

Features

- High fidelity headphone amplifier
- DSP + DAC + Amp Combo
- PCM/DSD USB audio streaming

Hardware

- XMOS XCore200 Multicore CPU
- SHARC ADSP21489 400MHZ
- ESS ES9018K2M DAC
- AK5386 ADC for analog in
- Optical Input via 3.5mm
- Front panel volume/preset control

Software Control

- DSP tuning from GUI
- Up to 4 preset DSP settings stored
- FIR/IIR banks
- Win/Mac/Android compatible
- Firmware upgradeable

Power

- 3300mAh Lithium Ion battery
- Phone charging mode
- 5V 2A USB supply charger

Applications

- High-fidelity headphone amplifier
- Headphone correction and EQ
- Cross-feed processing
- USB DAC
- USB to digital optical interface

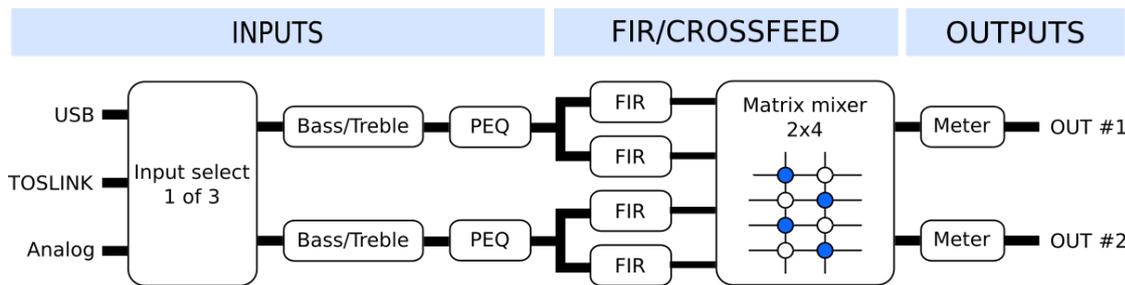
The **HA-DSP** is a revolutionary new headphone DAC/amplifier from miniDSP. As well as providing three inputs including (USB/Analog/Toslink), the miniDSP HA-DSP features a hitherto-unknown level of digital signal processing power and flexibility in a headphone amplifier: simple bass and treble adjustments, ten fully programmable parametric EQ bands per channel, and a revolutionary FIR filtering/cross-feed matrix that allows implementation of extremely sophisticated headphone correction and cross-feed algorithms.

All this power is delivered by a 500MHz XMOS multi-core processor **and** a 400MHZ SHARC DSP. The onboard firmware is designed to seamlessly interface with laptops and desktops, iOS devices, and Android devices. And any other source can be connected via the analog input or optical digital input.

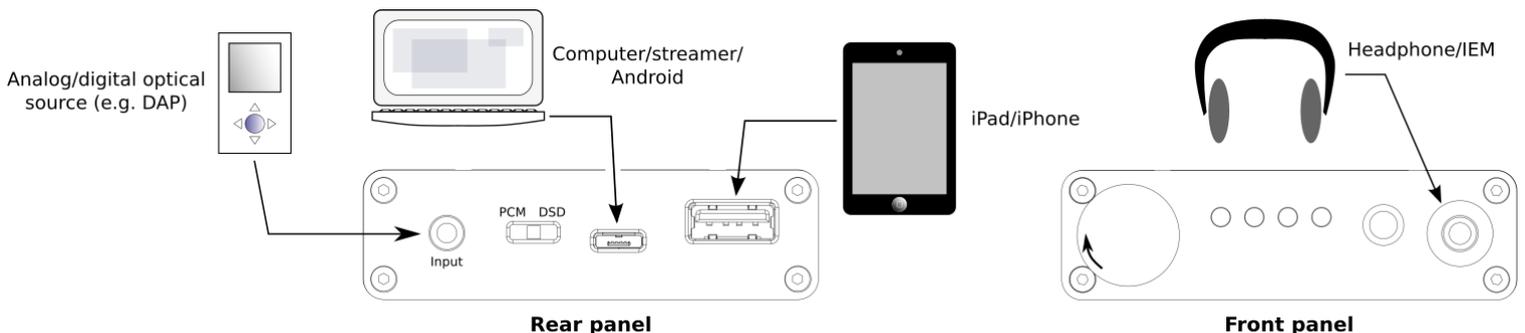
Housed in a lightweight and compact enclosure, the HA-DSP can go anywhere you can. Its 3300 mAh battery provides ample power — enough for a full day (ten hours) of listening. The combination of DSP power, careful selection of high-quality components and a 32-bit ESS audiophile-quality DAC combine to create an unparalleled portable headphone experience.



TYPICAL CONNECTIONS AND SOFTWARE PROCESSING DIAGRAM



Template DSP audio flow diagram



HARDWARE SPECIFICATIONS

Item	Description
USB Controller / Multicore Controller	XMOS xCORE-200 / USB 2.0 asynchronous audio transfer
DAC chip	ESS Sabre ES9018K2M / Up to 127DNR @ 32-bit
Digital Signal Processor (DSP)	ADSP21489 400 MHz floating-point SHARC DSP See user manual for details on DSP audio flow diagram
Headphone amplifier chip	High-fidelity Texas Instruments TPA6120A2 / Up to 120 dB SNR
Audio sample rate / Resolution	Resolution: Up to 24-bit Input PCM Sample rate: 44.1/48/88.2/96/176.2/192 kHz DSD modes: DSD64/DSD128 (no DSP processing under DSD mode) DSP sample rate: Depends on loaded plugin. Check user manual for details
Analog audio specifications	Frequency response: 20 Hz to 20 kHz +/- 0.2 dB, 20Hz to 96kHz @ 192k. S/N ratio: 112 dB (32 Ω, 1 kHz, A-weighted, digital in 0 dB) Maximum output: 100 mW + 100 mW (32 Ω, 1 kHz, digital in 0 dB) THD+N: 0.001% (32 Ω, 1 kHz, 65 mW + 65 mW, mid gain) Supported headphone impedance: 16 – 600 Ω
Digital inputs	USB audio from PC/Mac, up to 192 kHz PCM and DSD64/128 (DSD256 coming up) USB audio from select Android devices (PCM up to 96 kHz) Digital Optical in on 3.5mm input (44.1~192kHz)
Analog input	Line in on 3.5 mm gold-plated stereo connector AKM5386 (Up to 110dB SNR)
Select switch at back	Source selection between USB Type A and micro USB (PCM or DSD format)
Firmware upgrade	Infield upgrade over USB for future proofing
Battery	Lithium Ion 3300 mAh / Up to 10 hours of continuous playback time
Power supply	5V 2A (fast charge) USB power supply provided, multi-plug pack
Dimensions (H x W x D) mm	20 x 69 x 137 mm, 230gm
Accessories	USB cable, optical cable, USB charger, OTG cable, 3.5mm optical adaptor

MECHANICAL SPECIFICATIONS

