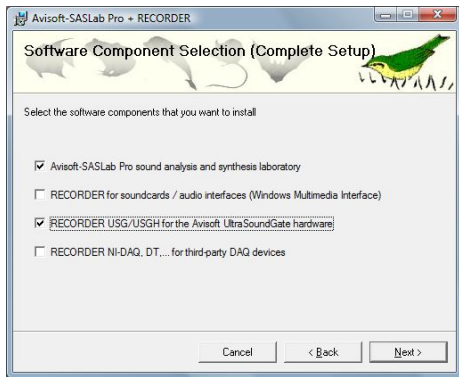# Introduction

Thank you for purchasing Avisoft UltraSoundGate 116e. 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 USG/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:

When the installation procedure has completed, the UltraSoundGate unit can be connected to the computer.

Windows 98, 2000 and XP
The device should be detected as "Avisoft-UltraSoundGate 116e" and Windows will automaticfally install the USB composite device driver that is supplied wth the Windows operating system. The green POWER LED (4) should light permanently and the amber REC LED (3) should be flashing.

Windows Vista
Unfortunately, the USB composite / audio class device driver supplied with Windows Vista is no longer compatible with the USG 116e. For this reason, the default Microsoft USB Composite Device driver must be replaced manually by the dedicated Avisoft-UltraSoundGate device driver (USGH.SYS).

At first, the UltraSoundGate unit must be connected to the computer. Windows will then recognize a USB compositite device, an USB audio device and a HID device. This automatically installed USB Composite Device must then be manually replaced by the dedicated UltraSoundGate driver as descibed below:

Launch the Windows Device Manager from Start > Control Panel > Hardware and Sound > Device Manager

Find the "USB Composite Device" in the section "Universal Serial Bus controllers ".

In order to make sure that the selected USB Composite Device really represents the UltraSoundGate unit, left-click at the entry and go to the register card "Details" and choose the "Property" item "Hardware Ids". The correct entry should be „USB\VID_0547&PID_0412"

If there is a different hardware ID displayed, then try another composite device from the list. Once you have found the correct device, choose the register card "Driver" and click at the button "Update Driver…":

Then choose the option "Browse my computer for driver software":

On the next dialog box, choose the option "Let me pick from a list of device drivers on my computer"

Then click at the button „Have Disk…" and click at the „Browse" button and search the directory where the UltraSoundGate device driver files (usgh.sys, usgh_116.inf) are located. If the Avisoft software has been installed from the software installation CD, the correct path name would be "C:/Program Files/Avisoft Bioacoustics/Drivers".

Choose the setup information file usgh_116 and click at "Open".

Click at "OK" and then at "Next"

Finally, click at „Close".

The Device manager should now report the newly installed "Avisoft-UltraSoundGate"> "Avisoft-UltraSoundGate 116" device driver:

After completing the device driver installation procedure, the RECORDER USGH software can be launched from Start->All Programs/Avisoft Bioacoustics/RECORDER USGH.

Note that the USGH driver installation and de-installation must be done separately for each USB port (Windows registers the installed driver separately for each port).

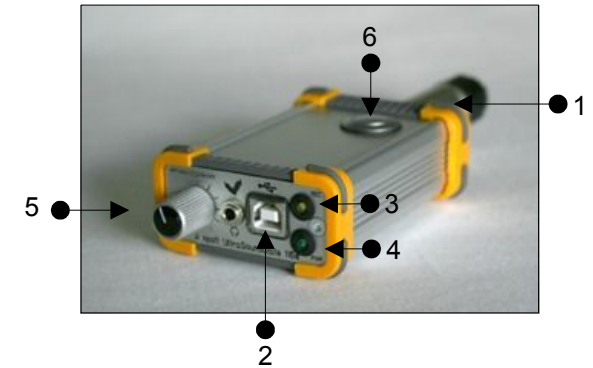An illustrated version with screen shots of these instructions is available from www.avisoft.com/downloa_.htm

Getting started

On Windows XP, the RECORDER USG software can be launched from **Start / All Programs** / **Avisoft Bioacoustics** / **RECORDER USG.**

On Windows Vista, the 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.
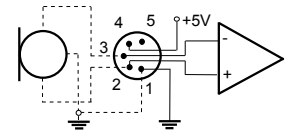
Components of the UltraSoundGate 116e

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	Unused

2 USB 1.1 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.

6 TRG button
This button can control the .wav file recording process in the RECORDER software. To enable this mode of operation, one of the following *Trigger* source options must be selected from the configuration dialog box:

USG TRG button auto hold : Pressing the button for more than 2 seconds will activate an auto hold mechanism (the recording continues after releasing the button and will stop once the button is pressed again). If the button is pressed for less than two seconds, it will only record as long as the button is being pressed.
USG TRG button : The software will record as long as the button is pressed.
USG TRG button inversed : The software will record as long as the button is not pressed (or as long as the external TRG signal is not active (logic high)).
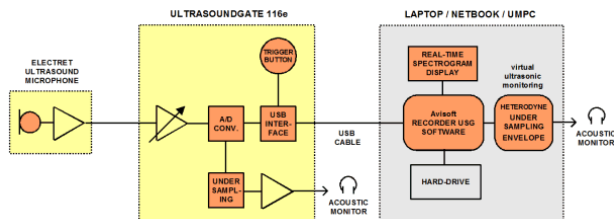**USG TRG button toggled** : The software will start recording once the button is pressed and continues until the button is pressed again.

Specifications

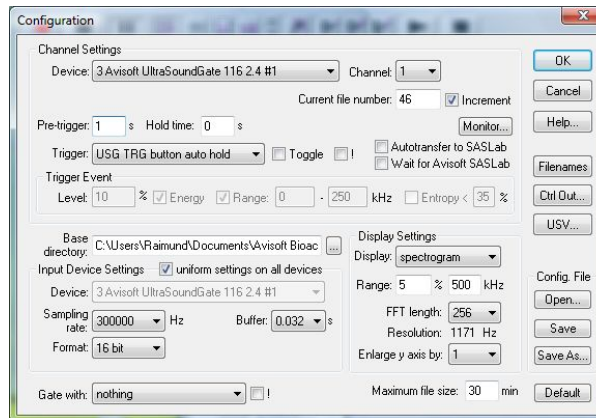|	
Number of channels	1
ADC type	Delta-Sigma architecture with integrated adaptive anti-aliasing filter
Resolution	16 bit or 8 bit
Sample rates [kHz]	300, 250, 214, 192, 187.5, 166.6, 150, 125, 100, 96, 75, 62.5, 50
Frequency response (-3dB)	20 Hz - 120 kHz
Input sensitivity (max trim)	-43.2dBV = -41 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 1.1, isochronous full-speed mode
Supply current (drawn from the USB)	185 mA
Physical dimensions (W/H/D)	63 x 33 x 170 mm
Weight	220 g

Computer requirements

Windows PC with at least one USB 1.1 or 2.0 port, running Windows 98, 2000, XP (recommended) or Vista

In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without notice.

RECORDER USG/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, 192, 187.5, 166.6, 150, 125, 100, 96, 75, 62.5 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.

Sound-activated recording can be arranged by selecting the **Trigger** source option *level of this channel*.
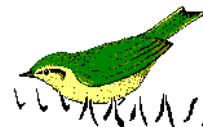
The Pre-trigger duration should be kept as short as possible. Long pre-trigger settings can lead to data transmission errors if the sample rate and the number of channels is high.

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.

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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