Apodemus Pipistrelle Mini | Manual

Description

The Apodemus Pipistrelle Mini is a compact bat detector designed for enthusiasts and beginners. With this bat detector, anyone will be able to listen to the wonderful world of bats in an affordable way.

The Pipistrelle Mini has the ability to operate in heterodyne or time expansion mode, and can also function as a USB ultrasonic microphone. With these options available, this device offers a universal and advanced introduction to making bat sounds audible.

The Pipistrelle Mini requires headphones and 3x AAA batteries, which are not included.
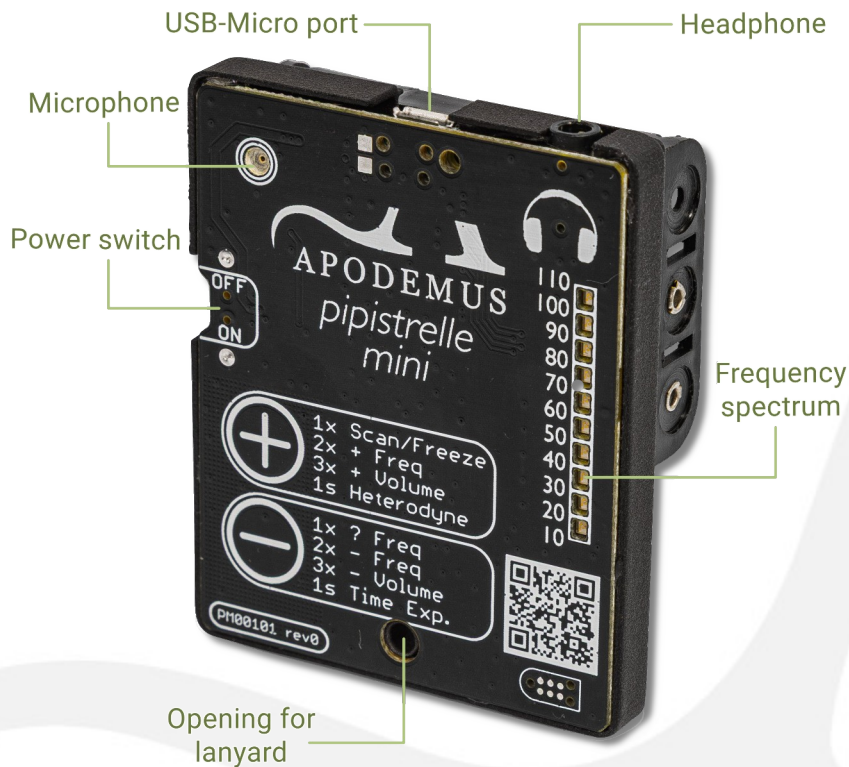
Applicability

This manual applies to the Apodemus Pipistrelle Mini, version number "PM00101 rev0" next to the opening for a carrying strap.

Basic explanation of bat detection

The Pipistrelle Mini offers two listening modes; heterodyne and time expansion. Each of these enables you to listen to bat calls, but the sound output will be different.

In heterodyne mode the ultrasonic frequencies of the bat calls get mixed and transformed into sounds in a human range. Since different species of bats have different ways of calling, the sound frequency, rhythm and call length will often be quite different between species. In heterodyne mode this results in the output of these calls all sounding different, this output in combination with the frequency can be used to recognize the different bat species.

In time expansion mode, the device takes a short recording of the current bat activity. This recording is then played very slowly, resulting in a pitched down version of the actual bat call. In this mode it is hard to differentiate between calls, but it's useful to listen to the individual call elements. This is especially nice when listening to more complex calls like social calls or mating calls, since these are composed of multiple call elements.

In addition to heterodyne and time expansion, the Pipistrelle Mini can also be used as a USB microphone. This allows the software on a phone, tablet or laptop to record or play back sounds. There are several options for this, giving you great freedom in how you use the Pipistrelle Mini.

Setting up

Required materials

- 1x Apodemus Pipistrelle Mini
- 3x AAA battery (not included)

Setting up the device

1. Insert the AAA batteries into the compartment on the back of the device.
2. Connect headphones, earphones (wired) or a speaker.
3. Turn on the device by sliding the power switch to the "ON" position. Make sure that the microphone is not blocked.

You should now be able to listen to bats in scanning mode. In this mode, the Pipistrelle Mini detects and plays all frequencies within the 10–110 kHz range, allowing you to hear different bat species at different frequencies without making adjustments. A red light will indicate the frequency with the highest energy (the peak frequency).

Functions and operation

Set Mode (Heterodyne ↔ Time Expansion)

When the Pipistrelle Mini is switched on, it defaults to heterodyne mode.

⊖	Press and hold for 1 second to switch to Time Expansion mode. Detected sounds will now be played back in Time Expansion mode.
	The green LED will now flash twice, every 2 seconds.
	Press and hold again for 1 second to adjust the Time Expansion mode between 10x or 16x slow motion.
⊕	Press and hold for 1 second to switch to Heterodyne mode.
	The green LED will now flash slowly once every 2 seconds.

Frequency setting (only in Heterodyne mode)

The red LED's on the right hand side indicate the peak frequency.

⊕	Press once to switch between Scan and Freeze. The red LED flashes at the set peak frequency. *Scan mode automatically tracks the frequency of the signals, while Freeze mode locks the frequency, allowing you to hear only bats around this frequency.*
⊖	Press once to hear the peak frequency. A voice signal will announce the exact value.
⊖ or ⊕	Quickly tap one of these buttons twice to adjust the frequency. Freeze mode is activated automatically.

> ## Note:
> Frozen frequency options are limited to:
> 11.5 – 19.8 – 25 – 36 – 45 – 55 – 82 – 110 kHz.

Volume setting

⊖ or ⊕	Quickly tap 3 times to decrease or increase the volume.

The green flashing light at the top indicates the current mode:

- Slow flashing: heterodyne mode

- Fast flashing: time expansion mode

> ## Note:
> Pressing both buttons at start-up enables 'aggressive feedback suppression,' applying an extremely low-pass filter to the heterodyne output.
> This is useful when using a very high-frequency, preamplified speaker.

Use as a USB microphone

When connected via USB, the Pipistrelle Mini can be used as a USB microphone.
Please note: when using as a USB microphone, the batteries must be removed.

The Pipistrelle Mini has a USB-Micro connection.

Info:

Apple Lightning:
When using an iPhone with a Lightning connector, it is important to use a Lightning to USB Camera adapter and a USB cablewith a USB-A to USB-Micro connector.
Apple item number: MD821ZM/A

USB-C:
Android devices with USB-C, or iPhone version 15 or higher, are equipped with a USB-C connection.
This requires a USB-C to USB Micro cable.

Required materials

- 1x Apodemus Pipistrelle Mini

- 1x Smartphone, tablet or other device with compatible software for downloading app

- 1x USB cable (For Apple, use Lightning md821zm/a + USB-A to USB-Micro cable)

To use the Pipistrelle mini as a USB microphone, you need an app. This app differs for Android and iOS smartphones. These apps will display a sonogram of the sound detected by the Pipistrelle Mini. Both apps allow you to adjust the previously mentioned functions and controls, such as heterodyne versus time expansion and record.

Batgizmo   **IOS**

Basic connection to BatGizmo (Android)

1. Connect the Pipistrelle Mini (without batteries) to your phone with the cable

2. Open the BatGizmo app

3. Press the record icon and give Batgizmo access to the USB microphone

4. You should now see the live spectrogram

5. Press the speaker icon and select the reference audio (peak frequency) that you want to listen to. Additionally, you can check the box for dual heterodyne mode to listen on two peak frequencies

Basic connection to Bat Detector (iOS)

1. Connect the Pipistrelle Mini (without batteries) to your phone with the cable

2. Open the Bat Detector app

3. The app should automatically detect the USB microphone and show the live spectrogram

4. You have multiple functions and controls, such as heterodyne versus time expansion and recording.

5. With heterodyne selected, you can drag the horizontal line to the requested heterodyne frequency

Note:
When the Pipistelle mini is connected to your phone, all buttons on the Pipistrelle mini will be Unresponsive. All functions must be controlled on the phone or in the app.

Advanced features

Firmware updates

To update the firmware of a Pipistrelle Mini device, you will need:

- PC
- micro USB cable

Use the following procedure:

1. Download the latest Pipistrelle Mini firmware file from apodemus.eu
2. Check that the file is meant for the Pipistrelle Mini: the name should be "pipmini_xxx.uf2", where xxx denotes the version number.
3. Remove the batteries from the Pipistrelle Mini
4. Short the two Firmware flash contacts with a small piece of aluminum foil.
5. While shorting the contacts, connect the USB cable: a new storage device should be detected by the PC.
6. Release the short.
7. Copy the Pipistrelle Mini firmware file to the new storage device.
8. The firmware will be installed.

Usage warnings

- Remove batteries when the Pipistrelle Mini is not in use. The solder point for the battery holder are exposed on the Pipistrelle Mini, and care should be taken to not short these connections. These connections can be shorted even if the device is switched off.

- Always store a Pipistrelle Mini protected from conductive materials.

- Always store a Pipistrelle Mini dry and dust free to protect the microphone and electronics.

- When you need to dispose of a Pipistrelle Mini, recycle the device as electronic waste or send it back to the seller.

Product identification

The hardware identification number is printed on the visible side of the PCB. This manual is applicable to version "PM00101 rev0".

The original firmware version and serial number is printed on the product label.

Technical specifications

Type:	Heterodyne and real-time expansion (10x, 16x)
Microphone:	MEMS – Knowles SPU0410
Frequency range:	10 - 110 kHz
Aggressive Feedback Filter:	Enable by holding both buttons when switching on
Battery:	3x AAA battery (not included)
USB port:	USB-Micro For USB use and updates
Outputs:	1x 3.5 mm headphone jack
Dimensions:	70 x 56 x 23 mm / 30 g
Packaging:	145 x 95 x 28 mm / 70 g
Country of origin:	The Netherlands

Currently the IP rights are owned by Apodemus Field Equipment for the whole Pipistrelle family of devices.

The Pipistrelle Mini described in this manual is the industrialized version by Apodemus, which comes fully assembled and tested.

The original Pipistrelle Mini has been designed by Phil Atkin. There is a self-build design available at www.pippyg.com.

Recommendation:
We recommend using sensitive headphones due to the relatively low output level.
Specification guideline: 95dBSPL @ 1mW. (e.g. Sony MDRZX110).