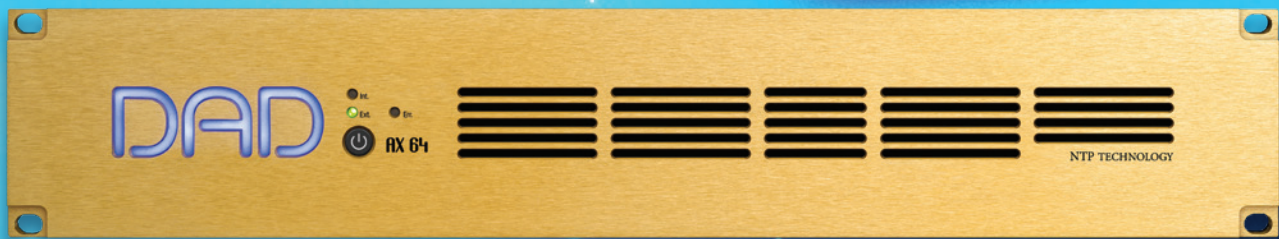# THUNDER | CORE AUDIO INTERFACE

AX64

1,744 input and output channels multi-format audio A/D and D/A converter, router and monitoring interface with:

- 256 channel Thunderbolt 3 I/O
- 256 channel Dante AoIP I/O
- 64 channel MADI I/O
- 16 channel ADAT I/O
- 8 slots for optional multi-format DAD I/O cards
- 512x64 channel Pro|Mon summing and speaker EQ processing
- 1 slot for 128 channel dual MADI Module with SFP I/O
- Sample-rates supported from 44,1 to 384 kHz

AX64
Features and specifications

The Thunder|Core-driven AX64 is a powerful and versatile modular multi-format audio interface with 8 slots for the Pristine audio I/O cards known from the AX32 and Penta product family. Up to 8 analogue cards can be installed providing 64 analogue input or output audio channels with well know DAD high-end sonic quality. With tons of channels, a wide palette of digital connectivity, built-in SPQ processing, Eucon control compatibility, internal summing engine and drivers for macOS and Windows 10, it is a pristine digital audio interface by any measure and for just about any application.
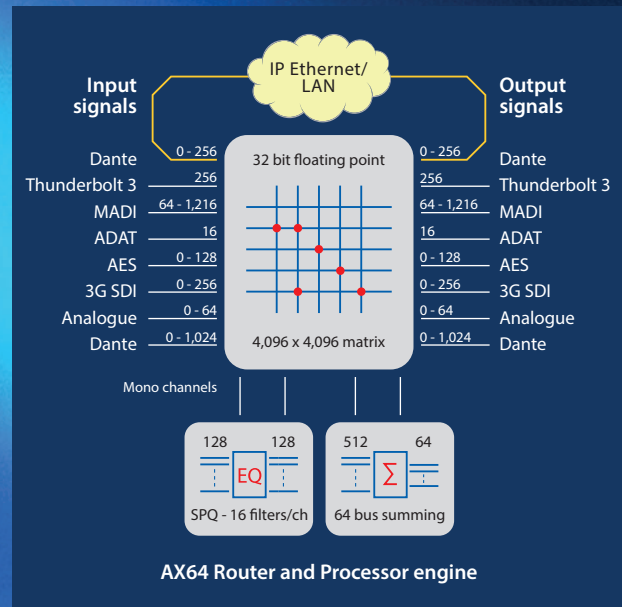
AX64 is the ultimate modular multi-format interface. That said, AX64 is of course ready to take on a wealth of other tasks in the post production, studio, live music and installed audio spheres. With Dante, MADI and ADAT ports onboard and native interfaces and versatile, flexible DADman routing control available, it is a stellar AD/D, D/A and D/D converter that can grab any digital audio channel – convert it if needed – and route it anywhere.

DAW Interfacing

Another application would be as a dedicates audio interface for your DAW. Whether you run Pro Tools, Logic Pro, Nuendo, Cubase, Ableton Live, Digital Performer or any other DAW, AX64 can be your super low-latency entrance. With the ADAT, MADI and Dante connectivity, or any combination of DAD card options AX64 can be the audio center pieces of your studio.

DAD card options

AX64 can be installed with up to 8 optional I/O cards. These are the card available DAD AX32 and Penta products. The cards are fully inter-changeable between the products. Future cards for the AX64 however will not be backwards compatible.

AX64 Router and Processor engine

Features

The basic I/O configuration for the AX64 Multi-format interface is:

- 2 Thunderbolt 3 ports each w. 15W power
- 256 bi-directional channels at 48 & 96 kHz
- ASIO / Core Audio Thunderbolt PCIe drivers
- MADI/BNC-optional 2 x SFP/BNC MADI
- ADAT /Litepipe 16 channels
- DANTE: 256 ch @ 48 kHz, 128 ch @ 96 kHz (IP core)
- WC I/O
- SPQ: 128 channel w 16 filters
- Pro|Mon support
- Summing processor 64 output / 512 input busses
- Internal Router: 4,096 x 4,096
- 32bit floating point processing
- 8 Slots for any available cards for expansion cards
- Avid Eucon enabled devices via DADman
- APPLE Intel and Silicon M1 compatible Software
- Control via Ethernet or Thunderbolt connection
- Dual 110/240V AC Power connection as option

8 channel A/D microphone card supporting sample rates from 44,1 kHz to 384 kHz

8 channel A/D line card supporting sample rates from 44,1 kHz to 384 kHz

8 channel D/A line card supporting sample rates from 44,1 kHz to 384 kHz

Dual 3G SDI embedder and de-embedder card with SRC

Dual MADI I/O card with SRC

16 channel AES3 I/O card with SRC

128 channel Dante I/O card with SRC

MADI mini-module with optical SFP or mini coax connectors
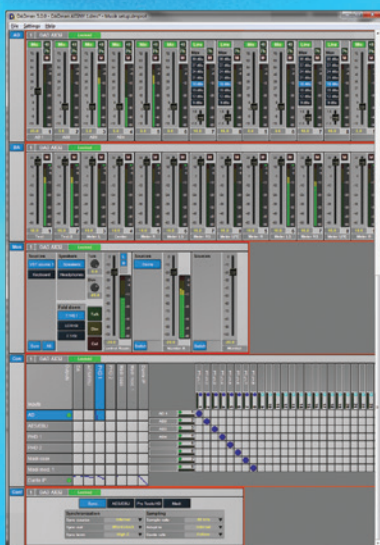
THUNDER | CORE
AUDIO INTERFACE

Control

The Thunder|Core Audio interface is controlled via the DADman software. DADman can connect to the Thunder|Core interface either via Ethernet or via a communication channel in the Thunderbolt connection. More units can be daisy chained via the Thunderbolt connection, and each unit will appear in DADman. Using control over Ethernet the two RJ45 connectors act as a switch for connection to more units. The Dante /AES67 audio is also passed on the two RJ45 connectors.

Thunder|Core

The DAD Thunder|Core Technology provides a Thunderbolt 3 connection with near-zero latency for interfacing between audio applications on MacOS or Windows computers and the Thunder|Core audio hardware. The interface provides a fast Thunderbolt 3 connection and a data transfer with 2 samples latency on the connection and a total of 9 samples in the digital interface as a total including EQ and summing processing in the unit. The channel capacity is up – to 256 audio channels @ 48 and 96 kHz, and the latency @ 96 kHz is 95 micro seconds.

The total round trip latency with an audio software application will depend on the buffer size set for the application. With a buffer size of 32 samples the latency is 670 micro seconds at 96 kHz.

Core Audio Thunder|Core audio driver

· Compatible with Apple Intel and Silicon (M1) Big-Sur and forward
· Core Audio Aggregates for more Applications I/O
· Control connection for DADman

ASIO Thunder|Core audio driver

· Compatible with Windows 10 and forward
· One Application can connect to the driver
· Control connection for DADman

Functionality

The Thunder|Core products have been designed with a unique router core based on 32bit floating point processing and a low latency and highly reliable FPGA based matrix structure, with a time stamp mechanism providing equal latency for all signals routed through the core. The Core AX64 has a total capacity of 4,096 x 4,096 non-blocking cross points, which provides a capacity of 1,744 x 1,744 cross points on the I/O and processing level.
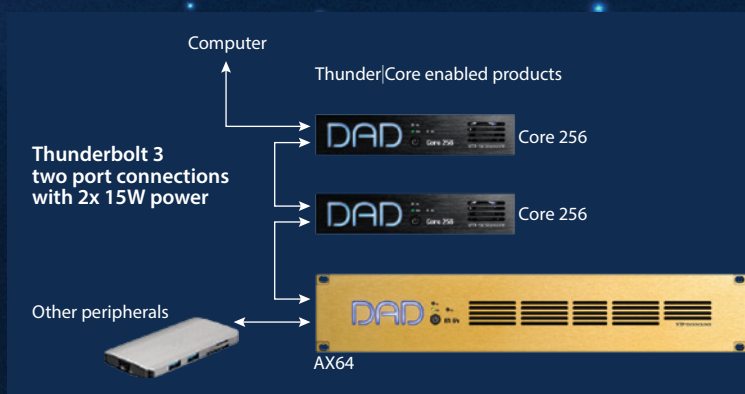
The matrix provides fixed latency routing of all inputs to one or more outputs with a latency of 7 audio samples and supports sample rates from 44,1 to 384 kHz. The channel processor provides for all input and output channels a signal detection logic, PPM level measurement as well as level control.

All inputs and outputs have processing for level adjustment and the core have additionally a summing/mixing processer with 64 output busses and 512 inputs, which can be allocated to sets of input and output signals managed by the Pro|Mon monitor contol functionality in DADman. SPQ speaker EQ management is available native in the core with 1.024 filters combined into 128 channels with 16 filters, each with adjustable delay.
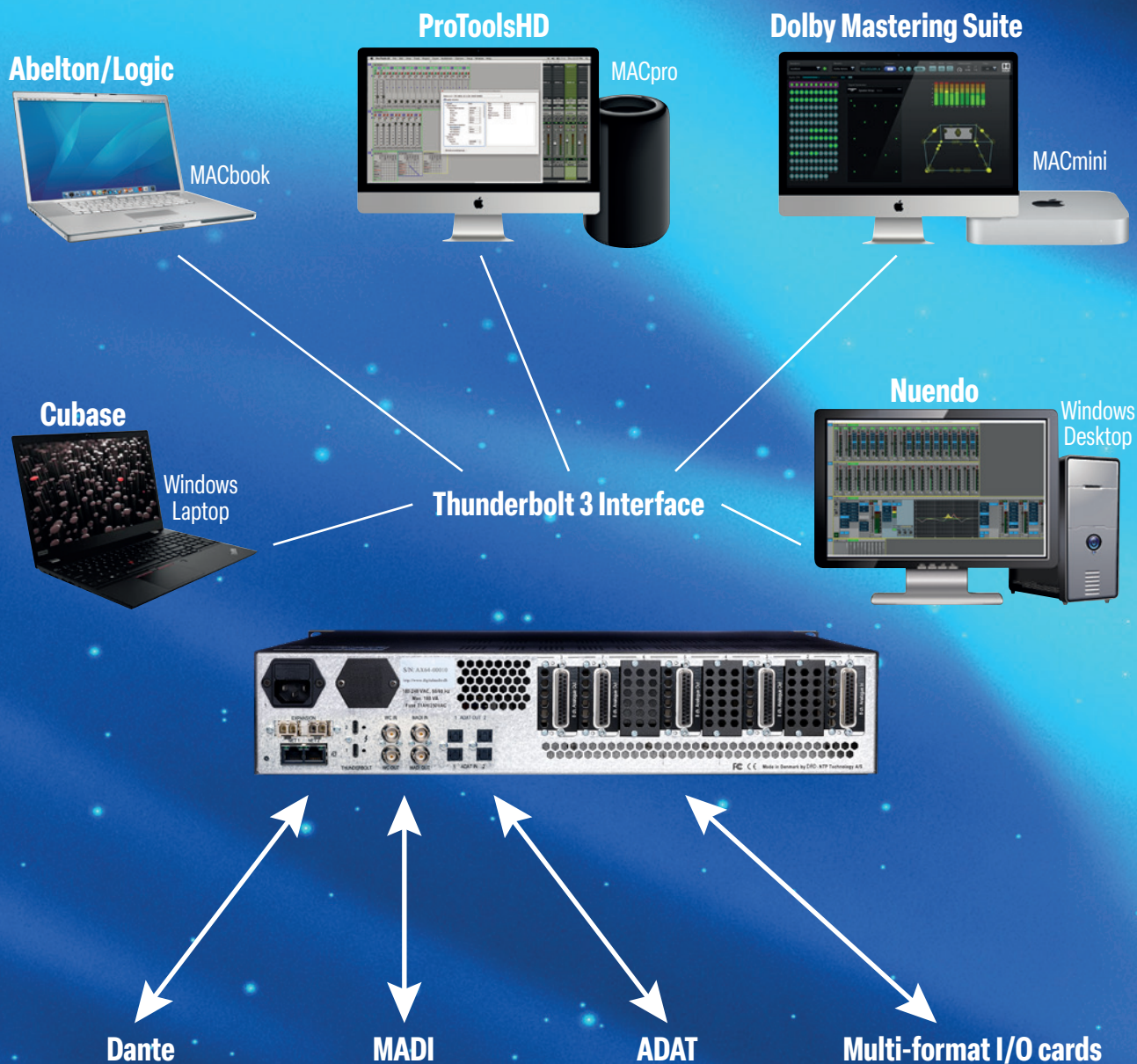
Summary

The AX64 Multi-format Audio A/D and D/A converter, router and monitoring interface provides 256 channels of Thunderbolt 3, Dante and MADI as well as ADAT.

AX64 is a Multi-format Audio A/D and D/A converter, router and monitoring interface with 256 ch. Thunderbolt 3 I/O, 256 ch. Dante AoIP I/O, MADI 64 ch. BNC I/O, 128 ch. MADI SFP I/O module option and 16 ch. ADAT dual TosLink I/O and 8 slots for optional multi-format DAD I/O cards. Pro|Mon with 512x64 ch. summing and speaker EQ processing.

MULTI-FORMAT I/O

Abelton/Logic

MACbook

ProToolsHD

MACpro

Dolby Mastering Suite

MACmini

Cubase

Windows
Laptop

Nuendo

Windows
Desktop

Thunderbolt 3 Interface

Dante

MADI

ADAT

Multi-format I/O cards

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