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The Alchemist Ph.C™, now in its sixth generation, is recognized throughout the world as the undisputed gold standard of motion compensated frame rate standards conversion. Now Snell has introduced FilmTools, Timecode, Dolby E and SNMP to the Alchemist Ph.C - HD, further supporting your workflow and business needs.

Alchemist Ph.C™– HD

The World's Finest Motion Compensated High-Definition Standards Converter

The result of an extensive research into the exacting demands of HD frame-rate conversion, Alchemist Ph.C – HD is designed to produce converted HD outputs that are virtually indistinguishable from the input.

The system's conversion quality is guaranteed through the utilization of the company's Emmy® award-winning Ph.C motion measurement technology. Ph.C algorithms, which have been continuously refined since the introduction of the first Alchemist Ph.C in 1992, have been optimized to prevent motion-related artifacts in high-definition video. The resulting output images are clear, sharp and free from the motion artifacts commonly associated with standards conversion.

With Alchemist Ph.C – HD, high-definition content including news, sports, live events and entertainment programming can now be broadcast around the globe in multiple high-definition standards and formats without degradation of image quality. Alchemist Ph.C – HD automatically processes image movement to produce clear, smooth motion with the widest range of input material on the largest HD video displays.

Alchemist Ph.C – HD provides a complete one-box system solution that can easily integrate into any broadcast facility. It features the ability to convert between all commonly used HD broadcast standards and formats and has been architected to accommodate new standards as they emerge, thus future-proofing the investment of customers. Alchemist Ph.C – HD is also capable of cross conversion, upconversion and downconversion of the same and different frame rates, making it a truly universal conversion platform.
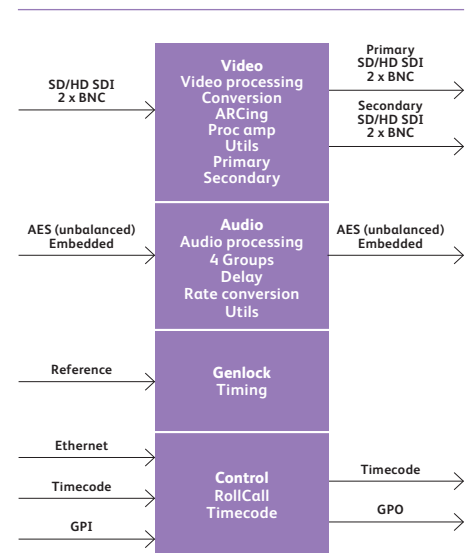
Alchemist Ph.C – HD Block Diagram

Ph.C is a proprietary Snell technology that utilizes phase correlation-based motion estimation, the most powerful and accurate method of motion measurement, to produce stunningly sharp and detailed converted outputs that are virtually indistinguishable from the input. Because Ph.C operates in the frequency rather than spatial domain, it is highly tolerant to noise and rapid changes in luminance levels that are commonly found in many types of content.

Alchemist Ph.C – HD Conversions

			Output					
			HD SDI				SD SDI	
			1080i		720p		576i	480i
			25	29.97	50	59.94	25	29.97
HD SDI	**1080i**	**25**	Pass Thru	Cross Frame	Cross	Cross Frame	Down	Down Frame
		29.97	Cross Frame	Pass Thru	Cross Frame	Cross	Down Frame	Down
	720p	**50**	Cross	Cross Frame	Pass Thru	Cross Frame	Down	Down Frame
		59.94	Cross Frame	Cross	Cross Frame	Pass Thru	Down Frame	Down
SD SDI	**576i**	**25**	Up	Up Frame	Up	Up Frame	Pass Thru	Frame
	480i	**29.97**	Up Frame	Up	Up Frame	Up	Frame	Pass Thru

Alchemist Ph.C – HD Conversion Table

Alchemist Ph.C – HD is designed to meet the challenges of today's multichannel audio world, handling embedded audio and providing 8 AES inputs and outputs. In addition to handling 16 channels of PCM audio, Alchemist Ph.C – HD is Dolby E ready using the optional Dolby E transcoder card. In order to eliminate lipsync issues, all audio that passes through the system is time compensated via an integral audio delay.

Also included is CleanCut™ technology, a Snell technique that ensures that video cuts at the input appear as identical cuts at the output. Accurate cut detection and processing is an important factor in maintaining quality control of converted video and with Alchemist Ph.C – HD this is done automatically.

The Alchemist Ph.C – HD platform includes optional capability for handling timecode, using VITC and LTC. For added flexibility XLR connectors are provided. This option provides timecode gearbox functionality greatly simplifying production of deliverables with correct timecode when standards converting.

In addition, noise reduction further aids in applications where compression preprocessing is needed. The tight integration of motion compensated conversion, CleanCut and noise reduction combine to make the Alchemist Ph.C – HD a very compression-friendly device.

Adding to its operational flexibility, the Alchemist Ph.C - HD provides two independent video outputs, a feature that provides capability for two simultaneous program feeds of different standards. For example, if the input is 1080/25i, the outputs could be 1080/29i and 525/29i. This removes the need for an outboard downconverter or a second standards converter. A Gamut legalization circuit also ensures that even if the input is out of spec, the output of the unit will be compliant.

As with all Snell "smart" infrastructure products, the Alchemist Ph.C - HD can easily be integrated with the Snell RollCall® networked control and management system or SNMP.

Alchemist Ph.C set the industry standard for the finest SD frame-rate conversion. With the Alchemist Ph.C – HD, Snell has once again engineered a conversion platform without compromise or peer, thereby extending its franchise into the high-definition domain.
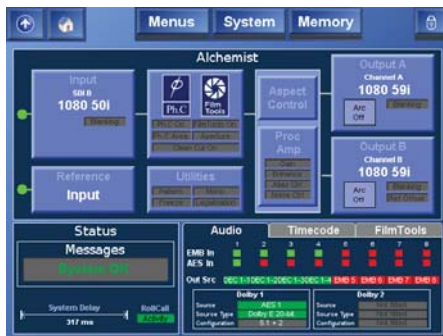
Home screen / Aspect Control screen

Audio Control
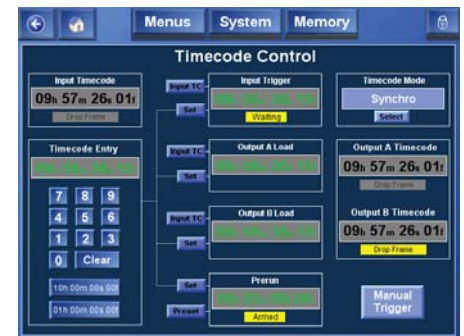
Timecode option / Dolby E option

The Home screen provides instant status information about the condition and configuration of the unit. At a glance the output standard and reference status can be determined. The screen also acts as the control interface providing easy visual access to the major system control functions. The touch sensitive screen provides an easy intuitive way to navigate and control the unit.

The Aspect Control screen provides a simple interface to allow users to perform the desired aspect ratio conversion for a particular job or feed. Commonly used ARC settings are pre-configured, alternatively custom settings may be selected using industry recognized controls Size, Pan, Asp and Tilt. The powerful Auto (format) mode allows users to specify independent ARC settings for different format conversions, and AFD authoring tools enable your deliverables to be provided "AFD Ready". Separate ARC controls are provide for the Primary output (Channel A) and the Secondary output (Channel B), this provides capability for an HD 16:9 output and an SD output at 4:3, 14:9 or 16:9 as desired by the user. To simplify operation the Secondary output ARC may be locked to the Primary output.

With the Alchemist Ph.C – HD control of audio functionality is not overlooked. The Alchemist Ph.C – HD has capability for 8 AES & 4 Groups of embedded audio inputs and outputs and provides a simple way to configure and view the status of the internal audio processing. The delay for each of the internal audio channels may be adjusted as required and any of the inputs (embedded and AES) may be routed to the output.

As with all Snell "smart" infrastructure products, Alchemist Ph.C – HD is "self aware" and ready for centralized set up and monitoring through the RollCall network management system or SNMP.

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Full Product List

Base Model
Alchemist Ph.C – HD
(5048500)

Motion-Compensated Standards Conversion Platform with SD SDI I/O, SD standards conversion, CleanCuts™, ARC, embedded & AES Audio, redundant PSU, intuitive touch screen control, RollCall control, 3 RU frame.

Alchemist Ph.C – HD
(5048000)

As above with SD & HD SDI I/O, SD & HD standards conversion with up down and cross conversion.

Options
HD Upgrade
(5045000)

Upgrade from SD only platform to SD & HD Platform.

Timecode
(5045001)

Adds LTC and VITC timecode processing.

Dolby E (1 channel)
(5045002)

Adds Dolby E transcoding and Dolby E decode function.

Dolby E (2 channels)
(5045012)

Adds Dolby E transcoding and Dolby E decode function.

FilmTools option
(5045003)

Adds low rate progressive I/O.

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Technical Specification

Signal Inputs

Serial digital	2 x 75 Ohm SD/HD Serial Digital with embedded audio (4 Groups) Input Standards: 1.5 Gbit/s HD-SDI SMPTE292M/SMPTE299M 270M Mbit/s SD-SDI SMPTE259M
Reference	2 x loop-through HDTV Trisync/SD Bisync (Black & Burst) SMPTE 240M/274M, with auto selection dependant on output standard
Audio AES	8 channels unbalanced AES-3 via BNC connectors (75 Ohm)

Signal Outputs

Serial digital primary (Output A)	2 x 75 Ohm SD/HD Serial Digital with embedded audio (4 Groups) Output Standards: 1.5 Gbit/s HD-SDI SMPTE292M/SMPTE299M 270M Mbit/s SD-SDI SMPTE259M
Serial digital secondary (Output B)	2 x 75 Ohm SD/HD Serial Digital with embedded audio (4 Groups) Output Standards: 1.5 Gbit/s HD-SDI SMPTE292M/SMPTE299M 270M Mbit/s SD-SDI
Audio AES	8 channels unbalanced AES-3 via BNC connectors (75 Ohm)

Control Functions

Input select	Input A, Input B
Input blanking	Left, Right, Top, Bottom
Input loss	Input, Freeze, Black
Input standard	Auto
– SD	525, 625
– SD & HD	525, 625, 720P50, 720P59, 1080i50, 1080i59
Output standard	Auto
– Primary	SD 525, 625
– Primary SD & HD	525, 625, 720P50, 720P59, 1080i50, 1080i59 Colorimetry
Output standard	Auto
– Secondary SD	525, 625
– Secondary SD & HD	525, 625, 720P50, 720P59, 1080i50, 1080i59 Colorimetry
Output blanking	Left, Right, Top, Bottom
Output blanking color	Red, Green, Blue
RGB legalizer	On/Off, 700 mV, 721 mV, 735 mV
Enhancement	Horizontal & Vertical
Noise reduction	On/Off

Conversion Functions

Convert	Ph.C™ Motion Compensation CleanCut™
Alias suppression / aperture	Horizontal & Vertical aperture adjustment
Modes	SD Standard Conversion SD & HD Standards, Up, Down & Cross Conversion
Ph.C area	5 user definable keys with overlays to define active and inactive areas
Aspect ratio conversion	Manual, Forced or Auto (Format) mode. Preset Input and Output ARC Settings 4:3, 16:9, 14:9LB, 16:9LB, 4:3PB, Anamorphic, No Change User (Pan, Size, Asp, Tilt) Forced or Auto (Format) SMPTE 2016, (AFD) Authoring
CleanCut™	On/Off F1/F2/Any

Audio Functions

Audio select	Embedded, AES
Audio channel selection	Group 1 pair 1, Group 1 pair 2 Group 2 pair 1, Group 2 pair 2 Group 3 pair 1, Group 3 pair 2 Group 4 pair 1, Group 4 pair 2 AES1, AES2 AES3, AES4 AES5, AES6, AES7, AES8
Audio type	PCM, Data

Power

Input voltage range	100 V to 240 V rms., 50/60 Hz
Mains fuse rating	T 8 AH 250 V. (Each Power supply)
Maximum input current	7 - 3 A (Each Power supply)
Power consumption	500 W

Communications

RollCall	BNC connector, RS422, Ethernet
SNMP	Ethernet

Mechanical

Temperature range	0 to 35° C operating
Cooling	Axial fan, front-to-rear airflow
Weight	Approximately 20 kg
Case type	3 RU Rack Mounting
Dimensions	483mm x 563mm x 132mm (w,d,h)

Alchemist_PhC-HD v3