# Introduction

Thank you for purchasing Avisoft UltraSoundGate 116Hnbm. 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 download and install the RECORDER USGH software from the Avisoft Bioacoustics website (www.avisoft.com/downloads.htm or directly 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. Then 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:
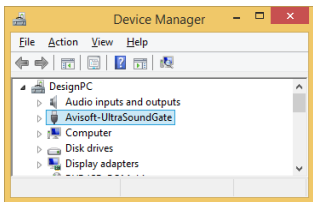

Getting started

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

On the first program start, a preset 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. To become familiar with the RECORDER USGH software use the online help system that can be accessed through the drop-down menu *Help > Help...*, the *Help...* buttons on the individual dialog boxes or the website at http://www.avisoft.com/Help/RECORDER/content.htm and the section *RECORDER USGH Software Settings* in this guide.

Components of the UltraSoundGate 116Hnbm
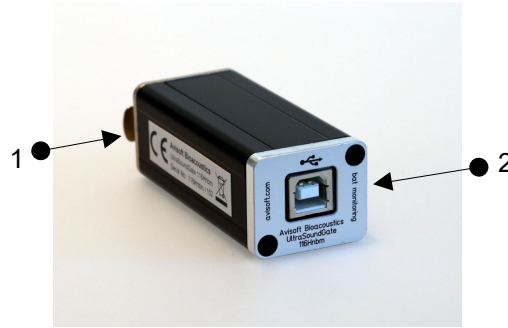
1 XLR input connector

The 5-pole XLR input connector represents the analog inputs of the recording device and provide power supply voltages for external amplifiers and microphones. The connector scheme is as follows:

1 Ground
2 Positive input
3 Negative input
4 +5V supply voltage (max current 20 mA)
5 TRG input/output or 200V polarization voltage (optional)

differential source

single-ended source
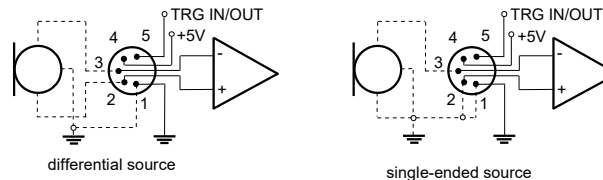
2 USB 2.0 interface

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
Frequency response (-3dB)	1 - 135 kHz
Input sensitivity	-9 dBV = -7 dBu = 0.35 Vrms
Input impedance	50 kOhm
Analog input connector	female XLR-5 socket
Computer interface	USB 2.0, isochronous high-speed mode
Supply current (drawn from the USB)	120 mA
Physical dimensions (W/H/D)	31 x 26 x 80 mm
Weight	90 g

RECORDER USGH Settings

The configuration dialog box can be launched from the menu Options/Configuration... or through the button [icon]
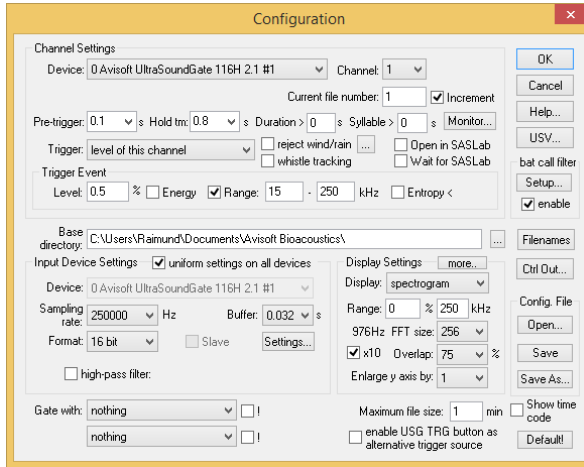
The input sample rate can be selected from the *Input Device Settings* section. Available sample rates are 300, 250, 214, 187, 166, 150, 125, 100, 75, 62 and 50 kHz.
The *Buffer* setting determines the USB transfer buffer size on the PC. Shorter durations will provide low real-time spectrogram display 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 option :

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

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

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 116Hnbm.

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 116Hnbm, unless the unit has the 200V polarization voltage generator option.

Ignore GetOverlappedResult error By default, the *GetOverlapped Result* 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 allows to change the I/O direction of the TRG pin (XLR pin 5). If activated, the TRG pin will be configured as a digital output for controlling the test signal generator on the disk microphone.

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

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

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 laptop (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 UltraSoiundGate 116Hnbm 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**. It is also recommended to activate the option **x10** on the Display Settings section of the Configuration Dialog box that will provide a better (more sensitive) real-time spectrogram display.

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).

ULTRASOUNDGATE
Avisoft

User's Guide Model 116Hnbm