Overview



Introduction

The **AIXpressor** is a flexible, software-defined audio processing and interface platform. Unlike traditional stand-alone processors, where functionality is closely tied to fixed hardware and firmware, AIXpressor runs the **flexAI** software platform. This allows processing functions, codecs, metadata tools, interfaces, and other features to be added or extended through software updates and licensing.

AIXpressor combines real-time audio processing with a wide range of physical and IP-based audio interfaces. Native Audio over IP support includes **Livewire+**, **AES67**, and **SMPTE ST 2110**, while conventional interfaces such as analog audio, AES3, and MADI provide connectivity to existing baseband infrastructure.

This makes AIXpressor suitable both as a stand-alone audio processor and as an interface between traditional audio systems and IP-based environments.

Hardware

AIXpressor is built around a high-performance x86 multi-core processing platform. The main processor handles real-time audio processing, measurement, routing, codecs, Audio over IP, system services, and the web-based user interface.

A high-performance FPGA manages the connection between the processing system and the physical audio interfaces.

The main hardware features include:

- **Chassis:** 19-inch, 1RU rack-mount unit
- **Display:** 16.5 cm touch-sensitive front-panel display
- **Status Indicators:** Multicolor system status indication
- **Power Supplies:** Redundant power supplies with individual power controls
- **Headphones:** 6.3 mm (1/4") front-panel headphone output
- **Ethernet:** Four Gigabit Ethernet ports for control, management, and Audio over IP

- **USB Type A:** One front-panel and one rear-panel USB 3.0 connector
- **USB Type B:** One rear-panel USB 2.0 connector
- **External Sync:** BNC input supporting Word Clock, AES3/AES11, Black Burst, and Tri-Level Sync

On-board Audio Interfaces

AIXpressor includes the following audio interfaces as standard:

- **AES3:** 8 inputs / 8 outputs or 4 inputs / 12 outputs
- **Analog:** 8 inputs / 8 outputs or 4 inputs / 12 outputs
- **2 SFP interfaces:** MADI or Jünger Audio tieLight, depending on the installed SFP modules
- **Audio over IP:** Native support for Livewire+, AES67, and SMPTE ST 2110

MADI and tieLight require different SFP module types. Refer to the corresponding interface section for details.

Expansion Slots

Four expansion slots allow additional physical interfaces to be installed. Each slot provides connectivity for high-channel-count audio applications.

Available interface modules may include:

- SD/HD/3G-SDI
- Optical or coaxial MADI
- Audinate Dante
- AES3 I/O
- Analog I/O
- Analog outputs
- Microphone inputs

The exact channel count and capabilities depend on the installed interface module.

Software

AIXpressor runs the **flexAI** software platform. flexAI separates audio processing functionality from the physical hardware, allowing new applications and features to be added as the software platform evolves.

Processing modules are available in different channel configurations where applicable, ranging from mono and stereo to surround and immersive formats such as 7.1.4.

Available and optional processing functions may include:

- **Level Magic** loudness management based on ITU-R BS.1770 and related international loudness standards
- True Peak Limiting
- Spectral Signature dynamic filtering
- Compression
- Parametric equalization and filtering
- Phase rotation
- De-essing
- Expansion and gating
- Voice-over mixing
- Automatic mixing
- Multichannel and immersive upmixing
- Automatic failover
- FM conditioning
- Object-based metadata authoring and rendering
- Audio codecs

The exact set of available functions depends on the installed flexAI software version and licenses.

Audio I/O and Routing

AIXpressor provides analog, AES3, MADI, and Audio over IP connectivity as part of its standard hardware. Additional interfaces can be added using the four expansion slots.

The built-in AES3 and analog interfaces can each be configured as either **8 Inputs / 8 Outputs** or **4 Inputs / 12 Outputs**. The 4-in / 12-out configuration provides additional output capacity for multichannel and immersive audio formats such as 7.1.4.

The two SFP interfaces can be configured for **MADI** or the proprietary Jünger Audio **tieLight** interface. tieLight provides a high-channel-count, low-latency optical connection between compatible systems.

Audio from physical and IP-based interfaces is available to the internal flexAI routing system. Routing operates at channel level, allowing signals from different interface types to be freely combined, rearranged, processed, and routed to available destinations.

Routing configurations can also be stored and recalled as presets.

Control

AIXpressor is primarily operated through its browser-based web interface.

For integration with external control, automation, and monitoring systems, flexAI supports protocols including:

- **Ember+** for external parameter control
- **NMOS IS-04 and IS-05** for discovery and connection management in IP-based environments
- **SNMP** for system monitoring and hardware health information

The available control functions may depend on the installed software version and system configuration.

Applications and Use Cases

The flexible combination of processing, routing, conventional audio interfaces, and Audio over IP allows AIXpressor to be used in a wide range of broadcast and professional audio applications.

Typical applications include:

- Ingest and contribution
- Radio and television studios
- Master control rooms
- Playout systems
- Loudness and dynamics processing
- Format conversion
- Audio over IP gateways
- Multichannel and immersive audio workflows
- Rebroadcasting and distribution
- Centralized or distributed audio processing

AIXpressor can operate as a dedicated stand-alone processor or as part of a larger flexAI installation with multiple interconnected processing systems.

Revision #1
Created 2026-09-04 10:59:04 UTC by FK
Updated 2026-09-04 10:59:05 UTC by FK