

THE ATLANTIC 2 TRP



LampizatOr DAC – User Manual

Tube Rollers Paradise

WARNING: as every DAC comes with a 7 days testing period (please to confirm it - ask your dealer first), during this time it is not allowed to open the DAC. The screws are protected with a seal. You have to decide, if you like the sound and you want to keep it. After the 7 days period expire – your DAC is a keeper, and you may open the hood. This does not invalidate the warranty, however – any modifications – no matter how small – invalidate the 5 years warranty. Changes, upgrades and mods must be pre-authorized in writing, even tube change. DACS returned during the test period with the seal broken will not be refunded and will be sent back.

THE SHORT MANUAL

1. Plug in
2. Enjoy

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The description of REMOTE CONTROL

functions for “Kallas” systems

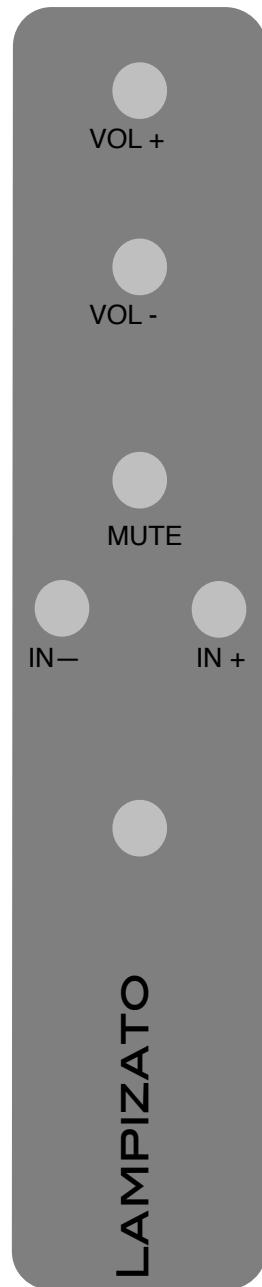
ON powers up/down the whole DAC but the Remote Control processing circuit remains powered even after switch off . If you switch off by the rear power button - it also powers down the remote circuit therefore it will be impossible to switch the DAC on via remote.

VOL+ VOL- changes the volume from complete MUTE (-63 dB) to complete bypass - 0 dB in 64 smooth steps.

Input - and Input +- changes the analog and digital inputs to the tube section.

MUTE does just that - mute. After pressing again - the DAC will go back to the last volume used. Touching the Vol-Up and Vol Down functions will un-mute automatically.

The volume levels (last used) are remembered.



A quick guide to a smooth start

THE RING BUTTON

In all DACs up to serial #500 the ring button used to be just the mains power switch. After that we started using the ring for other purposes, namely - for whatever we think will be most useful to the listener (in non-volume DACs).

If your DAC is a non-volume type (without display) the ring button can be:

1. Power button if there is no power toggle at the back right next to the IEC AC power inlet socket. This comes PER REQUEST ONLY as 99% of DACs the ring button does USB.
2. USB to NON-USB switch.
3. DSD to non-DSD switch on dacs equipped with DSD separate engine. DSD must be selected by hand.
4. Other, but only if agreed with the user. Like SPDIF - TOSLINK or MUTE

VOLTAGE: All DACs are shipped with the voltage of MAINS according to the country of destination. If you bought the DAC second hand and you are in different voltage zone - the DAC can be converted by a qualified technician. There is also a switch at the back allowing user to select mains voltage. We need to change transformer windings arrangement of the primaries.

It is not necessary, but advisable that the power cable used is a quality one, not simply a computer cable. It is also advisable to use some kind of AC filter – in many cases this brings nice results. Generally under-filtering is better than over-filtering.

Due to multitude of AC plugs around the world - we dont supply any AC cable at all.

TOGGLE SWITCHES

All toggle switches are safe to use even if by mistake. Dont be afraid to throw a toggle if for example you get no sound while you think you should.

We orient our toggles physically so their position and orientation of the lever corresponds to the placement of the respective input or output.

Example: if the toggle is marked USB-SPDIF - the lever towards USB means USB is selected, lever towards the RCA means RCA is selected. Same for Toslink, AESEBU, BNC etc.

The USB selector - selects USB against “all other digital inputs”. Only then “all others” can be individually selected by the respective switches. USB selection to USB overrides all other inputs.

Introduction

Thank you for choosing Lampizator DAC. We created it with huge research effort to deliver not only world class musical performance, rivalling the most expensive DACS money can buy, but also to offer very long life of the product. Simply speaking – if you adhere to some basic precautions listed below – the product should last a lifetime and hopefully in this period – will never be outperformed by a competing product.

“Whose lifetime?” one might ask – well – let’s not go into details – enough to say it should work flawlessly for the foreseeable future.

The DAC should be future-proof. Shall we ever launch a major upgrade to the digital part – you can get the upgrade at very reasonable cost. Shall you decide you need some added features – you can also get them at reasonable cost anytime in the future. Be it AES/EBU input, Toslink input, BNC input, XLR outputs, volume control, information status LEDs – any option you initially forgot.

We can’t be 100% sure, but it is extremely unlikely that the market and the industry in the future will embark any technology of music storage faster than 192 kHz and with more resolution than 24 bits. We already hit the human ear limits, not to mention the real needs of mass consumers (MP3).

Data formats

The DAC is capable of automatic recognition of all sampling rates from 44 to 760 kHz and bit rates from 16 to 32. Since few if any transports offering SPDIF format of the 192 kHz exist in the consumer market, it is hard to guarantee the operation but on the professional ones which we tried – it worked. From our experience the transmitters of SPDIF are incapable of making good square wave over 48 kHz, so if you play a 192 kHz file, be aware that on one hand you “play” more detailed data, but at the same time your signal is waaaay more distorted so at the end of the day for this reason alone it may not be worth it to chase the hi-rez rabbit.

If you use USB connection, all our DACs will play up to 760kHz and 32 bits. This theoretical limit does not imply that you need RECORDINGS of that resolution, which don’t exist by the way, but that you can use up sampling to play regular files. We however listen to all recordings at the resolution settings they were recorded.

By PCM files we mean all known file formats like: MP3, MP4, Aiff, Flac, WMA, WAV, Ogg, and many more less known types. PCM abbreviation stands for pulse code modulation.

DSD

Direct Stream Digital, also known as DSD format - this format is not new as many people think, it is as old as digital but it wasn't used for consumer audio or home audio - before. It became very popular after 2010 and continues to make its way into our homes. It is VERY different than our well known PCM format as found in our CD files, MP3, FLAC or WAV - AIFF. It encodes the music in the data stream differently, looks different and sounds different. It is the format in which the SACD discs were recorded and a format in which the analog master tapes were backed up by record companies. It is currently the format in which the master recordings are made in record industry.

In ATLANTIC2 TRP DAC - we use AUTOSENSING and automatic switch from DSD to PCM and back. Used doesn't need to do anything, just enjoy.

Atlantic DAC will automatically recognize and switch all DSD speed rates from normal 64 SACD format to 2x (128x) and quad 256x format all the way to 512 is supported.

Audio volume level

Tube technology allows us to set practically unlimited volume level at the output, up to 10 x higher than from a normal CD player. We have decided to adhere to one internally set standard: the test tone of 1 kHz at -20 dB produces an output of sine wave 300 mV AC under the amp load of 47K. That's equivalent of circa 3 V pp. Shall this be inconvenient for some reason – it is adjustable in the range of 0-1800 mV by just one resistor change. The test tone is available from me via email in the form of WAV or AIFF or FLAC or MP3 file.

Generally - we prefer the sound of the DAC with high output levels, and most amps don't have any problem with that. A simple potentiometer or stepped attenuator takes care of that. Only solid state chip based preamps will saturate and distort that's why we need to know in advance about such solid state chip volume system being driven by the DAC. We will keep then the volume level at the "book" level of 2 V pp. Having said that - chip volume systems and preamps with opamps belong in home theatre (cheap one) and DEFINITELY not in high end.

LampizatOr DAC **should not be** used with opamp based preamp, no matter how good. Because the op-amp feedback loops will remove the whole joy of music as delivered by the tubed DAC.

The heat issue

Many people are concerned about the heat inside the player.

We want you to relax about it - that this is NOT an issue. The DAC operates well below half of its maximum allowed temperature. Tubes are DESIGNED to be hot, this is their very nature. That's why they have internal heaters and when they are not at optimal operating temperature – they sound bad.

The other components are guaranteed up to 105C and we are expecting no more than 45 degrees Celsius in the air inside the DAC.

Our only advice is do not heat the box additionally by placing it - for example - on top of a hot class A amplifier. Give it some space around to allow free air flow and adequate cooling. Do not cover it with blankets or mats.

Optimal placement

Apart from the heat issue as described above, the DAC has no special placement requirements. Just remember to keep the S/PDIF cable not longer than 1,5 m (5 feet) and RCA chinch cables – not longer than that either. USB cables should not exceed 2m and MUST NOT have ferrite filters on them.

Since tubes are microphonic, they hate vibrations. Therefore it is forbidden to place the dac on top of the speakers or a sub. Choose least vibrating location, preferably one foot behind the plane of the speakers.

Power on-off cycle

The tube lifetime, almost like the life of a car engine in cold climate – is determined largely by the on-off cycle. The heat expansion coefficient of the glass is so much different than that of the metal, that the air-tight seal of the metal pins can leak oxygen inside the tube and eventually kill it. Even if it is just one molecule per day. So in other words it is better to keep the DAC always on, than to switch it on and off more than necessary.

The lampizator DAC with tube rectifier (Atlantic PLUS) has a slow start feature which brings the high voltage supply gradually up, at the rate of two- to five volts per second. The PSU reaches 250 V DC after 90 seconds. This helps to extend tube life. The DAC is also equipped with voltage down feature (bleeders) which reduce the power voltage upon switch-off at roughly the same rate.

On top of that – the tubes are operated always around 25% of full nominal power, which greatly increases their life expectancy. Combining all the factors together, the tube lifetime should be anywhere between 10 and 20 years, assuming the player is switched off only once per day, for the night.

Additionally all our DACs have special heater circuits that slow down the inrush current by the factor of 10 and protect the heaters (cathodes) from developing spots and blemishes that cause metal erosion and eventually death (of the tube). Our circuit goes way beyond the tube datasheet recommended protection. It extends the tube life at least double versus the datasheet specs.

Cabling and cable handling

Just to be sure that we know what we are doing:

- AC cable can be freely plugged and unplugged during operation. It is OK for the DAC but NOT OK for the amplifier and speakers. A loud thump may appear after switch off. Please turn your volume fully down before switching off the DAC.
- SPDIF cable should be plugged and unplugged when the transport is powered off. The DAC can be on. However doing it on „hot” when all is working – is not dangerous for the DAC as long as the AC power supply has the GND for all products (DAC, transport, amps).
- Signal cables can be plugged / unplugged with the amplifier volume turned fully down. XLR cables can be unplugged and plugged at any time because it is in their professional nature to do so.

Please use a decent AC cable. We suggest spending around 100-200 Euro for a good AC cable, not more but not much less. The free AC “computer grade” cables are not good enough for serious audio.

Please use a decent digital interconnect. In our DAC it is completely unimportant what is the wave characteristic impedance of the cable (the famous 75 Ohms). Just use the cable that sounds good to you. Analog as well as digital interconnects can be tried. Best results are obtained with silver cables. Let your ears decide, not specs of the cable.

Lampizators produces all types of cables for audio systems - you can order them from us with confidence of tremendous value for money. To beat our cables you need to spend 2000 Euro per one.

Tube rolling and replacement



We took an expensive and painful decision to sell the DAC with the best tubes we can find in consistent sustainable supply. Therefore we feel you should not be tempted to change them for any reason.

If you feel that you MUST try other tubes – we need to pre-authorize it in writing. Otherwise you lose the warranty, sorry.

It is possible to order the special version of DAC for tube rolling fans. It will have specially configured multiple sockets to enable the use of almost any existing tubes - from 6SN7GT to e182cc or EF80 or VT99.

Atlantic TRP tube rolling guide

The “music” tubes are pentodes in single ended triode mode. The use of tetrodes is also possible

For rolling we must observe some basic and simple principles

1. The tube must be OCTAL BASE, and novals like EL84 or Loctals can be used with base adapter

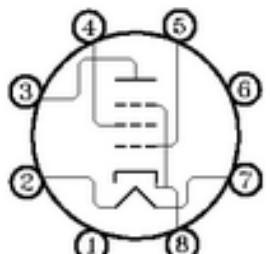
2. The heater of this DAC provides DC heating in 6,3V DC supplied to pins 2 and 7. This is the CRITICAL parameter - only pins 2 and 7 are heaters. Our limit of current is 2A per tube.

3. Since the tubes work in Single Ended Triode mode with Anode Loading (Anode Follower fashion) the voltage on anodes is dropped by the load to 50-80V DC only. However with amaged tube or no tube at all, the voltmeter will read 240 VDC on anode pin 3.

4. The bias of our system is automatic which means it is provided bu the cathode resistance and noit by means of external biasing voltage source (manual bias). Our solution prevents the tube from runaway scenario (big current) even under most extreme cases of failure or component damage - the tube is safe.

5. Our system will accept wildly broad spectrum of tubes from the smallest (EL84 with adapter) to the biggest of them all - KT170.

No adjustements of any kind are necessary.



KT88 Connections

Source: KT 88 GEC 1957 datasheet	
Heater Voltage	6,3V
Heater Current	1,8Amp
Max Plate voltage	600V
Max Plate voltage	800V peak
Max Screen grid voltage	600V
Transconductance	11,8mA/V
Plate impedance	12kOhms
Screen Grid dissipation	7W max
Plate dissipation	40W max
Plate current	230mA max

specification and max ratings(*)

Known tube types:

EL34, KT66, KT88, KT90, KT120, KT77, KT150, KT170, 6L6, 6V6, 6550, 6CA7, 5881

There are countless name and data variations, dont forget this tube has been manufactured for 90 years already in 8 countries.

Interesting history can be found here: <http://www.jacmusic.com/KT88/kt88.htm>

Here are some practical tips for tube rolling:

1. Tube compatibility- many people ask “is the tube X compatible with Y?” and the answer is of course - it depends. Tubes can have completely different bases but be compatible by parameters and can be swapped by means of an adaptor. A good example are ECC40, and 6SN7GT - different bases but very close parameters. Or ECC88 and 6DJ8. Or 6H8C and 6N1P.
2. Other scenario is when the tubes have same base (say - noval) but they have different pinouts. So we CAN NOT inter-change the two tube types but we CAN use an adaptor. Same base type and same pinout DOES NOT MEAN that the tubes are interchangeable - best example is cc81 and cc82 - same base, same exact pinout but completely different parameters. Or octal 6SN7 and VT99 - both octal, same parameters, different pinout.
3. Some tubes can have same base, same pinout and same parameters except the different heaters. Best example is ECC82 and 12BH7 - the former uses half heating of the latter. They can be used with a switch or within limited timing or with extra care, depending on the heater arrangement in our DAC. Another example are completely different tubes that miraculously are perfectly interchangeable - like E182CC with 5687.
4. DHT triodes used in our Level7 and Big 7 DAC are yet another can of worms. Most DHT tubes have the same base (four pin) and the same pinout (two fat legs are heaters and cathode, two slim legs are Grid and Anode. The problem is that these tubes have completely different heater demands. Our DAC7 is designed to accept ALL KNOWN dht triodes from this group: 101D, 45, 245, 345, 6A3, 2A3, 300B. People keep discovering more and more compatible triode types every month.

How is it possible to run so many triode types in one circuit ? DON'T THEY HAVE DIFFERENT HEATERS ?

Our genius circuit automatically detects the current demand and adjusts voltage accordingly. We added a switch which divides the tubes into two groups: high heaters

and low heaters. High heaters are 2A3, 300B, 6A3 PX-25 and low heaters are 101D, 45, 245, 345, PX-4, 242.

ATLANTIC DAC in standard form uses Soviet 4P1L DHT pentode in triode mode. It has an LOKTAL BASE which is unique. It also uses unique pinout and unique heater voltage and current therefore ATLANTIC tubes can not be rolled at all. There is only one brand and one version.

We supply the tubes that are purchased new from reliable sources. They are tested and matched. They are the best sounding tubes we know and rolling them, even if possible, would make no sense.

PLEASE VISIT OUR AFFILIATED SHOP FOR BEST TUBES: WWW.BEST300B.COM

Rectifier Rolling



Rectifiers are generally less rolled but many customers report that huge leaps in synergy can be achieved when, after choosing the optimal music tubes, we also choose optimal rectifier.

How can we tell the rectifiers ?

Directly heated diodes are older in design, physically larger, and have 4 pins versus 5 and use 5V heaters versus 6,3.

PINOUT: 2-8 is heater 5,0 V AC. Pin 8 (or2) is also cathode. Pins 4 and 6 are two anodes. Other pins - even if existing - are not connected. To test - just use a meter and check resistance in ohms between the pins. IN A RECTIFIER THE ONLY TWO PINS WHICH SHOW ANY OHM READING AT ALL, ARE HEATER PINS. THE READING SHOULD BE IN SINGLE OHMS like 2Ohm.

Some people report back that the directly heated diodes sound better than their indirectly heated counterparts, but this hasn't been verified in any semi scientific way. Generally we expect the directly heated diodes to have up to 400% higher current capability as well as voltage max. It all depends on the DEMAND of our circuit. Some Lampizator tube stages demand only 2 mA in total, some can demand 40mA and more. Atlantic DAC demand in total for 2 channels is 20 mA for SE or 40 mA for balanced version.

Rectifiers compatible: 274B, 5c3s, 5Y3, 5r4, 5U4G, GZ34, 5c4s, 5u4c

Rectifiers can be changed safely **during playback**. Just grab them by the base.

To change music tubes you must switch off the amp. DAC can continue to work.
The rectifier can be changed safely DURING LISTENING without even turning down the volume.

Aging problems

As already explained above, the DAC should age very very slowly.

The digital PCB should last a lifetime. The transformer, the paper in oil caps, the cables, plugs, sockets – should last a lifetime. There are only 4 electrolyte caps which we selected from premium brands and they should last circa 25-30 years. Other than that we suggest to change tubes every 10 years.

So - short of a thunderstrike – we expect no failures or ageing problems before 20-30 years.

Fuse Change

The DAC is equipped with a non-repairable 20 mm glass fuse circuit breaker inside the IEC-AC socket at the back. There is also one spare fuse provided in the little drawer removable when changing the fuse. The fuses are 1,6A (or 2A for USA/Japan/Taiwan) they are slow blow, and overrated by the factor of 3. Therefore it is impossible for the fuse to blow without a specific reason - a failure inside the player. Consequently, if the fuse burns, it is a signal to send the dac for service and NOT change the fuse. Obviously the second fuse will burn as well.

Spare fuse is here



WE ABSOLUTELY DO NOT ALLOW changing the fuses for any larger size than 1,6A or installing the “audiophile silver bolts” in place of the fuse. Fuses are there mainly to SAVE YOUR LIFE. And we mean that. You can experiment with audiophile grade fuses but not DEAD BOLTS please.

Volume control

The volume control is an extremely nice module, that changes the way we use the DAC. The module consists of 5 elements:

1. Power supply with the DAC power management relay, allowing to switchON/OFF the whole DAC via the remote while keeping the volume module powered.
2. The display - amber backlit 2 x 16 alpha LCD, which is our GUI.
3. The microprocessor board with memory, firmware and the chip that controls the relays
4. Relay volume board with resistor ladder. The microprocessor connects the resistors in such way that they form a resistive attenuation L-Pad with 63 steps of logarithmic attenuation. The overall impedance is held at almost constant 30k and the steps are calibrated in 1 db distances.
5. The virtual potentiometer with push action called the encoder.

The module is capable not only of volume adjustment but also of the input selection- both analog inputs as well as digital.

Using the volume module: Press the volume knob down for 3 seconds and the display will show selection of 4 analog inputs . Turn the knob to select the desired input. Press for 3 s again to exit this menu.

The input selection is available from the remote in direct mode - just press digit 1 to 4 to choose input or use left - right cursor buttons.

MUTE function: this is useful to use instead of turning the volume all the way down. Available ONLY via remote.

POWER OFF - the DAC will be switched off fully but the remote module will be always alive to enable you to power it ON again.

*** Do not be upset about the “C-2018” text - it means the date the firmware was written for this module and not the year of manufacturing of the DAC.

0dB operation: at full volume - 0dB the DAC operates as if there was no volume module. This position is recommended for systems with own volume control: preamp or integrated amp. The resistor ladder is completely by-passed.

COOPERATION WITH THE PREAMP

The DAC with volume control should sound audibly cleaner and more direct without any preamp between the DAC and the amp. The preamp, however good, will veil a lot of the DAC's natural clarity, speed and directness. If you feel you need the preamp nevertheless, use DAC at the full volume or order your DAC without volume module.

The load presented by the preamp or amp or simply the next analog component that the DAC sees, should be as high as possible. It is measured in kilo-Ohms and 100Kilo Ohms is a perfect ballpark value. More is VERY rarely seen. 47 K is next common value, and it is great too. 20 K is kind of on a low side, but we can handle that. Lower than 20k is bad news. We must configure the DAC with additional cathode follower buffer stage.

The DAC will not be damaged in any way, but at around 10K of load the dynamics of the dac will start to fade away.

Having said that - every properly designed amp or preamp keeps the load value above 40k. And if it doesn't - we simply don't choose such amp because it was not designed with audiophiles in mind.

DIGITAL INPUTS

There are three data types that our DAC can read internally: biphase, i2s and USB. The bi-phase can come in many forms, but the most common are:

S/PDIF (sony/Philips data interface) by means of single ended square wave of amplitude around 0,5 V pp

AES/EBU - the same as S/PDIF but the signal is a mirrored (balanced) pair of square waves around 2,5 V pp (max. 5 V pp)

TTL - just as S/PDIF but 5 V pp

TOSLINK - a fiber optic transmission of S/PDIF producing at the DAC the 5 V TTL electrical signal.

RS422 - it is practically the same as AES/EBU

The i2S is the same as biphase but separated into 4 signals - each carrying only one type of information. Biphase encodes 4 groups of informations in one signal stream. Specifically they are: System Clock, Bit Clock, Left/Right Clock and Data. We can install these four in any type of connector, because there is no standard. Most customers use RJ45 LAN socket or simply four RCA sockets just like in TV RGB.

The TOSLINK connection

Is toslink bad or not ? That is the question. Like everything in life - it can be bad or it can be good.

By using own experiments and oscilloscope observations we concluded, that Toslink is not bad and not inferior to RCA SPDIF if implemented properly. Toslink is EXTREMELY demanding about the power supply quality. That's why we build for toslink separate dedicated power supply and with this supply the response is instantaneous and there is no deformation of square wave. Usually Toslink ports are installed in cheap low end gear and the power supply to Toslink is completely neglected. Not in LampizatOr DAC. If you have Toslink in your DAC you can be sure it will sound good and not degrade the sound. Of course providing that the transmitter part of the link is at least semi decent.

NOTE: All Apple products which have headphone output (iMac, MacBook, Power MAC, MacMini, iPhone, iPad, iPod) - have a secret toslink transmitter hidden inside that port. Just buy the special cable - Toslink Minijack and when placed in the headphone output of an Apple product - will emit light with SPDIF in it. That is a very good way of using MAC computers as transports.

USB playback

USB data requires installation of additional converter module to convert the “packet” data into a steady i2S stream. Our asynchronous converter has internal RAM and two own clocks and own power supply and own power transformer secondary winding.

The USB module requires a driver for Windows to recognize it. MAC OS and LINUX work without any need for extra drivers.

We use three vendors of USB modules:

For ATLANTIC2 we use “JL” USB module: the driver is at:

<http://www.jlsounds.com/drivers.html>

Our USB converter is capable of working with 32 bit files with 768kHz signal frequency.

Only USB2 rated cables will work well.

USB cables with ferrite filters (the “thingie” on the cable) will not work.



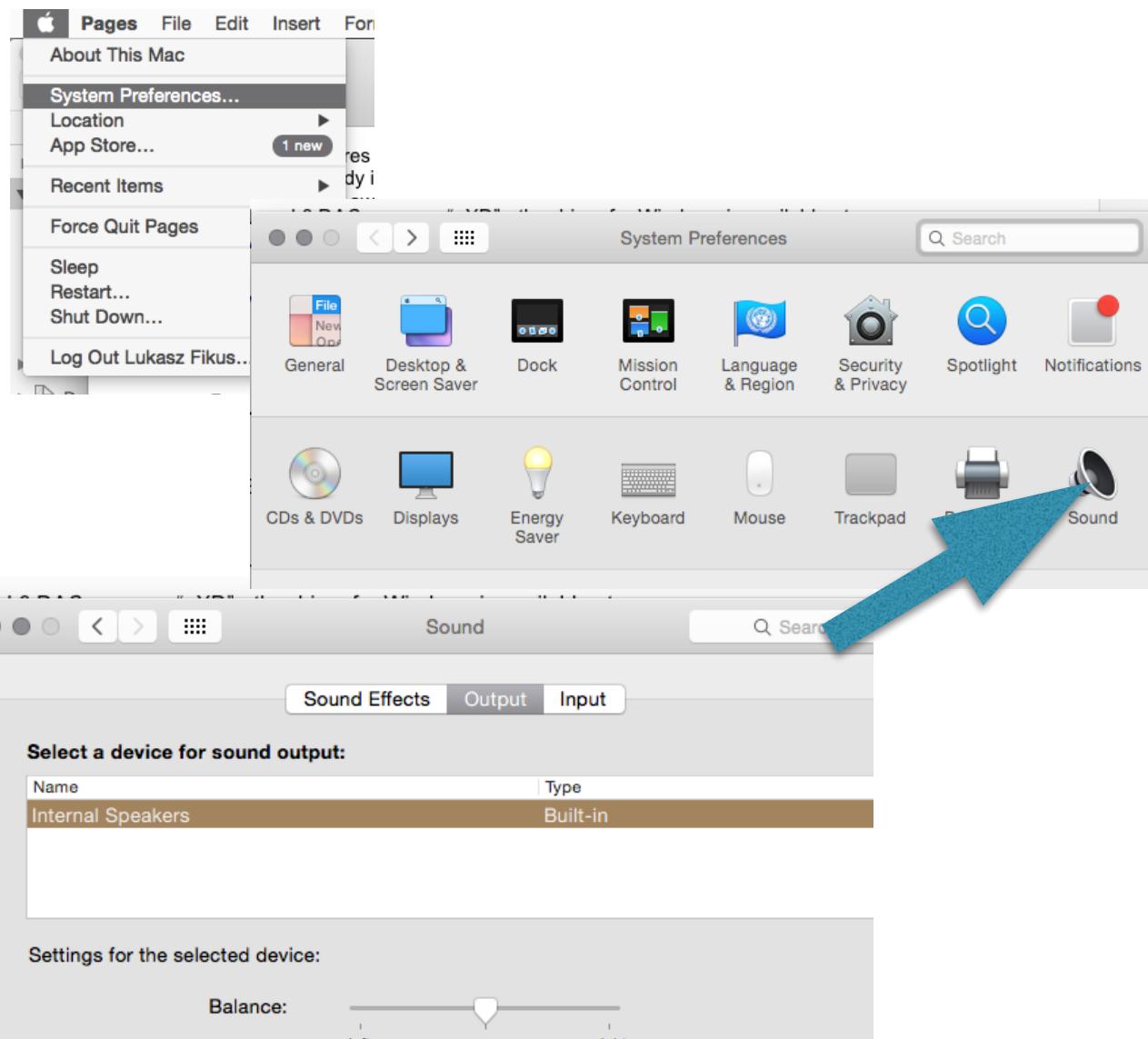
MAC OS operation of USB output:

MAC OS does not require any driver installation. Somehow miraculously the MAC computer knows how to handle all USB devices. Microsoft, even 15 years later, still can't figure out how to do it. They are probably still scratching their heads.

After plugging the DAC by the USB cable and turning it on, within 3 seconds the device should show up on the MAC.

Note: the device will NOT be described as Lampizator DAC but as JL USB or LAmpizator USB module.

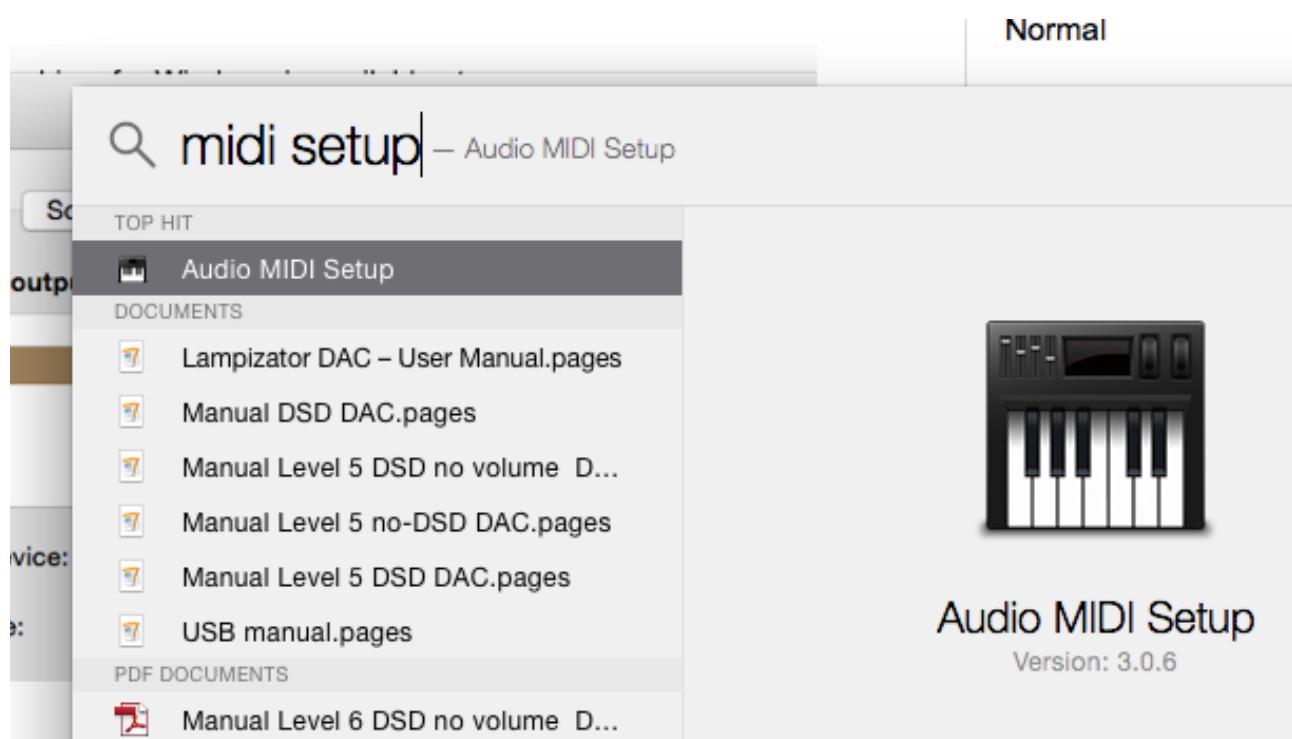
To verify what is going on, please go to the "apple sign" in top left corner of the screen and choose PREFERENCES and then the loudspeaker icon - SOUND.



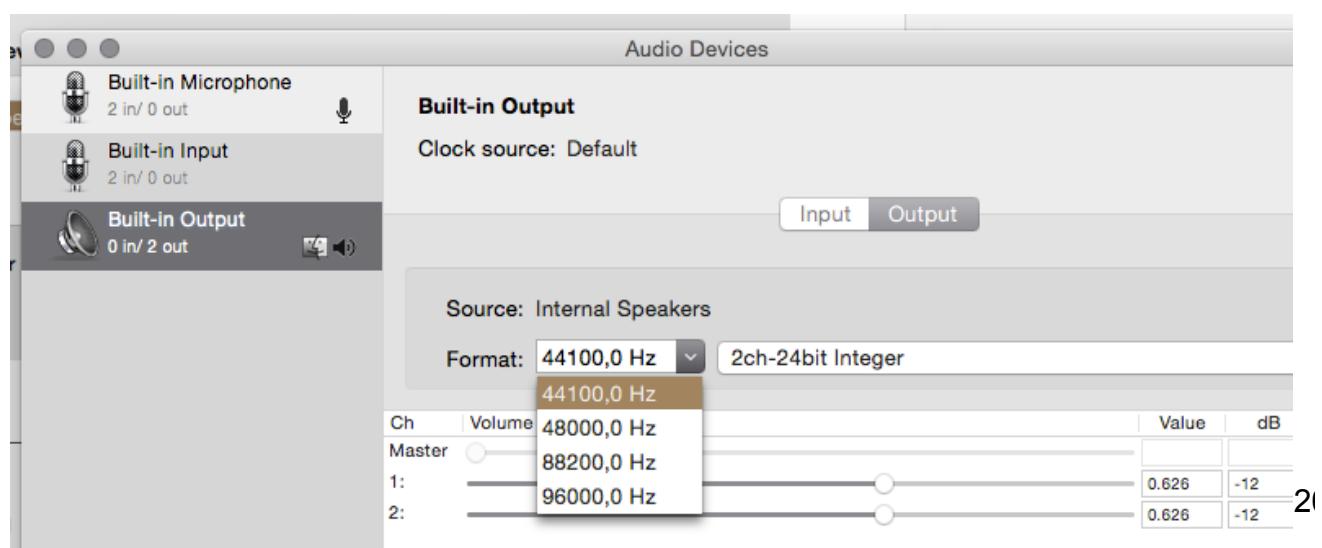
Above: on that list the Amanero should appear under INTERNAL SPEAKERS.

Next thing to check is MIDI SETTINGS of the MAC computer. We go to the top right corner of the screen and press SPOTLIGHT (Loupe):

We type in the search line MIDI SETUP and -> enter.



In the MIDI setup we can choose frequencies of sampling we use for the USB output. We don't think that the higher the better but your own test should confirm that.



LISTENING TO THE MUSIC

some practical tips

Please use good shelf for the DAC. Do not place it on speakers, subs, or even on transports or amps. Again - tubes hate vibrations.

If you try the special devices for placement, we feel that: granite or marble is bad (ringing). Cones are just plain ridiculous and stupid. Cones are for uneducated people. Ceramic ball bearing feet are great. Good wood is great if thick. Others - please try.

The way stereo sound is created inside the DAC can - under optimal condition - re-create the musical experience as it sounded live. It means that two speakers can cause us listeners to hear sounds everywhere around us, above, below, far in front, almost close to our face, and also behind us. This type of imaging is our goal. The sound must be able to get detached from the speakers (so called disappearing act) and the more our DAC helps doing it - the higher we value it (and price accordingly). We voice our DACs to be as 3-D as possible with the beginning of that 3D as close to listener as possible.

From our experience speakers should be positioned following the basic rules of LampizatOr Nirvana Room:

1. Speakers and listener's head form unilateral triangle (3×60 degrees) with the distance between speakers being exactly equal to distance head-speaker.
2. Head must be in exactly middle of the speaker base and the speaker base must be exactly symmetrical versus side walls. We place speakers and measure the distance from side walls with 1 cm accuracy.
3. The distance of the speakers to the side walls and speakers to rear wall should not be equal. We recommend 1,4 times smaller or 1,4 times larger distance- but not equal. We measure that counting from the magnet of the bass driver.
4. Distance from rear wall of speaker and rear wall of the room should be no less than 0,5 m or 2 feet.
5. Ideally, the tweeter should be at the height of the ear or up to 10 cm higher, but NOT LOWER. Speakers with tweeters lower than 90 cm sound terribly wrong. In such event do everything you can to elevate the speaker by means of stands, bases or just cement block or at least lower the listening seat as much as possible.
6. The chair or sofa should not have the back support higher than the person's shoulders - in other words - should not be just behind the ears
7. Feet are the second ears of our body. They receive a lot of vibration stimulation and the brain combines this with the hearing. So we advise to have a piece of floor without any carpet directly where our feet are. Listening with feet (preferably bare)

on the hard floor greatly enhances our perception of music. It is advisable to have rug or carpet between listener and speakers but not under the feet.

8. It is advisable to put something soft directly on the wall behind the speakers
9. The so called toe-in - the degree by which the speakers face the listener and not alongside the walls straight - is very critical. The rule of thumb is to toe in half way between standing straight and aiming at the listeners ear. Or slightly more straight, but not more towards the head. Over- toe-in kills the soundstage.

BURN IN PERIOD

The DAC comes straight from our factory after around 24 Hours of testing so it is not exactly "new" but it is not burned-in enough. Our customers report back, that after 3 days of constant powering (playing or not) the DAC opens up significantly. Further improvements are observed after up to 7 days when things stabilise.

Additional one day burn in is needed after every time the DAC: travels somewhere (vibrations), or is disconnected for over a month or is subject to cold temperature - like in the car trunk, when left overnight.

When the DAC is fully burned in, the sound quality is stable, and we only need to warm it after powering every day.

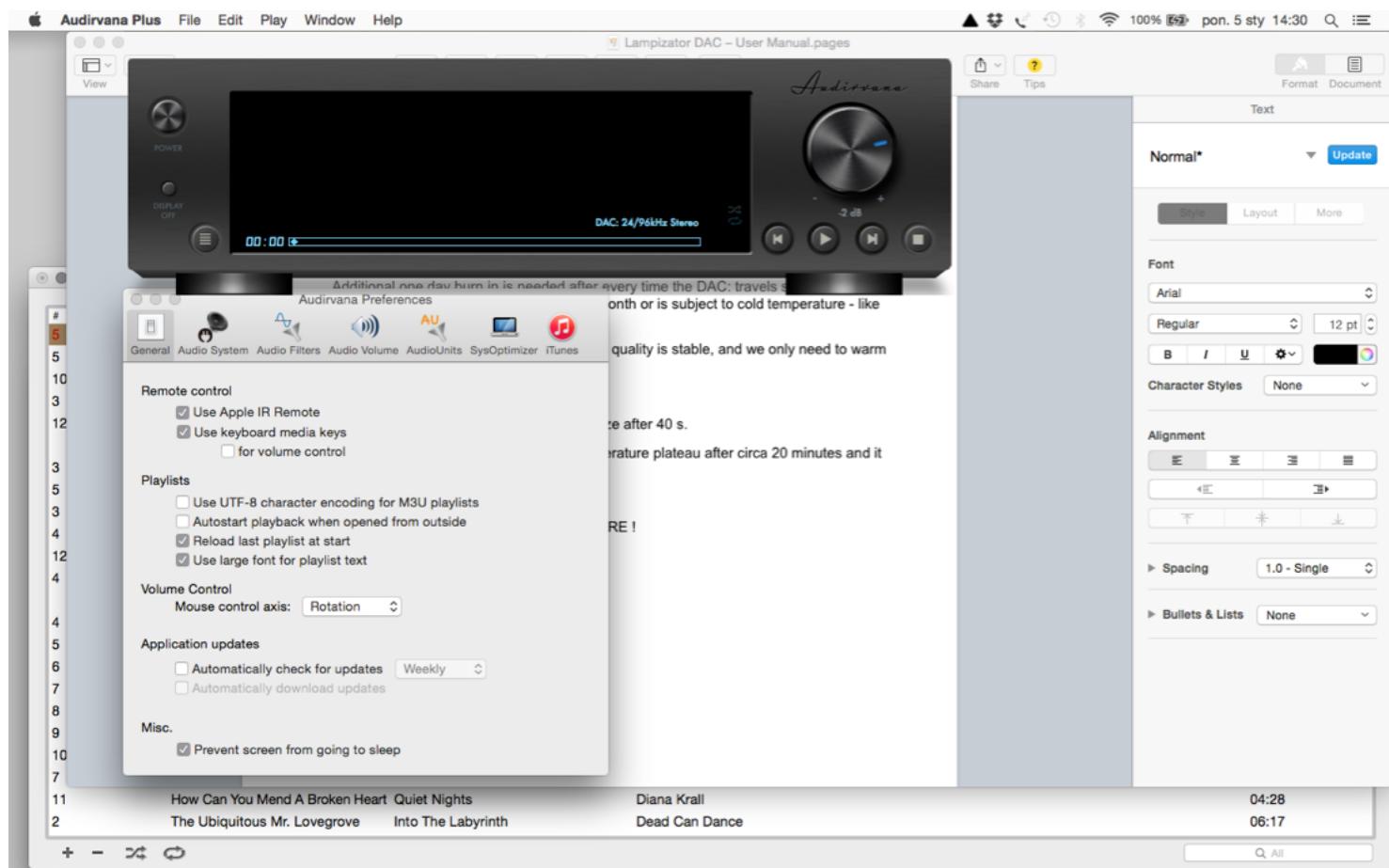
The DAC starts to play after 10 seconds.

The tubes reach full technical parameters and stabilise after 40 s. but that does not mean that the DAC sounds its best yet.

The whole system reaches operating temperature plateau after circa 20 minutes and it is ready for serious listening.

ENJOY YOUR MUSIC LIKE NEVER BEFORE !

Audirvana Screenshots of working MAC OS configuration:



Audirvana Preferences

- General
- Audio System
- Audio Filters
- Audio Volume
- AudioUnits
- SysOptimizer
- iTunes

General Optimization

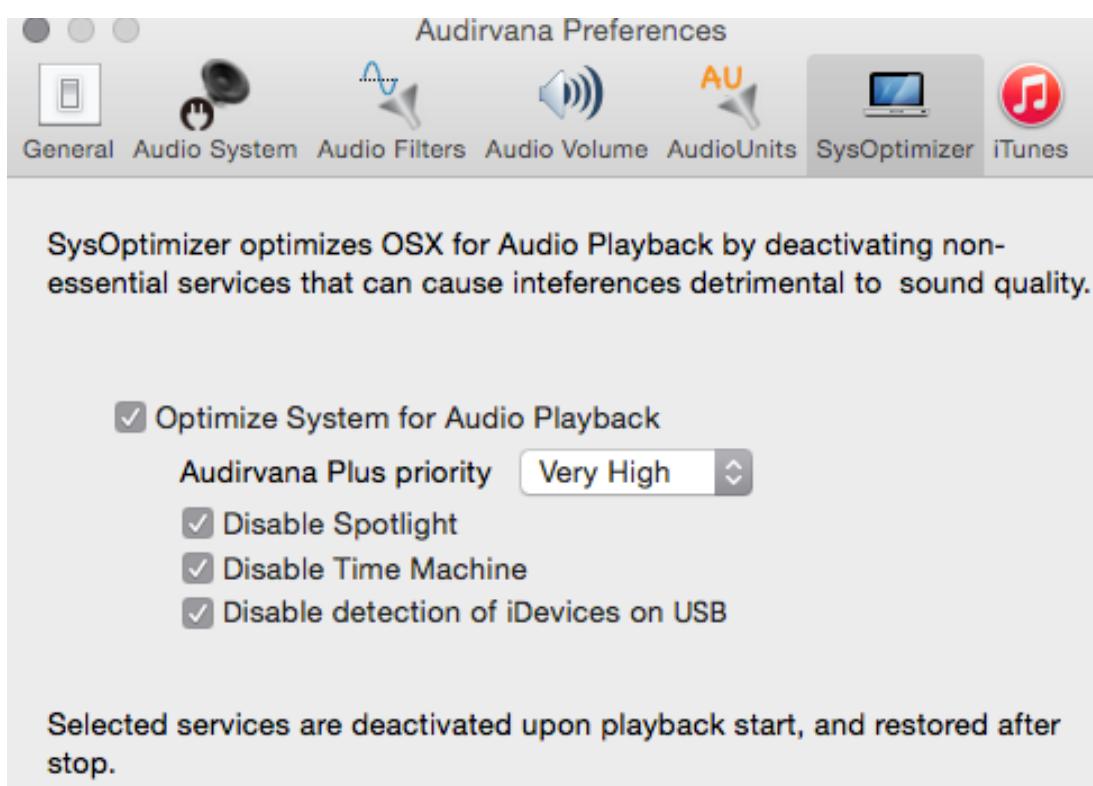
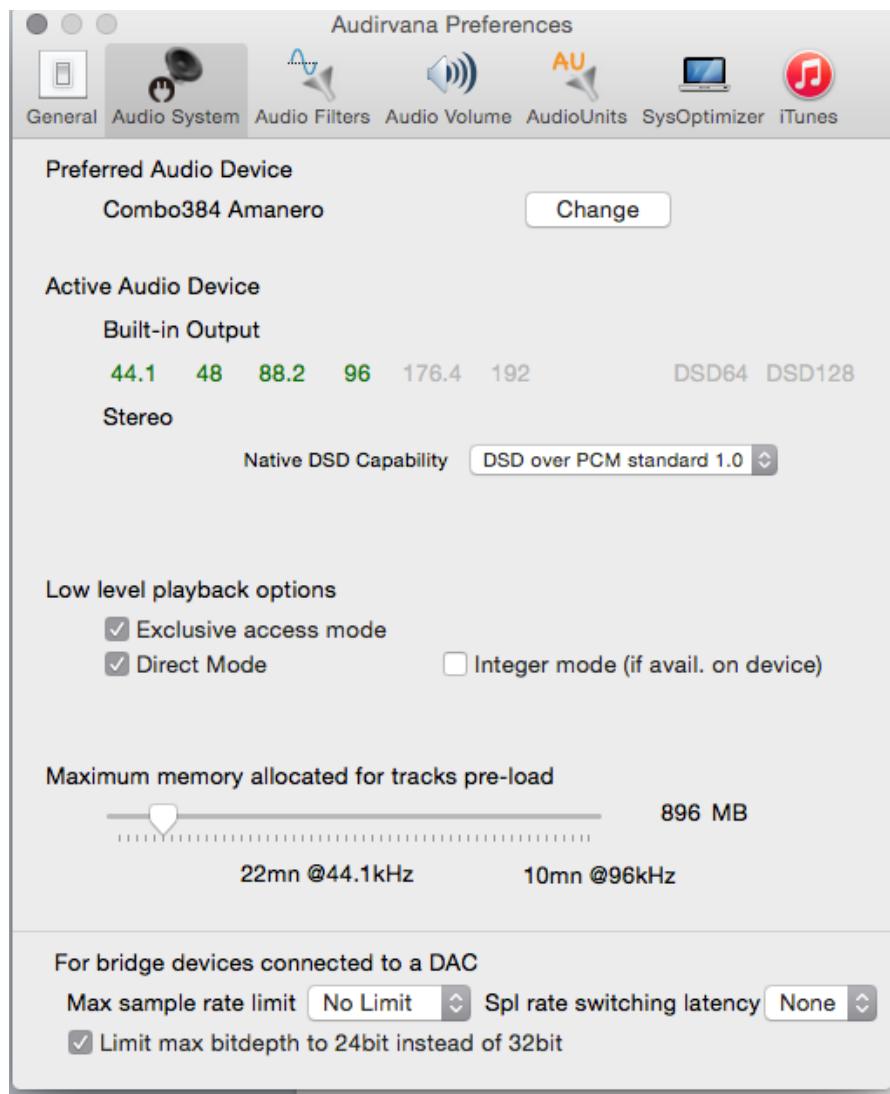
Deactivate completely iTunes own playback
Note: this option should be enabled for playing proxy files

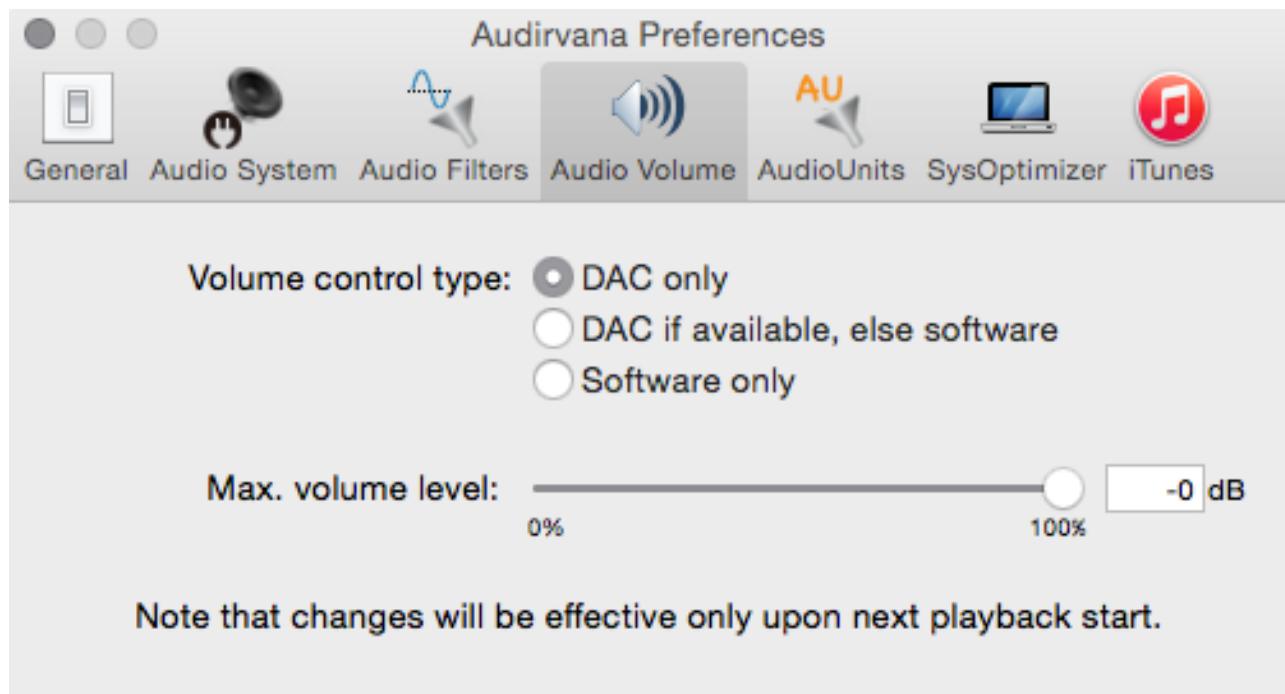
Sound Quality optimizations at the expense of convenience functions

Deactivate volume control by iTunes

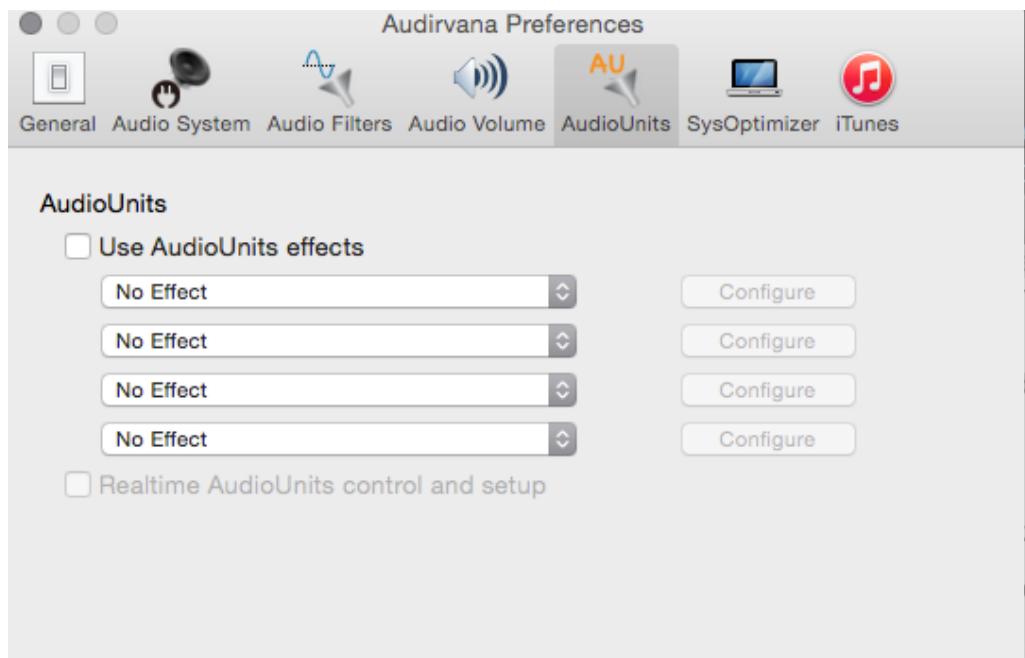
Deactivate play position control by iTunes

Note that changes will be effective only upon next playback start.



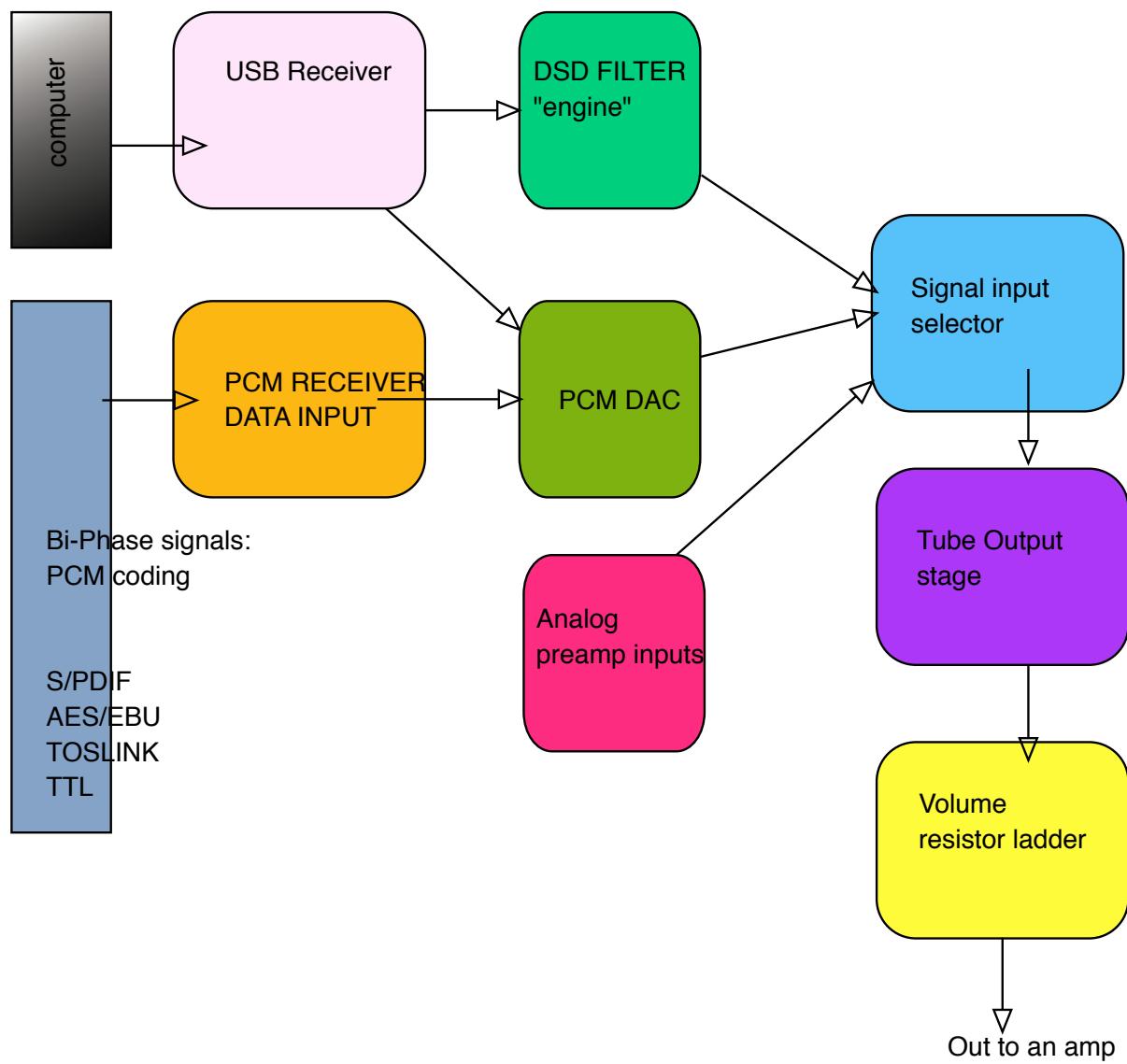


The screenshot shows the 'Audirvana Preferences' window with the 'Audio Filters' tab selected. It includes sections for 'Sample Rate Conversion' and 'Forced Upsampling'. In 'Sample Rate Conversion', the 'Converter:' dropdown is set to 'iZotope 64-bit SRC'. A 'Quality' slider is positioned between 'Fastest' and 'Best'. Under 'Advanced parameters', there are five sliders: 'Steepness' (97 dB), 'Filter max length' (500,000 Samples), 'Cutoff freq.' (1.00 x Nyquist), 'Anti-aliasing' (175.0), and 'Pre-ringing' (Min. Phase to Linear). In 'Forced Upsampling', the 'None' option is selected. Other options include 'Power of 2 oversampling only (2x, 4x, ...)', 'Maximum sample rate upsampling', 'Oversampling 2x only', and 'Custom'. A link 'Edit custom settings' is also present. A note at the bottom states: 'Some CPUs may not be able to perform sample rate conversion at best quality settings fast enough for realtime playback. This could result in pauses in playback. Note that changes will be effective only upon next playback start.'

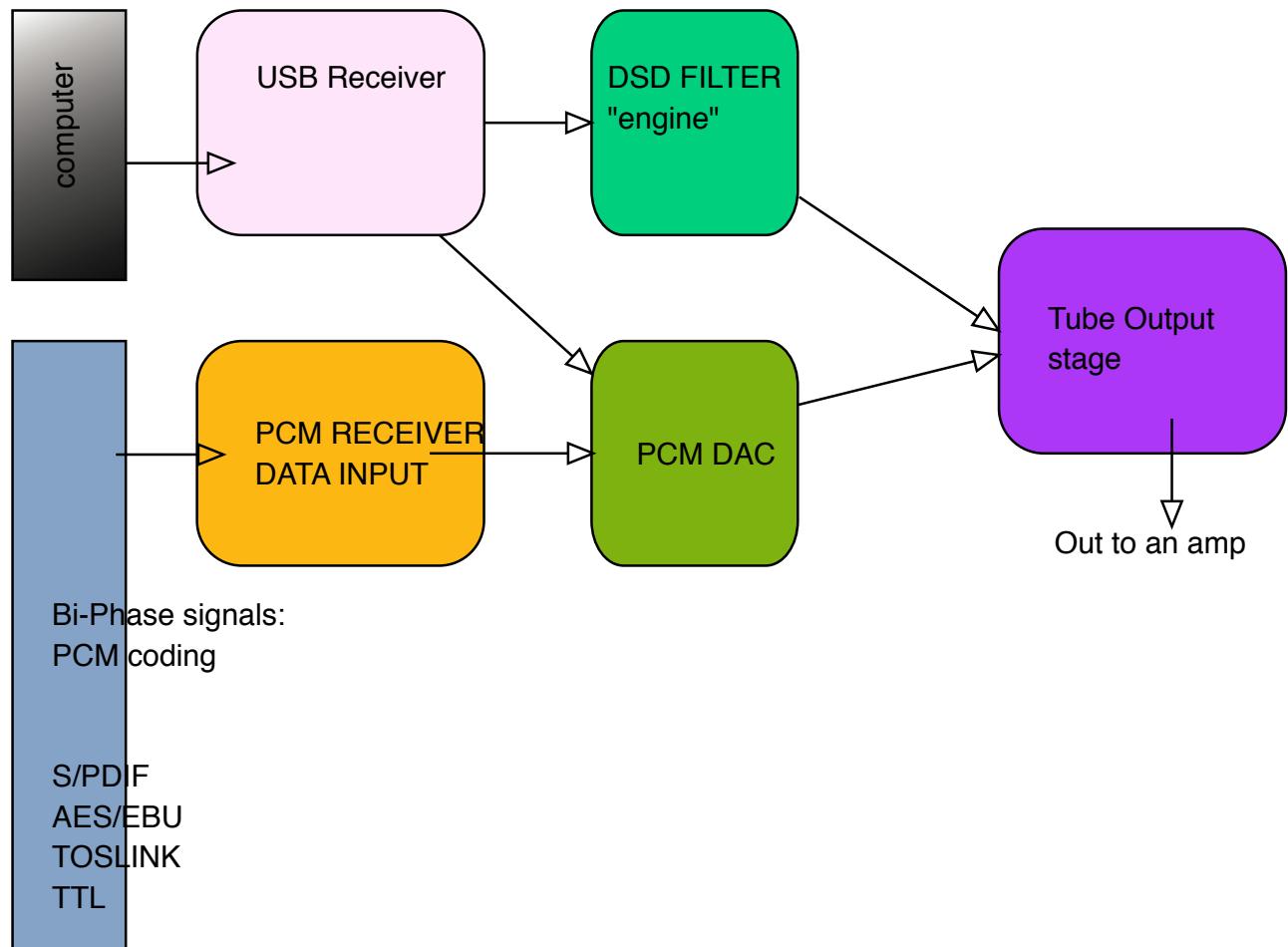


Block Diagrams

Block Diagram - DAC with Remote Control



Block Diagram - DAC without Remote Control



SOME Q & A

1. Why ATLANTIC?

Atlantic name is to commemorate Lukasz Fikus sailing voyage across that ocean in May 2016 where he took the decision to build this very special DAC, focusing on it during the endless sailing shifts of duty.

2. Why Power Pentodes?

The decision of using power pentodes comes from three main decisive factors - the fact that the power pentode sounds better in this application than a noval or octal "small signal dual triode" as commonly used. The huge current and voltage headroom that this tube offers as well as the huge electron transmission area gives our sound great authority , spaciousness and sense of ease that is not possible to match by small tubes. Also it drives the amplifier better despite simple circuit without output buffers.

3. Which tubes sound best? Well we cant answer this for you, but there are countless forums where people share their experience with tube rolling.

4. Why Copper capacitors?

Since there are only 3 components in total in our signal path - it is important to use these 3 parts from the highest quality group. the output capacitor is one of the three so we wanted to use the best available at any price. So here it is - our Lampizator house branded copper cap which matches the 4 known copper brands in quality of sound.

I PLUGGED EVERYTHING BUT I GET NO SOUND

Quick check list:

Is the voltage at the back switch selected to your country?

Is AC power switch at the back thrown to ON and red lamp illuminated?

Is ring on the front illuminated ?

Are tubes warm to touch after min. 1 minute ? Glowing in the darkness ?

Is the ring button pressed in (meaning USB input engaged in non-Volume Control DACs)

Is the ring button OUT - meaning SPDIF input engaged - in non-VOLUME CONTROL DACs

In DACs with more than one SPDIF input (also Toslink, BNC, AESEBU) is the rear panel's toggle switch pointing towards the right input?

Are analog RCA cables leading to the amp connected to OUTPUT sockets, and NOT the preamp input sockets (in Vol-CTRL DACs?)

Is Amplifier powered, connected, input selected correctly, un-muted, with speakers connected ?

If you use a computer with USB connection - is the driver recognized ? Is Windows driver installed (Amanero Combo384?)

Is the computer's output device properly defined to be AMANERO COMBO and not speakers, SPDIF, Toslink or Intel?

Is the computer's digital volume control set to maximum ?

Is the USB cable not of USB1.0 type, not longer than 2 m and not with ferrite rings on it?

In Vol-CTRL DAC is the mute dis-engaged (see the screen) and is volume NOT on -63 DB but at least on -20dB? Is the input selected according to display - on proper input ?
Cycle CHANNELS pr PGM UP-DOWN to go through the input list.

Rear panel layout

