



Features

- HEADlab-compatible, binaural headphone equalizer

USB connection to the PC

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

Connection to a HEADlab system

- Connection to a HEADlab controller, e.g. for monitoring a recording

Connection of headphones

- Equalized, level-accurate playback with dynamic open headphones:
 - HD IV.1
 - HD IV.2
 - HD VII
 - HD VIII
- Equalization filters (FF, ID, DF, USER); four additional IIR filters can be installed

Connection of other devices

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

Cascading with other labP2 and labO2 devices

- For creating a synchronized playback system with several labP2 or labO2 units (equalizer for realistic playback via subwoofers, shakers etc.), for playback of up to four channel pairs

Functions

- Level meter
- Programmable delays
- Limiter function
- Sampling rates: 32, 44.1, 48 kHz
- Small and handy
- Rugged design

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)
- Using as Windows audio device

Power supply

- Power supply via a HEADlab controller
- Power supply units
- HEADlab Power Boxes
 - labPWR I.1
 - labPWR I.2

DATA SHEET

labP2 (Code 3732)

Binaural headphone equalizer with USB interface, HEADlab-compatible

Overview

The labP2 playback module is designed for playback via high-quality headphones. Its equalizer function allows users to play aurally accurate recordings with the correct equalization.

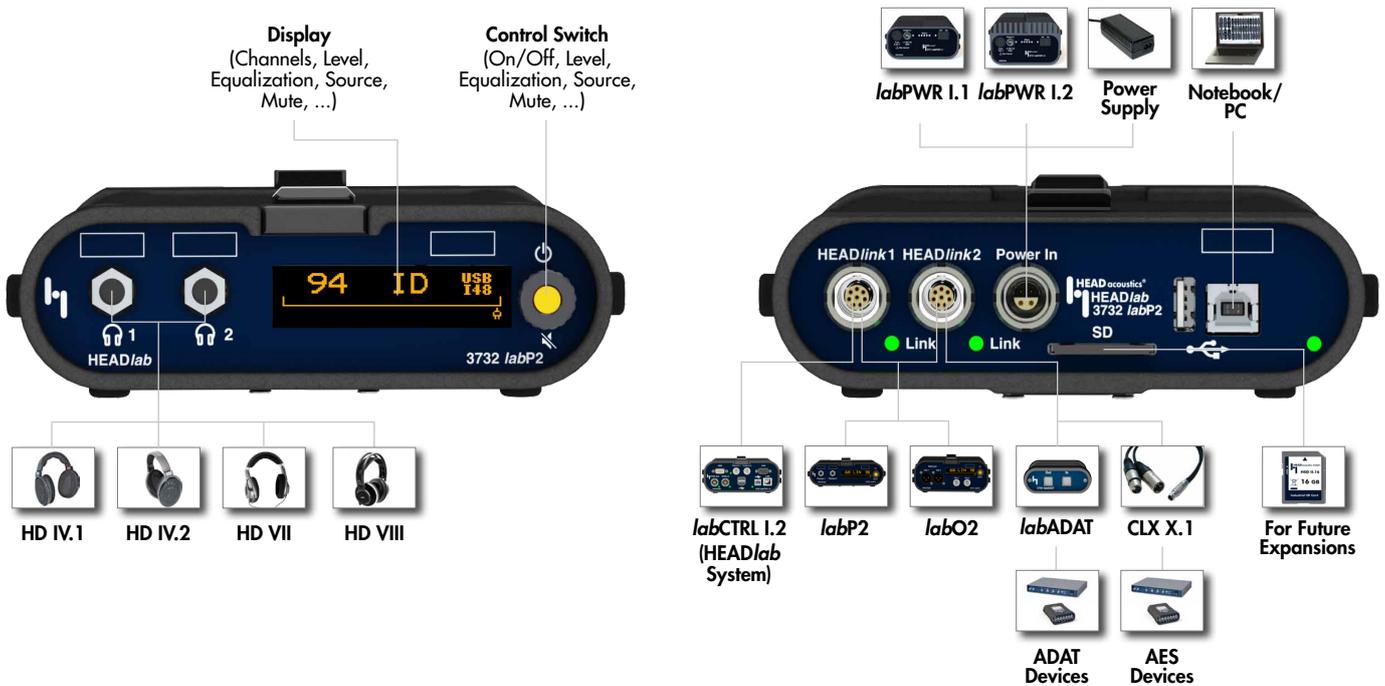
labP2 can be connected directly to a PC via USB or can be included in a HEADlab system. Operation is easy and intuitive, e.g. via the ArtemiS SUITE software or via the built-in display with a rotary control switch.

Each labP2 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.

labP2 can be combined with the labO2 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 labO2 unit via amplifiers and synchronize them to the playback.

As variants labP2-V1 or labO2-V1 are available.

labP2 - Overview



Connection to a PC (USB interface)

Via USB, *labP2* can be connected directly to a computer and used as a playback device for up to two headphones. More *labP2* or *labO2* units can be connected to the equalizer and combined into a synchronized playback system.

In a playback system connected to a computer via USB, two devices can be powered by one PSH or one Power Box. The second device is powered via the HEADlink interface. Any additional equalizers require their own power supply.

Connection to a HEADlab controller

In a HEADlab system, synchronized playback of up to four channel pairs is possible by connecting several *labP2* or *labO2* units directly to a HEADlab controller.

Each *labP2* or *labO2* unit is powered by the controller via the HEADlink connection. No external power supply is required.

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 *labP2* 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 *labP2* unit.

labP2 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 *labO2*), all equalizers can use individual equalization filters, so a correct equalization, playback level etc. is ensured for both the headphones and the subwoofers.

If several *labP2* or *labO2* units are combined into a system via HEADlink, they are synchronized automatically.

Playback equalization

labP2 can be programmed with all required equalization filters (FF, ID, DF, USER).

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.

Besides the user-specific USER filter (FIR), up to four IIR filters can be created, for example, with ArtemiS Classic and installed on the *labP2* unit.

Another IIR filter is pre-installed. With this Subjective Equalization SEQ 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.

labP2 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.

Playback system with *labO2*

For applications where playback via a headphone is to be complemented by subwoofers and shakers in the low-frequency range, the combination of *labP2* and *labO2* forms a perfectly matched playback system, which can be used, for example, in the SoundCar or in a listening studio (HEAD SQUARE).

Several *labP2* or *labO2* units can be combined into a matched eight-channel playback system.

Using as Windows audio device

labP2 can be used as Windows audio device. An additional sound board is not necessary.

Connection of ADAT devices (*labADAT* adapter via HEADlink interface)

Using the *labADAT* adapter, the HEADlink interface can also be used as an optical input and output (ADAT or S/PDIF) for connecting devices with an optical interface.

Limiter

labP2 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

- *labP2* (Code 3732)
Binaural headphone equalizer with USB interface, HEADlab-compatible
- CUSB II.1.5 (Code 5478-1.5)
Cable USB 2.0, 1,5 m (59")
- HEAD Tools DVD

Recommended accessories

- Power supply for HEADlab systems up to 60 W (without *labPWR*)

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 devices

- *labCTRL* I.2 (Code 3702)
LAN/USB controller for HEADlab
- *labO2* (Code 3731)
2-channel playback equalizer with Line outputs and USB interface, HEADlab-compatible
- *labO2-V1* (Code 3731-V1)
2-channel playback equalizer with Line outputs, headphone connector, and USB interface
- *labP2-V1* (Code 3732-V1)
Binaural headphone equalizer with USB interface

Power supply

- *labPWR* I.1 (Code 3711)
Power Box for HEADlab systems (up to 40 W)
- *labPWR* I.2 (Code 3712)
Power Box for HEADlab systems (up to 100 W)
- Power supply for HEADlab systems up to 160 W (without *labPWR*)

Adapters and cables

- *labADAT* (Code 3794)
ADAT adapter
- CLX X.1 (Code 3797-1)
AES/EBU adapter
- CLL X.xx (Code 3780-xx)
Cable LEMO 8-pin ↔ LEMO 8-pin (HEADlink cable)

Windows is a registered trademark of the Microsoft Corporation

Technical Data

General

| | |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Interfaces: | 1 x USB Hi-speed client, 2 x jack 6.3 mm (headphones), 2 x LEMO 8-pin (HEADlink), 1 x USB Hi-speed host, 1 x SD card slot, 1 x LEMO 4-pin (Power-In) |
| Sampling frequencies (F_s): | 32; 44.1; 48 kHz |
| Power supply: | 9.3 to 36 V |
| Power consumption: | 10 W |
| Frequency range: | 0 Hz to 20 kHz |
| S/N: | 104 dB(A) |
| THD+N: | -94.5 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) |
| Maximum cable length to the controller: | 60 m (2362") (with HEADlink cable CLL X) |
| Cooling: | Convection, no fan |
| Dimensions: | 140 x 173 x 42 mm (WxDxH) (5.5" x 6.8" x 1.7") |
| incl. locking mechanism and rubber pads and knob: | 148 x 185 x 48 mm (WxDxH) (5.8" x 7.3" x 1.9") |
| Weight: | 706 g (1.56 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

| | |
|--------------------------------|-----------------------------------------------------------|
| 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 |

USB 2.0 Hi-Speed Client

| | |
|--------------------|--|
| Connection to a PC | |
|--------------------|--|

USB 2.0 Hi-Speed Host

| | |
|-------------------------------------------|--|
| Updates / connecting a USB Recovery Stick | |
|-------------------------------------------|--|

SD Card Slot

| | |
|---------------------------------|--|
| Updates / for future expansions | |
|---------------------------------|--|

HEADlink (HEAD acoustics standard)

| | |
|--------------------------------------------------------------------------------------|--|
| Connection to a labCTRL I.1 or a labCTRL I.2; power supply of another labP2 or labO2 | |
|--------------------------------------------------------------------------------------|--|