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WEEE-Reg-Nr. DE98991032

## OWNER'S MANUAL



## USB 2 D/A MKII

**Audiophiler 24Bit/192kHz Digital to Analog Converter**  
**defeatable Upsampling - True Balanced - Single-Ended Class-A**  
**High-End Headphone Amplifier - USB In-/Output**



## CAUTIONS REGARDING HANDLING



### Precautions for use:

Check that the operating voltage of your unit is identical with the voltage of your local power supply. Look at the backpanel under the power-jack for the actual preset. Either 90-140V or 220-240V AC-power at 50 or 60Hz.



Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.  
Sometimes in summer you have faults in your local power supply due to over-loading.



### Disconnect the power cord from the wall outlet in dangerous situations!

Always unplug the power cord from wall outlet by grasping the plug. Never pull the cord itself!

Unplug the unit from the wall outlet if it is not to be used for an extended period of time.

Unplug the unit from the wall outlet before connecting other units or opening the unit.

If there is any break or cut in the AC-line cord, unplug it from the wall outlet and replace it by a new one!



### Location

Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock. Leave some space around this unit for heat dissipation, especially near the heat sink on backside.



### Condensation

When this unit is brought into a warm room from previously cold surroundings or when the room temperature rises sharply, condensation may form inside, and the unit may not be able to attain its full performance. In cases like this, allow the unit to stand for about an hour or raise the room temperature gradually.



### DISASSEMBLING PROHIBITED ! DO NOT OPEN! NO USER-SERVICEABLE PARTS INSIDE!

Refer servicing to qualified service personnel!

The fuses are inside of the unit and should be changed by qualified personnel only.

### Warning!

Changes or modifications to this equipment not expressly approved by AQVOX for compliance will void the user's warranty.

## TIPS AND HINTS

- Use high-quality cable for all audio connections. If you use AQVOX CONNECTIONS cables, you can be sure to have good connections!
- The USB2D/A is a bit phase-sensitive to AC-power input. Since the correct phase of a switching power supply is difficult to determine by measure. The best is always to find out by listening. Turn the power plug in the wall outlet, and try on which direction sounds best.
- Digital signals with 32 - 48kHz sampling rate, connected at the TOSLink, COAX or AES/EBU input can be copied to a computer via the USB in/out. This function might be blocked by copy protection of your source, e.g. CD-Player!
- !! When connecting the USB2DA to a PC, all media player or sound software must be closed. Artifacts, coming from a computer which is connected to the USB input of the AQVOX DAC may cause errors of the logic functions. The input selection or other functions may be blocked. This is easy to resolve: 1. Let the Powerswitch in ON position and unplug the powercord and the USB- cable.  
2. wait 30 seconds 3. Plug in at FIRST the powercord and after initialising the logic works again.  
4. Plug in the USB-cable. If no success, same procedure, but leave the AQVOX unplugged for 5 minutes.
- The USB 2 D/A offers different settings to make your own choice. If you have any doubt or confusion about any setting, we recommend to set:  
 $\Delta\Sigma$  OVERSAMPLING = 32fs / PHASE = 0° / DIGITAL FILTER = FLAT  
 UPSAMPLING = BYPASS / DITHER = ON
- To keep the unit clean use only a soft cloth. Never use any solvents or abrasives. Dust and fingerprints may be removed with a soft cloth moistened only with a few drops of water.

## SPECIFICATIONS

### Digital inputs:

COAX-S/PDIF :	16bit/32kHz - 24bit/192kHz MONO/STEREO/PCM (electrical)
AES/EBU :	16bit/32kHz - 24bit/192kHz MONO/STEREO/PCM (balanced electrical)
TOSLINK :	16bit/32kHz - 24bit/ 96kHz MONO/STEREO/PCM (optical)
USB1.1(2.0) In/Output :	16bit/11kHz - 16bit/ 48kHz MONO/STEREO/PCM (PC, Computer)
Input impedance:	COAX-S/PDIF 75 Ohm, AES/EBU 110 Ohm
<b>Digital Output: USB1.1(2.0)</b>	16bit/11kHz - 16bit/ 48kHz (Computer) all digital+ analog inputs

### Analog outputs:

Cinch/RCA unbalanced:	2 Vrms Output Voltage (XLR and RCA output can be used at same time)
XLR balanced:	±2Vrms Output Voltage (XLR and RCA output can be used at same time)
Frequency Range:	20 Hz to 20 kHz ± 0,3dB
Output Impedance/Level:	120 Ohm at 1kHz, Cinch/RCA: + 8 dBu, XLR: +14 dBu

### Upsampling/Reclocking (asynchronous):

192kHz/24bit - Passive Filter

### USB Sound Recording System:

Frontjack with 12V phantom power and a level knob for the microphone input (mic out via USB-out)

### Measurements:

Signal/Noise:	117dB at XLR-Output	110dB at RCA-Output
Dynamic Range:	115dB at XLR-Output	105dB at RCA-Output
THD:	0.003% at XLR(32fs),	0.010 at RCA
Jitter:	110ps over all Toslink - peak to peak	40ps over all TOSLINK - RMS, 3ps rms internal

### Headphone Output:

Frequency Range:	20 Hz to 20 kHz ± 0,5dB
THD+Noise:	under 0,03% at 32 Ohm, under 0,008% at 100 Ohm and -6 dBFS
Signal-to-Noise Ratio:	110dB at maximal volume
Signal-to-Hum Ratio:	90dB at maximal volume

### Supply Voltage:

Internal power supply, 90-140V- AC /50-60 Hz or 220-240V- AC /50-60 Hz

### Power Consumption:

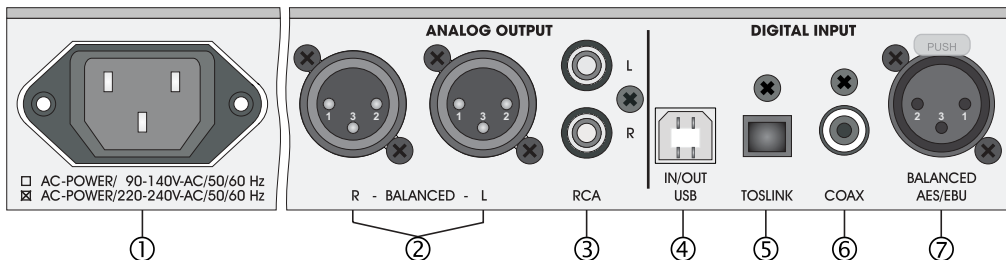
5 W

### Weight:

ca. 2,8 kg

**Dimensions:** (B / H / T) ca. 435 x 59 x 290 mm

Note: Specifications and design are subject to possible modification without notice due to improvements. Errors excepted.



## REAR PANEL

### POWER CONNECTION

- ① AC POWER Connector for the AC power cord. The power supply is set from the factory to either A/C voltage 90 - 140V or 220 - 240V at 50-60Hz. The actual setting is indicated under the power jack.

### ANALOG OUTPUT

There are two analog output connections: RCA jacks for unbalanced line output and XLR connectors for balanced. Make sure your preamplifier/amplifier is either turned off or its volume is set to minimum whenever making connections. Both outputs can be used simultaneously.

- ② BALANCED OUTPUT XLR connectors for balanced line output. The pin configuration for the XLR connector is: Pin 1 = Ground  
Pin 2 = + / non-inverted signal  
Pin 3 = - / inverted signal
- ③ RCA OUT RCA jacks for unbalanced line output.

### 4 DIGITAL INPUTS, 1 DIGITAL OUTPUT

- ④ USB (In- and Output) USB 1.1(2.0) interface to personal computer (no driver needed). The USB Sound System supports 11 - 48 kHz sampling rate. Use this bidirectional interface to play back or record any sound files. USB delivers the most precise data stream for long distances. The USB-In/Output must be connected directly to the USB-interface of a computer. Function can be disrupted when a USB-hub is in the connection line.
- ⑤ TOSLink S/PDIF digital audio input (PCM) via optical TOSLink, supports 32 - 96 kHz sample rate. Use this input to connect the unit to the digital output of e.g. a CD-Transport, DAT-Recorder or DVD-Player, using a digital fiber optic cable. Connect least highend devices here.
- ⑥ COAX S/PDIF digital audio input (PCM) via coaxial connection. Use this input to connect the USB 2D/A to the digital output of a unit, using a high-quality 75 Ohm digital cable with RCA plugs. (32 - 192 kHz)
- ⑦ AES/EBU S/PDIF digital audio input (PCM) via AES/EBU connection. AES/EBU balanced connections are the most common digital connection for professional digital audio equipment and are becoming increasingly popular with high-end consumer equipment. AES/EBU connections are thought to be superior to coaxial and TOSlink because of their inherent noise rejection capability. Use a high-quality 110 Ohm cable designed for digital transmission with XLR plugs.

## INTRODUCTION

Thank you for purchasing the **AQVOX USB 2 D/A**! This model was designed using the groundbreakingly innovative Advanced Class-A with Current Amplification technology and the latest state of the art components to sound most dynamic, highly detailed yet neutral and untiring. We believe the USB 2 D/A to be a unit with outstanding sound quality and an excellent value. Please read the manual carefully in order to get the best result out of your USB 2 D/A.

The USB 2 D/A is an D/A-Converter and audiophile headphone amplifier for use in high-end or pro audio environment. Furthermore it is designed to work as an external computer soundcard via USB 1.1 connection (no driver needed for Windows, Linux or Apple MacOS). To complete this feature the unit is equipped with a standard hifi-quality microphone amplifier and A/D-Converter.

The unique combination of Current Amplification and Single Ended Advanced Class-A technology, the use of just one amplifier per balanced analog output stage provides you with today's best possible sound quality. The amplifier section runs without overall negative feedback only little local feedback. Thus the amplifier generates nearly no dynamic distortions.

If you want to use a Windows computer for playing music, please install an ASIO driver as this results in bit-transparent output. Linux and Apple do not need ASIO. If you want to grab CD's please use maximum 4x speed, as higher CD-reading speed kills transients. No software can help you here - even if the checksum is OK, you lost soundquality if grabbed with more than 4x. Slower grabbing speed results in a more open, transparent sound, tighter bass and a generally more "musical" sound. More info for computer audio, grabbing and ASIO on [www.aqvox.com](http://www.aqvox.com)

Featured with an AES/EBU digital input and a balanced XLR analog output the USB 2 D/A is the best choice for professional users to monitor digital recordings. The USB 2 D/A is also excellent for persons who strive for the highest level of sound quality from their home audio systems, as well as for computer users who like to get the best output quality from their Workstations or Notebooks. No need to use a lossy inbuilt soundcard.

Furthermore users can upgrade their older highend CD-player or other CD/DAT/DVD-player or DVB/SAT-Tuner to real high-end standard.

We appreciate the support you have shown us by purchasing this product. At AQVOX we pursue the philosophy of constant product improvement. To collect valuable ideas for future improvements, the feedback we get from you, our esteemed customers, is very important to us. So, please don't hesitate to send us comments and reports about your experiences with this product.

! Copyright info: Windows, Linux, Apple MacOS are trademarks of the respective owners !

## Important Safety Instructions



### DANGEROUS VOLTAGE!

Uninsulated dangerous voltage inside the product's enclosure may cause an accident resulting in injury or death by fire or electrical shock.



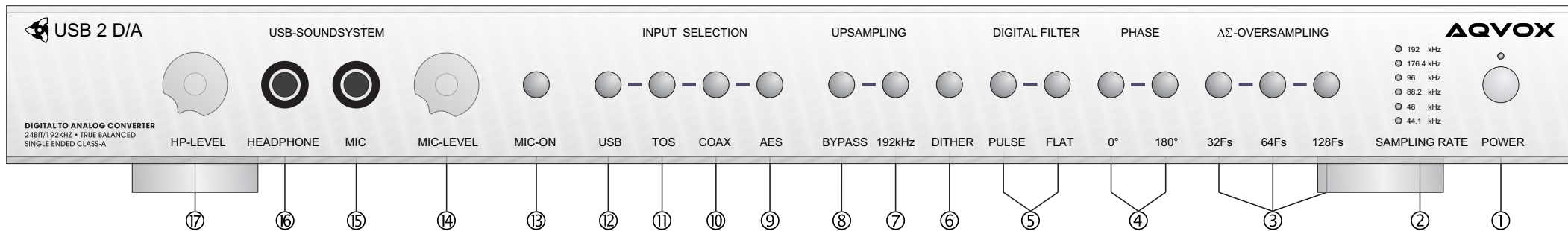
### ATTENTION!

The Owner's Manual contains important operating and maintenance instructions. For your safety, it is necessary to refer to the manual.



WARNING: TO PREVENT FIRE OR SHOCKHAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE. THE USER IS NOT ALLOWED TO MODIFY THIS UNIT.





## FRONT PANEL

- ① POWER SWITCH Turns the unit ON/OFF. On is indicated by lighting power LED .
- ② SAMPLING RATE Indicates the sampling frequency of the input signal 44.1 to 192 KHz. Signals under 44.1 kHz are not indicated but played.

## ΔΣ -OVERSAMPLING

- ③ 32fs 64fs 128Fs Selection of oversampling rates. 32fs is recommended for 44.1kHz, 64fs sounds best for 96kHz and 128fs for 192kHz input signals.

## PHASE

- ④ 0° - 180° Inverts the phase by 180 degrees. Most recordings are done without care for the polarity/phase of the signal, so you can improve the sound by try out.

## DIGITAL FILTER

- ⑤ PULSE - FLAT Selectable characteristics of the high frequency reduction filter. If you hear no difference by changing from PULSE to FLAT, it is no disorder, the filters have very little effect, try out what do sounds better.
- ⑥ DITHER A random modulation of the signal at a level corresponding to the least-significant bit, which helps reducing quantization distortion noise in the Digital/Analog converter, thus enhancing low level linearity and resulting in a clearer sound for lower-level recordings.

## SAMPLE RATE CONVERTER

- ⑦ 192kHz The principle of upsampling means: the signal at the output of the DAC-chip will be upsampled to 192 kHz where a passive filter filters out conversion-garbage what every DA-converter chip produces beside the usable audio signal. Then the signal is sampled down to the original frequency. The idea of filtering the garbage is good but the up- and downsampling process costs sound. So we recommend not to use Upsampling if the quality of the digital-signal is good.
- ⑧ BYPASS Defeats the 192kHz upsampling mode. Incoming signals are not resampled and reclocked. We recommend to use the bypass for all good digital sources.

## INPUT SELECTION

- ⑨ AES Selects the S/PDIF digital audio input via AES/EBU connection.
- ⑩ COAX Selects the S/PDIF digital audio input via coaxial connection.
- ⑪ TOS Selects the S/PDIF digital audio input via optical TOSLink.
- ⑫ USB Selects the USB digital audio input from Pc's, notebooks etc..

## USB-SOUNDSYSTEM

The USB Sound System supports 11 - 48 kHz sampling rate and can be used either as a replacement or in addition to your computer sound card (no driver needed). Enjoy the excellent performance of the USB 2 D/A for all your computer sounds. For optimal audiophile performance, we recommend to skip the windows Kernel-Mixer with an ASIO driver. More information about ASIO and downloads are at [www.aqvox.com](http://www.aqvox.com)

- ⑬ MIC-ON Activates the microphone input. Output is only via USB. HINT: a measuring microphone and appropriate software ([www.CARA.de](http://www.CARA.de)) lets you analyse room acoustics or the performance of your speakers. !! The microphone input was not designed for high-end recording. For audiophile high-quality recordings we recommend our microphone preamplifier and AD converter MIC 2 D/A.
- ⑭ MIC-LEVEL Determines the microphone pre-amplification level of up to +33 dB.
- ⑮ MIC Microphone input connector for a 6.4 mm/1/4" TRS plug and 12V phantom power. You can use any condenser microphone. To connect your existing computer head-phones and microphone use the 3.5 mm to 1/4" adapter included in delivery.
- ⑯ HEADPHONE Headphone input connector for a stereo 6.4 mm/1/4" TRS plug. For head phones with a 3.5 mm stereo plug use the adapter included in delivery. The headphone output in complex fully discrete Class-A circuitry delivers excellent audiophile results for all dynamic headphones .
- ⑰ HP-LEVEL Headphone volume control. Turn off the volume if HPs are not in use.