

## Introduction

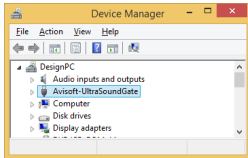
Thank you for purchasing Avisoft UltraSoundGate 116Hnm. This bus-powered USB device supports single-channel high-speed data acquisition at sampling rates of up to 300 kHz.

The accompanying recording software Avisoft-RECORDER USGH provides either continuous or triggered direct-to-disk recording with real-time spectrogram displays.

## Installation procedure

First install the RECORDER USGH software either from the supplied software installation media (navigate to the subfolder **RECORDER USH** and run **setup.exe**) or from the Avisoft Bioacoustics website ([www.avisoft.com/downloads.htm](http://www.avisoft.com/downloads.htm) or directly [www.avisoft.com/RECORDER\\_USGH.exe](http://www.avisoft.com/RECORDER_USGH.exe)). This installation program will install both the RECORDER USGH application (**rec\_usgh.exe**) and the required device drivers (**usgh\_xx16h.inf**, **usgh.sys**) for the UltraSoundGate xx16H devices. When the installation procedure has completed, the UltraSoundGate unit can be connected to the computer. The device should then be detected as "Avisoft-UltraSoundGate 116H" and the pre-installed driver should be finally activated.

Under some circumstances it might happen that the silent installation of the device driver fails. If that happens, navigate to the *Windows Control Panel > Hardware and Sound > Device Manager* and right-click at the entry *Other devices > Avisoft UltraSoundGate 116H* and select the *Update Driver Software...* option. The click at *Browse my computer for device driver software*, click at *Browse* and navigate to the folder *C:\Program Files (x86)\Avisoft Bioacoustics\RECORDER USGH\Drivers* and finally click at *Next*. The completed device driver installation will then look like this:

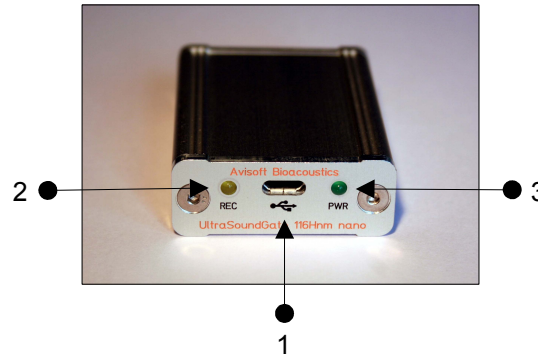


## Getting started

The supplied RECORDER USGH software can be launched from **Start / All Programs / Avisoft Bioacoustics / RECORDER USGH**

On the first program start, a presets selection dialog box will be launched. Select here the option "Bat Monitoring using USG 116Hnm/Hnb/Hnbm". The **Configuration** dialog box will then be launched showing the preset settings. Click at **OK** to confirm these settings (this can be changed later from the command **Options / Configuration**). Then click at the Pause button (**Monitoring/Pause**) and the Start button (**Monitoring/Start**). You will then see the real-time spectrogram displaying the incoming signals. For details on the operation of the RECORDER software see the Avisoft-RECORDER manual and the section **RECORDER USGH Software Settings** in this guide.

## Components of the UltraSoundGate 116Hnm



### 1 USB 2.0 interface

Insert here the supplied Micro-B USB cable and connect the other end to the computer.

### 2 REC indicator

This amber colored LED will flash once the device is connected to the PC. It will be switched off once the RECORDER USGH software is running in the monitoring mode. In this mode, the REC LED will indicate when the RECORDER software is recording the incoming data onto disk.

### 3 POWER indicator

This green LED indicates that the unit is connected to the USB power supply.

## Specifications

Number of channels	1
ADC type	Delta-Sigma architecture with integrated adaptive anti-aliasing filter
Resolution	16 bit
Sample rates [kHz]	300, 250, 214, 187.5, 166.6, 150, 125, 100, 75, 62.5, 50
Computer interface	USB 2.0 Micro-B connector, isochronous high-speed mode
Supply current (drawn from the USB)	80 mA
Physical dimensions (W/H/D)	42 x 16 x 55 mm
Weight	50 g


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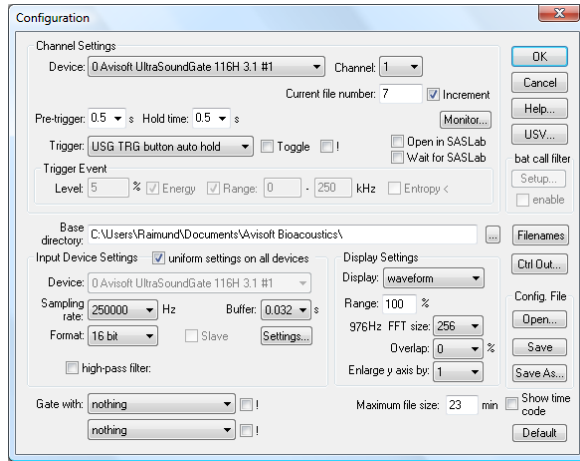
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# RECORDER USGH Settings

The configuration dialog box can be launched from the menu Options/Configuration... or through the button 



The input sample rate can be selected from the **Input Device Settings** section. Available sample rates are 300, 250, 214, 187, 166, 150, 125, 100, 75, 62 and 50 kHz.

The **Buffer** setting determines the USB transfer buffer size on the PC. Shorter durations will provide low real-time spectrogram display latencies but might lead to erroneous USB transfers under certain conditions.

The **Settings...** button in the **Input Device Settings** section launches the *Advanced USGH Device Settings* dialog box that provides several additional device-specific options:

**Enable master/slave mode for synchronizing several devices** This option has no effect on the model 116Hnm.

**Activate slave mode for this device** This option has no effect on the model 116Hnm.

**Enable low power mode** The A/D converter chip can optionally be operated in a power-saving mode that would increase the battery life in mobile laptop-based systems. The low-power mode slightly degrades the dynamic range performance.

**Enable automatic offset compensation** If activated, this option removes potential DC offset voltages from the input signal. This option should be activated.

**Keep DI** This option should always be deactivated on the USG 116Hnm.

**Enable band-pass mode** At a few sample rates (50, 62.5, 75, 150, 187.5, 200 and 250 kHz), the A/D converter can be configured for a special band-pass mode in which the analog input bandwidth ranges from  $fs/2$  to  $fs$  instead of the normal mode from 0 to  $fs/2$ .

This option can be advantageous for monitoring applications that require minimal .WAV files sizes. Note that the frequency scale of the resulting .WAV files will be reversed.

**Turn on the polarization voltage** This option has no effect on the model 116Hnm.

**Ignore GetOverlappedResult error** By default, the *GetOverlappedResult* error message will stop the monitoring/recording process. If this option is activated, the monitoring procedure will be immediately restarted, which is desired in long-term monitoring applications.

**TRG out mode** This option has no effect on the model 116Hnm.

**Monitor undersampling ratio** This option has no effect on the model 116Hnm

Sound-activated recording can be arranged by selecting the **Trigger source option level of this channel**.

Manual recording with pre-trigger can be accomplished by selecting the Trigger option **permanent with pretrigger** and activating the pause button. Once the pause button is then released, the recording will start with the selected pretrigger duration. Another way to manually trigger a recording would be option **left-click / touch window area**, which will start a .wav file as soon as the RECORDER software window area below the button bar record is left-clicked or touched.

The Pre-trigger duration should be kept as short as possible. Long pre-trigger settings can lead to data transmission errors if the sample rate is high.

In order to simplify the operation of the Avisoft-RECORDER software in the field, a link to **RECORDER USGH** may be added to the Windows **Startup folder** (Start->All Programs->Startup). Additionally, the Avisoft-RECORDER option **Monitoring/Autostart** should be activated. This arrangement will start the monitoring process automatically after booting the computer (the UltraSoundGate device must be attached to the USB port prior to booting Windows).

The menu **Options/Configuration management/Presets** provides a number of default settings that might help to configure the system for a specific task.

Note that the relatively low gain of the UltraSoundGate 116Hnm requires that the trigger threshold is set to a low level. For passive bat monitoring try the preset **Options / Configuration management / Preset / Bat monitoring using USG116Hnm/Hnb/Hnbm**. This will also activate the **x10** option on the Display Settings section of the Configuration Dialog box that provides a better (more sensitive) real-time spectrogram display.

In order to facilitate the operation of the software on tablet PCs, the option **Options/Display/Large buttons** should be activated.

Please refer to the users guide or the online help system for further details on the Avisoft-RECORDER software (<http://www.avisoft.com/RECORDER.pdf>).



**Avisoft ULTRASOUNDGATE**

**User's Guide Model 116Hnm**

