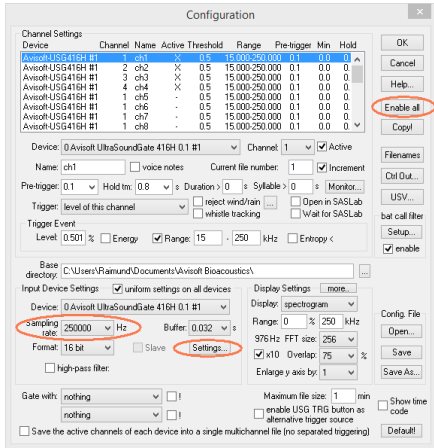


## RECORDER USGH Settings

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 option :

**Enable master/slave mode for synchronizing several devices**  
This option has no effect on the model 416Hnbm.

**Activate slave mode for this device** This option has no effect on the model 416Hnbm.

**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 416Hnbm.

**Monitor undersampling ratio** This option has no effect on the model 416Hnbm.

**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  $f_s/2$  to  $f_s$  instead of the normal mode from 0 to  $f_s/2$ .

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 416Hnbm.

**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 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.

## Specifications

Number of channels	4 (4 separate A/D converters)
ADC type	Delta-Sigma architecture with integrated adaptive anti-aliasing filter
Resolution	16 bit or 8 bit
Maximum aggregate sample rate	4 x 300 kHz / 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)	400 mA
Physical dimensions (W/H/D)	163 x 42 x 109mm
Weight	560 g

Avisoft Bioacoustics e.K.  
Schönfließer Str. 83  
16548 Glienicke/Nordbahn  
Germany

Phone: +49 (0)33056 426086  
Fax: +49 (0)33056 426087  
www.avisoft.com

sales@avisoft.com



part #54163



UltraSoundGate 416Hnbm

User's Guide



Avisoft ULTRASOUNDGATE

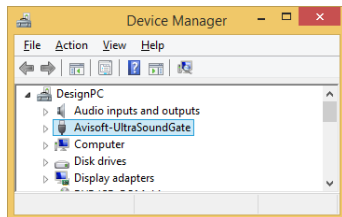
## Introduction

Thank you for purchasing Avisoft UltraSoundGate 416Hnbm. This bus-powered USB device supports 4 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 416H* 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:



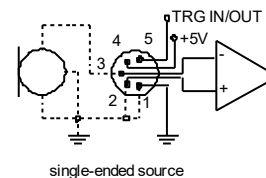
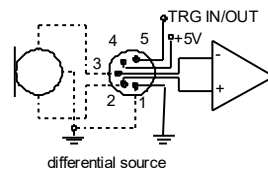
## Components of the UltraSoundGate 416Hnbm



### 1 XLR input connectors

The 5-pole XLR input connectors represent 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 in/out for controlling the test signal generators



### 2 USB 2.0 Port

## Computer requirements

Windows PC with at least one USB 2.0 port, running Windows 7 / 8 / 8.1 / 10

## 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.

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 UltraSoundGate 416Hnbm 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.

When the system is operated on a battery-operated laptop or tablet PC, it is recommended to disable any power saving options that might otherwise lead to occasional loss of data (short gaps in the recordings) or temporarily interchanged channels.

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>).