

# Petterson M500 USB Ultrasound Microphone

## BatSound<sup>®</sup> Touch Lite

### Quick Start Guide



## **GUARANTEE**

This product is guaranteed against defects in material and workmanship for a period of one year from the date of purchase. In order for the guarantee to be granted, a proof of purchase (normally the original invoice/receipt) is required and the serial number label must not be removed from the product. Pettersson Elektronik AB, Sweden ("Pettersson") will repair or replace the product if it proves to be defective during the guarantee period, provided it is returned to Pettersson. No other guarantee is expressed or implied.

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4. Accidents or similar causes beyond the control of Pettersson, including but not limited to lightning, water, fire and public disturbances.

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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 USB Ultrasound Microphone

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## INTRODUCTION

The M500 USB Ultrasound Microphone enables you to make high-quality, full spectrum recordings of bat calls or other ultrasonic signals with a Windows tablet PC or laptop.

The M500 comes in a small and durable aluminium enclosure. It utilizes the same advanced 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 highest quality recordings.

The microphone comes with an easy-to-use Windows recording program, BatSound Touch Lite, that saves the recordings as 16 bit wav files. Real-time display of the waveform and the spectrogram as well as real-time monitoring of the bat calls are also available. The program offers various triggering modes; manual and automatic, with or without pre-trigger, level triggered or frequency triggered operation. BatSound Touch Lite can be downloaded from [www.batsound.com](http://www.batsound.com).

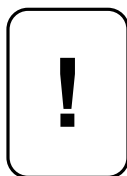
BatSound Touch Lite, which is a special version of the BatSound Touch software with limited functionality, can only be used with the M500, not with other sound devices. The full version of BatSound Touch, which can be purchased from Pettersson Elektronik, offers full functionality.

## SYSTEM REQUIREMENTS

- Computer with Windows 7, Windows 8/8.1 or Windows 10 operating system.
- Minimum 1 GB RAM
- Minimum 1.33 GHz quad core processor
- Microsoft .NET Framework 4.5 (included in Windows 8/8.1/10)
- Microsoft Visual C++ Redistributable Package for Visual Studio 2013\*
- Internet access during installation (only for installing .NET Framework 4.5)
- USB 2 High-speed or USB 3 interface/host type with USB bus power (minimum 150 mA).

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

- Close all other programs running on the computer, if possible
- Disable anti-virus scanning, if an anti-virus program is used.
- Disable computer functions such as WiFi, Bluetooth and certain Power Options ("Turn off the display after x minutes" and "Put the computer to sleep after x minutes").



**IMPORTANT! Do not plug the M500 into a USB port on your computer yet. The M500 software and driver must be installed first! Please refer to the BatSound Touch User Manual for more information. The User Manual is available as a pdf file on the USB memory stick that comes with the M500.**

*\* Included in the BatSound Touch Lite installation package*

## INSTALLING THE SOFTWARE

1. Download BatSound Touch Lite from [www.batsound.com](http://www.batsound.com) and run the file "BatSoundTouchInstaller32.exe".
2. Accept the Security Warning and click "Run".
3. Read the license agreement and check the box "I agree to the license terms and conditions" to confirm that you agree and click Install.
4. If a User Account Control window appears, click Yes.
5. The installation now begins. If Microsoft Visual C++ 2013 Redistributable (x86) is not already installed on your system, a dialog box will open. Read the Microsoft Software License Terms and check the box "I agree to the license terms and conditions" to confirm that you agree and click Install. When it is completed, press Close to finish the installation of BatSound Touch.

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## USING THE M500

### Getting started

Connect the M500 to a USB 2.0 high-speed or USB 3 port of your computer, using the supplied USB cable\*. A sound will be heard from the computer as an acknowledgement and the text "Petterson" on the M500 will be illuminated to indicate that the M500 receives power from the computer. This process may take a few seconds. The M500 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 into the USB jack, please disconnect the M500 a few seconds and then connect it again and wait to let it establish the USB connection.

Next, start the BatSound Touch software. There will be two empty diagrams for the waveform (oscillogram) and spectrogram. Tap the "Live View" symbol  above the respective diagram to turn on the Live View. Rub two fingers in front of the microphone and you will "see" this sound in real-time on the screen. The red indicator on the M500 will flash once every second in this mode.

To make a recording, simply tap the red recording symbol  in the toolbar at the right. The red indicator will then light constantly. To stop the recording, tap the black stop  symbol.

Other recording modes are also available, such as the triggered and circular buffer modes. For more information about these, please refer to the BatSound Touch User Manual in the BatSound Touch program folder.

The recorded files will be saved in the C:\Users\Your Account\Documents\BatSound\Recordings\ folder by default. "Your Account" is the name of the user account that is currently used.

*\* In order to connect the M500 to a computer with a micro USB jack (e.g. a tablet PC) an adapter with an OTG USB micro plug is required. Separate cables with USB Mini-B and USB Micro-B/OTG plugs are also available on the market.*

### Changing the microphone directionality

The M500 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 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 Specifications

Microphone:	Advanced electret
Sampling frequency:	500 kHz
ADC resolution:	16 bits
Interface:	USB 2.0, high speed or USB 3
Anti-aliasing filter:	8th order, 210 kHz
Frequency range:	10 kHz - 210 kHz
Real-time monitoring:	Through the PC sound card (under-sampling)
Size:	43 x 114 x 13 mm (incl microphone horn)
Weight:	60 g
Power:	USB bus powered (5 V, 150 mA max)