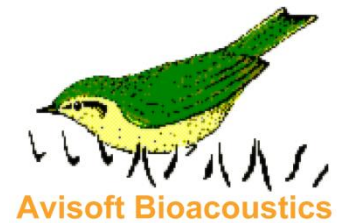


# Avisoft Bioacoustics – Monitoring Equipment for Mice and Rat Ultrasonic Vocalizations



Avisoft Bioacoustics provides cutting-edge equipment for monitoring mice and rat ultrasonic vocalizations (USV) in drug development procedures and basic research in neuroscience. USV are used as an indicator of the emotional and motivational status in animal models of stress, anxiety, pain, drug abuse or communicative disorders. The Avisoft Bioacoustics UltraSoundGate system integrates optimized hardware and software components that are easy to use and provide superior results.

## Ultrasound recording system

The Avisoft Bioacoustics ultrasound microphones CM16 / CMPA have been optimized for maximum signal-to-noise ratio and a wide pick-up pattern. The microphones are connected to the Avisoft UltraSoundGate base unit, which integrates adjustable pre-amplifiers and high-quality analog-to-digital converters with adaptive anti-aliasing filters and a USB interface.

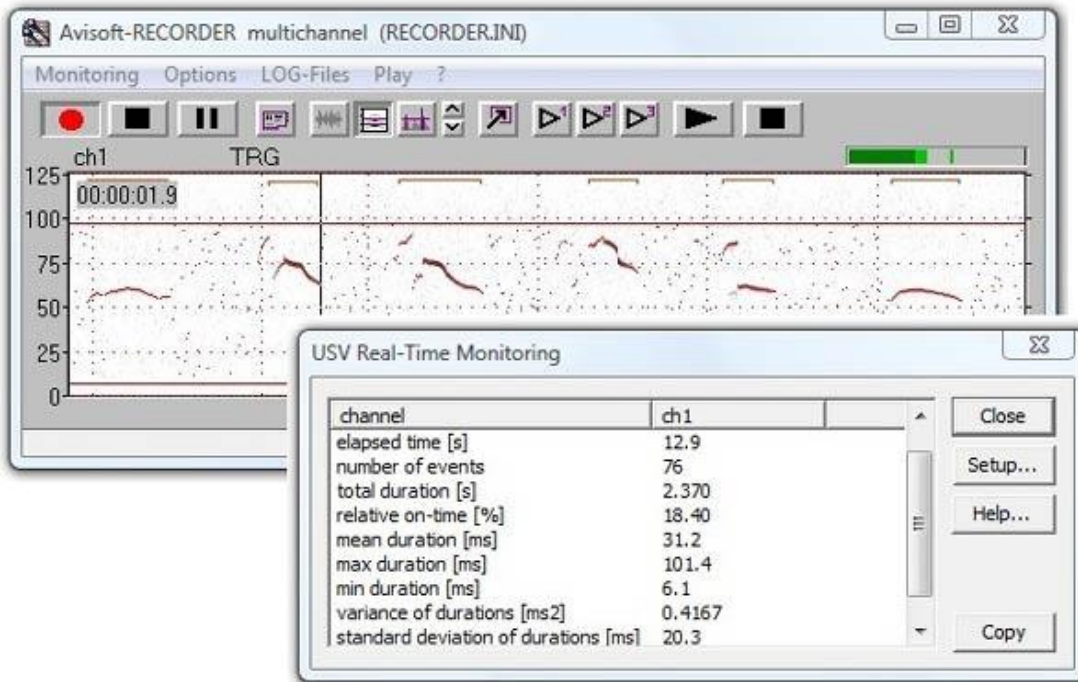
There are different models providing either single, four, eight or twelve-channel operation for testing multiple animals simultaneously. The bus-powered UltraSoundGate base units are connected to the PC via USB, which prevents any hassle during installation. The rugged construction of all components guarantees reliable operation even under rough laboratory conditions.



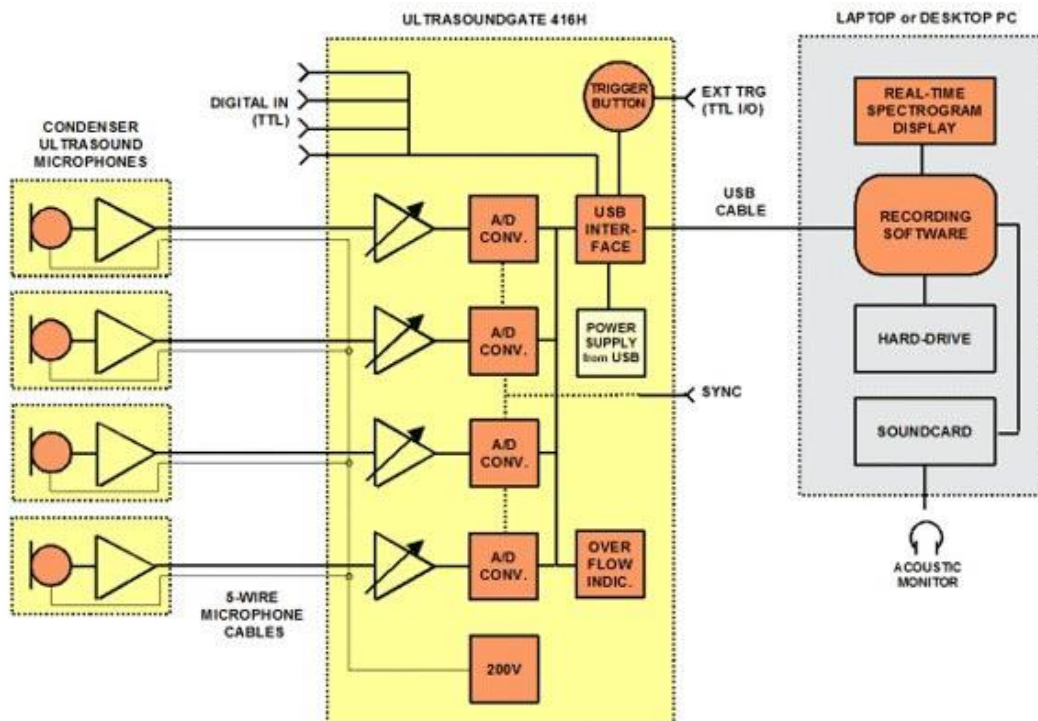
## USV detection systems

Unlike other USV detection systems, the Avisoft Bioacoustics UltraSoundGate system records the full spectrum of the ultrasound vocalizations at sample rates of up to 500kHz, which enables a more reliable and much more detailed analysis of the structure of complex vocalizations.

The recording hardware is controlled by the bundled Avisoft RECORDER USH software, which provides a real-time spectrographic display of the incoming ultrasounds and saves the digitized data streams onto the PC hard drive as common .wav files.



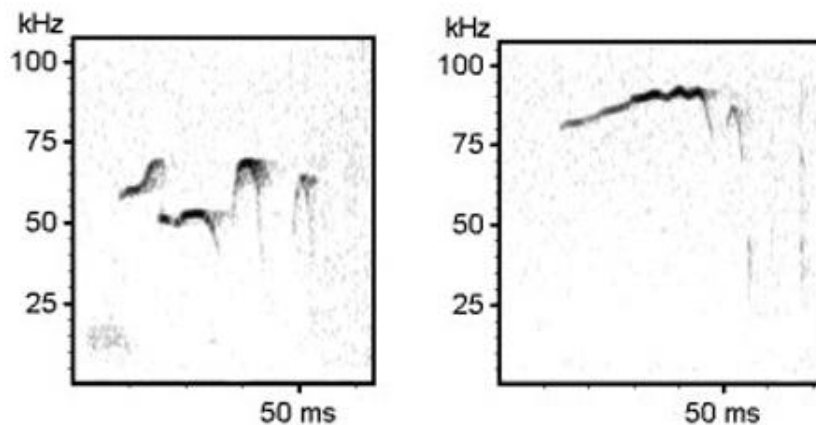
The ultrasonic vocalizations, which are inaudible to the human operator, can be made audible through the PC speakers. The emitted USVs are detected and counted in real-time, providing immediate descriptive statistics during the ongoing test procedure. The combination of these audio-visual feedback features allows the operator to identify potential problems instantly.



Advanced hardware and software options allow easy synchronization of USV and video recordings.

## USV analysis software

The unique sound analysis software Avisoft-SASLab Pro can be used to analyze the recorded .wav files in more detail. Its automatic call-detection algorithms provide reliable and efficient USV analysis, even under difficult circumstances such as high levels of disturbing noise originating from the substrate. If this automatic procedure fails in some cases, it is still possible to correct the results interactively on the spectrographic display window. The measurement results can be exported into other applications such as Excel, for instance as ASCII-formatted tables.



## Ultrasound playback hardware and software

Previously recorded, modified or synthetically generated USVs can be played through the UltraSoundGate Player hardware. The accompanying playback software includes versatile playlist functionality for conducting playback experiments.

