

Archangel Ph.C - HD™ — Real-Time HD and SD Video Restoration



Data Sheet

What is Archangel Ph.C - HD?

Archangel Ph.C-HD, is an advanced SD and HD restoration system with real-time dirt, dust, grain, noise, scratch, instability and flicker removal, controllable scene-by-scene with SAM's PC-based timeline control.



Archangel Ph.C-HD unlocks the value of existing assets, ensuring that SD and HD content can be distributed in superb quality. The restoration system also brings significant improvements to users' workflows by maximizing the amount of restoration that can be completed in real time.

Available at a price point considerably lower than frame-by-frame restoration, Archangel Ph.C-HD enables virtually any content to be cost-effectively treated.

Most material can be restored within two or three times its running length and the end result can be better than when it was first shot.

Features

- The ability to remove defects from video content in real-time
- Gain value from existing content assets, at whatever quality you need
- Timeline control for precise scene-by-scene repair
- VTR control
- Support for external control surfaces
- Clean up archive content to use in new programming
- SD and HD support including integrated up/down conversion to enable multiple deliverables from one source
- On-screen condition meters to support rapid restoration only where it is needed
- Dead pixel repair

Applications

Broadcasters and content owners re-mastering for Blu-ray: Many films, features and drama series being re-mastered for sale on DVD and Blu-ray require comprehensive restoration to enable them to meet the high quality expectations of consumers, many of whom view using large screen HD TVs.

Broadcasters re-mastering material for transmission:

Much of the material being transmitted, especially on satellite and cable, consists of repeats and "classics" from the archives. Anything originated over ten years ago will probably need restoration.

As well as benefiting the viewer, Archangel Ph.C-HD can also reduce the cost of transmission. The bit-rate needed for digital transmission can be reduced without affecting picture quality by eliminating unwanted motion, dirt and other artifacts.

Correction of new material: Even with today's sophisticated production equipment, errors can still creep into the material which in some instances are not noticed until much later, when it is not possible to re-shoot the scene. Errors such as noise, flicker and unstable sequences can be cleaned up effectively and in real-time.

Independent producers using archive footage: Documentaries, Historical Series, Natural History, Travel, Biography, Music - all of these genres regularly incorporate archive footage. Restoration with Archangel Ph.C-HD allows such material to be used by eliminating any sudden quality drop-off that could adversely affect the overall impact of the program. In many cases it will enable otherwise unusable material to be shown.

Archangel Ph.C includes the following processes:

Image Stabilization

Unsteadiness can be caused by telecine, camera or print weave, hand-held camera work, long lenses or moving vehicle shots.

Flicker Removal

Luminance flicker can be caused by poor film printing, unsuitable storage or shooting under fluorescent light.

Noise Reduction

Including electronic noise and film grain, spatial noise, video-based dropouts, satellite salt-and-pepper noise, dirt and dust, two-inch Quadraplex VTR tape damage, picture enhancements and scratches of various shapes and sizes. Also dead pixel repair.

How you can benefit from Archangel Ph.C-HD

Extra business opportunity

Archangel Ph.C-HD is capable of handling both SD and HD content, which now opens up the opportunity to offer additional services to new and existing customers.

Greater efficiency

Archangel Ph.C-HD enables you to restore content in real-time, which can be up to 10 times faster than equivalent software products. The efficiency savings enable you to utilise your staff more effectively and to make Archangel Ph.C -HD readily available to more customers in the same period.

Value from content assets

Until now this level of restoration quality could only be achieved by laborious and time-consuming frame-by-frame processing.

Consequently, there is a lot of material that remains un-restored because, although potentially useful, it is not considered valuable enough to warrant an expensive restoration process. Archangel Ph.C-HD unlocks the value of these assets, by enabling them to be cost-effectively restored for new uses.

Archangel Ph.C-HD works in a unique way

Archangel Ph.C-HD provides a unique combination of unsteadiness stabilization and noise reduction processes, with Ph.C (phase correlation motion compensation) used throughout to guarantee the highest quality results.

The time required to complete a restoration depends on the nature of the material and the problems to be solved. Most cases will typically require no more than two to threetimes program length. The right combination of processes, settings and filters is decided by the operator using the sophisticated artifact detection and measurement systems built into Archangel Ph.C-HD.

Timeline Control

Restoration parameters can be set scene-by-scene enabling finely tuned repair to be carried out only where it's needed. Archangel Ph.C-HD automatically detects scene breaks and offers the user filter control by input timecode.

Parameter control using Tangent Wave and JLCooper Eclipse CX panels is also supported.

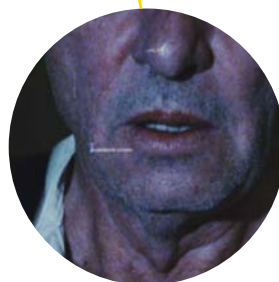
Archangel Ph.C-HD Performance



Original with dirt



After Archangel Ph.C-HD dirt and dust removal

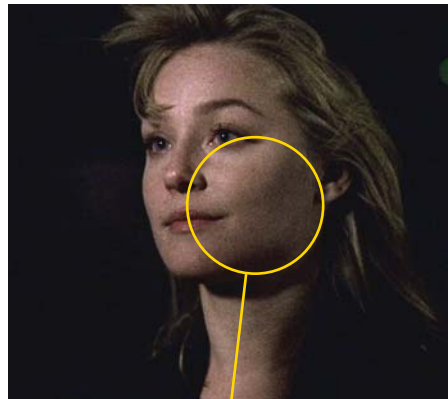


Workflow support

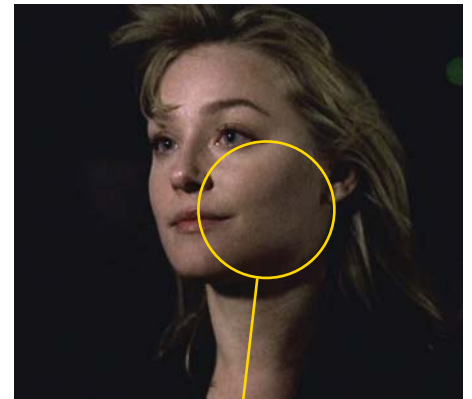
In addition to restoration tools, Archangel Ph.C-HD provides utilities for picture enhancement, primary color correction, bandwidth limiting and aperture correction.

Eight AES audio inputs are available and up to eight stereo pairs of embedded AES audio can be extracted from the input video. After audio delay, gain and routing, up to eight stereo pairs of output audio are available on AES outputs and simultaneously as embedded AES in the output video.

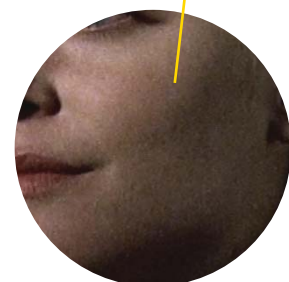
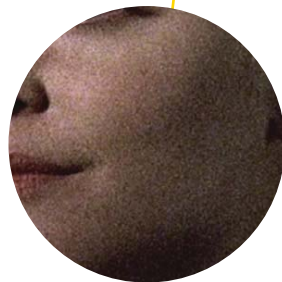
Archangel Ph.C-HD has an LTC input XLR and an LTC output XLR as well as the ability to extract and embed VITC, E-VITC and E-LTC..



Original with noise



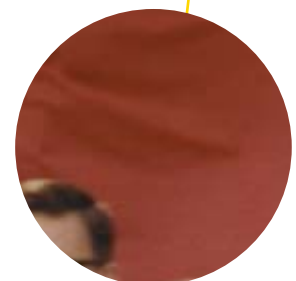
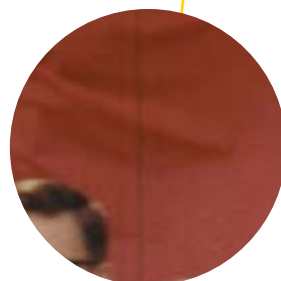
After Archangel Ph.C-HD noise reduction



Original with scratches



After Archangel Ph.C-HD scratch removal



Order Information

5058000

Archangel Ph.C-HD - Real-time Motion-compensated SD and HD Video content Restoration System (Dirt, Dust, Tramline Scratch, Noise Reduction, Dropout, Unsteadiness and Flicker) for Film and Video originated material with PC based GUI.

Archangel Ph.C-HD Specification

Signal Inputs

Serial Digital	2 x 75 Ohm SD/HD Serial Digital with embedded audio (4 Groups) – 270M Mbit/s SD-SDI SMPTE259M – 1.5 Gbit/s HD-SDI SMPTE292M / SMPTE299M – 3 Gbit/s Dual HD-SDI SMPTE372M
Reference	2 x loop-through HDTV Trisync/SD Bi-sync (Black & Burst) SMPTE 240M/274M.
Audio AES	8 channels unbalanced AES-3 via BNC connectors (75 Ohm)

Signal Outputs

Serial Digital Primary	2 x 75 Ohm SD/HD Serial Digital with embedded audio (4 Groups) – 270M Mbit/s SD-SDI SMPTE259M – 1.5 Gbit/s HD-SDI SMPTE292M/SMPTE299M – 3 Gbit/s Dual HD-SDI SMPTE372M
Serial Digital Secondary:	2 x 75 Ohm SD/HD Serial Digital with embedded audio (4 Groups) – 270M Mbit/s SD-SDI SMPTE259M – 1.5 Gbit/s HD-SDI SMPTE292M /SMPTE299M Audio AES: 8 channels unbalanced AES-3 via BNC connectors (75 Ohm)

Control Functions

Input Select	Input A, Input B (Single Link Only)
Input Material Type	Auto, Video, Film (2,2), Film (2:3)
Field Dominance	F1:F2, F2:F1
Input Blanking	Left, Right, Top, Bottom
Input Standard (Single)	
YCbCr 4:2:2, 10 bit:	525, 625, 1080 50i, 1080 59i, 1080 23.98PsF, 1080 24 PsF, 1080 25 PsF, 1080 29.97 PsF
Input Standard (Dual)	
YCbCr 4:4:4, 10 bit:	1080 23.98 PsF, 1080 24 PsF, 1080 25 PsF, 1080 29.97 PsF
RGB 4:4:4, 10 bit:	1080 23.98 PsF, 1080 24 PsF, 1080 25 PsF, 1080 29.97 PsF
Output Blanking	Left, Right, Top, Bottom
Output Split Screen	H Split, H Repeat, V Split, Diagonal Split

Restoration Functions

Artefact Repair	Dirt & Dust, Tramline Scratch, Stabilization, Flicker, Video Dropout, Dead Pixel
Noise & Grain	Film Grain Management, Video Noise Reduction
Non-linear Enhance	Horizontal & Vertical Enhancement

Audio Functions

Audio Select	Embedded, AES
Audio Type	PCM, Data
Audio Mode	Pass, Mute, Tone (1KHz, 4KHz)
Audio Gain	-6dB to +6dB (PCM only)
Audio Delay Offset	-250 to +250 ms (global) -250 to +250 ms (per pair)

Up/down conversion SD to HD and HD to SD conversion at the same frame rate with independent ARC available for primary and secondary outputs

System Utilities

Test Patterns	Black, Colour Bars, Plug Procamp, Color Corrector, Clipper, Gamut Legaliser
Video Utilities	Input, Ref A, Ref B H & V Offset VANC data passing in same format processing modes (HD/HD and SD/SD)
Genlock	
Output Timing	
VANC 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

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 (W, D, H)	483 mm x 563 mm x 132 mm