DSP-4

1in/4out Advanced DSP board with Digital Input and Ethernet-based Networking

DSP-4 is a 1in/4 out advanced processing board specifically designed to provide powered products with advanced DSP features and processing: parametric raised-cosine filters, custom FIR and IIR equalizers, as well as TruePower™, RMS and Peak limiters, Active DampingControl™ are completelly supported via Armonía Pro Audio Suite™ software.

Based on the Analog Devices SHARC® chip, the **DSP-4** offers an unmatched set of processing capabilities, with up to 4 s of input delay, multi-layer input and output EQ and custom dynamic processing.

2xAES3 digital input streams are accepted through RJ45 or XLR connectors, supporting multiple sampling rates.

Flexible and reliable networking capabilities are guaranteed by the AESOP protocol, with automatic configuration to quickly set up redundant and daisy-chained network topologies and assuring solid connectivity without any audio or control signal loss.

Compatible with all DigiMod Series amp modules, the **DSP-4** is ideal for any application with high processing and digital audio networking requirements, and represents the perfect DSP add-on for top-level multi-way systems and line arrays where complete control and premium performances are needed.
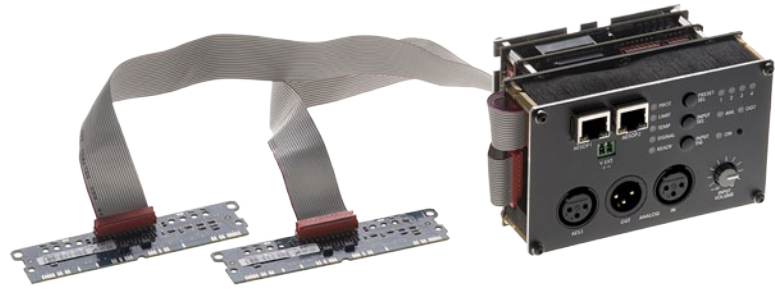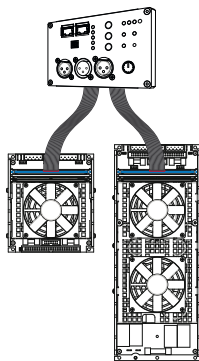

Armonía
Pro Audio Suite™

- ▶ Line-arrays
- ▶ High-Level 2-way and 3-way systems
- ▶ OEM rack processors
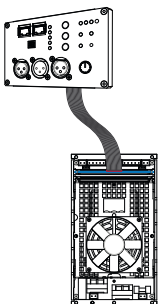
Example with DigiMod 1500

Example with DigiMod 3000PFC single unit and DigiMod 3000PFC amp

- ▶ Full integration with Armonía Pro Audio Suite™ software
  - ✓ Remote control via Ethernet (AESOP network) with:
  - ✓ remote control and recall of parameters
  - ✓ remote preset handling / OEM protection
  - ✓ firmware update
  - ✓ protection of OEM part / user part
  - ✓ group information
  - ✓ user defined FIR filters handling
- ▶ Digital Audio input optional add-on board with:
  - ✓ AES3 input through XLR connector.
  - ✓ AESOP carring up to 2x AES3 streams, stereo 24 bit @ 32 to 196 kHz sample rate through RJ45 connector.
  - ✓ Forward to AESOP network of the AES3 input from the XLR.
- ▶ Four versions to match any DigiMod amps configuration:
  - ✓ 2-channel version – it connects the amp module via the 72 pin SIM board.
  - ✓ 4-channel version – it connects up to two amp modules by means of two 72 pin SIM board.
  - ✓ PFC4 version – it drives the four channel of the DigiMod 3004PFC4.
  - ✓ Core version – it allows full customization of the I/O interface.
- ▶ One input channel:
  - ✓ Analog input: 24 bit @ 48 kHz AD converter with Tandem™ architecture.
  - ✓ Digital input: 24 bit @ 32 to 196 kHz; internal SRC makes the system independent from the clock of the digital input stream.
  - ✓ Input gain, trim and mute.
  - ✓ Input EQ: three layers of 32 raised-cosine filetrs each.
  - ✓ Up to 4 s of input delay.
- ▶ Four ouput channels:
  - ✓ Output EQ: parametric equalizers: custom FIR, parametric IIR: peaking, hi/lo-shelving, all-pass, band-pass, band-stop, hi/lo-pass.
  - ✓ Crossover: Butterworth, Linkwitz-Riley, Bessel: 6 dB/oct to 48 dB/oct (IIR).
  - ✓ TruePower™ limiter, RMS limiter, Peak limiter.
  - ✓ Active DampingControl™ for cable resistance compensation and speaker damping.
  - ✓ Signal generator (arbitrary waveform).
  - ✓ Up to 100 ms for time alignment.
  - ✓ Auxiliary mic input for testing and alignment

DSP-4

1in/4out Advanced DSP board with Digital Input and Ethernet-based Networking

DSP-40004 model

Specifically designed for the M-Drive and IpalMod amp modules the **DSP-40004** shares the same signal processing capability of the DSP-4, full integration with Armonía Pro Audio Suite and a full featured interface with analog and digital input via XLR and Ethercon connectors.

The **DSP-40004** implements a further RS-485 connection that provides a link to the ZeroLatency DSP on board of the M-Drive and IpalMod, for setting the Differential Pressure Control configuration.

The **DSP-40004** is mechanically compatible with the M-Drive Integration Kit that provides to loudspeaker manufacturer an easy to assemble solution including amp module, heatsink and DSP, ready to go.

Connectors and controllers - DSP-40004

Analog	1x XLR analog input + 1x XLR analog link thru
Digital	AES3: 1x XLR + 2x Ethercon carrying 2 AESOP streams
RS-485	DSUB-9
Status LEDs	8x status LEDs: Protection active, Limiters active, Temperature warning, Signal presence, Ready, Input equalizer active, Input source: Analog/Digital
Trimmer	Input volume knob
Push-buttons	DSP preste selection, Input selection, Input equalizer switch

Armonía
Pro Audio Suite™

Specifications

General

Architecture	Analog Devices SHARC® DSP 330 MHz / 2000 MFLOPS
Internal processing	40 bit floating point and Asynchronous Sample Rate Converter for matching any input digital stream
Latency	4.02 ms fixed latency architecture
Configuration	1 input, 4 output
User data storage	Up to 10 local presets, unlimited via Armonía Pro Audio Suite™ software
Firmware update	Network upgradable firmware
Remote control	Armonía Pro Audio Suite™ software
Environmental operating temperature	0° - 40° C / 32° - 104° F

Audio

Frequency response	20 Hz - 20 kHz (-0.5 dB)
Input impedance	10 kΩ
Max input voltage	7.75 V / +20 dBu
Max output voltage	5 V / +16 dBu
S/N ratio	> 117 dB
THD+N	< 0.02% (20 Hz - 20 kHz)

DSP features

Delay	Up to 4 s input delay plus 100 ms output delay for time alignment
Input equalizer	Three layers of 32 raised-cosine filters each
Output equalizer	Parametric equalizers: custom FIR, parametric IIR: peaking, hi/lo-shelving, all-pass, band-pass, band-stop, hi/lo-pass
Crossover	Butterworth, Linkwitz-Riley, Bessel: 6 dB/oct to 48 dB/oct (IIR)
Limiters	TruePower™ limiter, RMS limiter, Peak limiter
Damping control	DampingControl™ and cable resistance compensation, up to 2 Ω negative/positive compensation for optimal low-end speaker control
System monitoring	High performance monitoring of Power Amp output voltage/current/impedance
Parameters locking	Protection of OEM/user features

Connectors and controllers - DSP-4

Analog	1x XLR analog input + 1x XLR analog link thru
Digital	AES3: 1x XLR + 2x RJ45 carrying 2 AESOP streams
Auxiliary voltage (V_{ext})	Phoenix MC 1.5/2-ST-3.81 provides external DSP auxiliary power supply
Status LEDs	8x status LEDs: Protection active, Limiters active, Temperature warning, Signal presence, Ready, Input equalizer active, Input source: Analog/Digital
Trimmer	Input volume knob
Push-buttons	DSP preste selection, Input selection, Input equalizer switch

AD/DA converters

AD Converters	Dual 24 bit 48 kHz Tandem™ architecture
Sample rate supported	32 kHz, 44.1 kHz, 48 kHz, 96 kHz, 192 kHz
Dynamic range	127 dB
DA Converters	Dual 24 bit 48 kHz Tandem™ architecture
THD+N	< 0.005% (20 Hz - 20 kHz)
Dynamic range	122 dB

Powersoft
AUDIO