ULTRAMIC384K EVO
ULTRAMIC192K EVO

High performance dual sensor Ultrasonic USB microphone

USER GUIDE

2.0

Overview

Ultramics are USB audio and ultrasonic microphones.

Two versions are available:
- UM384K USB MICROPHONE with 384 kHz sampling rate and 190kHz bandwidth
- UM384K USB MICROPHONE with 192 kHz sampling rate and 95kHz bandwidth

This means that you can record sounds up to about 190 kHz or up to 95 kHz.
The USB 2.0 full speed port allows an easy connection to your PC, iOS, Android smartphone or tablet and to embedded Linux systems.

The microphone is provided (optional) with a magnetic cone that makes the microphone more directional.
The cone can be easily removed pulling it from the tip making the microphone omnidirectional, moreover the cone provides a protection to the sensor.
The magnets keep the cone close to the sensor.

Features

- A high performance dual sensor- omnidirectional audio and ultrasonic microphone
- **USB 2.0** full speed connection using a driverless - standard audio class UAC 1.1 interface for an easier communication with host devices
- Hardware amplification gain is settled via four switches
-

Applications

- BIOACOUSTICS:
  - Detecting and recording of biological ultrasounds for **bioacoustics studies** on insects, cetaceans, rodents, and bats.
  - Environmental studies to assess the impact of **wind farms** on bats.
  - Recording and analyzing mice ultrasonic vocalizations for **pharmacological studies**.
  - Soundtracks and special effects (such as slowing down the recorded ultrasounds).

- INDUSTRIAL:
  - **LEAK detection**
  - **Predictive motor fault monitoring**
  - Detection of **high-frequency noises** emitted by switching power supplies, LCD screens, or the turbines of car and truck engines, energy saving lamps.

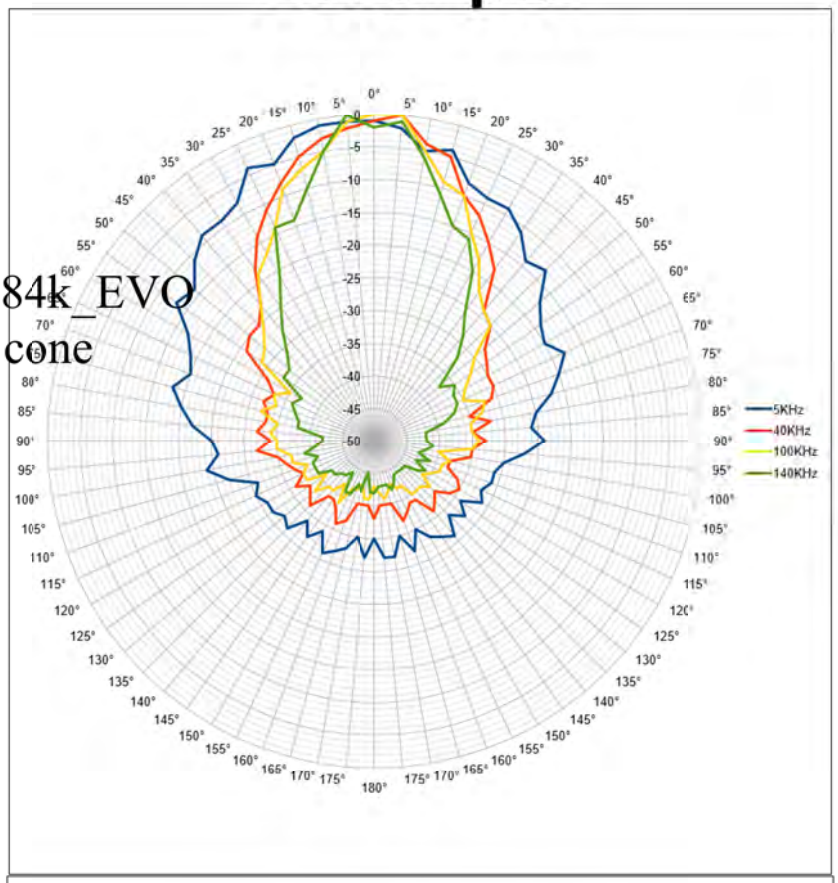
The use of standard USB audio class allows the microphone to be used as a standard Plug & Play device with no driver installation required.

... WITH YOUR PC
Insert the USB connector of the microphone to the USB connector of your PC.
Less than a minute is required for the operating system of your PC to install the required software.
Install your preferred audio software. The list of compatible software can be found on:
www.dodotronic.com

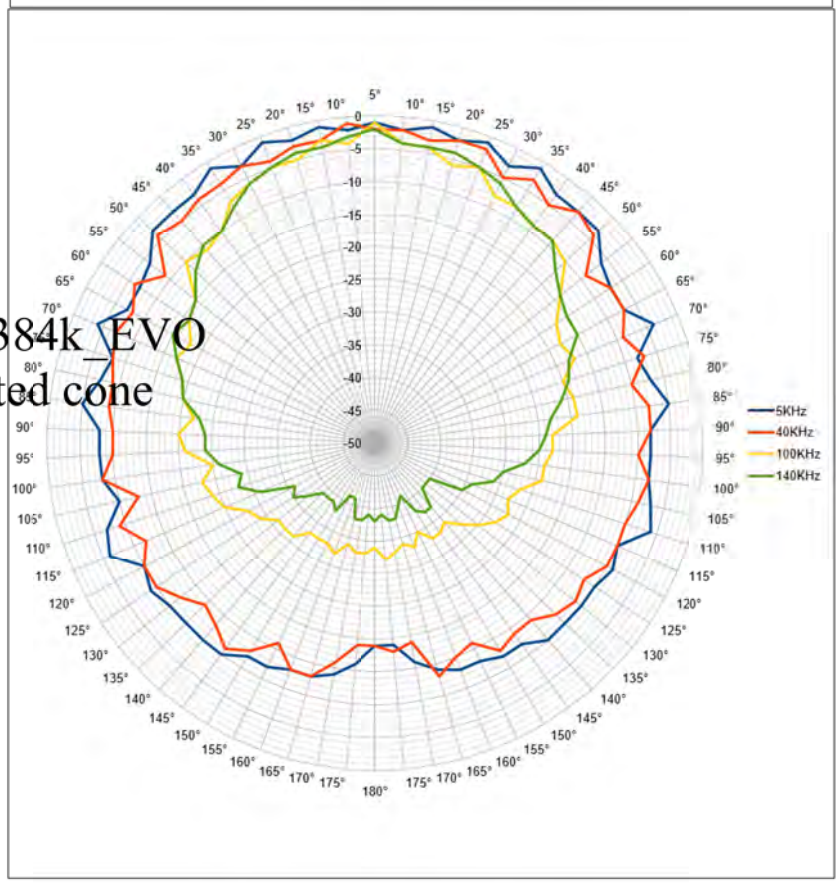
... WITH YOUR SMARTPHONE OR TABLET
Use a USB OTG adapter and connect the Ultramic to your Android smartphone.
Download the BAT RECORDER app and open it.
Connect your headphones to listen the ultrasound translated in audio range. The online user guide will lead you to understand the many available features.

Planar plot

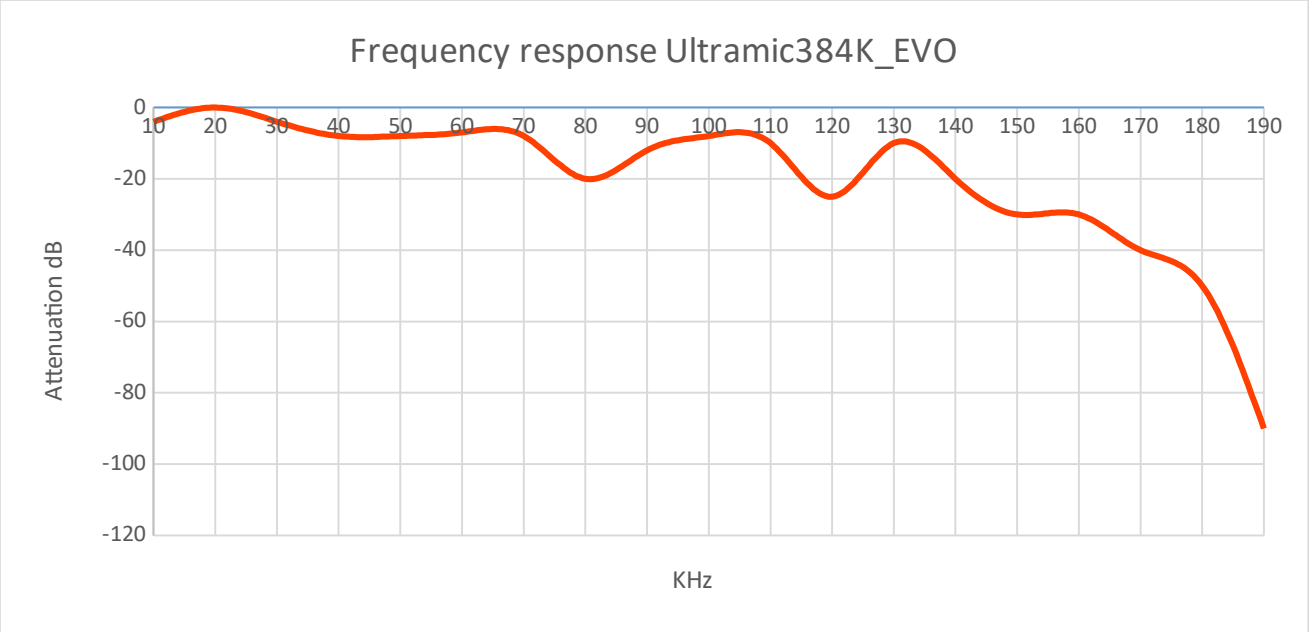
ULTRAMIC384k_EVO
with mounted cone



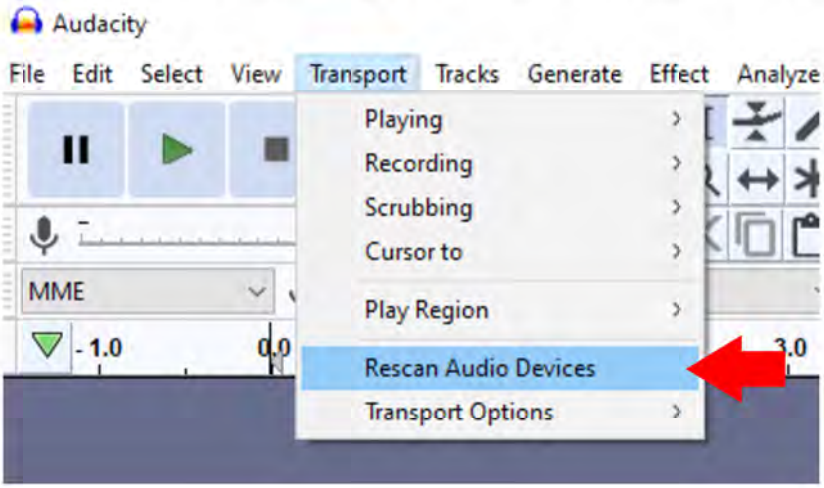
ULTRAMIC384k_EVO
with unmounted cone

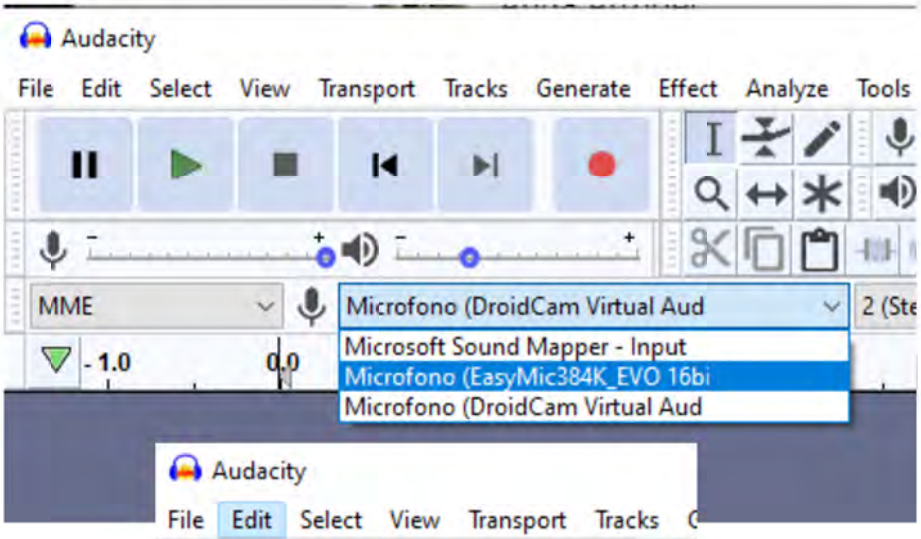


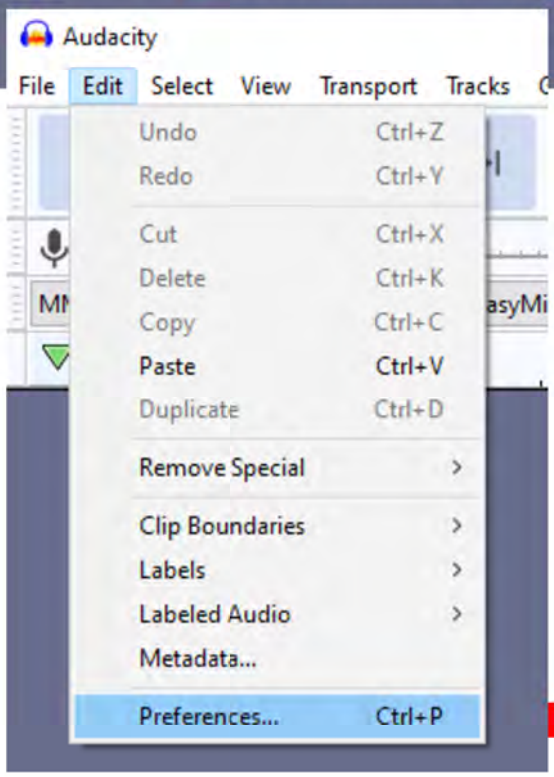
Frequency response

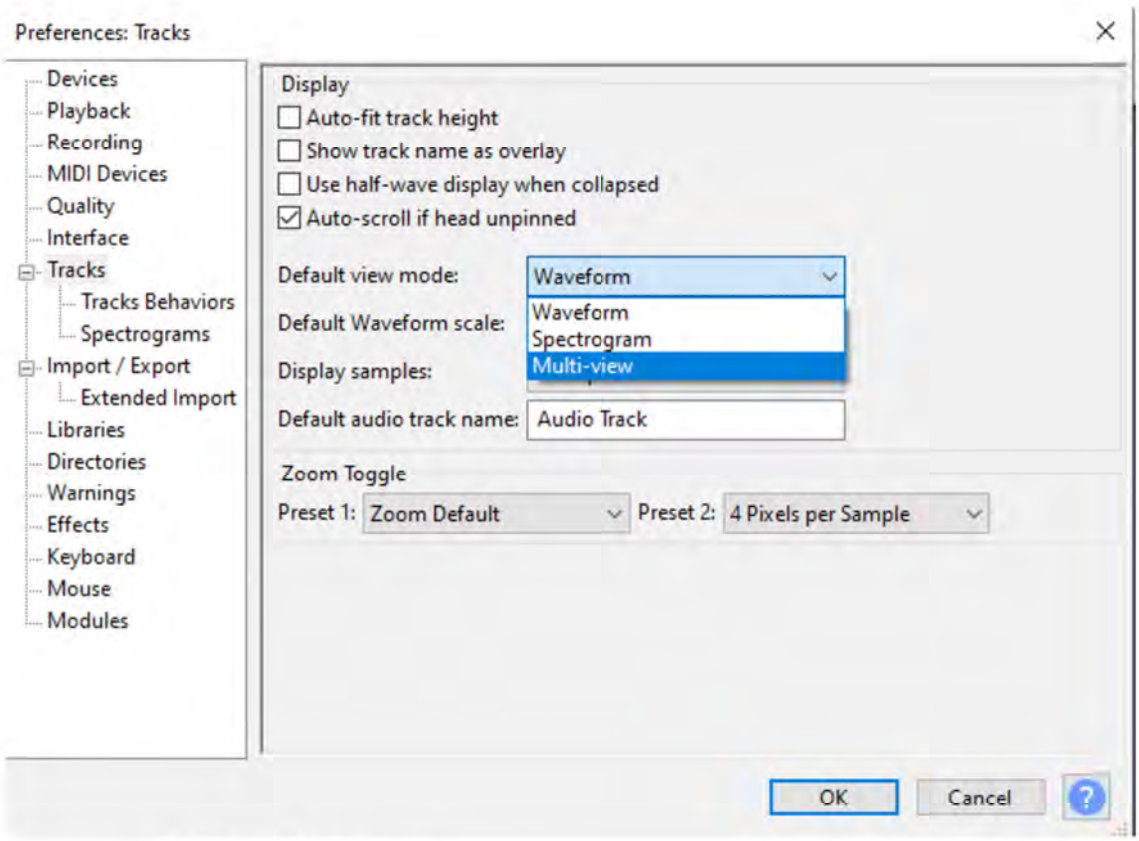


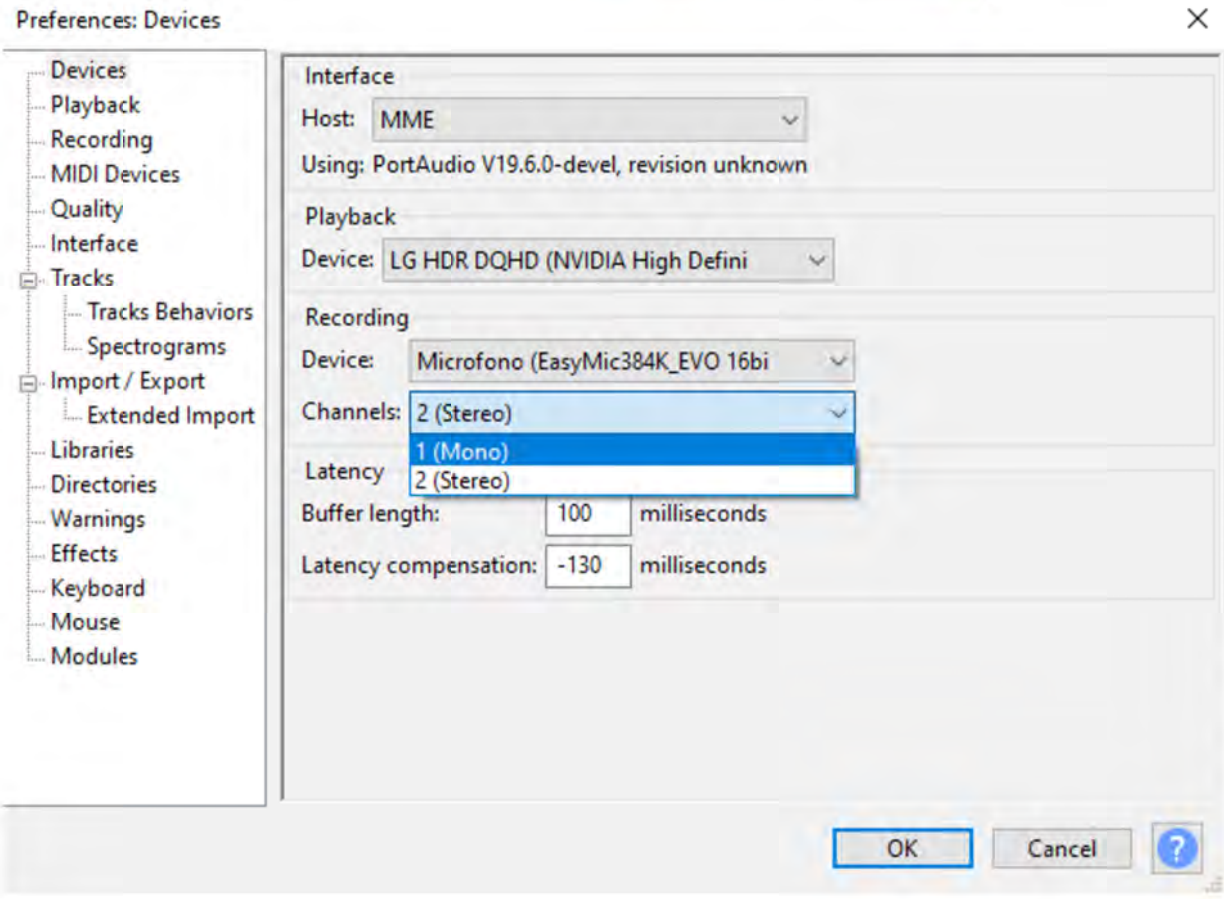
How to setup Audacity with Ultramic384K_EVO

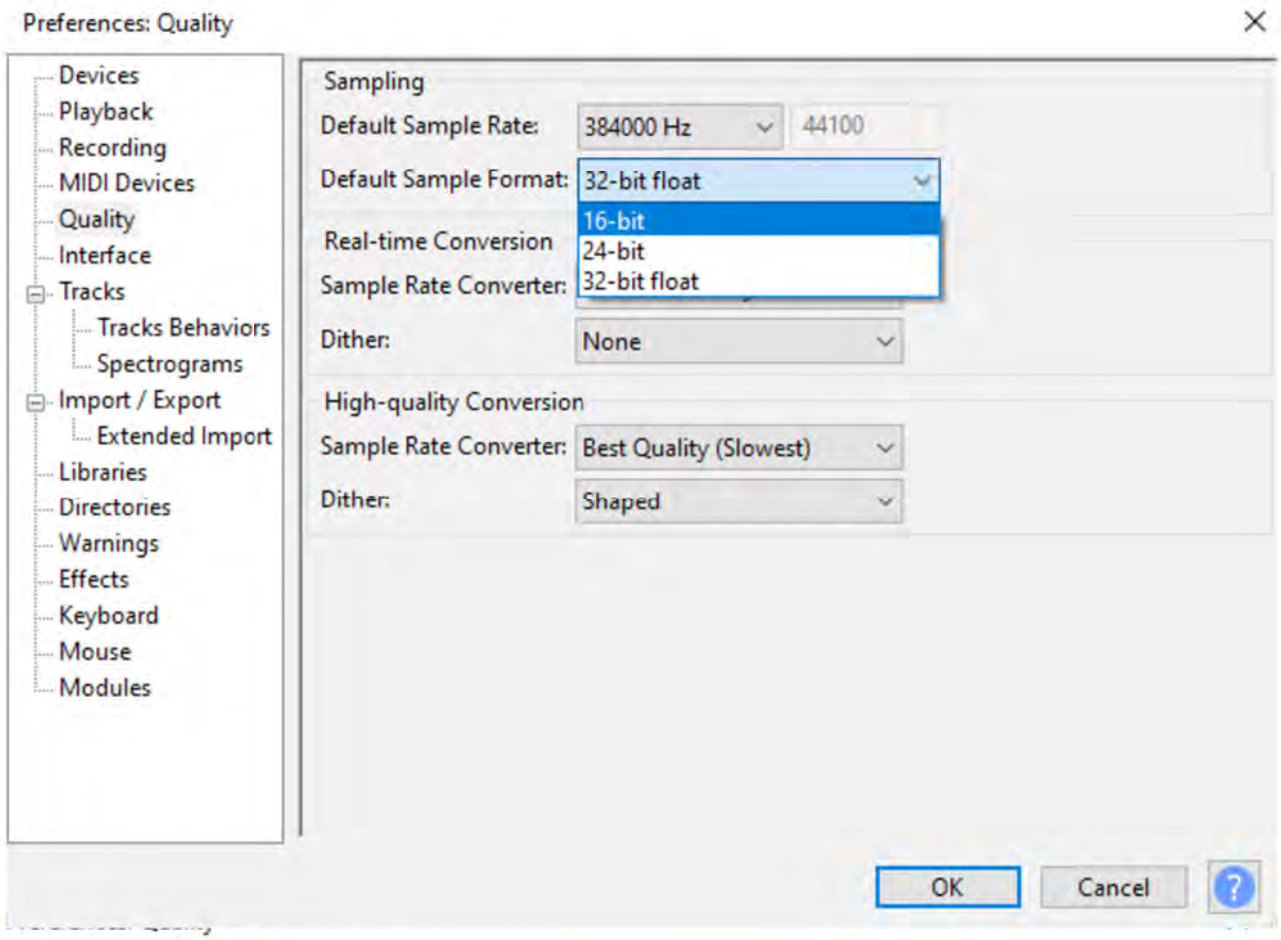


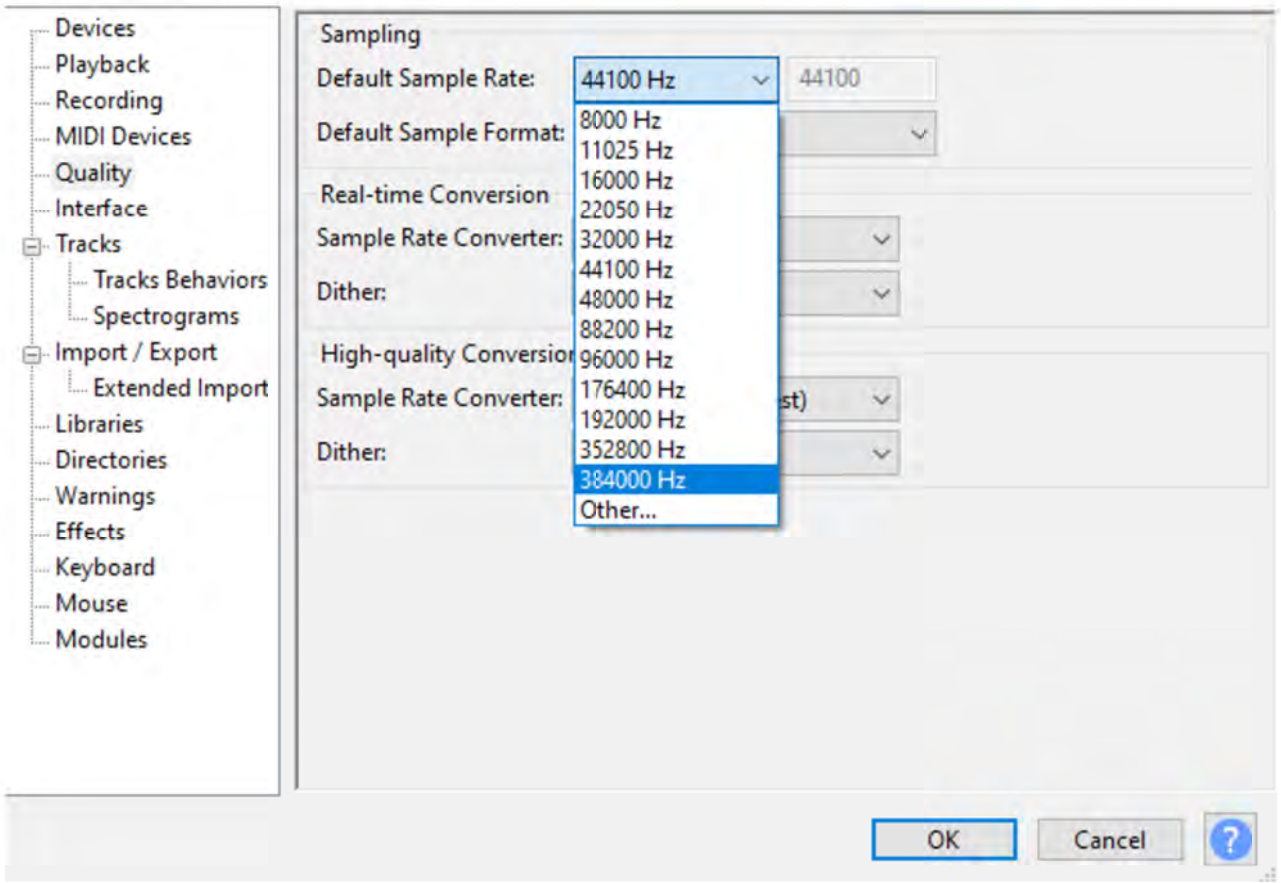


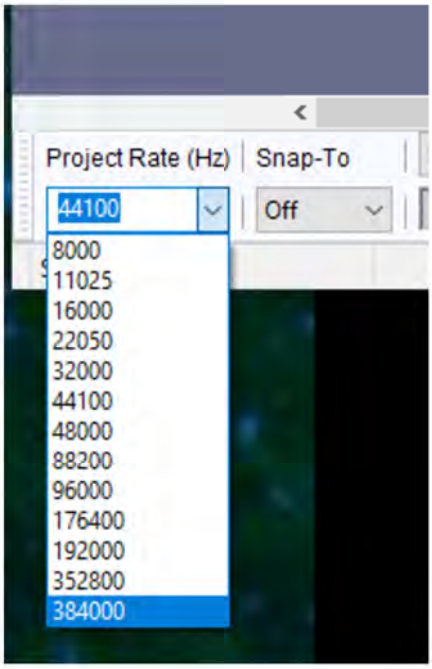


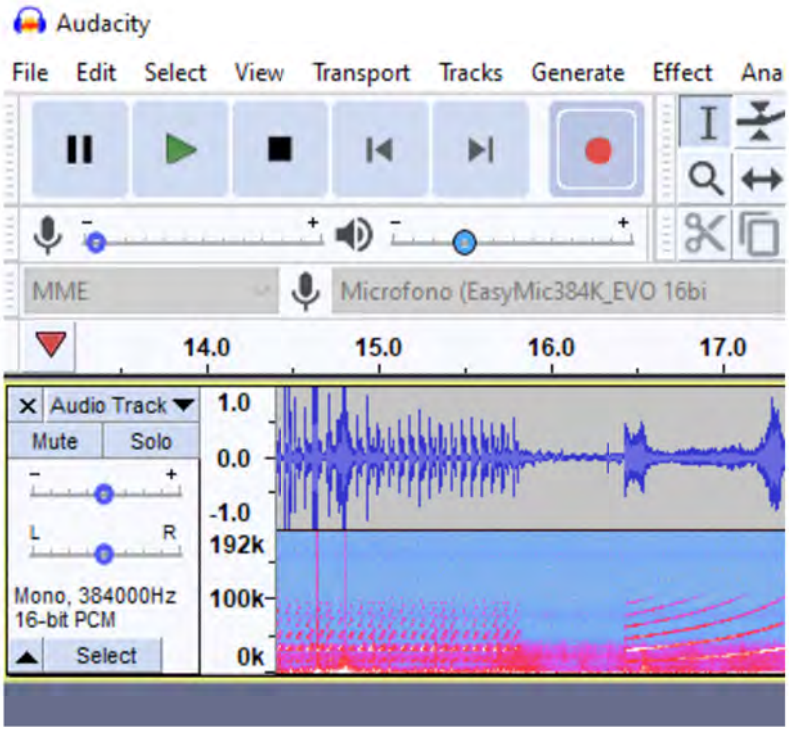

Preferences: Tracks
Devices
Playback
Recording
MIDI Devices
Quality
Interface
Tracks
Tracks Behaviors
Spectrograms
Import / Export
Extended Import
Libraries
Directories
Warnings
Effects
Keyboard
Mouse
Modules
Display
Auto-fit track height
Show track name as overlay
Use half-wave display when collapsed
Auto-scroll if head unpinned
Default view mode:
Waveform
Waveform
Spectrogram
Multi-view
Default Waveform scale:
Display samples:
Default audio track name:
Audio Track
Zoom Toggle
Preset 1:
Zoom Default
Preset 2:
4 Pixels per Sample
OK
Cancel


Preferences: Devices
Devices
Playback
Recording
MIDI Devices
Quality
Interface
Tracks
Tracks Behaviors
Spectrograms
Import / Export
Extended Import
Libraries
Directories
Warnings
Effects
Keyboard
Mouse
Modules
Interface
Host:
MME
Using: PortAudio V19.6.0-devel, revision unknown
Playback
Device:
LG HDR DQHD (NVIDIA High Defini
Recording
Device:
Microfono (EasyMic384K_EVO 16bi
Channels:
2 (Stereo)
1 (Mono)
2 (Stereo)
Latency
Buffer length:
100
milliseconds
Latency compensation:
-130
milliseconds
OK
Cancel


Preferences: Quality
Devices
Playback
Recording
MIDI Devices
Quality
Interface
Tracks
Tracks Behaviors
Spectrograms
Import / Export
Extended Import
Libraries
Directories
Warnings
Effects
Keyboard
Mouse
Modules
Sampling
Default Sample Rate:
384000 Hz
44100
Default Sample Format:
32-bit float
16-bit
24-bit
32-bit float
Real-time Conversion
Sample Rate Converter:
Dither:
None
High-quality Conversion
Sample Rate Converter:
Best Quality (Slowest)
Dither:
Shaped
OK
Cancel


Devices
Playback
Recording
MIDI Devices
Quality
Interface
Tracks
Tracks Behaviors
Spectrograms
Import / Export
Extended Import
Libraries
Directories
Warnings
Effects
Keyboard
Mouse
Modules
Sampling
Default Sample Rate:
44100 Hz
44100
Default Sample Format:
Real-time Conversion
Sample Rate Converter:
Dither:
High-quality Conversion
Sample Rate Converter:
Dither:
8000 Hz
11025 Hz
16000 Hz
22050 Hz
32000 Hz
44100 Hz
48000 Hz
88200 Hz
96000 Hz
176400 Hz
192000 Hz
352800 Hz
384000 Hz
Other...
OK
Cancel


Project Rate (Hz)
Snap-To
44100
Off
8000
11025
16000
22050
32000
44100
48000
88200
96000
176400
192000
352800
384000


Audacity
File
Edit
Select
View
Transport
Tracks
Generate
Effect
Ana
MME
Microfono (EasyMic384K_EVO 16bi
14.0
15.0
16.0
17.0
Audio Track
Mute
Solo
L
R
Mono, 384000Hz
16-bit PCM
Select
1.0
0.0
-1.0
192k
100k
0k

Technical Specifications

Recording format	Linear PCM (Pulse Code Modulation) format	
USB B connector	USB 2.0 Full Speed USB audio class 1.1	
External dimensions	Ultramic = 80 W x 30 L x 16 H mm Cone = 37 W x 25 L x 18 H mm	
Weight	24 g	
Switch gain settings referred to 1 Khz 94 dB SPL = 0 dB	1 2 3 4	-33 dB -10dB 0dB 10dB
Sampling frequency	384 kHz/second or 192kHz/second	
Resolution	16 bit	
Amplification	High quality, and low noise, amplification with low pass filter with cutting frequency of 190 kHz or 95kHz	
CPU	32 bit integrated ARM Cortex M4 microcontroller	
Power	15 mA power requirement when connected to a USB host	
Microphone sensor	Dual SPU0410LR5H from Knowles	

Q&A

Q: How can I connect Ultraimc384K to my own analog recorder?

A: Ultramic384K doesn't need a separate recorder and cannot be connected to an analog recorder since the only output is digital (USB). Use the integrated recorder instead.

Q: Can I record audio and Ultrasound at the same time?

A: Yes, Ultramic384K_EVO has no high pass filter so you can record audio and ultrasound at the same time.

Q: I want to listen and view the spectrograms of acoustical signals.

A: Connect your Ultramic384K to your smartphone, tablet or PC and use your preferred app. The list of compatible apps is available on www.dodotronic.com.

Q: My software can't get the audio stream from UM384K.

A: Not all the software allow a so high sampling rate, check if the sampling rate can be set to 384 Khz. Select the right sound source.

Q: I'm recording in real time but from the spectrogram I see only a valid bandwidth up to 20 Khz.

A: probably you have chosen the wrong sound source, try to change the sound source from the PC microphone to UM384K.

Technical assistance and support

Send request to:
info@dodotronic.com

Safety Precautions

Before using this device, read this manual carefully to ensure that you know how to operate the Ultramic384K safely and correctly. Be sure to keep this manual on hand so that you can refer to it at any time.

Instructions for use

- Do not leave the product where it will be subject to high temperatures and/or in direct sunlight.
- Do not use organic solvent such as alcohol or thinner for cleaning.
- Do not apply strong vibration or shock to the product.
- Do not expose to water and dust.
- Use appropriate cables

⚠ Caution

- Stop using the product if you notice an abnormality such as unusual odor, abnormal sound, or smoke.
- Do not leave the product where it will be subject to high temperatures.

Conformity declaration

model: ULTRAMIC384K EVO

Ultramic is in conformity with the protection and compliance requirements of the following EC Directives:

- 2004/108/CE
- 2006/95/CE

Dodotronic di Ivano Pelicella
via Giuseppina Saragat, 6
00073 Castel Gandolfo RM
Italy
VAT IT07343571001

www.dodotronic.com
info@dodotronic.com

Made in Italy

rev. 2.0 202104