LINNENBERG

Owner's Manual

ARIOSO

PCM

DSD
Direct Stream Digital

<u>Introduction</u>

Thank you for purchasing the **ARIOSO**, an USB / Coax / Toslink input D/A converter, preamplifier and headphones amplifier.

In conjunction with a laptop / PC operating © Vista / Windows7 / Windows8 or any Mac computer the **ARIOSO** realizes a high performance audio source without drawbacks. The playback of audio files at CD quality (1411 kbps) is absolutely comparable with the reproduction of a pure high class CD-player. The result you get from the **ARIOSO** depends strongly on the resolution of the audio file you play and on the correct settings of your computer running the audio software. In contrast to a red book CD-player, a computer in conjunction with the USB input can play files with extremely high resolution and with different formats like WAV, FLAC or DFF **(DSD bitstream)**. Such music files can be downloaded on specialist internet shops like 2L.no, HDtracks.com or highresaudio.com to name but a few. The choice of music and the number of albums available is clearly limited today, but new releases show up every day. The big advantage here is that you are not bound to a certain format like SACD or DVD-Audio. Computer audio is future proof.
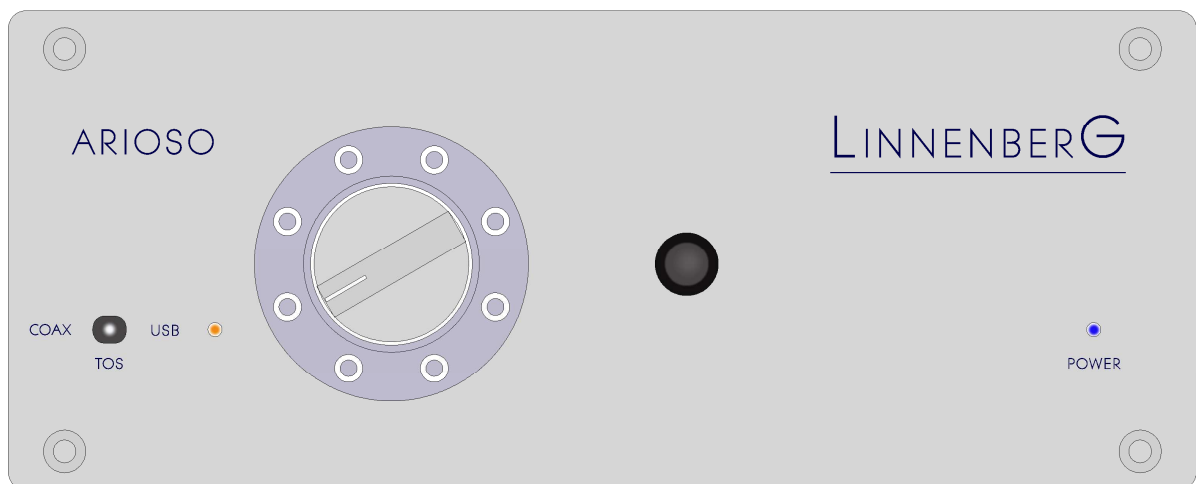
The second essential digital audio format is S/PDIF (Coax / Toslink). The **ARIOSO** supports sample rates up to 192kHz and bit depths up to 24bit. The S/PDIF inputs are intended for high performance CD drives as well as for © iphone / ipad / ipod docking stations. Here it builds the bridge to the playback of music collections stored on mobile devices.

Controls + Connections - front

Coax <-> Toslink <-> USB select switch: the three way toggle switch is used to select the input from which the DAC receives the data.

Headphones analogue – output: the **ARIOSO** offers a 6.35mm phones jack at the front for use with 32-600 Ohms headphones

Volume control knob: the high resolution analogue attenuator controls the volume of the headphones and line output simultaneously.

Status LED: USB
connected
Yellow: PCM
Green: DSD

Status LED:
Blue: DAC ready

Connections - rear

AC mains: connect a high quality IEC power cable to the power socket. Before connecting the cable to a live wall socket, ensure that it is firmly connected to the unit's power socket first.
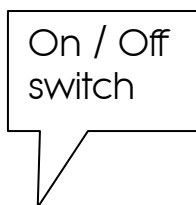
Power (on/off) switch: the on/off switch disconnects the unit completely from the AC mains when switched off. No standby function is used.

USB – input: the USB input employs a standard female B USB connector. Connect to the host computer with a high quality 2.0 USB cable.

Coax – input: an RCA connector is provided for correct hook-up of coaxial cables.

Toslink – input: the optical input is compliant with JEITA RC-5720B standard, better known as Toslink. A shutter is provided to protect the sensitive optical receiver from dust.

Analogue Left / Right – output: a pair of gold plated RCA's allows the connection of a power amplifier. This high current output drives any amplifier with ease.

On / Off switch

ARIOSO

DIGITAL INPUT   ANALOG

USB   COAX   TOS   LEFT   RIGHT

115 / 230 VAC

CE

HANDMADE IN GERMANY   CAUTION : DO NOT REMOVE COVER

Operation

As soon as you have plugged in the power cord, the **ARIOSO** is ready to operate. The blue LED confirms the power on status. **It takes approximately 60s (1min) before the DAC is ready to operate.** No stand by function is implemented. Power off means zero current drain from the mains.

The front toggle switch is used to select the input source. The USB input conforms to the USB audio 2.0 standard. Here, a computer running Windows, Linux or a Mac is connected via a high quality cable (length < 1.5m). The yellow LED lights up, when the USB input is selected and when bus power is present (cable connected, computer powered up). This LED alters the colour to green when a DSD stream is detected. Using and listening to the USB input requires a Mac or Windows computer with the appropriate driver installed.

S/PDIF sources like a CD-transport or an i-pod docking station are conveniently connected to the RCA connector, whereas the Toslink input is used for sources requiring an interference free link. A TV set top box for instance is best connected here using a digital fibre optic cable.

The volume control works simultaneously for both analogue outputs. The control range spans from -80 ... +7dB.

<u>Driver installation</u>

Installing process (Mac)

No drivers are required for the Mac computer with OSX 10.6.4 and later. A native support for audio devices compliant with USB 2.0 Audio class is already included in the operating system. Your **ARIOSO** will be immediately recognized by the OS and ready to use. Be sure to select the **ARIOSO** (Ivo Linnenberg Elektronik) as output device in the "System Preferences / (Hardware) Sound / Output" menu. In the "Applications / Utilities / Audio Midi setup.app" menu you can select the standard sample rate which is (44100 kHz) for CD sourced music. Using high end audio player software instead of iTunes is recommended.

Installation process (PC)

Do not connect the **ARIOSO** to your computer yet, first download and install the driver:

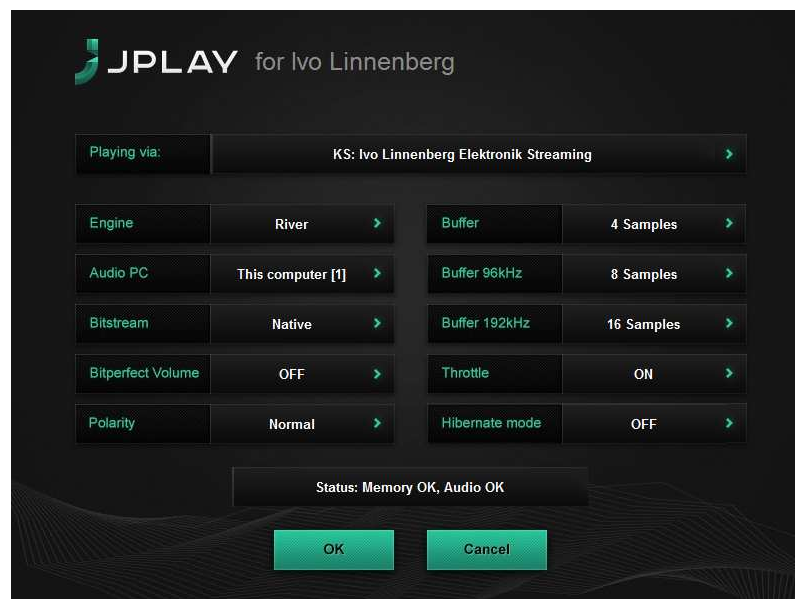http://linnenberg-audio.de/html/downloads.html

The installation package offers two installation utilities, "setup32.exe" and "setup64.exe" for Vista / Win7 or XP operating systems. Double-click on either "setup64.exe" or "setup32.exe", depending on your operating system: the driver will be installed in your PC. Restart your PC or Notebook and connect the **ARIOSO** to the host for the first time. The **ARIOSO** will now be recognized as usable device.

When the driver installation is done, you are ready to play music via USB. As long as the **ARIOSO** is connected, it is automatically selected as output device. As it is the case with Mac computer, we highly recommend using special software instead of the Windows Media Player.

JPLAY (PC)

There are numerous high performance audio player for Mac and Windows OS available. Describing all of them would definitely go beyond the scope of this manual. If you should encounter problems with specific software, please feel free to send an enquiry regarding the matter. We will be happy in assisting you rectifying the subject.

Representative for a high quality audio player the JPLAY software is presented below. The reason why JPLAY was chosen is simple: it sounds awesome and is easy to use – even for computer newbie's.

(JPLAY settings menu)

The actual version is ready for DSD playback. Please feel free to order your software licence at www.jplay.eu . One drawback is the very basic to non existent user interface, the other is that JPLAY can produce clicks and plops when in DSD mode (start.- and endpoint) Those of you not willing to except the limited functionality can use JPLAY as ASIO output device in foobar2000 or just work with foobar2000 alone. Foobar2000 is free of charge, but needs to be accustomed for DSD playback capability. Here is what to do:

Foobar2000 (PC for PCM and DSD playback):

Install the latest version of foobar2000 from the official website www.foobar2000.org . Download the kernel streaming support from the components section of the website. This allows you to have a bit-perfect transfer via USB. Decompress the file and copy the file "foo_out_ks.dll" in the directory "components" of the foobar2000 directory.

After having successfully installed all foobar2000 components, connect the **ARIOSO** to your PC. Now start the foobar2000 player. Click on "file"; a drop down menu will appear; here go to "preferences". Select "playback / output". Now you have to make several adjustments:

Device: KS: Ivo Linnenberg Elektronik Streaming
Buffer length: 2000ms
Output format: 24bit

That's the default setting for PCM files like WAV, FLAC or even MP3. In order to use the DSD capability of the **ARIOSO**, you have to do the following: First, you need to download and install the Super Audio CD Decoder plug - in at:

www.sourceforge.net/projects/sacddecoder/files/foo_input_sacd/

Download "foo_input_sacd - 0.6.1.zip" (or later), open and extract all files. Then click and install "ASIOProxyInstall - 0.6.0.exe". After the installation is finished, copy the "foo_input_sacd.dll" file into the foobar2000 components folder. Next download and install the ASIO support 2.1.2 (or later version) plug - in:

www.foobar2000.org/components/view/foo_out_asio/

Run the downloaded file foo_out_asio.fb2k - component to install the ASIO plug - in. Start foobar2000, click menu and select "file", and then enter the "preference" section. Jump to "playback / output" tab. Select "ASIO: foo_dsd_asio" as output device in the "Device" section.

Go to the ASIO4ALL website and download "ASIO4ALL 2.10" (or newer):

www.ASIO4ALL.com

In foobar2000 "preferences / playback / output / ASIO" you will see ASIO4ALL as an ASIO driver option: Double click on ASIO4ALL to launch the control panel. If you don't see the control panel it is minimized on your task bar. Configure ASIO4ALL by selecting "Ivo Linnenberg Elektronik USB driver 1.0.56". Click on the little icon to highlight it.

Now configure "foo_dsd_asio" by selecting ASIO4ALL as the ASIO driver. Here again, the control panel may be minimized on the task bar. Important: Use "DoP Marker 0x05/0xFA" = "DSD Playback Method" ; "PCM to DSD Method" = "none"; "Fs" = "DSD64"

Close the "foo_dsd_asio" pop - up window; go back to the "Tools / SACD" tab and select "DSD" as "ASIO Driver Mode" option. Furthermore: "PCM-Volume" = "+0dB"; "PCM Samplerate" = "176000"; "DSDtoPCM Mode" = "Multistage"; "Preferable Area" = "Stereo"

Click "OK" button on Preferences windows and restart the program.

You are now ready to play back PCM and DSD files with foobar2000.
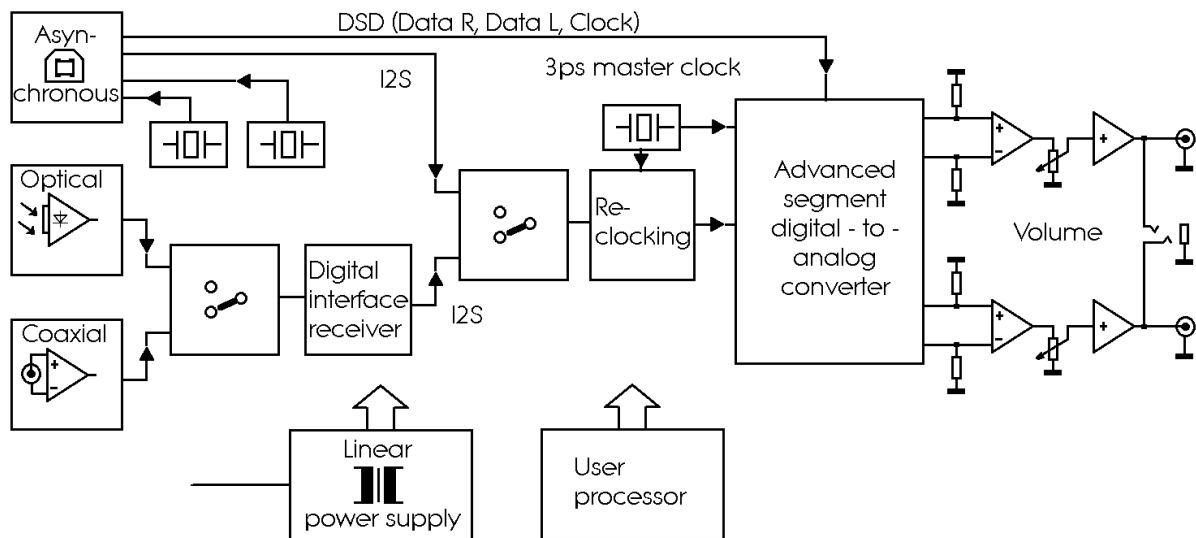
Some tips and hints using DSD

Following the instruction steps above will guarantee a trouble free operation. When using the DSD feature, please consider this additional advice:

The DSD bit stream is transmitted using the PCM structure. The so called DoP marker indicates that the incoming data is actually DSD and not PCM. The ARIOSO selects the proper signal routing automatically by analysing the data stream. When in DSD mode, the digital signal directly drives the sigma delta modulator of the DAC chip. No buffering, resampling, filtering or soft muting takes place: the DSD stream reaches the analogue output in the purest native form. In contrast to the fool proof PCM format, abrupt signal changes will be transmitted to the analogue output without attenuation. This implies some easy to follow rules:

In order to avoid click noise, avoid skipping in DSD files and avoid mixed DSD64 / DSD128 playlists. It is good practice to have separate playlists for DSD64, DSD128 and PCM. The different PCM tracks can vary from 44.1kHz/16bit to 192kHz/32bit without producing any click noise, whereas switching back and forth between DSD64 and DSD128 may produce some harmless artefacts.

Generally, the DAC behaviour is largely dependent on the music player software used, because the software is responsible for maintaining the DoP marker.

Technology & Design

The unit has been entirely designed and manufactured in Germany.

Specifications

Sampling frequencies PCM :	44.1, 48, 88.2, 96, 176.4, 192kHz (USB – input) + 32kHz (S/PDIF – input)
Resolution PCM :	Up to 32bit
Resolution DSD :	DSD64 (2.8224MHz) and DSD128 (5.6448MHz) over DoP protocol
Frequency response :	DC - 24kHz +0.1dB -0.5dB DC – 70kHz -3dB @192kHz or DSD
Distortion and noise :	<0.06% 10Hz - 20kHz @ 0dB <0.006% 10Hz - 20kHz @ -10dB <0.01% 10Hz - 20kHz @ -20dB <0.03% 10Hz - 20kHz @ -60dB **zero feedback operation !**
Output level :	4.4V rms
Output power :	2x 600mW continuous @ 32 Ohm
Output impedance :	1 Ohm, 100 Ohm line output
Mains voltage :	115V, 230V factory set
Dimensions (H x W x D) :	73.5 x 165 x 222 mm

Important Safety Instructions

1) Place the unit on a solid, flat level surface such as a shelf where it is convenient to operate. Some naturally venting air is recommended and ambient temperatures over 27 degrees Celsius and extreme humidity (> 85%) should be avoided.

2) The voltage of the available AC mains differs according to country or region. Be sure that the AC mains voltage of the area where this unit will be used meets the required voltage (e.g. 230V or 115V) written on the rear panel.

3) This product must be terminated with a three-conductor AC-mains power cord which includes an earth ground connection.

4) Always disconnect your DAC from the AC mains before inserting or removing any interconnects.

5) DANGEROUS VOLTAGES ARE PRESENT INSIDE YOUR **ARIOSO.** FOR THIS REASON IT SHOULD ONLY BE OPENED BY A QUALIFIED ENGINEER UNDER ANY CIRCUMSTANCES.

<u>Addendum</u>

The following work should only be carried out by a qualified technician in accordance to highest electrical safety standards.

Replacing the fuse

The fuse must be replaced by a 0.63AT type (5x20mm). Never attempt to short the fuse holder. Normally the fuse should never blow – if it has, it is a sign of a serious fault condition.

Mains voltage

Altering the mains input voltage range from 115V to 230V or vice versa is done by changing the jumper according to the figures below :

CE declaration of conformity

Product Type: Digital – Analogue – Converter (DAC)

Model: **ARIOSO**

Linnenberg-Elektronik declares that this product complies with the Low Voltage Directive 2006/95/EG and the Electromagnetic Compatibility Directive 2004/108/EG.

The unit meets all currently valid regulations only in its original condition. The original, unaltered factory serial number must be present on the outside of the unit and must be clearly legible! The serial number is an essential part of our conformity declaration and therefore of the approval for operation of the **ARIOSO**. The serial numbers on the unit and in manual, must not be removed or modified, and must correspond.

Furthermore, the unit has been found to comply with the limits for a Class B digital device, pursuant to Part 15, subpart B (unintentional radiators) of the FCC rules.

LINNENBERG – ELEKTRONIK
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Warranty Certificate

LINNENBERG ELEKTRONIK warrants this product, under normal use, to be free of defects in materials and workmanship for a period of __2 years__ from date of purchase, as long as the product is owned by the original purchaser.

In the event that LINNENBERG ELEKTRONIK receives, from an original purchaser and within the warranty coverage period, written notice of defects in materials or workmanship, LINNENBERG ELEKTRONIK will replace the product, repair the product, or refund the purchase price at its option.

In the event repair is required, all shipment costs to and from LINNENBERG ELEKTRONIK shall be covered by the purchaser. In the event that repair is required, a return authorization must be obtained from LINNENBERG ELEKTRONIK. After this authorization is obtained, the unit should be shipped back to LINNENBERG ELEKTRONIK in a protective package with a description of the problem.

In the event that LINNENBERG ELEKTRONIK determines that the product requires repair because of user misuse or regular wear, it will consider a fair repair or replacement fee. The customer will have the option to pay this fee and have the unit repaired and returned, or not pay this fee and have the unit returned not repaired.