SW2421CFA

24" (610mm) + 21" (260mm), Very High Output, Powered, Processed, Native Active Cardioid, Flyable Subwoofer

KEY FEATURES

- High power-density cardioid subwoofer with exceptional acoustic output
- Dual-driver pressure-gradient configuration with 24" and 21" neodymium transducers
- Single-cabinet cardioid and end-fire operation
- Extended low-frequency response: 31Hz – 90Hz (processed)
- 18mm reinforced phenolic birch plywood construction
- Dual 4000W Class D amplifiers (8000W total system power)
- Independent fifth-generation SHARC+ DSP processing per transducer
- AVB-Milan networking with redundancy support
- AES70 standardized control and device management
- AUDIA software control with preset-based mode selection
- Compatible rigging hardware for integration with AX2022A and AX2022P line arrays
- Ground-stackable or flyable

TECHNICAL SPECIFICATIONS

SYSTEM	
System's Acoustic Principle	Native Active Cardiod Subwoofer
Frequency Response (-3dB)	31 Hz – 90Hz (Processed)
Horizontal Coverage (-6dB)	Cardioid - Endfire (preset dependant)
Vertical Coverage (-6dB)	Cardioid - Endfire (preset dependant)
Maximum Peak SPL	146 dBSPL (AES 75 Standard) @1m
TRANSDUCERS	
Front	24"(610mm) Diaphragm - 6" (152mm) Voice coil, Neodymium Subwoofer, 4Ω
Back	21"(260mm) Diaphragm - 4,5" (115mm) Tetracoil, Neodymium Subwoofer, 4Ω
ELECTRICAL	
Input Impedance	30 kΩ balanced, 15 kΩ unbalanced
Input Sensitivity	+4dBu / 1.25 V
Audio Networking	AVB - Milan
Signal Processing	Fifth-generation SHARC+ 32-bit floating-point DSP
Direct access Controls	3 Presets (End Fire / Hyper / Cardioid)
Remote Control	AUDIA software with AES70 device control standard
Amplifier Type	Class D with SMPS and PFC
Output Power	4000 W + 4000 W
Mains Voltage Range (Vac)	100 - 240 V~ ±10% 50/60 Hz
IN / OUT Connectors	Neutrik XLR-M / XLR-F
IN / OUT Network Connectors	ETHERCON®(NE8FAV)
Mains Connector	PowerCon TRUE1 (NAC3PX In/Out)
Cooling	Variable speed DC fan
ENCLOSURE & CONSTRUCTION	
Dimensions (W x H x D)	830 mm (W) x 1013 mm (H) x 800 mm (D)
Enclosure Material	18mm, reinforced Phenolic Birch
Paint	High resistance, water based paint
Flying System	External Frame suspension system, back hinge
Net Weight	165kg Kg (363.7 lbs.)

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APPLICATIONS

The SW2421CFA subwoofer is engineered for applications where maximum acoustic output, extended low-frequency response, and controlled directivity are required within a compact footprint. Conceived as a high power-density low-frequency system, the SW2421CFA delivers exceptionally high SPL while maintaining accuracy and definition in demanding live sound environments.

The internally generated pressure-gradient configuration allows the SW2421CFA to operate in cardioid or end-fire modes through DSP presets, eliminating the need for reversing cabinets or setting up complex subwoofer array configurations. This approach is particularly valuable in applications where rear rejection, stage control, and low-frequency precision are critical.

Optimized for both ground-stacked and flown deployment, the SW2421CFA can serve as a high-impact foundation for large-format systems or be converted to a flyable subwoofer with optional rigging hardware. The system integrates seamlessly with AX2022A and AX2022P line arrays through compatible rigging, enabling combined suspension and predictable acoustic behavior across the full frequency range.

From touring productions and festivals to arenas and permanent installations, the SW2421CFA provides high-performance output with controlled low-frequency directivity.

DESCRIPTION

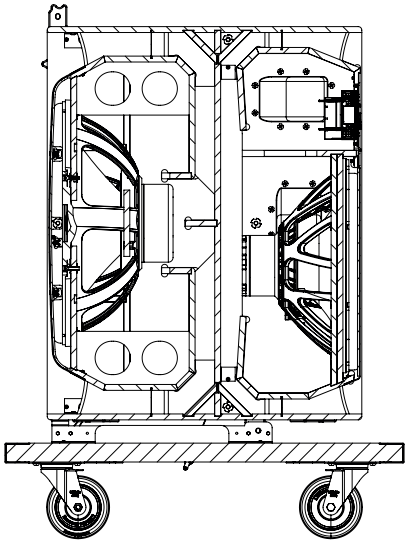
The SW2421CFA represents a new approach to low-frequency power density and directional control. The design is based on an advanced pressure-gradient configuration achieved within a single enclosure through the combination of a front-loaded 24-inch high-excursion transducer and a rear-mounted 21-inch transducer.

The 24-inch driver serves as the primary low-frequency radiator, optimized for maximum displacement and acoustic output at the lowest frequencies. The 21-inch driver operates as an active rear element, and through precise amplitude, phase, and delay management between the two transducers, directional radiation patterns are generated and controlled entirely through DSP presets.

Unlike traditional cardioid systems that require specific cabinet positioning or array configurations, the SW2421CFA achieves directional control within a single enclosure. This simplifies deployment, improves consistency, and enables rapid mode switching without physical reconfiguration. The enclosure and internal loading are engineered to support very high acoustic pressure levels with minimal distortion while preserving transient response and definition across the operating bandwidth.

TRANSDUCERS

The SW2421CFA employs a dual-driver configuration centered around complementary high-excursion neodymium transducers: a front-loaded 24-inch driver with a 6-inch voice coil optimized for maximum displacement and acoustic output at the lowest frequencies, and a rear-mounted 21-inch driver with a 4.5-inch voice coil that operates as an active rear element in the pressure-gradient system.



Through precise amplitude, phase, and delay management, the interaction between these transducers generates directional radiation patterns fully managed by DSP presets. Three operating modes are available: Cardioid for maximum rear rejection and stage control, ideal for applications requiring minimal low-frequency spill; Hyper (Hypercardioid) for narrower forward coverage with stronger directional focus and moderate rear energy; and End Fire for maximum forward summation and output, suited to high-impact performances. Each mode can be selected through preset changes without cabinet reconfiguration.

This pressure-gradient approach achieves directional control within a single cabinet, eliminating the complexity and space requirements of traditional cardioid subwoofer arrays while providing fast mode switching adaptable to different venues and stage layouts.

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SYSTEM CONCEPT AND SONIC PERFORMANCE

Constructed from 18mm reinforced phenolic birch plywood, the SW2421CFA features a robust enclosure developed to withstand the demands of both touring and permanent installation environments. The internal acoustic loading is engineered to support very high acoustic pressure levels with minimal distortion, preserving fast transient response and definition across the operating bandwidth.

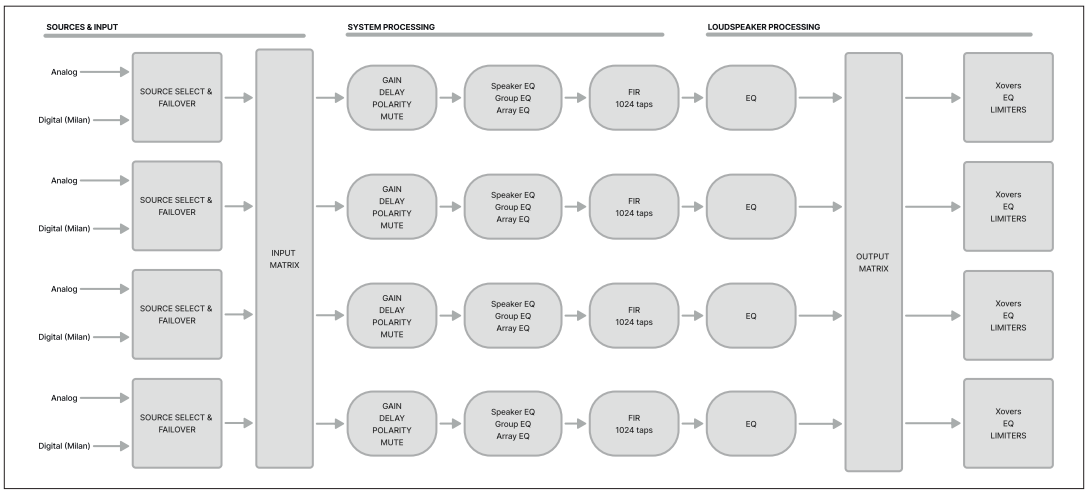
The result is extended low-frequency response from 31Hz to 90Hz with controlled radiation and improved efficiency. Rear rejection in Cardioid mode reduces unwanted low-frequency energy on stage, while End Fire mode prioritizes forward output and impact for maximum audience coverage.

The SW2421CFA can be deployed as a ground-stacked foundation for large-format systems or converted to a flyable subwoofer with optional external rigging hardware. When combined with AX2022A or AX2022P line arrays, the system provides fully compatible mechanical integration and predictable acoustic behavior across the entire frequency spectrum.

SIGNAL PROCESSING and POWER AMPLIFIERS

The SW2421CFA integrates independent processing and amplification for each transducer, with two dedicated 4000-watt Class D amplifier modules providing 8000 watts of total system power. Each amplifier features switch-mode power supply (SMPS) with power factor correction (PFC), combining high efficiency with the necessary headroom to drive the transducers across their full excursion range.

Processing is handled by dual fifth-generation SHARC+ floating-point DSP channels operating at 32-bit resolution with 24-bit converters, delivering 121dB of dynamic range per channel. This architecture ensures pristine signal integrity and precise control over the amplitude, phase, and delay relationships that generate the cardioid radiation pattern.



Network connectivity is provided through dual gigabit Ethernet ports supporting AVB-Milan audio transport at 96/48kHz, with up to four input channels and full redundancy capability. Milan's deterministic, low-latency performance ensures reliable audio delivery across distributed systems, while AES70 provides standardized control and device management over the same Ethernet infrastructure.

The AXIOM AUDIA control software provides unified remote control, configuration, and monitoring of the SW2421CFA alongside other AXIOM systems. Cardioid operating modes can be selected through DSP presets within AUDIA, allowing engineers to adapt the system to different venues and performance requirements without physical reconfiguration. Active loudspeakers and passive systems driven by Q-NEX+ amplifiers can coexist within the same network and be managed inside the same AUDIA workspace, ensuring consistent control logic across the entire AXIOM ecosystem.

HARDWARE

The integrated external rigging frame provides full compatibility with AX2022A and AX2022P line array systems in both ground-stacked and flown configurations, allowing combined deployment as a unified system.

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