HEAD acoustics

Ebertstraße 30a
52134 Herzogenrath
Tel.: +49 2407 577-0
Fax: +49 2407 577-99
eMail: info@head-acoustics.de
Web: www.head-acoustics.de

labP2-V1 (Code 3732-V1)

Binaural headphone equalizer with USB interface
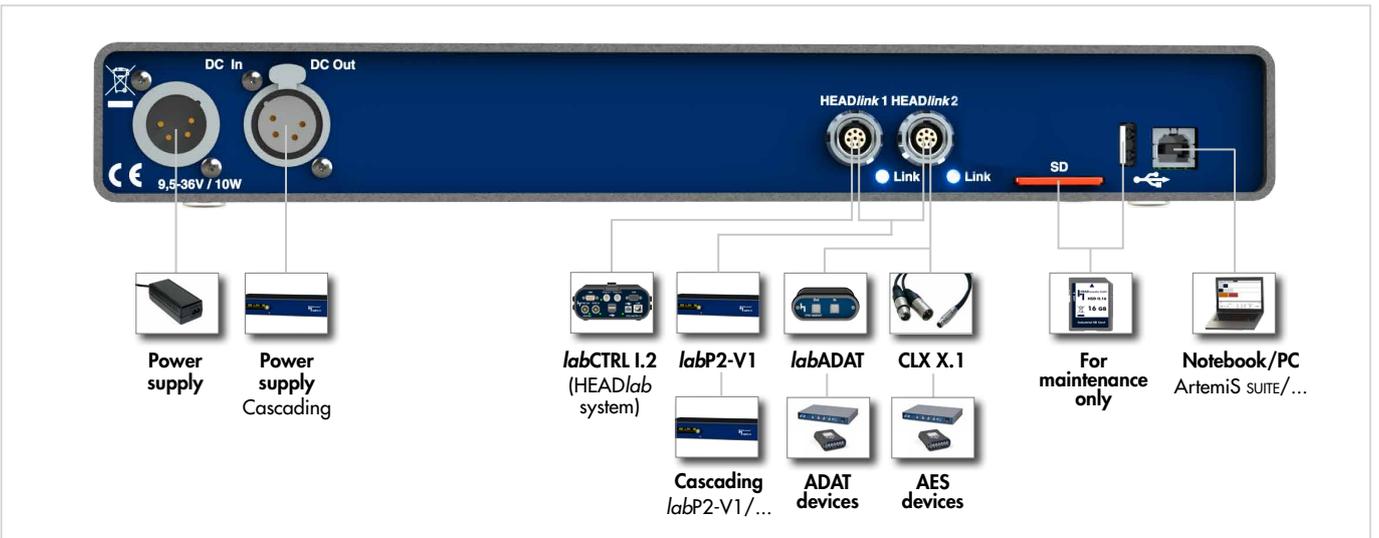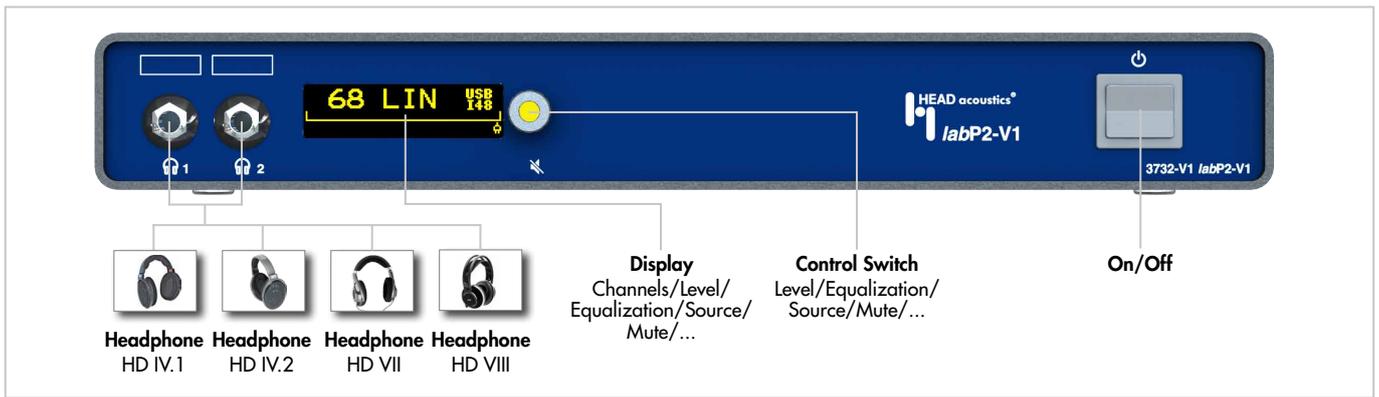

Overview

The equalizer *lab*P2-V1 is designed for playback via high-quality headphones. Its equalizer function allows users to play aurally accurate recordings with the correct equalization.

*lab*P2-V1 can be connected directly to a PC via USB or can be included in a HEAD*lab* system. Operation is easy and intuitive, e.g. via the ArtemiS SUITE software or via the built-in display with a rotary control switch.

Each *lab*P2-V1 unit provides two independent headphone outputs, which can be calibrated and equalized separately. With an individually-equalized headphone, the playback delivers a sound impression resembling the original sound field very closely.

*lab*P2-V1 can be combined with the *lab*O2-V1 (*lab*O2) equalizer into a synchronized playback system, which accurately equalizes the headphone and the subwoofers, removes delays between the headphone signal and the subwoofer signal, and calibrates the sound pressure levels. It is also possible to connect shakers to the *lab*O2 unit via amplifiers and synchronize them to the playback.

Features

- Binaural equalizer for playback via headphones

USB connection to the PC

- Direct connection to a PC (USB Hi-Speed)

Connection of headphones

- Equalized, level-accurate playback with dynamic open headphones
  - HD IV.1
  - HD IV.2
  - HD VII
  - HD VIII

Connection of other devices

- AES adapter for devices with an AES interface
- ADAT adapter for devices with an optical interface

Larger playback systems

- Cascading of several *lab*P2-V1, *lab*O2-V1, *lab*P2, and *lab*O2 playback equalizers
  - Data transfer via HEAD*link*; power supply looped through via DC Out (*lab*P2-V1, *lab*O2-V1)

Functions

- OLED display
- Channel-wise level display
- Programmable delays
- Limiter function
- Sampling rates: 32, 44.1, 48 kHz

- Rugged design
- *lab*P2-V1 can be used as Windows audio device

Operation and playback control

- Via software from HEAD acoustics: ArtemiS SUITE, NoiseBook, HEAD SQuare, H3S etc.
- Manually via the rotary knob (status information via OLED display)

Playback equalization

- Factory installation of a custom equalization filter for two HD IV.1, HD IV.2, HD VII, or HD VIII headphones
- Equalization types: FF, ID, DF, USER (FIR filters)
- Apply up to four additional IIR filters (e.g. created with ArtemiS Classic) and a fixed Subj. filter (subjective equalization) suitable to enhance the acoustic perception of artificial head recordings
- Automatic equalization and correct adjustment of the playback level via ArtemiS SUITE (provided that ArtemiS SUITE has information about the equalization and level settings used for the recording)

Front and rear side

Display
Channels/Level/
Equalization/Source/
Mute/...

Control Switch
Level/Equalization/
Source/Mute/...

On/Off

Headphone HD IV.1
Headphone HD IV.2
Headphone HD VII
Headphone HD VIII

Power supply

Power supply Cascading

*lab*CTRL I.2 (HEAD*lab* system)

*lab*P2-V1

*lab*ADAT

CLX X.1

For maintenance only

Notebook/PC ArtemiS SUITE/...

Cascading *lab*P2-V1/...

ADAT devices

AES devices

Connection to a PC (USB interface)

Via USB, *lab*P2-V1 can be connected directly to a computer and used as a playback device for up to two headphones. More *lab*P2-V1 and *lab*O2-V1 (*lab*P2, *lab*O2) units can be connected to the equalizer and combined into a synchronized playback system.

Control switch and display

The rotary control switch and the high-quality display allow various settings (channel selection, level, equalization, source, mute) to be configured manually.

Playback control

In the ArtemiS SUITE, playback is controlled via the easy-to-use Player tool.

If a signal contains information about the equalization and measurement range used for the recording, the ArtemiS SUITE passes such information to the *lab*P2-V1 unit, where the correct equalization and playback level are then set automatically.

Playback in the ArtemiS SUITE takes place with a sampling rate of 48 kHz. Signals recorded at a different sampling rate are converted accordingly before they are sent to the *lab*P2-V1 unit.

*lab*P2-V1 can also be used for aurally accurate playback in simulators, such as the SoundCar from HEAD acoustics, and in listening studios with HEAD SQuare etc.

In a combined headphone/subwoofer playback (with *lab*O2-V1, *lab*O2), all equalizers can use individual equalization filters, so a correct equalization, playback level etc. is ensured for both the headphones and the subwoofers.

Playback equalization

*lab*P2-V1 can be programmed with all required equalization filters FF, ID, DF, USER (FIR filter).

That way, the playback of aurally accurate recordings can be turned into an acoustic impression that is virtually identical to that of a listener present in the original sound field. This allows a meaningful inclusion of human hearing characteristics when judging the quality of a sound.

Furthermore, up to four IIR filters can be created, for example, with ArtemiS Classic and installed on the *lab*P2-V1 unit.

Another IIR filter is pre-installed. With this Subjective Equalization Subj. filter based on listening tests, the realistic playback of artificial head recordings can be improved perceptively compared to a technically correct playback.

The IIR filters can be used, for example, for low-pass, high-pass, or band-pass filtering, increasing or reducing a signal level, or other purposes.

Headphone equalization

Aurally accurate playback is only possible if each of the headphone outputs is equalized and calibrated for a specific headphone specimen, as otherwise the individual transfer characteristics of the headphone would cause an inaccurate acoustic impression.

*lab*P2-V1 features separately calibrated headphone outputs, to which specific headphone specimens can be connected. The numbers of the headphones can be found above the outputs to make sure that the correct headphone is connected to the respective output.

Recommended headphones

HEAD acoustics recommends the high-quality open headphones HD IV.1, HD IV.2, HD VII, and HD VIII.

They have a natural sound across the entire spectrum and a low distortion factor, and they are also very comfortable to wear.

Using as Windows audio device

*lab*P2-V1 can be used as Windows audio device. An additional sound board is not necessary.

Connection of ADAT and AES devices (*lab*ADAT or AES/EBU adapter via HEAD*link* interface)

Using *lab*ADAT or AES/EBU adapters, a nearly latency-free playback from an ADAT-capable sound card, a BEQ II front end or an artificial head of the HMS generation (via AES) is possible.

Limiter

*lab*P2-V1 is equipped with a limiter that limits the playback level to a certain maximum. This maximum output level can be configured manually.

Scope of supply

- *lab*P2-V1 (Code 3732-V1)
  Binaural headphone equalizer with USB interface
- Power supply
- CUSB II.1.5 (Code 5478-1.5)
  Cable USB 2.0, 1,5 m (59")
- HSC VI.1 (Code 9871)
  Carrying case
- HEAD Tools DVD

Optional

Software

- ArtemiS SUITE Basic Framework (Code 5000)
- ArtemiS SUITE Data Acquisition Module (Code 5004)

Dynamic open headphones

- HD IV.1 (Code 2380)
- HD IV.2 (Code 2481)
- HD VII (Code 2497)
- HD VIII (Code 2498)

Other Equalizers

- *lab*O2-V1 (Code 3731-V1)
  2-channel playback equalizer with Line outputs, headphone connector, and USB interface
- *lab*P2 (Code 3732)
  Binaural headphone equalizer with USB interface, HEAD*lab* compatible
- *lab*O2 (Code 3731)
  2-channel playback equalizer with Line outputs and USB interface, HEAD*lab* compatible

Adapters and cables

- *lab*ADAT (Code 3794)
  Adapter ADAT
- CLX X.1 (Code 3797-1)
  Adapter AES/EBU
- CLL X.xx (Code 3780-xx)
  Cable LEMO 8-pin ↔ LEMO 8-pin (cable HEAD*link*)

Technical Data

General

Interfaces:	2 x jack 6.3 mm (headphones), 2 x LEMO 8-pin (HEAD*link*), 1 x USB Hi-Speed Client, 1 x USB Hi-speed client, 1 x SD card slot, 2 x XLR 4-pin (DC In/DC Out)
Sampling frequencies (F_S):	32; 44.1; 48 kHz

Power supply
    DC In:
    DC Out:
	
	9.5 to 36 V
	max. 3 A (looped through via DC In)

Power consumption:	10 W
Frequency range:	0 Hz to 20 kHz
S/N:	104 dB(A)
THD+N:	-92 dB(A) at -6 dB_{FS}
Frequency response:	0.04 dB (20 Hz to 20 kHz) at F_S = 48 kHz

Crosstalk
    at 1 kHz:
    20 Hz to 20 kHz:
	
	110 dB(A)
	105 dB(A)

Equalizations:	FF, ID, DF, LIN (no equalization), USER (max. 1024 taps); IIR filters: 4 filters 2nd order, one fixed Subj. filter (subjective equalization)
Maximum cable length to the controller:	60 m (2362") (with HEAD*link* cable CLL X)
Cooling:	Convection, no fan

Dimensions:
    incl. locking mechanism, rubber pads
    and knob:
	327 x 175 x 44 mm (WxDxH) (12.9" x 6.9" x 1.7")
	
	327 x 188 x 47 mm (WxDxH) (12.9" x 7.4" x 1.9")

Weight:	1400 g (3.08 lb)
Operating temperature:	-10 °C to 60 °C (14 °F to 140 °F)
Storage temperature:	-20 °C to 70 °C (-4 °F to 158 °F)

Headphones Out

Number of channels:	2
Interfaces:	Jack 6.3 mm
Output impedance:	10 Ω
Max. output level:	8.86 V_{eff} equivalent to 119 dB_{SPL}
Nominal level:	0.5 V_{eff} equivalent to 94 dB_{SPL}
Max. output power per channel:	1.2 W
Equalizations:	FF, ID, DF, USER and IIR filters

HEAD*link* (HEAD acoustics standard)

Number of channels:	8 (2 channels selectable)
Interfaces:	LEMO 8-pin
Cascading additional playback equalizers	

USB 2.0 Hi-Speed Client

Connection to a PC	

USB 2.0 Hi-Speed Host

For maintenance only	

SD Card Slot

For maintenance only	