

# Redwood BLACK

## Multipurpose Video Engine



Product Data Sheet



Powered by Harmonic

### KEY FEATURES

#### Hybrid IP & SDI Workflows

Live-to-disk recording, clip playout, graphics insertion, master control switching including DVEs, subtitling, independent branding of simulcast channels and many other broadcast features

#### Dolby® E encode/decode

#### Video processing core powered by Harmonic Spectrum

Modular and scalable software and hardware architecture to deliver the feature set you need

High level of quality, reliability and redundancy

### OVERVIEW

Aveco's Redwood BLACK is a multipurpose video engine that provides integrated channel origination, ingest and playout features. It is a proven broadcasting solution with integrated IP and SDI interfaces, graphics, DVE effects, to-from live switching, and support for formats up to UHD HDR for end video delivery – for applications where quality and reliability are paramount. Redwood BLACK is powered by Harmonic Spectrum X technology.

### SYSTEM DESCRIPTION

#### Integrated Channel Workflow

As a platform for live-to-disk recording, clip playout, graphics insertion, master control switching with DVEs, subtitling, independent branding of simultaneous channels and many other

broadcast features, Redwood BLACK's hardware and software are both modular and scalable to deliver the right feature set. Further providing a complete IP workflow using the industry standards SMPTE ST 2022-6 and ST 2110, together with the SDI interfaces, means streamlined delivery of professional content in today's hybrid world where the adoption of IP to the existing SDI infrastructures is in progress.

#### Best of Both Worlds

As a result of the combined technologies of Harmonic – the worldwide leader in video delivery infrastructure solutions – and Aveco's robust, industry-standard automation system, Aveco delivers integrated solutions that meet the needs of the most demanding users.

#### Video Engine

The Redwood BLACK video engine, which provides end-to-end SD/HD and UHD HDR video ingest and delivery, is highly scalable and suitable for traditional broadcast chains as well as integrated channel playout. Built-in multi-channel DVE, 8 layers of graphics, master control switching with clip playback, and ingest capabilities make Redwood BLACK perfect for a wide range of applications. With up to four SD/HD channels or one 4K UHD channel per unit, Redwood BLACK gives you the flexibility to add channels as you need. For reliability and fault tolerance, the video engine components operate independently. Redwood BLACK is designed for extreme reliability.

#### Automation Platform

The ASTRA Suite of Tools can automate your facility's workflows. By automating ingest, media asset management, master control playout and studio operation, your costs are lower and your workflows are simpler. Built on powerful media asset management, ASTRA provides tools to streamline the lifecycle of all of your content locally or from remote locations.

CONNECTIVITY	
SDI Inputs BNC or Mini-DIN female, 75 Ω	Up to four SD/HD channels, one UHD channel Up to two Live inputs in standard channel mode Up to six Live inputs in enhanced channel mode
SDI Outputs BNC or Mini-DIN female, 75 Ω	Up to four SD/HD channels, one UHD channel Up to two simulcast outputs per channel Independently configurable up/down/crossconversion
IP Inputs/Outputs	Quad 1GE ports for TS ingest Optional dual 10GE ports for HD 2022-6 / 2110 IP I/O
Others	LTC I/O, Ref In, AES
Media Network	Two 1GbE ports Access: FTP, CIFS, AFP

VIDEO	
Output Video Definitions	SD: 525i @ 29.97 fps, 625i @ 25 fps HD 1.5G: 1080i @ 25, 29.97 fps; 720p @ 50, 59.94 fps HD 3G: 1080p @ 50, 59.94 fps UHD Quad-3G: 2160p @ 50, 59.94 fps
Codecs SD (525i 29.97, 625i 25)	MPEG-2: 3-24.9 Mbps LGOP; 25-50 Mbps I-frame DV: DV 25, DVCPRO25, DVCPRO50
Codecs HD 1.5G (1080i 50/60, 720p 50/60)	MPEG-2: 18-85 Mbps LGOP; 50-100 Mbps I-frame DV: DVCPRO HD XDCAM HD: 18, 25, 35, 50 Mbps RP 2027 Class 50/100: Class 100, 1920x1080i (25/29.97 Hz); Generic 1280x720p (50/59.94 Hz) AVC-Ultra (Panasonic): Class 50 and Class 100, 1920x1080i (25/29.97 Hz); 1280x720p (50/59.94 Hz) XAVC-I Class 100 (Sony): Class 100, 1920x1080i (25/29.97 Hz); 1280x720p (50/59.94 Hz) XAVC-L: High 422, Level 4, 25, 50 Mbps AVC-LongG: Record: 25, 50 Mbps; Playback: 12, 25, 50 Mbps VC-3 (SMPTE 2019-1): 120, 145, 220 Mbps ProRes: 122, 147, 220 Mbps; SQ and HQ modes
Codecs HD 3G (1080p 50/60)	AVC I-Frame: XAVC-I, AVC-Intra , AVC-I RP 2027 Class 100 (generic) XAVC-L: XAVC, High 422, Level 4.2, up to 50 Mbps AVC-LongG: 35, 40, 45, 50 Mbps AVCU-LongG: 12, 25, 50 Mbps VC-3 (SMPTE 2019-1): 190, 220, 367, 440 Mbps, HQX mode ProRes: 440 Mbps, LT mode
Codecs UHD Quad-3G (2160p 50/60)	XAVC: I-Frame, Class 300, 422, 10-bit, 50p/60p, L-Gop 10bit 4.2.2 200mbs 50p/60p - play only AVCU: I-Frame, Level 5.2, 422, 10-bit, 50p/60p VC-3 (SMPTE 2019-1): 145-180 Mbps, LB mode ProRes: 821 Mbps LT mode
Media File Wrappers	QT MOV (self-contained and referenced), MXF OP1a (also low latency), GXF
Aspect Ratio Conversion	Configurable

AUDIO	
Channels	SMPTE 299M/272M Up to 16 embedded per video channel
Formats	Uncompressed: 16, 24, 32-bit PCM @ 48 kHz Compressed: passthrough, Dolby® decode/encode
Features	Audio track swapping, track tagging, language rules Audio mix effects, VO insertion

AUXILIARY DATA	
Closed Captions	EIA-608, EIA-708 Up convert: EIA-608 captions translated to EIA-708 Down convert: EIA-608 compatibility bytes extracted from EIA-708 data to create EIA-608 captions
Subtitles	Line 21, OP47 Up convert: Line 21 OP-42 subtitles translated to OP-47 Down convert: OP-47 subtitles translated to line 21 OP-42
Digital Cuetone	SCTE 104
VBI, VANC	Passthrough

CHANNEL ORIGINATION	
Integrated Channel Playback	Up to 6 live inputs, 4 independent program outputs
Master Control Switching	Frame-accurate transitions between live and recorded clips, Key + fill support
Clip Playback	2 usable SD/HD players per ICP card (up to 2 ICP cards per chassis), or one 4K UHD player
Branding & Graphics	Adobe Creative Suite authoring 8 graphics layers Single layers from clip or live inputs Dual DVE for playback of two clips or live inputs Independent branding for simulcast channels Up to 2 external key/fill inputs 3-point animations Dynamic text substitution from Astra or external source
Graphics Formats	PNG, JPG, TIFF, GIF, FLV, Targa, WEBM, MP4, with HTML5 or SWF
Typefaces	All standard font formats are supported
Captions & Subtitles	Localized and customized open captions File-based closed-caption insertion
Audio	Integrated voice-over Independent duck-mix-shuffle of live, clip and graphics audio sources

INTEGRATION	
Applications	Integrated Channel Playback, videosever for playback and ingest
Automation	ASTRA Studio, ASTRA Take 2, ASTRA MCR, ASTRA MAM and ASTRA Ingest
MAM	Proxy encoding (MPEG4)

STORAGE	
Capacity	Choice of four internal 3.5" 2TB, 4TB or 6TB HDDs or 1.9TB SSDs
Redundancy	3+1 modified RAID 4 (single parity)

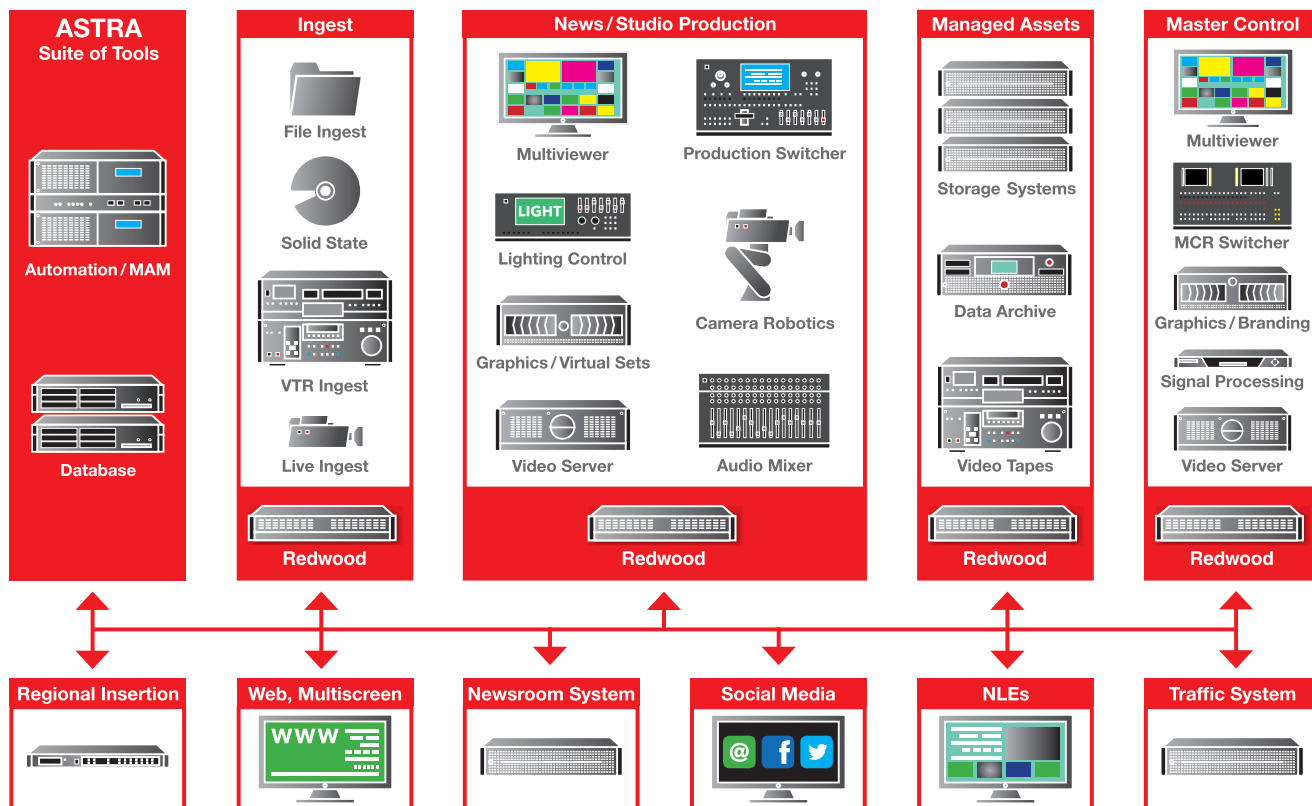
POWER	
Power Supply	Dual redundant, hot-swappable
Input Voltage Range	90-260 V, 45-63 Hz
Power Consumption	Max 505 W

PHYSICAL	
Dimensions	1U, depth 70.5 cm / 27.75 in
Weight	17 kg/29.5 lbs.

ENVIRONMENTAL	
Operating Temperature	+5° to +40° C
Operating Humidity	10% to 85% non-condensing

The ASTRA and Redwood product families can be used in applications including live news and sports studio production, MCR payout, Integrated Channel Payout, mass ingest, ad insertion and disaster recovery.

**AVECO | ASTRA**



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