Introduction

Thank you for purchasing Avisoft UltraSoundGate 116Hbm. 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 from the supplied software installation media. The installation procedure will require administrator rights. Check the option "*RECORDER USG/USGH for the Avisoft UltraSoundGate hardware*" on the Software Component Selection panel:
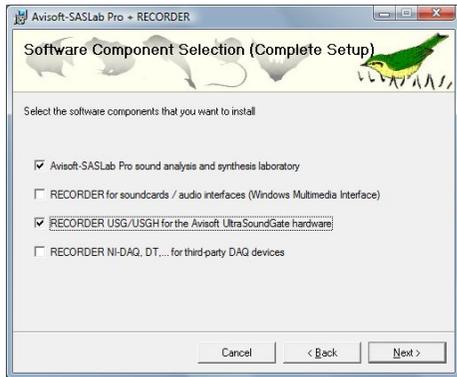
At the same time, the required device drivers (usgh_xx16h.inf, usgh.sys) for the UltraSoundGate XX16H devices will be installed. When the installation procedure has completed, the UltraSoundGate unit can be connected to the computer. The device should then be detected as "Avisoft-UltraSoundGate 116H" and the pre-installed driver should be installed. Under some circumstances (on Windows XP) it might happen that the Windows Device Manager asks for the device driver file usgh.sys, which can be found at C:/Program Files/Avisoft Bioacoustics/Drivers.The green POWER LED (4) should light permanently and the amber REC LED (3) should be flashing.

Getting started

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

On the first program start, the configuration dialog box will be launched automatically (otherwise it is available from **Options** / **Configuration).** Select the desired **Sampling rate** from the **Input Device Settings** section and click at **Ok.** 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 116Hbm
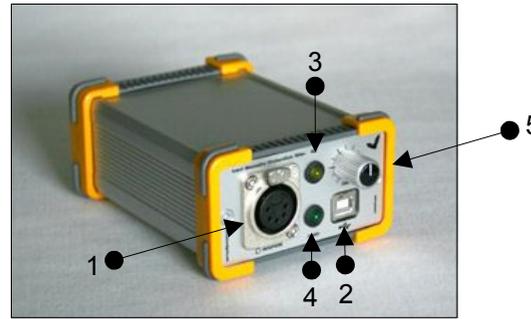
1 XLR input connector

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. +200V polarization voltage
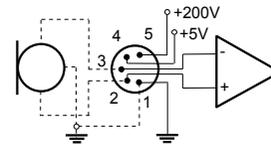
differential source   single-ended source
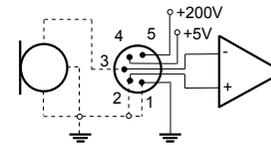
2 USB 2.0 interface

3 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 the in the monitoring mode. In this mode, the REC LED indicates whether the RECORDER software is recording the incoming data onto disk.

4 POWER indicator

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

5 GAIN control knob

This control knob adjusts the analog input recording level.

Specifications

Number of channels	1
ADC type	Delta-Sigma architecture with integrated adaptive anti-aliasing filter
Resolution	16 bit or 8 bit
Sample rates [kHz]	300, 250, 214, 187.5, 166.6, 150, 125, 100, 75, 62.5, 50
Frequency response (-3dB)	20 Hz - 135 kHz
Input sensitivity (max trim)	-43.2dBV = -41 dBu = 6.9 mVrms
Input sensitivity (min trim)	-3.2dBV = -1 dBu = 0.69 Vrms
Gain adjustment potentiometer	40 dB continuous range
Input impedance	50 kOhm
Analog input connector	female XLR-5 socket
Computer interface	USB 2.0, isochronous high-speed mode
Max supply current (drawn from the USB)	160 mA
Physical dimensions (W/H/D)	90 x 53 x 130 mm
Weight	290 g

Computer requirements

Windows PC with at least one USB 2.0 port, running Windows XP / Vista / 7
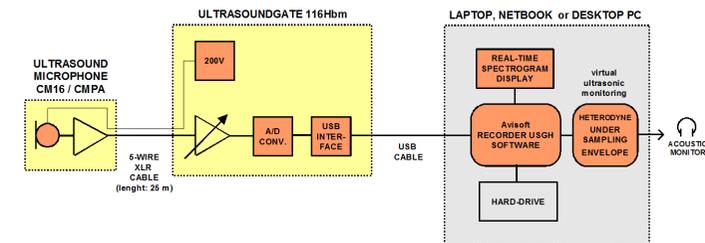
In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without notice.

RECORDER USGH Settings

The configuration dialog box can be launched from the menu Options/Configuration... or through the button 🖼
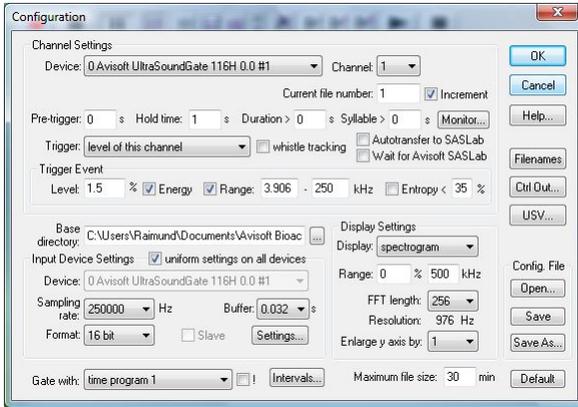
The input sample rate can be selected from the *Input Device Settings* section. Available sample rates are 300, 250, 214, 187.5, 166, 150, 125, 100, 75, 62 and 50 kHz.

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:

The options **Enable master/slave mode for synchronizing several devices** and **Activate slave mode for this device** have no effect on the model USG 116Hbm.

Enable low power mode The A/D converter chips 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 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 activates the internal 200V polarization voltage generator of the UltraSoundGate XX16H devices and must be activated when using the CM16/CMPA microphones.

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 has no effect on the USG 116Hbm.

Monitor undersampling ratio This list box has no meaning on the USG 116Hbm because there is no acoustic monitor output available.

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 and the number of channels 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).

Please refer to the users guide or the online help system for further details on the Avisoft-RECORDER software.

User's Guide Model 116Hbm
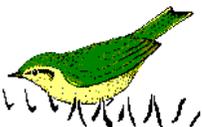
End-user Agreement

This a legal agreement between Avisoft Bioacoustics and the buyer. By operating this device and the accompanying software, the buyer accepts the terms of this agreement.

1. The Device and the accompanying software is warranted to perform substantially in accordance with the operating manual fora period of twelve month from the date of shipment.

2. EXCEPT AS SET FORTH IN THE EXPRESS WARRANTY ABOVE, THE DEVICE IS PROVIDED WITH NO OTHER WARRANTIES, EXPRESS OR IMPLIED. THE VENDOR EXCLUDES ALL IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE.

3. The Vendor's entire liability and the Buyer's exclusive remedy shall be, at the Vendor's SOLE DISCRETION, either (1) return of the device and refund of purchase price or (2) repair or replacement of the device.

4. THE VENDOR WILL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES HEREUNDER, INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS, LOSS OF USE, OR LOSS OF DATA OR INFORMATION OF ANY KIND, ARISING OUT OF THE USE OF OR INABILITY TO USE THE DEVICE IN NO EVENT SHALL THE VENDOR BE LIABLE FOR ANY AMOUNT IN EXCESS OF THE PURCHASE PRICE.

5. This agreement is the complete and exclusive agreement between the Vendor and the Buyer concerning the device.

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