ACOUSTIC SYSTEMS

SIAP AVA PROCESSOR

TECHNICAL SPECIFICATIONS

The SIAP AVA Processor is a digital audio processing platform for immersive audio applications, combining advanced Active Acoustics (AAS), including Virtual Acoustics (VAS), and spatial audio.

The system enables control of both room acoustics and the spatial distribution of sound, including reverberation time, spatial behaviour, tonal balance and real-time object positioning.

For Active Acoustics (AAS), the AVA Processor uses a hybrid processing approach combining regenerative and in-line processing to achieve stable, natural and physically consistent acoustic enhancement.

For spatial audio, the AVA Processor supports multiple rendering methods, including VBAP, DBAP, Higher Order Ambisonics (HOA) and SIAP wave propagation-based (SWP) rendering, as well as SIAP Instant Sonic Immersion (ISI).

Sound object position and movement can be controlled in real time via the SIAP Spatial Audio application or via OSC using external tools such as GRAPES 3D, QLab, Max and real-time tracking systems.

The AVA platform is designed for integration into professional audio environments using Dante / AES67 audio networking, OSC-based control and TCP/IP communication.

Applications

Theatres · Concert halls · Auditoriums · Multi-purpose venues · Immersive installations

TECHNICAL SPECIFICATIONS

Physical	
Form Factor	19" rackmount, 2U
Physical Dimensions (WxHxD)	483 x 88 x 305 mm (19.0" x 3.5" x 12.0")
Weight (unboxed)	approx. 7.0 kg
Weight (boxed)	approx. 9.0 kg (15.4 lbs)
Material/Finish	Aluminum (anodized / brushed)
Processing	
Processor Architecture	64-bit floating-point processing
Acoustic Processing	Hybrid acoustic processing
Processing Latency	typically 0.65 ms, ≤ 1.0 ms
Sample Rate	48 kHz / 96 kHz
Frequency Response	20 Hz - 20 kHz
Spatial Processing	VBAP, DBAP, HOA, SIAP wave propagation, ISI
Audio Channels	Up to 1024 (network)
Audio & Network	
Audio Networking	Dante™ / AES67, optional MADI
Control / Network	1 × Control Ethernet (1 Gbit, TCP/IP, OSC), 2 × Dante™/AES67 (Pri. & Sec., 1 Gbit), BMC
Redundancy Support	System-level redundancy via dual processor configuration with automatic failover using Dante subscription switching
Controls and Indicators	Mains power switch (rear), power button with LED indicator, 4 × front-panel status LEDs (system status)
Environmental	
Operating Temperature	0 °C to 50 °C (32 °F to 122 °F)
Operating Humidity	10% to 85% RH (non-condensing)
Power	
Power Requirements	90 – 135 VAC / 180 – 265 VAC (auto-ranging)
Power Frequency	47 - 63 Hz
Power Consumption	Typical 120 W, Max. 300 W
Approvals	
Approvals	CE, RoHS

Standard warranty: 2 years

Specifications are subject to change without notice.
Please refer to the latest version available at www.siapacoustics.com/downloads

Version 1.2 - May 2026

Key Features and Benefits

Active Acoustics

- Hybrid acoustic processing combining regenerative and in-line processing
- Coherent acoustic field integrating direct sound, early reflections and reverberation
- Independent control of reverberation time, spatial behaviour and tonal balance (incl. frequency-dependent response)
- Consistent acoustic performance independent of audience occupancy
- Predictable acoustic behaviour, independent of program material
- Time-constant acoustic processing without artificial modulation
- Multiple acoustic zones within a single space, each with independent control of reverberation time and envelopment
- User presets with full system recall for different acoustic configurations
- Speech Control; dynamic reverberation control for speech
- Hybrid stage monitoring combining active acoustics and direct signals
- Processing of line-level inputs for reinforcement of weak acoustic sources / soloists
- Flexible routing of line-level inputs for reinforcement and multi-channel playback
- Enables precise control of acoustic parameters to meet recognised standards (e.g. ISO 23591, NS 8178, ISO 3382)

Spatial Audio

- Object-based audio rendering for flexible sound positioning
- Multiple spatialisation methodes; SIAP wave propegation(SWP), VBAP, DBAP and HOA
- Real-time positioning and movement of sound objects via OSC
- Integration with external tools and tracking systems (e.g. GRAPES, QLab, Max)
- Flexible loudspeaker grouping and system configuration
- Real-time immersive processing applied to input signals and sound objects
- Intuitive SIAP Spatial Audio desktop App
- SIAP Instant Sonic Immersion (ISI) processing for immersive effects
- Support for both static and dynamic spatial audio scenarios
- Snapshots provide full system recall within projects, supporting fast transitions between scenes and use cases

System Platform

- Seamless integration of active acoustics and spatial audio within a unified platform
- Network-based audio transport (Dante / AES67)
- Brand-agnostic integration with microphones, amplifiers, loudspeakers and audio interfaces
- Low-latency processing suitable for live performance
- Scalable system architecture for small to large venues
- Centralised system control via dedicated control interfaces and software
- System recall for presets and scene-based operation
- System-level redundancy with automatic failover via dual-processor configurations
- Scalable processor configurations (AVA 3, 5, 7 and 9) based on licensed channel capacity for Active Acoustics and Spatial Audio applications

Signal Processing Overview

The AVA Processor is structured as a signal processing platform, combining input processing, active acoustic processing, spatial rendering and output distribution within a single system.

Input Stage

- Microphone and playback inputs via network audio (Dante / AES67)
- Gain, equalisation and delay per input channel
- Signal routing and grouping for distribution to different processing stages

Active Acoustics Processing

- Regenerative and In-line acoustic processing for reverberation enhancement
- Early reflections generation for spatial impression and clarity
- Late reverberation control for room response shaping
- Adjustment of acoustic parameters during system design and tuning

Spatial Audio Processing

- Object-based audio rendering
- Multiple spatialisation (SIAP wave-propegation (WSP), VBAP, DBAP and HOA)
- Real-time control of position and movement via OSC
- Real-time processing of sound objects, including SIAP Instant Sonic Immersion (ISI)

Output Stage

- Routing of processed signals to loudspeaker systems
- Level, delay and equalisation per output channel
- Flexible grouping and system-wide control

System Integration

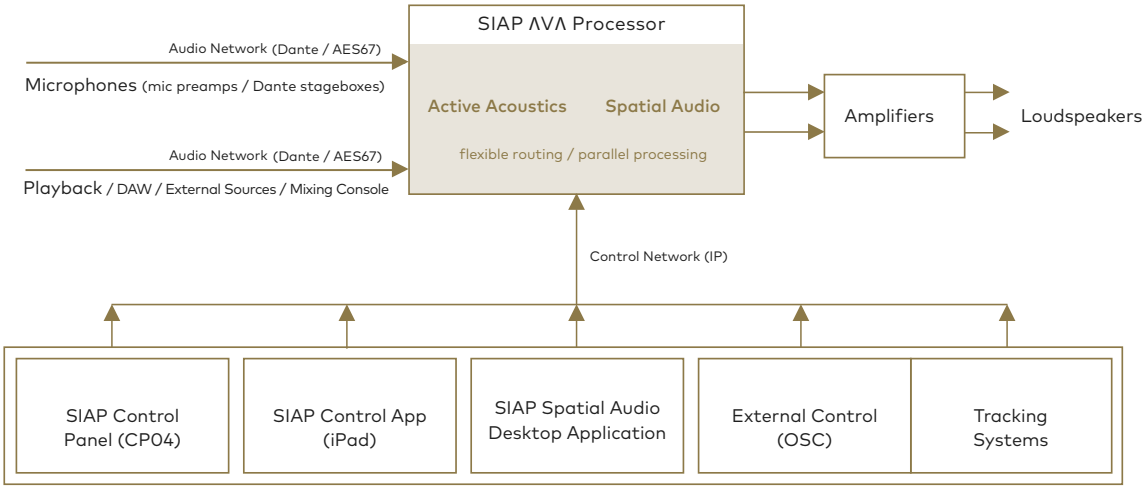
The AVA Processor operates as a central processing unit within a network-based audio system, receiving input signals from microphones or playback sources and distributing processed signals to amplifiers and loudspeaker systems via Dante™ / AES67.

The system supports flexible configurations, including single-processor operation and dual-processor setups with automatic failover using Dante subscription switching.

Control and integration with external systems is provided via OSC enabling connection to show control, tracking systems, and automation environments.

The system is brand-agnostic and designed to integrate with a wide range of third-party equipment, including microphones, loudspeakers, amplifiers, preamps and conversion systems, provided these meet the required SIAP performance standards.

SYSTEM OVERVIEW



The AVA Processor acts as the central processing unit within a network-based audio system. Microphone and playback signals are received via Dante / AES67, processed in real time, and distributed to loudspeaker systems via amplifiers. Control is provided via dedicated interfaces, software applications and external systems using OSC.

MECHANICAL DRAWINGS