuffling and delay
- Dolby E Transcoding option to maintain Dolby guard-band protection
- HTML5 web control interface, along with native support for Grass Valley's GV Orbit, SNMP and NMOS
- Certified turnkey solution

Specifications

SDI Supported Video Formats

SD: 525, 625

HD: 720 50/59.94/60p, 1080i 25/29/30, 1080p 23/24/25/29/30

3G: 1080 – 50/59.94/60p

4x 3G: UHD 3840x2160, 4K 4096x2160 – 23/24/25/29/30/50/59.94/60p

IP Supported Video Formats

SD: 525, 625 (SMPTE ST 2110 only)

HD: 720 50/59.94/60p, 1080i 25/29/30, 1080p 23/24/25/29/30

3G: 1080 – 50/59.94/60p

4x 3G: UHD 3840x2160, 4K 4096x2160 – 23/24/25/29/30/50/59.94/60p

4K UHD Single Stream: UHD 3840x2160, 4K 4096x2160 – 23/24/25/29/30/50/59.94/60p

Processing Channels

1 channel of 4K UHD and 4K DCI conversion

3 channels of 1080p conversion*

Conversion Modes

Motion Compensated Interpolation

Low Ph.C Motion Compensated

Linear

Synchronous

Stream Inputs and Outputs (for IP Version)

Dual 40 GbE and single 100 GbE native interfaces, Dual 10 GbE and 25 GbE interfaces with adapters

Video: SMPTE ST 2110-20 and SMPTE ST 2022-6

Audio: SMPTE ST 2110-30 and SMPTE ST 2110-31 (AES67), 48 kHz, 24-bit PCM, up to 16 audio processed channels. Synchronization and timestamp realignment with video stream. Supported packet timing: 125 µs, 250 µs, 500 µs, 1 ms

Metadata: SMPTE 2110-40

NMOS IS-04/05 IP device discovery, registration and connection management

SMPTE ST 2022-7 Packet redundancy and re-ordering

SDI Inputs and Outputs (for SDI version)

8x 75Ω SD/HD serial digital interface with 16 channels of embedded audio

3 Gb/s HD-SDI SMPTE ST 424/425

Quad link / Square division / 2SI

1.5 Gb/s HD-SDI SMPTE ST 292 / SMPTE ST 299

270 Mb/s SD-SDI SMPTE ST 259

Supported Audio Format

16 PCM pass-through channels of audio (for IP version)

16 PCM pass-through channels of embedded audio (for SDI version)

Dolby E Transcoding, of up to 3 Dolby E streams (licensed option)

Control & Monitoring

GV Orbit control interface

GV Orbit logging and reporting

HTML5 web control interface

NMOS: Discovery and registration (IS04), and Connection Management (IS05) – (Alchemist Live IP only)

Form Factor

4 RU

2000W dual redundant PSU @240V AC (1000W @ 120 VAC)

Power consumption: 850W

Connectivity

2 x RJ45 GbE LAN ports

1 x RJ45 dedicated IPMI LAN port

1 x VGA (console)

Video Utilities

Color space conversion (REC601 / BT709 / BT2020)

Alias Suppression – Horizontal & vertical

RGB Legalization (700 / 721 / 735 / Custom)

Aperture – Sharp / Normal / Anti-alias

VANC bypass

Pattern Generator

Logo Inserter

Caption overlay

Ph.C Protect Area – 3x adjustable areas to exclude

Ph.C motion processing

HDR Processing

HDR (PQ / S-Log3 / HLG) to SDR

HDR (PQ / S-Log3 / HLG) to HDR (PQ / S-Log3 / HLG)

SDR to HDR (PQ / S-Log3 / HLG)

Custom LUTs

Reference Input

SDI version: SD Bisync, HDTV Trisync

IP version: Clock Locked NTP/PTP/System Clock

Latency

High framerate conversion, 210 ms – 320 ms (actual value depends on standards & genlock mode)

Low framerate conversion, 420 ms – 630 ms (actual value depends on standards & genlock mode)

Mechanical

Temperature range: 0 to 35°C (32 to 95°F) operating

Cooling: Front to rear

Weight: Gross weight 28.1 kg (62 lbs.)

Case type: 4 RU freestanding or rackmount

Dimensions: 462 mm x 673 mm x 172 mm (18.2 x 26.5 x 6.8 in.)

* Alchemist Live SDI: all three inputs must be the same framerate and all three outputs must be the same framerate.

Ordering

IP Version

9822210

Alchemist Live (IP) (Software licenses and hardware)
Motion compensated frame-rate conversion for Live IP media streams. 1x 4K UHD channel or 3x 1080p channels

SDI Version

9822200

Alchemist Live (SDI) (Software licenses and hardware)

Motion compensated frame-rate conversion for SDI media streams. 1x 4K UHD channel or 3x 1080p channels

Dolby E Option

ALCLIVE-DBE

Alchemist Live single-channel Dolby E transcoding license – enables 1 channel of Dolby E transcoding in 4K UHD mode, or in a single SD/HD/3G video channel in HD mode (assignable 1 per video channel). Note: maximum of three Dolby E transcodes permitted per Turnkey unit

IP Upgrade

9822250

Alchemist Live (SDI to SMPTE ST 2110 IP upgrade) (Software licenses and hardware changes)

Motion compensated frame-rate conversion for live SMPTE ST 2110 IP media streams. 1x 4K UHD channel or 3x 1080p channels

IP Options

FCQ-100GE-SR4

100GBASE-SR short range QSFP for MMF (Note: Single QSFP support only)

FCQ-40GE-SR

40GBASE-SR short range QSFP for MMF.

FGAN FCQ-ADPT-10

Ethernet adapter 40 Gb/s to 10 Gb/s QSFP to SFP+

FGAN FCQ-ADPT-25

Ethernet adapter 100 Gb/s to 25 Gb/s QSFP28 to SFP28

Mandatory Maintenance

Conver-Prime

Mandatory 1-year annual maintenance – includes hardware and software support and in-version software updates

Get the Most from Alchemist Live with GV Care Prime

Built on 50 years of experience and service excellence, GV Care provides access to the worldwide technical and operational support that you need to help keep your products running smoothly so that you can focus on business

GV Care Prime provides a highly skilled 24x7 technical help desk, committed response times, knowledge base access, software maintenance support, and fast access to spare parts with our high-performance Advance Exchange service.

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

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