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

DATA SHEET

*lab*P2 (Code 3732)
*lab*P2-V1 (Code 3732-V1)

Binaural headphone equalizers, USB interface, HEAD*lab*-compatible

Overview

The *lab*P2 and *lab*P2-V1 headphone equalizers are used for aurally accurate playback of binaural recordings.

In order to achieve an acoustic impression comparable to the original sound field during playback, the headphone equalizers have two independent headphone outputs to connect headphone equalizers, that are individually equalized and calibrated at the factory. The serial numbers of the individual s are placed above the corresponding outputs so that a clear assignment between headphones and headphone outputs is possible.

*lab*P2 and *lab*P2-V1 can be used in a HEAD*lab* system or connected directly to a PC via USB. For users, the operation is simple and intuitive via the integrated display using the control switch or via the software.

Several *lab*P2 and *lab*P2-V1 units can be connected to each other and to the *lab*O2 and *lab*O2-V1 playback equalizers, forming synchronous playback systems. Headphones and subwoofers, which are connected to *lab*O2 or *lab*O2-V1, are correctly equalized, the delay between signals from headphones and subwoofers is compensated, and the levels are calibrated. Shakers can also be used synchronously to the playback.

*lab*P2 and *lab*P2-V1 provide identical functionalities. They only differ by different interfaces for the power supply and the housing.

Features

Connections

- Via HEAD*link* to a
  - HEAD*lab* Controller *lab*CTRL II.1
  - *lab*HSU frontend
  - HEAD*lab* Compact Modules
    - *lab*COMPACT12 / *lab*COMPACT12-V1
    - *lab*COMPACT24 / *lab*COMPACT24-V11
- Via USB to a PC
- Via AES/EBU adapter to devices with AES/EBU interface
- Via ADAT adapter to devices with optical interface

Headphones from HEAD acoustics

- Open, dynamic headphones: HD VIII, HD IV.2, HD IV.1
- Closed, dynamic headphones: HD NC.1 (ANC)

Handling and control

- Via software from HEAD acoustics
  - ArtemiS SUITE
  - SQala
  - HEAD Companion
  - HEADscape
- Via control switch (OLED display with status information)
- Using as Windows audio device

Equalization filters

- ID, FF, DF, USER
- Additionally, four IIR filters can be installed
- Subjective Equalization Filter (SEQ)

Cascading

- Cascaded *lab*P2 and *lab*P2-V1 headphone equalizers as well as *lab*O2 and *lab*O2-V1 playback equalizers can form synchronous playback systems for headphones, subwoofers, shakers, etc.
- Users can connect
  - two headphone equalizers and playback equalizers via HEAD*link*
  - more than two headphone equalizers and playback equalizers via the AES/EBU adapter CLX X.1

Power supply

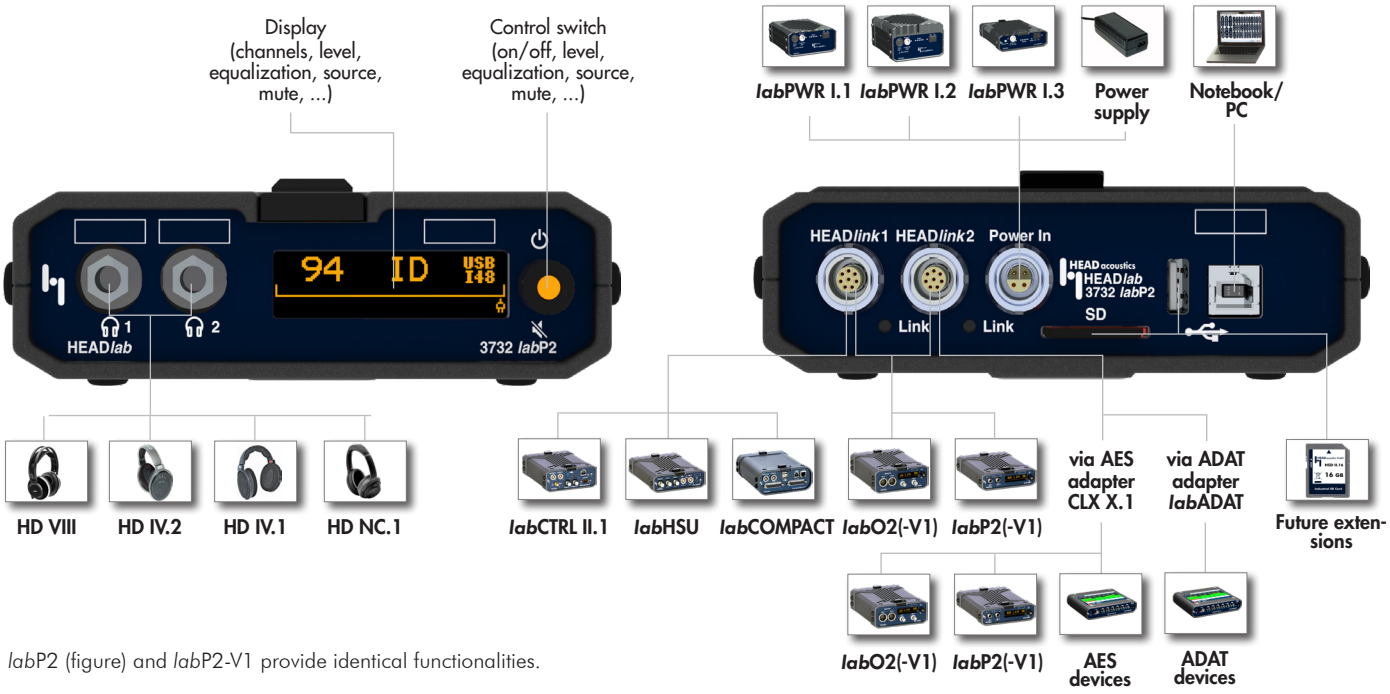
- *lab*P2
  - Power supply unit (LEMO)
  - Power Boxes
  - HEAD*lab* Controllers
- *lab*P2-V1
  - Power supply unit (XLR)
  - HEAD*lab* Controllers
- Via HEAD*link*, *lab*P2 and *lab*P2-V1 are able to supply another headphone equalizer or playback equalizer

*lab*P2

*lab*P2-V1

The *lab*P2 housing is compatible with the devices of the HEAD*lab* series, *lab*P2-V1 can be mounted into a 19“ rack.

Front and rear view *lab*P2



*lab*P2 (figure) and *lab*P2-V1 provide identical functionalities.

Playback

ArtemiS SUITE

In ArtemiS SUITE, the software for sound and vibration analyses, playback is controlled via the easy-to-use Player.

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

SQala listening studios

In listening studios, the SQala jury testing software controls all used headphone equalizers.

For applications where playback is to be complemented by subwoofers and shakers in the low-frequency range, the combination of *lab*O2 and *lab*O2-V1 with *lab*P2 and *lab*P2-V1 form perfectly matched playback systems. For such a combined and synchronized headphone-subwoofer playback, SQala ensures that equalization, level, etc. are adjusted correctly.

For cascading headphone equalizers and playback equalizers, the CLX X.1 AES/EBU adapter is available.

HEAD Companion

HEAD Companion is a license-free software, which enables aurally accurate playback of HDF files (HEAD Data File format).

HEADscape

HEADscape, the software solution for analyzing and classifying soundscape measurements according to ISO 12913-2, also allows aurally correct playback.

Using as Windows audio device

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

Control switch and display

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

Limiter

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

Equalization filters

*lab*P2 and *lab*P2-V1 are equipped with the „Independend of Direction“ (ID) equalization, developed by HEAD acoustics, the „Free Field“ (FF) and „Diffuse Field“ (DF) equalizations, as well as a user-specific (USER) equalization (FIR filter).

In addition, up to four IIR filters can be loaded. 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 applications.

An additional SEQ (Subjective Equalization) equalization is firmly defined. With this IIR filter, which was developed on the basis of listening tests, the reproduction of artificial head recordings is perceptibly and audibly improved compared to the technically correct playback.

Scope of supply

*lab*P2

- *lab*P2 (Code 3732)
- CUSB II.1.5 (Code 5478-1.5)
  Cable USB 2.0, 1.5 m
- Data media

*lab*P2-V1

- *lab*P2-V1 (Code 3732-V1)
- 15 V, 60 W, XLR 4-pin.
  PS 15-60-X4
  Power supply for *lab*P2-V1
- CUSB II.1.5 (Code 5478-1.5)
  Cable USB 2.0, 1.5 m
- HSC VI.1 (Code 9871)
  Carrying case
- Data media

Optional

HEAD*lab* Controllers

- *lab*CTRL II.1 (Code 3704)
  LAN/USB Controller for HEAD*lab*

Frontends

- *lab*HSU (Code 3710)
  High-end 2-channel frontend

HEAD*lab* Compact Modules

- *lab*COMPACT12
  (Code 3708)
- *lab*COMPACT12-V1
  (Code 3708-V1)
- *lab*COMPACT24
  (Code D3709)
- *lab*COMPACT24-V1
  (Code D3709-V1)

Dynamic headphones

- HD VIII (Code 2498)
- HD IV.2 (Code 2481)
- HD IV.1 (Code 2380)
- HD NC.1 (Code 2499.1)

Recommended accessories for *lab*P2

- PS 24-60-L4
  24 V, 60 W, LEMO 4-pin.
  Power supply for *lab*P2

Recommended accessories for *lab*P2-V1

- RMB IV.3 (Code 9852.1)
  19" Rack Mount Bracket (2 pcs.)

Power Boxes for *lab*P2

- *lab*PWR I.1 (Code 3711)
  Power Box for HEAD*lab* systems
  (up to 40 W)
- *lab*PWR I.2 (Code 3712)
  Power Box for HEAD*lab* systems
  (up to 100 W)
- *lab*PWR I.3 (Code 3713)
  Power Box for HEAD*lab* systems
  (up to 35 W)

Adapters and cables

- CLX X.1 (Code 3797-1)
  AES/EBU adapter
- *lab*ADAT (Code 3794)
  ADAT adapter
- CLL X.xx (Code 3780-xx)
  Cable LEMO 8-pin. ↔ LEMO 8-pin.
  (cable HEAD*link*)
  Available cable lengths:
  17 cm, 26 cm, 36 cm, 50 cm, 1 m, 1.5 m, 2.5 m, 5 m, 10 m, 20 m, 25 m, 30 m, 40 m, 50 m, 60 m
- CXX II.xx (Code 5177-xx)
  Cable AES/EBU XLR 3-pin., male ↔ XLR 3-pin., female
  Available cable lengths:
  30 cm, 1 m, 3 m, 10 m, 20 m, 30 m, 40 m

Playback equalizers

- *lab*O2 (Code 3731)
  2-channel playback equalizer with Line outputs, USB interface, HEAD*lab*-compatible
- *lab*O2-V1 (Code 3731-V1)
  2-channel playback equalizer with Line outputs, headphone connector, USB interface, HEAD*lab*-compatible
  (housing for rack mounting)

Software

- ArtemiS SUITE
  - Basic Framework (Code 5000)
  - Advanced Playback (Code 5011)
- SQala – Jury Testing
  - SQala Basic (Code 5050)
  - SQala Net (Code 5051)
  - SQala Server (Code 5058)
  - SQala Client (Code 5059)
- HEAD Companion (Code 4906)
- HEADscape (Code 5600)

Technical Data *lab*P2, *lab*P2-V1

General

Interfaces	
*lab*P2, *lab*P2-V1	2 x jack 6.3 mm, 2 x LEMO 8-pin. (HEAD*link*), 1 x USB high-speed client, 1 x USB high-speed host, 1 x SD card slot
*lab*P2	1 x LEMO 4-pin. (power in)
*lab*P2-V1	1 x XLR 4-pin. (power in), 1 x XLR 4-pin. (power out)
Sampling frequencies (F_S)	32 kHz, 44.1 kHz, 48 kHz
Supply voltage	
*lab*P2: DC in	9.3 V to 36 V
*lab*P2-V1: DC in	9.5 V to 36 V
DC out	Max. 3 A (looped through via DC in)
Power consumption	10 W
Equalizations	FF, ID, DF, LIN (no equalization), USER (max. 1024 taps); IIR filters: 4 x filters 2nd order, one firmly defined SEQ filter (Subjective Equalization)
Maximum cable length to the controller	60 m (with HEAD*link* cable CLL X)
Cooling	Convection, no fan
Dimensions	
*lab*P2	148 x 185 x 48 mm (W x D x H)
*lab*P2-V1	327 x 188 x 47 mm (W x D x H)
Weight	
*lab*P2	706 g
*lab*P2-V1	1400 g
Operating temperature	-10 °C to 60 °C
Storage temperature	-20 °C to 70 °C

Analog out headphones

Interfaces	2 x jack 6.3 mm (stereo)
Output impedance	10 Ω
Bandwidth	0 Hz to 20 kHz
S/N	104 dB(A)
THD+N	
*lab*P2	-94.5 dB(A) at -6 dB_{FS}
*lab*P2-V1	-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	110 dB(A)
20 Hz to 20 kHz	105 dB(A)
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, IIR filters, SEQ filter

Digital HEAD*link*

Connector	2 x LEMO 8-pin.
Number of interfaces	2
Supply voltage	10 V_{DC} to 28 V_{DC}
HEAD*link* version	HEAD*link* 1.0
Electrical isolation	No
Synchronization	48 kHz
Maximum cable length	60 m

Digital USB client

Connector	1 x USB type B
Number of interfaces	2
USB specification	USB 2.0
Data rate (gross)	480 Mbit/s
Electrical isolation	No

USB 2.0 high-speed host (for service purposes)

Updates, future extensions, etc.	

SD card slot (for service purposes)

Updates, future extensions, etc.	