



Features

- HEADlab-compatible playback equalizer for realistic playback via subwoofers, shakers etc.

USB connection to the PC

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

Connection to a HEADlab system

- Connection to a HEADlab controller

Connection of subwoofers

- Connection of amplifiers for two subwoofers for realistic playback, particularly of low-frequency airborne sound components
 - Subwoofer pair HSW II.1
 - Subwoofer HSW I
- Equalization filters (FF, ID, DF, USER); four additional IIR filters can be installed

Connection of other devices

- Headphone amplifier HDA IV.1 or HDA IV.2 for synchronized playback via four or eight additional, level-calibrated and equalized headphones
- Amplifiers for shakers (e.g. for H3S)
- Sine generators, oscilloscopes etc.
- AES adapter for devices with an AES interface
- ADAT adapter for devices with an optical interface
- Connecting additional devices via two asymmetric, separately equalizable BNC interfaces

Cascading with other labO2 and labP2 devices

- For creating a synchronized playback system with several labO2 or labP2 units (equalizer for playback via headphones), 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

labO2 (Code 3731)

2-channel playback equalizer with Line outputs and USB interface, HEADlab-compatible

Overview

The output module labO2 allows realistic playback via high-quality subwoofers, excitation of shakers, and connection of additional devices. With the equalizer function, users can play back aurally accurate recordings with the correct equalization.

labO2 can be connected directly to a PC via USB or can be integrated in a HEADlab system. Operation is easy and intuitive, e.g. via ArtemiS SUITE software or via the built-in display with a rotary control switch.

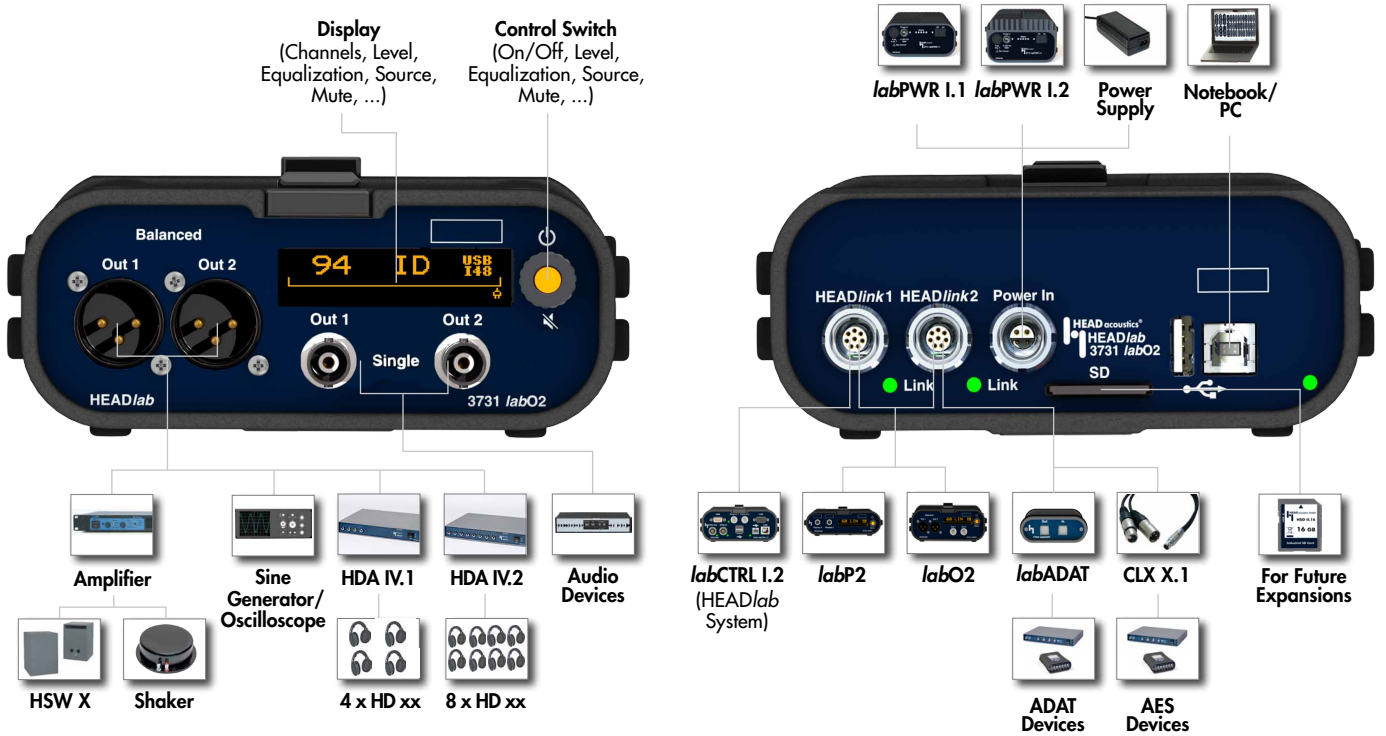
For playback, HEAD acoustics offers the high-quality subwoofers HSW II.1 and HSW I with realistic sound balance particularly in the low-frequency range. Furthermore, it is possible to connect shakers, oscilloscopes, and sine generators, as well as conventional playback devices.

labO2 can be combined with the labP2 headphone equalizer into a synchronized playback system, which accurately equalizes the subwoofers and the headphones, removes delays between the headphone signal and the subwoofer signal, and calibrates the sound pressure levels. Shakers can be synchronized to the playback as well.

Connecting a HDA IV.1 or HDA IV.2 headphone amplifier multiplies the number of headphones that can be used with the system.

For installation in a 19" rack the variants labO2-V1 or labP2-V1 are available.

labO2 - Overview



Connection to a PC (USB interface)

Via USB, labO2 can be connected directly to a computer and used as a playback device for subwoofers, for exciting shakers, and many other purposes.

More labO2 or labP2 units can be connected to the equalizer and combined into a synchronized playback system.

In a playback system with several labO2 or labP2 units 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 labO2 or labP2 units directly to a HEADlab controller.

Each labO2 or labP2 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 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, ArtemiS SUITE passes such information to the labO2 unit.

Headphones of the types HD IV or HD VII, which are connected to a headphone amplifier HDA IV. 1 or HDA IV. 2, automatically receive the correct equalization and the correct playback level via labO2. Usually, loudspeaker arrangements must be calibrated on-site.

labO2 can also be used in simulators, such as the SoundCar from HEAD acoustics, and in listening studios with HEAD Square etc.

In a combined headphone/subwoofer playback (with labP2), 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 labO2 or labP2 units are combined into a system via HEADlink, they are synchronized automatically.

Playback equalization

labO2 can be programmed with all required equalization filters (FF, ID, DF, USER).

Besides the user-specific USER filter (FIR), up to four IIR filters can be created, for example, with ArtemiS Classic and installed on the labO2 unit.

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.

Playback via subwoofers (XLR interface)

For playback via the symmetric XLR outputs of labO2, HEAD acoustics offers high-quality subwoofers featuring realistic sound balance and homogeneous sound radiation particularly in the low-frequency range.

Recommended subwoofers

Thanks to its relatively compact size, the subwoofer pair HSW II.1 is particularly suited for playback in a vehicle environment.

The HSW I subwoofer has an optimized efficiency factor in the low-frequency range, making it ideal for high-quality playback in a listening studio, for example.

Both the HSW II.1 and the HSW I are shipped with power amplifiers.

Playback system with *labP2*

For applications where playback via a headphone is to be complemented by subwoofers and shakers in the low-frequency range, the combination of *labO2* and *labP2* forms a perfectly matched playback system, which can be used, for example, in the Sound-Car or in a listening studio (HEAD SQUARE). Vibrations of the steering wheel or the seat, for example, can be simulated by shakers excited according to the driving situation chosen by the driver.

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

Using as Windows audio device

labO2 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.

Connecting additional playback devices (BNC interface)

In addition to the XLR interfaces for professional audio equipment, two asymmetric BNC interfaces are available for connecting additional playback devices. The BNC outputs can be equalized separately.

Limiter

labP2 is equipped with a limiter that limits the playback level to a certain maximum. This maximum output level can be configured manually.

Connecting the HDA IV headphone amplifier (XLR interface)

The high-end headphone amplifiers HDA IV.1 and HDA IV.2 can be connected directly to *labO2* and can be used, for example, for listening tests (with HEAD SQUARE).

The HDA IV.1 allows up to four, and the HDA IV.2 allows up to eight dynamic headphones to be connected and synchronized. Individual level calibrations for each headphone connected to an HDA IV are performed at the factory.

Cascading several HDA IV units allows the number of headphone outputs to be increased even more without a loss of sound quality.

Scope of supply

- *labO2* (Code 3731)
2-channel playback equalizer with Line outputs and 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)

Subwoofer

- HSW I (Code 2950)
2 x HEAD subwoofer
 - KMT power amplifier DC 5
- HSW II.1 (Code 2952)
HEAD subwoofer
 - KMT power amplifier DC 3

Headphone amplifier

- HDA IV.1 (Code 2488)
Quadruple headphone amplifier
- HDA IV.2 (Code 2489)
Octuple headphone amplifier

Other devices

- *labCTRL* I.2 (Code 3702)
LAN/USB controller for HEADlab
- *labP2* (Code 3731)
Binaural headphone equalizer with USB interface, HEADlab-compatible
- For installation in a 19" rack:
 - *labP2-V1* (Code 3732-V1)
Binaural headphone equalizer with USB interface
 - *labO2-V1* (Code 3731-V1)
2-channel playback equalizer with Line outputs, headphone connector, and 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)
- Speakon cable, 10 m (32 ft)
- CXX II.3 (Code 5177-3)
Cable XLR 3-pin male ↔ XLR 3-pin female (AES/EBU), 2.95 m (118")

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Technical Data

General

Interfaces:	1 x USB Hi-speed client, 2 x XLR 4-pin (symmetric), 2 x BNC (asymmetric), 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 (Fs):	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	
XLR:	-92 dB(A) at -6 dB _{FS}
BNC:	-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)
Equalization:	FF, ID, DF, LIN (no equalization)
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 63 mm (WxDxH) (5.8" x 7.3" x 2.5")
Weight:	801 g (1.76 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)

XLR, balanced (switching between the XLR and the BNC outputs)

Number of channels:	2
Interfaces:	XLR 3-pin
Output impedance:	50 Ω
Max. output level:	17.66 V _{eff} equivalent to 119 dB _{SPL} ; symmetric output
Nominal level:	1 V _{eff} equivalent to 94 dB _{SPL}
Max. output power per channel:	0.625 W

BNC, single ended (switching between the BNC and the XLR outputs)

Number of channels:	2
Interfaces:	BNC
Output impedance:	10 Ω
Max. output level:	8.86 V _{eff} equivalent to 119 dB _{SPL} ; asymmetric output
Nominal level:	0.5 V _{eff} equivalent to 94 dB _{SPL}
Max. output power per channel:	0.55 W

USB 2.0 Hi-Speed Client

Connection to a PC	
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USB 2.0 Hi-Speed Host

Updates / connecting a USB Recovery Stick	
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SD-Karten-Slot

Updates / for future expansions	
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HEADlink (HEAD acoustics standard)

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