AIXpressor - Technical Data

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General

- Multi-channel audio processor
- Rear panel AES, analog, MADI, tieLight I/O
- 3k x 3k cross-point audio router
- Front panel headphone jack
- Expandable by hardware option boards
- Versatile audio processing via licensed algorithms

Audio Sample Rate

- 48kHz
- +/- 150ppm sync input capture, +/- 25ppm master-sync stability

AES/EBU Inputs

- Relevant specifications comply with AES3-X-2009, IEC 60985, and AES11-2009
- 4 stereo channels (4 or 2 channel inputs switchable) on D-Sub 25 connector
- 24-bit transparent forwarding of PCM and compressed audio without optional SRC (sample rate converter)
- 24-bit PCM with SRC activated
- Impedance = 75Ohm single-ended
- Input level = 0.3 ... 5Vpp @ 75Ohm single-ended
- Sample Rate Converter (SRC) = THD+N -120dB @ 0dBFS, 1kHz, latency <0.3ms

AES/EBU Outputs

- Relevant specifications comply with AES3-X-2009, IEC 60985, and AES11-2009
- 4 stereo channels (4 or 6 channel outputs switchable) on Sub-D 25 connector
- 24-bit transparent forwarding of PCM and compressed audio
- Impedance = 75Ohm single-sided
- Output Voltage = 1Vpp (typical) @ 75Ohm single-ended
- Power fail relay bypass between AES/EBU inputs and outputs (can be deactivated by internal jumper)

SFP Sockets

- SFP spec, for MADI or tieLight, not for network

SFP MADI Module

- SFP spec, typically 125MBps

SFP tieLight Module

- SFP spec, typically 2.5GBps

Sync Input

- Multi-standard synchronization interface for AES/EBU, Wordclock, or video sync (including black burst and tri-level); complies with AES11-2009 and relevant audio or video standards.
- Connector type = BNC
- AES/EBU Input = 0.3 ... 5Vpp @ 75Ohm single-ended
- Wordclock input = 1 ... 5Vpp @ 75Ohm single-ended
- Video-sync input = 1Vpp (nominal) @ 75Ohm single-ended
- Supported rates = 23.975, 24, 24.975, 25, 29.97, 30, 49.95, 50, 59.94, and 60 fps (SD and HD)

Network Interfaces

- 4x RJ45 connectors, 1Gbit/s Ethernet auto sense, full duplex

USB Interfaces

- Front and rear USB A 3.0 connectors
- Internal USB A 2.0 (for license keys)
- Rear USB 2.0 connectors

Expansion Slots

- 4 general-purpose expansion slots for Jünger Audio Option Boards

Power Supplies

- Dual power supplies with automatic fail over
- 85 ... 264VAC, 50 ... 60Hz, 58W (max)Network Connections

Environmental

- Operating temperature = 0 ... 50°C, fan cooled
- Non-operating temperature = -20 ... 70°C
- Humidity < 90% non-condensing

Physical

- 19" x 1RU, 27cm depth
- Net weight ca. 5kg

- Shipping weight ca. 7.5kg

D-Sub DB-25 Pin Assignments

AES I/O

I/O Mode can be configured in the software to set the physical connectors between 8×8 I/O channels and 4×12 I/O channels.
Please note: AES3 is running digital audio in channel pairs (stereo) on one physical pin.

Pin (Female Connector)	I/O Mode: 8×8 I/O	I/O Mode: 4×12 I/O
1	Output Pair 4 +	Output Pair 4 +
2	Ground	Ground
3	Output Pair 3 -	Output Pair 3 -
4	Output Pair 2 +	Output Pair 2 +
5	Ground	Ground
6	Output Pair 1 +	Output Pair 1 +
7	Input Pair 4 +	Output Pair 6 +
8	Ground	Ground
9	Input Pair 3 -	Output Pair 5 -
10	Input Pair 2 +	Input Pair 2 +
11	Ground	Ground
12	Input Pair 1 -	Input Pair 1 -
13	Not Used	Not Used
14	Output Pair 4 -	Output Pair 4 -
15	Output Pair 3 +	Output Pair 3 +
16	Ground	Ground
17	Output Pair 2 -	Output Pair 2 -
18	Output Pair 1 +	Output Pair 1 +
19	Ground	Ground
20	Input Pair 4 -	Output Pair 6 -
21	Input Pair 3 +	Output Pair 5 +

22	Ground	Ground
23	Input Pair 2 -	Input Pair 2 -
24	Input Pair 1 +	Input Pair 1 +
25	Ground	Ground

Analog I/O

I/O Mode can be configured in the software to set the physical connectors between 8×8 I/O channels and 4×12 I/O channels. The outputs on the Analog I/O connectors thus are labeled to be the upper 4 of the total 12 outputs.

Pin (Female Connector)	Mode: 8×8 I/O	Mode: 4×12 I/O
1	Input 8 +	Output 12 +
2	Ground	Ground
3	Input 7 -	Output 11 -
4	Input 6 +	Output 10 +
5	Ground	Ground
6	Input 5 +	Output 9 +
7	Input 4 +	Input 4 +
8	Ground	Ground
9	Input 3 -	Input 3 -
10	Input 2 +	Input 2 +
11	Ground	Ground
12	Input 1 -	Input 1 -
13	Not Used	Not Used
14	Input 8 -	Output 12 -
15	Input 7 +	Output 11 +
16	Ground	Ground
17	Input 6 -	Output 10 -
18	Input 5 +	Output 9 +
19	Ground	Ground
20	Input 4 -	Input 4 -
21	Input 3 +	Input 3 +
22	Ground	Ground

23	Input 2 -	Input 2 -
24	Input 1 +	Input 1 +
25	Ground	Ground

Analog Outputs

Pin (Female Connector)	Function
1	Output 8 +
2	Ground
3	Output 7 -
4	Output 6 +
5	Ground
6	Output 5 -
7	Output 4 +
8	Ground
9	Output 3 -
10	Output 2 +
11	Ground
12	Output 1 -
13	Not Used
14	Output 8 -
15	Output 7 +
16	Ground
17	Output 6 -
18	Output 5 +
19	Ground
20	Output 4 -
21	Output 3 +
22	Ground
23	Output 2 -
24	Output 1 +
25	Ground

AES3 I/O Relay Bypass Settings

AES3 I/O Relay Bypass

The AES3 inputs and outputs provide a relay bypass feature that, when enabled, activates in the event of a power failure or upon a deliberate command from the GUI.

In order to enable the relay bypass feature, the **jumpers for each AES3 pair (A)** must be in place as shown in Figure 1 below. Removing the jumpers prevents relay bypass from occurring.

Figure 1 - Relay Bypass

Option Board AoIP / Dante™

Option Board AoIP / Dante™ (O_DAP_Dante_a)

Standards

- Audio-over-IP (AoIP) by Dante™ Digital Audio Networking Standard; parallel operation in AES67 mode

Audio

- 24-bit, transparent forwarding of PCM and compressed audio
- Sample rate = 44.1, 48, 88.2, 96kHz

> **Important** - Not all sample rates are supported by the host system, please refer to the respective information.

Inputs and Outputs

- 2x RJ45 1Gbit/s Ethernet
- Primary and secondary ports configurable as redundant or switched
- Inputs = 64 channels @ 44.1 or 48kHz to AIXpressor
- Outputs = 64 channels @ 44.1 or 48kHz from AIXpressor

General Features

- AES67 compliant
- SMPTE 2110-30 compliant
- PTP v2 / v1 sync
- Non-audio detection for input channels
- Glitch-free Dante / SMPTE 2022-7 audio redundancy

Option Board SDI I/O v1

Option Board SDI I/O (O_DAP_SDI_a)

Standards

- Video complies with SMPTE 424/425M (3G, Level A and B), SMPTE 292M (HD), or SMPTE 259M (SD)
- Automatic format detection
- Audio embedding and de-embedding complies with SMPTE 299M (3G, HD) or SMPTE 272M -AC (SD)
- Metadata embedding and de-embedding complies with SMPTE 2020-2

Video Data Rate

- 2970/296Mbps (3G), 1485/1483.5Mbps (HD), 270Mbps (SD

Video Formats

- 1080p - 23.975, 24, 25, 29.97, 30, 50, 59.94, 60
- 1080i - 50, 59.94, 60
- 720p - 23.975, 24, 25, 29.97, 30, 50, 59.94, 60
- 625i - 50
- 525i - 59.94

Video Delay

- User selectable 0 ... 15 frames, can be disabled

Audio

- 24-bit, transparent forwarding of PCM and compressed audio
- Sample rate = 48kHz (SDI compliant)
- Channels = 16 inputs and 16 outputs (4 groups of 4 channels each)
- Delay = Embedder audio delay selectable 0 ... 320ms per channel

Metadata (RDD6)

- 1 channel input, 1 channel output, SDID selectable

BNC Input

- Impedance = 75Ohm
- Return loss = >15dB 5 ... 1485MHz; >10dB 1485 ... 2970MHz
- Maximum cable length = 250m (SD), 230m (HD), 140m (3G) using Belden 1694A cable
- Jitter tolerance = >0.7UI (alignment)

BNC Output

- Impedance = 75Ohm
- Output voltage = 0.8Vpp (typical)
- Return loss = >15dB 5 ... 1485MHz; >10dB 1485 - 2970MHz
- Output jitter = <0.2UI (alignment), <0.5UI (timing)

Latency

- Video latency input to output = 120 ... 200 pixel, depending on video standard
- Audio latency input to output, embedder and de-embedder combined = <0.6ms (HD, 3G), <2ms (SD)

General Features

- Power fail relay bypass (may be enabled/disabled via GUI)
- Lip-sync compensation for processed and non-processed audio signals
- Dedicated routing for non-processed channels; all channels (maximum 16) can be routed to/from the device or looped through
- Test pattern generator (no genlock)
- Master-sync capable
- ITU-R BT.1685 / ARIB STD-B39 metadata support

Option Board SDI I/O v2

Option Board SDI I/O (O_DAP_SDI_b)

Standards

- Video complies with SMPTE 424/425M (3G, Level A and B), SMPTE 292M (HD), or SMPTE 259M (SD)
- Automatic format detection
- Audio embedding and de-embedding complies with SMPTE 299M (3G, HD) or SMPTE 272M -AC (SD)
- Metadata embedding and de-embedding complies with SMPTE 2020-2

Video Data Rate

- 2970/296Mbps (3G), 1485/1483.5Mbps (HD), 270Mbps (SD

Video Formats

- 1080p - 23.975, 24, 25, 29.97, 30, 50, 59.94, 60
- 1080i - 50, 59.94, 60
- 720p - 23.975, 24, 25, 29.97, 30, 50, 59.94, 60
- 625i - 50
- 525i - 59.94

Video Delay

- User selectable 0 ... 50 frames, can be disabled

Audio

- 24-bit, transparent forwarding of PCM and compressed audio
- Sample rate = 48kHz (SDI compliant)
- Channels = 16 inputs and 16 outputs (4 groups of 4 channels each)
- Delay = Embedder audio delay selectable 0 ... 2000ms per channel

Metadata (RDD6)

- 1 channel input, 1 channel output, SDID selectable

BNC Input

- Impedance = 75Ohm
- Return loss = >15dB 5 ... 1485MHz; >10dB 1485 ... 2970MHz
- Maximum cable length = 250m (SD), 230m (HD), 140m (3G) using Belden 1694A cable
- Jitter tolerance = >0.7UI (alignment)

BNC Output

- Impedance = 75Ohm
- Output voltage = 0.8Vpp (typical)
- Return loss = >15dB 5 ... 1485MHz; >10dB 1485 - 2970MHz
- Output jitter = <0.2UI (alignment), <0.5UI (timing)

Latency

- Video latency input to output = 120 ... 200 pixel, depending on video standard
- Audio latency input to output, embedder and de-embedder combined = <0.6ms (HD, 3G), <2ms (SD)

General Features

- Power fail relay bypass (may be enabled/disabled via GUI)
- Lip-sync compensation for processed and non-processed audio signals
- Dedicated routing for non-processed channels; all channels (maximum 16) can be routed to/from the device or looped through
- Test pattern generator (no genlock)
- Master-sync capable
- ITU-R BT.1685 / ARIB STD-B39 metadata support

SDI Card Self-Test

The SDI card provides a built-in self-test for verifying the SDI signal path in all three supported physical signal formats: **SD**, **HD**, and **3G**.

The exact video resolution or frame rate is not important for this test. One valid signal format from each of the three categories is sufficient.

Test Setup

1. Connect the SDI output back to the SDI input using a suitable cable to create a loop-through connection.
2. Enable the SDI generator.
3. Set the generator output to **Black**.
4. Enable **Delay** and set to a value greater than 0.

Running the Test

Perform the test once for each of the following signal formats:

1. **SD**
2. **HD**
3. **3G**

For each format:

1. Select any valid video format within the required SDI category.
2. Wait while the self-test runs.
3. Observe the status LED.
4. Wait until the test has completed successfully before changing to the next signal format.

Each individual test takes approximately **30 seconds**.

> **Note -** The exact video resolution or frame rate does not matter. The self-test only requires one successful test in each physical SDI format: SD, HD, and 3G.

If a test does not complete successfully, it is automatically restarted and continues to run until the test passes.

LED Indication

> **Note -** The self-test status LED is located on the SDI card between the two BNC connectors. The LED is not visible from outside the unit and can only be observed with the device cover removed.

> **Warning -** Opening the device enclosure is at the user's own risk. Take appropriate precautions when operating the unit with the cover removed and avoid contact with internal components.

LED Status	Meaning
Fast flashing blue	A self-test is currently running.
Slow flashing blue	The self-test sequence is incomplete. At least one of the SD, HD, or 3G tests has not yet been completed successfully.
Solid blue	All three tests — SD, HD, and 3G — have completed successfully.

>

Important - Do not proceed to the next signal format until the current test has completed successfully and the LED indication has stabilized.

Option Board 8 Ch Analog Out

Option Board 8 Ch Analog Out (O_DAP_8DA_a)

Audio

- 24-bit D/A converter
- 8 output channels (for speakers)
- Sample rate = 44.1, 48, 88.2, 96kHz

> **Important** - Not all sample rates are supported by the host system, please refer to the respective information.

Analog Outputs

- 8 channels
- Connector type = D-Sub25 female
- Maximum output level (0dBFS equivalent) = 0 ... 24dBu, adjustable in 0.5dB steps
- Impedance = 50Ohm (typical), differential
- THD+N = -91dB @ 0dBFS = 15dBu, 1kHz
- Dynamic range = >103dB (RMS)
- Crosstalk attenuation = >103dB @ 0dBFS = 15dBu, 1kHz
- Frequency response = 20Hz ... 20kHz (< +/-0.3dB) @ 48kHz; 20Hz ... 43kHz (< +/-0.3dB) @ 96 kHz

General Features

- Power faillure glitch prevention
- Balanced analog outputs
- Electrical isolation between outputs and device

Option Board 4 Ch Analog I/O

Option Board 4 Ch Analog I/O (O_DAP_ADDA_a)

Audio

- 24-bit sigma-delta D/A converter, 24 bit D/A converter
- 4 input channels, 4 output channels
- Sample rate = 44.1, 48kHz

> **Important** - Not all sample rates are supported by the host system, please refer to the respective information.

Analog Inputs

- 4 channels
- Connector type = D-Sub25 female connector
- Input Level (maximum) 0dBFS equivalent = 0 ... 24dBu, adjustable in 0.5dB steps
- Impedance = 20kOhm (typical), differential
- THD+N = -93dB @ 0dBFS = 15dBu, 1kHz
- Dynamic range = >110dB (RMS)
- Crosstalk attenuation = >93dB @ 0dBFS = 15DBu, 1kHz
- CMRR = >71dB @ 0dBFS = 15dBu, 1kHz
- Frequency response = 20Hz ... 22kHz (< +/-0.1dB) @ 48kHz; 20Hz ... 43kHz (<+/-0.1dB) @ 96kHz

Analog Outputs

- 4 channels
- Connector type = D-Sub25 female connector
- Output level (maximum) 0dBFS equivalent = 0 ... 24dBu, adjustable in 0.5dB steps
- Impedance = 50Ohm (typical) differential
- THD+N = -91dB @ 0dBFS = 15dBu, 1kHz
- Dynamic range = > 103dB @ 0dBFS = 15dBu, 1 kHz
- Frequency response = 20Hz ... 22kHz (< +/-0.1dB) @ 48kHz; 20Hz ... 43kHz (<+/-0.1dB) @ 96kHz

General Features

- Power fail relay bypass between inputs and outputs
- Balanced analog inputs and outputs
- Electrical isolation between inputs, outputs, and device

Option Board 4 Ch Microphone Inputs

Option Board 4 Ch Microphone Inputs (O_AIX_4MIC_a)

Analog Inputs

- 4 channels
- Connector type = D-Sub25 female connector
- Microphone or line input operation
- Microphone mode @ 150 Ohm load:
  - input-impedance mic: 9 kOhm, electronically balanced
  - gain range: -10 dB (Pad), 0 dB, 10 dB ... 65 dB
  - phantom power: +48 V DC, individually switchable per channel
  - frequency response @ 48 kHz sampling rate: +/- 0.1 dB, 11 Hz to 22 kHz
  - dynamic range @ 10 dB gain: 115.3 dB RMS unweighted, 118.0 dB A-weighted
  - equivalent input noise: -128 dB
- Line mode @ 40 Ohm load:
  - input-impedance line: 20 kOhm, electronically balanced
- Common data:
  - analog line channel to channel isolation, 20Hz to 20kHz @ 10 dB gain: min. 118 dB
  - THD+N @ -3 dBFS, 1 kHz, 10 dB gain: 0,00075 %
  - THD+N @ -3 dBFS, 1 kHz, 40 dB gain: 0,0075 %
  - THD+N @ -3 dBFS, 1 kHz, max gain: 0,020 %

Connector DB-25 Pin Assignment

Pin (Female Connector)	Function
1	Not Used
2	Ground
3	Not Used
4	Not Used
5	Ground
6	Not Used
7	Input 4 +
8	Ground

9	Input 3 -
10	Input 2 +
11	Ground
12	Input 1 -
13	Not Used
14	Not Used
15	Not Used
16	Ground
17	Not Used
18	Not Used
19	Ground
20	Input 4 -
21	Input 3 +
22	Ground
23	Input 2 -
24	Input 1 +
25	Ground

Option Board AES/EBU I/O

Option Board AES/EBU I/O (O_DAP_AES_a)

Standards

- Relevant specifications comply with AES3-X-2009, IEC 60985, and AES11-2009

Audio

- 24-bit, transparent forwarding of PCM and compressed audio (without SRC)
- 24 bit PCM with sample rate converter activated
- Sample rate = 44.1, 48, 88.2, 96kHz (32 ... 196kHz @ inputs with SRC)

> **Important** - Not all sample rates are supported by the host system, please refer to the respective information.

Inputs

- 8 channels (4 two-channel inputs)
- Connector type = D-Sub25 female connector
- Impedance = 110Ohm or 75Ohm, jumper selectable (110Ohm default)
- Input level = 0.3 ... 5Vpp @ 110Ohm differential
- Sample Rate Converter (SRC) THD+N -120dB @ 0dBFS, 1kHz; Latency <0.3ms

Outputs

- 8 channels (4 two-channel outputs)
- Input sample rate converters (SRCs)
- Electrical isolation between inputs, outputs, and device (if configured for differential mode, 110Ohm)
- AES3 channel status management, non-audio detection
- Master-sync capable

Connector DB-25 Pin Assignment

Please note: AES3 is running digital audio in channel pairs (stereo) on one physical pin.

Pin (Female Connector)	Function
1	Output Pair 4 +
2	Ground
3	Output Pair 3 -
4	Output Pair 2 +
5	Ground
6	Output Pair 1 +
7	Input Pair 4 +
8	Ground
9	Input Pair 3 -
10	Input Pair 2 +
11	Ground
12	Input Pair 1 -
13	Not Used
14	Output Pair 4 -
15	Output Pair 3 +
16	Ground
17	Output Pair 2 -
18	Output Pair 1 +
19	Ground
20	Input Pair 4 -
21	Input Pair 3 +
22	Ground
23	Input Pair 2 -
24	Input Pair 1 +
25	Ground

Option Board MADI I/O, BNC

Option Board MADI I/O, BNC (O_DAP_MB_a)

Standards

- Relevant specifications comply with AES10-2008 and AES11-2009

Audio

- 24-bit, transparent forwarding of PCM and compressed audio
- Sample rate = 44.1, 48, 88.2, 96kHz (88.2, 96kHz short framing) BNC

> **Important** - Not all sample rates are supported by the host system, please refer to the respective information.

BNC Input

- 65/56 channels @ 44.1 and 48kHz; 32/28 @ 88.2 and 96kHz
- Impedance = 75Ohm
- Input level = 0.15 ... 0.8Vpp @ 75Ohm
- Cable length maximum = 150m using Belden 1694A cable

BNC Output

- 64/65 channels @ 44.1 and 48kHz; 32/28 @ 88.2 and 96kHz
- Impedance = 75Ohm
- Output voltage = 0.6Vpp (typical) @75Ohm

General Features

- Input cable equalizer for extended range and robustness
- Reference-grade Wordclock recover, master-sync capable
- Dedicated routing for non-processed channels; all channels (max 64) can be routed to/from the device or looped through
- AES3 channel status management, non-audio detection

Option Board MADI I/O, Optical

Option Board MADI I/O, Optical (O_DAP_MO_MM_a, O_DAP_MO_SM_a)

Standards

- Relevant specifications comply with AES10-2008 and AES11-2009

Audio

- 24-bit, transparent forwarding of PCM and compressed audio
- Sample rate = 44.1, 48, 88.2, 96kHz (88.2, 96kHz short framing)

> **Important** - Not all sample rates are supported by the host system, please refer to the respective information.

Optical Input, LC

- 64/56 channels @ 44.1 and 48kHz; 32/28 @ 88.2 and 96kHz
- Connector type = LC (IEC 61754-20)
- Center wavelength = 1310nm (typical), 1270 ... 1360nm
- Input optical power
  - O DAP MO MM a = -31 ... -8dBm, OM2 multimode (50/125um)
  - O DAP MO SM a = -23 ... -8dBM, singlemode (standard values, others upon request)
- Cable length maximum
  - O DAP MO MM a = 1.5km, OM2 multimode
  - O DAP MO SM a = 2km, singlemode (standard values, others upon request)

BNC Output

- Optical and BNC outputs carry the same signal
- Impedance = 75Ohm
- Output voltage = 0.6Vpp (typical) @ 75Ohm

General Features

- Field-replaceable optical module (SFP)

- Reference-grade Wordclock recovery, master-sync capable
- Dedicated routing for non-processed channels
- All channels (maximum 64) can be routed to/from the device or looped through
- AES3 channel status management, non-audio detection
- Parallel outputs (BNC/LC) for media conversion