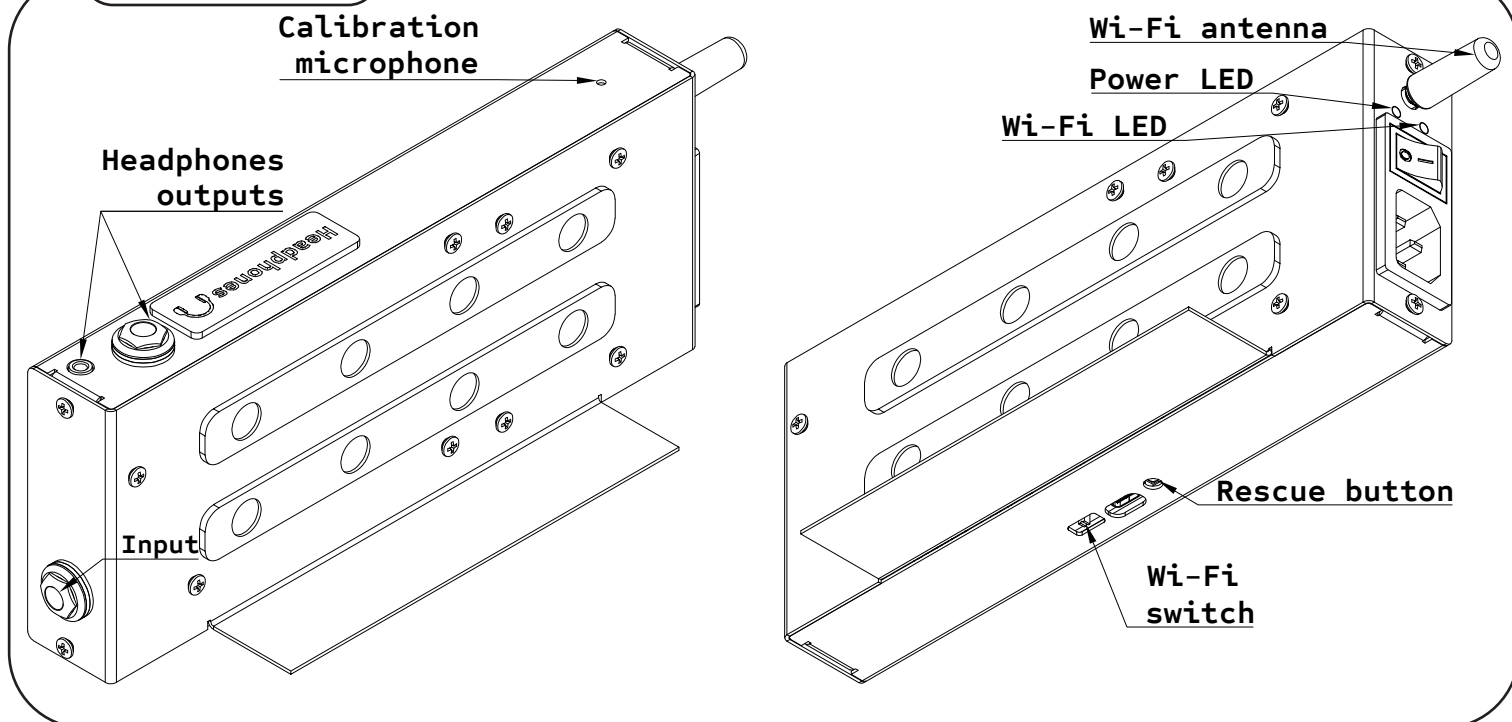


# Penrose Headphone Delay User manual

## Features



## Instructions

### Normal operation

1. Secure the Headphone Delay by sliding its tab underneath the front or side of the mixer.
2. Power on the Headphone Delay.
3. Connect the mixer headphone output to device input using the provided angled stereo (TRS) 1/4" jack.
4. Plug the DJ headphones into one of the device outputs.

The Headphone Delay is now applying the last configured delay to its outputs. The DJ can adjust their headphones level by using the mixer as they usually would.

### Calibration & configuration

A calibration of the delay can be performed using the device from its configuration page as described on page 2.

To enable the embedded Wi-Fi access point, slide the *Wi-Fi switch* in the direction of the USB connector & rescue button. The Wi-Fi LED will turn green as a result.

## Description

The Penrose Headphone Delay is an innovative headphone amplifier that solves the time alignment issues often found in DJ booths.

With its automated calibration method or a user-supplied delay value, it aligns the headphone output of DJ mixers to the monitors in the DJ booth.

This greatly improves the DJs' performance and comfort when cueing and mixing tracks by giving them clearer and more accurate timing information.

## Specifications

Frequency response	20 Hz to 20 kHz: +/- 0.5 dB
Maximum input level	+ 18 dBu
Output impedance	< 3 $\Omega$
Power per channel	200 mW (up to 600 $\Omega$ )
Configurable delay range	2 ms to 100 ms
Dimensions (LxWxH)	23 cm x 6 cm x 9 cm

# Configuration

Once the Wi-Fi access point is enabled, connect using a smartphone or laptop to the **Penrose Headphone Delay** SSID using **penrose-headphone-delay** as password. You should be redirected to the configuration page automatically. If not, you can navigate to <http://penrose-headphone-delay.local> or <http://192.168.4.1>.

## Configuration page

**Configuration**  
Set the delay added to the headphone outputs of the device

Delay 6,35 ms

☐ Phase flip

Save configuration

**Input vumeter**

Ref

Mic

Volume

**Auto-calibration**  
Perform an automatic delay calibration

Activate calibration mode, then unplug the headphones and connect the device output to the mixer before running the calibration.

Normal mode Calibration mode

☒ Send signal to check levels

Start calibration

**Firmware upgrade**  
Update the device firmware

Firmware file

Upload

The applied delay can be read & modified here.

Save the configuration to apply a given delay.

In normal mode, the vumeter shows the input RMS and peak levels in dBFS. In calibration mode, the vumeter shows the reference and microphone levels.

When activating calibration mode, the device output is muted and used for test signals instead.

A pink-noise signal can be generated to check levels before performing calibration.

The device can be upgraded to new firmware versions. When a new version is published, owners will be notified via email. Do not power off the device during the update.

## Performing a calibration

To perform a calibration, first activate the *calibration mode*. Disconnect any headphones from the device but keep the mixer headphone output connected to the device. Then, use the provided 3.5 mm stereo jack to RCA cable to connect the device to a line input of the mixer.

Enable *send signal to check levels* and verify that it is received on the left channel of the corresponding mixer input. Adjust the channel gain and headphone level such that the reference input vumeter level is in the green zone. Then, raise the DJ booth volume such that the microphone level is also within the green zone.

Now *start calibration*. A chirp is played through the left channel and captured by the microphone. Then, the required delay is computed, applied and saved within the device.

## Recommendations

During normal operation, it is recommended to disable the Wi-Fi access point. When the DJ booth has two mono monitors, the computed delay may need to be adjusted by 1-2ms to account for potential psychoacoustic effects of conflicting binaural & mono contexts. Don't hesitate to reach to us to suggest improvements to the Headphone Delay firmware.