

Petterson M500-384 USB Ultrasound Microphone

Quick Start Guide



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Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under FCC rules.

Pettersson M500-384 USB Ultrasound Microphone

INTRODUCTION

The M500-384 USB Ultrasound Microphone enables you to make high-quality, full spectrum recordings of bat calls or other ultrasonic signals with a wide variety of computers/laptops/tablets/smartphones (referred to as 'computers' below), using the sound recording software of your choice. The M500-384 uses standard sound device drivers and does not require installation of any custom drivers.

The M500-384 comes in a small and durable aluminium enclosure. It utilizes the same electret microphone technology as the well-known D500X detector and can be used both in directional and omnidirectional modes (with or without the directional horn).

Low-noise technology, high sampling frequency and efficient anti-aliasing filter provide high quality recordings.

SYSTEM REQUIREMENTS

The M500-384 works with most operating systems, e.g. Windows, OS X, iOS, Linux and Android, and on most computer devices. Due to the large number of possible combinations, it is not possible to guarantee full functionality on all computers and operating systems, though.

Specifically, the hardware and software used to record from the M500-384 must support recording at a sampling frequency of 384 kHz and a resolution of 16 bits. A USB 2 or USB 3 (OTG/host enabled) with USB bus power (minimum 150 mA) is also required. For information on this, please consult the specifications for the computer and recording software.

In order to reduce the load on the processor and increase the performance, we recommend you to:

- Run only the sound recording program/app. Close all other programs/apps, if possible.
- Disable anti-virus scanning, if an anti-virus program is used.
- Disable computer functions such as WiFi, Bluetooth and Power Saving features. Set the device in "flight mode", if available.

USING THE M500-384

Getting started

First, you need a sound recording software. There are quite a few suitable programs - both free and paid - on the market. The Pettersson BatSound Touch is one example for Windows devices. BatSound Touch Lite is free and can be downloaded from Pettersson's web site, www.batsound.com. Audacity is another popular program available in versions for Windows, OS X and Linux. For Android devices, the app 'Bat Recorder' is available at digitalbiology.com/BatRecorder-Downloads/. As mentioned, the program/app you choose, must support recording via USB at 384 kHz sampling frequency and 16 bits resolution. Most programs have to be specifically set up to use these recording parameters.

Next, connect the M500-384 to a USB port of your computer, using the supplied USB cable*. Usually, the computer will acknowledge this, e.g. with a sound, and the text "Pettersson" on the M500-384 will be illuminated to indicate that the microphone receives power from the computer. This process may take a few seconds. The M500-384 is now ready to be used.

If no "USB device connected" acknowledgement sound is heard and/or the red indicator remains constantly on after plugging the M500-384 into the USB jack, please disconnect the M500-384 a few seconds and then connect it again and wait to let it establish the USB connection.

Please note that some devices may require that you first turn on the USB port in the device's settings menu.

The way recordings are made, depends on the recording software. Please refer to the software manual for information about this. The red indicator on the M500-384 will light when data is being sent from the microphone to the computer. This does not necessarily mean that the software is actually recording when the red indicator is on. This is software dependent.

** In order to connect the M500-384 to a computer with a micro B USB jack or a USB C jack (e.g. a tablet or smartphone) an adapter is required. Separate cables with USB Mini-B and USB Micro-B/OTG plugs are also available from Pettersson. iOS devices with a Lightning jack, require a 'Lightning to USB Camera Adapter'.*

Changing the microphone directionality

The M500-384 comes with a detachable directional horn. In order to obtain a more directional microphone characteristic as well as a higher on-axis sensitivity, the directional horn should be used. To remove the horn, pull the horn straight away from the microphone tip. *Do not put pressure on the horn sideways - this may damage the microphone!* When the horn is put back on the microphone tip, please hold the horn at the edge while pressing it onto the tip. This avoids increasing the air pressure over the microphone port, which might occur if the horn opening is closed e.g. with a finger.

Weather protection

The M500-384 is not waterproof and should be protected against the elements if used e.g. under humid conditions. The housing and circuit board are relatively insensitive to humidity, but the microphone element and USB connector may require protection.

M500-384 Specifications

Microphone:	Advanced electret
Sampling frequency:	384 kHz
ADC resolution:	16 bits
Interface:	USB 2.0, 3.0, 3.1
Anti-aliasing filter:	8th order, 160 kHz
Frequency range:	10 kHz - 160 kHz
Size:	43 x 114 x 13 mm (incl microphone horn)
Weight:	60 g
Power:	USB bus powered (5 V, 150 mA max)