Less noise. More music.

NuPrime Networking Series

Low-noise power, precision clocks and control of electrical interference for network audio systems.



SW Ultimate

Low-noise Power Engine, AC filtering, dedicated grounding and a 25MHz TCXO / PLL clock system.



SW-9X

Active common-mode noise cancellation, filtered power rails and a precision 25MHz TCXO.



Omnia SW-8

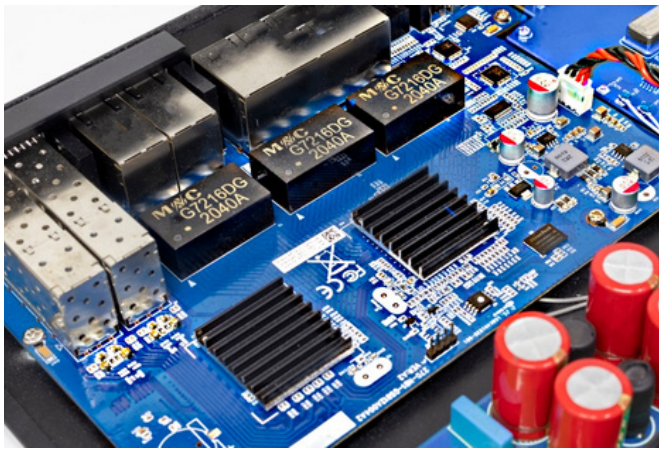
Separate power and clock isolation, an EMI absorber and a low-leakage external supply.

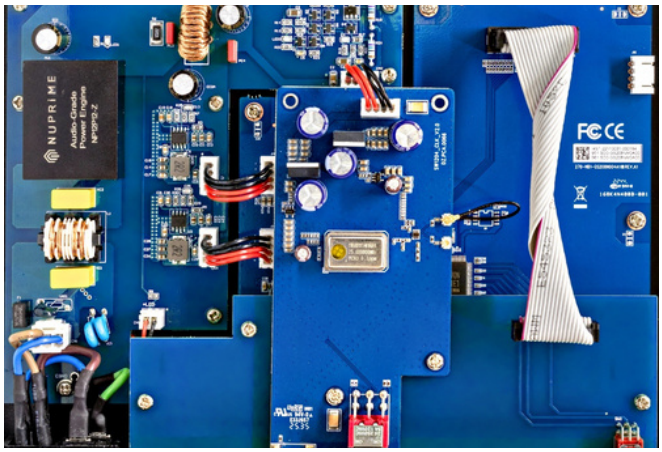
Power integrity · Noise isolation · Precision clocking

Beyond the bits.

Why noise control matters.

Ethernet carries error-checked packets. Buffered playback uses the receiver's audio clock; a switch cannot improve correctly received sample values.





How electrical noise travels

Power supplies and Ethernet electronics generate high-frequency currents. Magnetics isolate DC, but parasitic capacitance can carry RF. Cable shields and shared power or ground paths can provide other coupling routes.

Where audio can be affected

In susceptible players or DACs, coupled RF can disturb supplies, clock circuitry or analogue stages, creating noise or spurs. Reducing that interference can help preserve the equipment's intended performance.

Data	RF noise	Audio
Error-checked + buffered	Physical coupling paths	Sensitive analogue circuitry

The engineering objective

Reduce unwanted electrical energy reaching sensitive circuitry. The audible result depends on the player's isolation, noise rejection and complete system; circuit specifications alone do not establish an improvement at the DAC output.

Engineering context: Analog Devices · power, clock and interface noise.

SW Ultimate

Power, grounding and clock integrity.

Low-noise engineering with optical connectivity for a dedicated network audio system.



430 × 369 × 61.5 mm (W × D × H) · 5.2 kg · 12 Gigabit ports

NETWORK SWITCH · FRONT VIEW

Power Engine
Low-noise internal supply

AC filter
Common-mode choke

25MHz
TCXO / external reference

Filter at the inlet

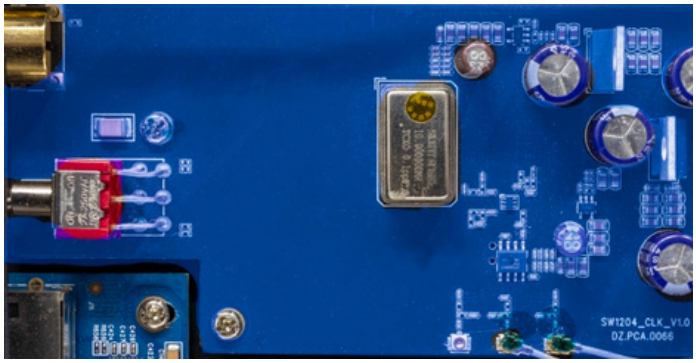
A high-isolation common-mode choke and AC filter address conducted interference from the mains.

Control ground noise

A dedicated grounding terminal and internal grounding adapter address ground-related electrical noise.

Optical separation

Fiber breaks the conductive Ethernet path. Four 1000BASE-X SFP interfaces share ports 9–12 with RJ45.



Clocked with care

A precision 25MHz (10MHz by request) TCXO and low-noise PLL clock synthesizer serve the switch. Select its internal clock or a compatible external 25MHz square-wave reference.

Precision clocks

Stable timing starts with quiet circuitry.

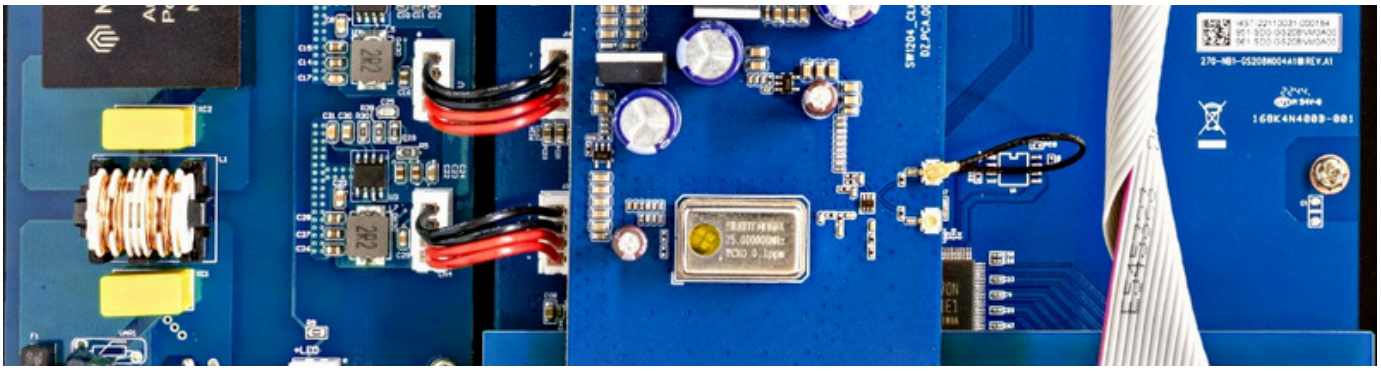
TCXO means temperature-compensated crystal oscillator: a stable reference for the switch electronics.

TCXO · Frequency stability



SW Ultimate and SW-9X use a 25MHz TCXO. SW Ultimate, SW-9X and Omnia SW-8 specify 0.1ppm accuracy at 25°C. A ppm rating specifies frequency accuracy; it does not quantify short-term jitter or phase noise.

Clock supply · Noise control



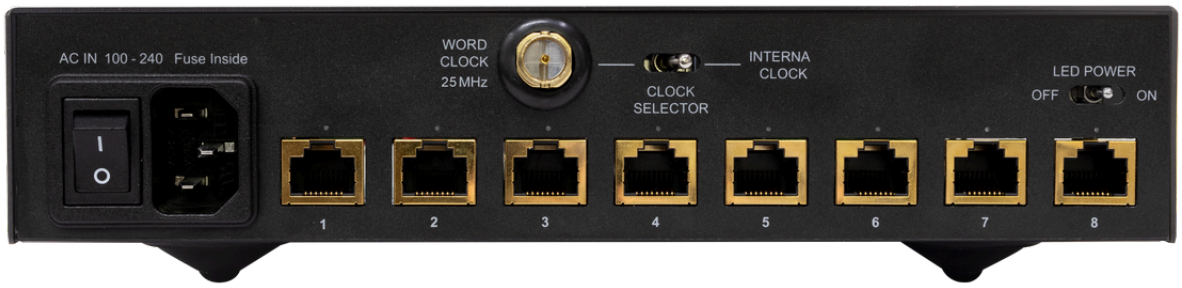
Noise on an oscillator’s supply can modulate its timing. Filtered power and careful circuit separation therefore complement the clock itself. SW-9X’s dedicated clock-supply filtering addresses interference at 10MHz, 100MHz and 1GHz.

Switch clock ≠ audio sample clock
Buffered network playback uses the receiver’s audio clock. Lower Ethernet jitter alone does not demonstrate lower DAC jitter.

SW-9X

Active cancellation. Layered noise control.

Power Engine supply, AC filtering, ground shielding and active common-mode noise cancellation.



NETWORK SWITCH · FRONT VIEW

CM-ANC
Active common-mode control

3 rails
12V · 3.3V · 1.1V

25MHz
TCXO · 0.1ppm at 25°C

Cancel common mode

An opposite-phase compensation signal reduces common-mode EMI / RFI on the power lines. The target is unwanted electrical noise.

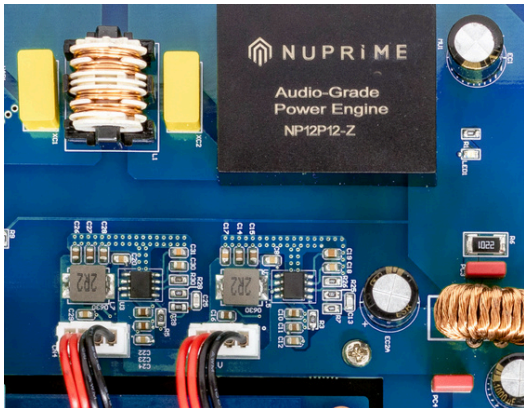
Filter each rail

Independent rails use low-noise conversion. Multi-stage clock-supply filtering addresses 10MHz, 100MHz and 1GHz interference.

Shield and separate

Ground shielding and optimized spacing between eight gold-plated ports address coupling. Select internal or external 25MHz clocking; switch off LAN LEDs.

CLOCK & POWER CIRCUIT · POINTS 3–5



- Switch regulation: Ultra-low-noise regulator with a wide input-voltage range.
- AC filter: High-isolation common-mode choke limits noise entering from the AC supply.
- Power Engine: Custom AC/DC module with wide dynamic range, stable low-ripple output, protection circuitry and an aluminum heat sink.

Omnia SW-8

Isolate, absorb and stabilize.

Precision clocking, separate noise isolation and electromagnetic absorption in a compact eight-port switch.



NETWORK SWITCH · FRONT VIEW

0.1ppm
TCXO accuracy at 25°C

2 + 2
Power + clock noise isolators

<100μA
Specified adapter leakage

Isolate power & clock

Two isolators for the main power circuit and two for the clock generator suppress conducted noise in both sections.

Absorb internal EMI

SANA absorber material inside the bottom case reduces internal electromagnetic interference; an aluminum chassis completes the enclosure.

Low-leakage supply

The supplied medical-grade 5V adapter specifies 2 × MOPP isolation and leakage below 100μA. This is a power-supply specification.

PRECISION TCXO · OMNIA SW-8



Isolation-circuit specifications:
Power: 17.78dB @ 100MHz ×2
Clock: 20.79dB @ 100MHz ×2
These are not DAC-output measurements.

155 × 85 × 30 mm (W × D × H) · 0.6 kg · 5V DC / 1A max