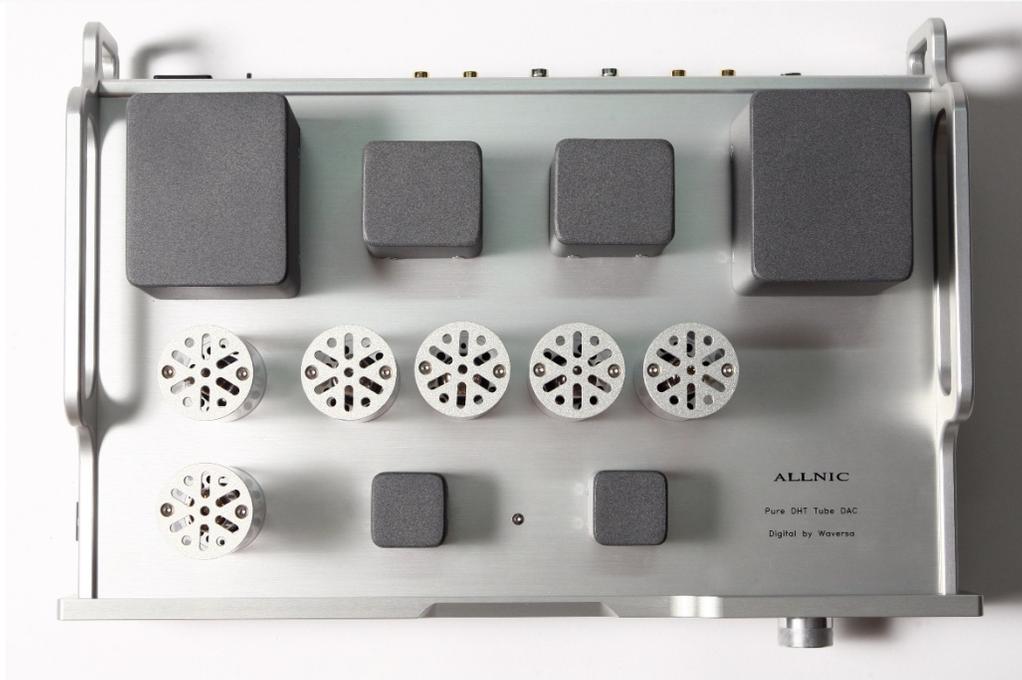


ALLNIC AUDIO
D-5000 DHT
DIGITAL TO ANALOG CONVERTER



OWNER'S MANUAL

Allnic Audio
D-5000 DHT
Digital to Analog Converter

Thank you for purchasing this Allnic Audio D-5000 DHT (Direct Heated Triode) Digital to Analog Converter (DAC). We are certain your trust in Allnic Audio and Hammertone Audio, as well as your appreciation for the sound of this innovative and ground-breaking device, will be rewarded by its excellent operation for many years to come.

Please read this entire manual before you connect the D-5000 DHT to the other components of your system and the electrical receptacle.



MUSICAL
TRUTH



David Beetles CEO

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**** Information and specifications for the Allnic Audio product described in this manual are subject to change without notice.**

Contents

ALLNIC AUDIO AND THE PURE DIRECT HEATED TRIODE BREAKTHROUGH	1
OVERCOMING THE DIFFICULTIES OF PURE DHT AMPLIFICATION DESIGN	2
WAVERSA SYSTEMS CUSTOM DIGITAL PROCESSING	3
INTRODUCING THE D-5000 DHT DAC.....	4
Key Features of the D-5000 DHT DAC:	4
WHAT IS IN THE BOX?	5
SAFETY!!.....	6
INITIAL SET-UP	6
INITIAL POWER-ON.....	8
OPERATION.....	8
SPECIFICATIONS FOR THE ALLNIC AUDIO D-5000 DHT DAC	12
WARRANTY	13
Figure 1.....	14
Figure 2.....	14
Figure 3.....	15
Figure 4.....	16

ALLNIC AUDIO AND THE PURE DIRECT HEATED TRIODE BREAKTHROUGH

In the early years of the last century, the directly heated triode (DHT) was invented independently, and almost simultaneously, in the USA and Austria. This simple device, an anode, a cathode and a grid in a vacuum contained in a glass bottle, transformed the world. Over one hundred years later, the very first triode remains a favourite audio amplification device for devoted music lovers worldwide.

Debate about the quality of the DHT's sound reproduction potential continues even today. One of the interesting aspects of these debates is the degree to which they ignore analysis of common, fundamental assumptions about DHTs. Those assumptions are based on many decades of circuit and mechanical experimentation and compromise. Indeed, because of the difficulty of using DHTs for audio, many circuit design issues have evolved into assumptions about the audio characteristics of DHTs themselves.

Allnic's Mr. Kang Su Park has spent a lifetime studying and designing circuits and transformers for use of DHTs in audio reproduction. Mr. Park has questioned basic assumptions about DHTs, re-examined variations of DHT circuit designs, and researched and experimented rigorously. His work has resulted in some remarkable audio power amplification devices. For example, Allnic's 300B amplifiers produce significantly more power than normally expected. They do this without shortening tube life because the power increase is not achieved by increased bias. In conjunction with an increase in power, Mr. Park's 300B amplifiers also have exceptionally low distortion and wide bandwidth.

Mr. Park successfully combined elements of what he learned and invented over decades to the development and production of a pure, direct heated triode (DHT) based amplifier and preamplifier: the A-5000 and L-5000, respectively. The main breakthrough was the design of a circuit, valve and transformer combination with astounding measured results. The purity of its square wave reproduction – as perfect as anything he had ever seen from a DHT valve amplification circuit – had him questioning what he was seeing! Of course, he replicated these tests many times and recorded them and their results before assuring himself that there was no mistake.

With such an unprecedented superior outcome for the circuit design, Mr. Park could not be satisfied placing a DHT stage after one or two stages using indirectly heated triodes. That approach is used in a number of commercially available preamplifiers using DHTs, but it is a compromise. It does not result in PURE DHT amplification. It introduces the characteristics of indirectly heated triode sound into the circuit. The output DHTs are only amplifying a signal already determined by the initial stage indirectly heated triodes.

In contrast, Mr. Park has created devices that use DHTs at each amplification stage. In his design, the output stage DHTs do not merely amplify the signal from indirectly heated triode stages. The A-5000 DHT, L-5000 DHT, and H-5000 DHT amplifier, preamplifier and phono-preamplifier are pure DHT, from signal input to output; and now, Allnic has produced the:

ALLNIC AUDIO D-5000 DHT DAC, WITH A PURE DHT ANALOG OUTPUT SIGNAL PATH.

OVERCOMING THE DIFFICULTIES OF PURE DHT AMPLIFICATION DESIGN

- Rarity of DHT tubes suitable for small signal amplification

The essential DHT tubes for small signal amplification should have high gain, low internal resistance and high mutual conductance. It is extremely difficult to make that kind of DHT tube. Among hundreds of kinds of DHT tubes, it is difficult to identify those that are best for the specific characteristics required for the particular amplification challenge. Selecting those tubes requires a broad and deep knowledge of tube types and specifications, and much time consuming experimentation.

- DHTs' extreme sensitivity to micro-phonic noise

Due to their generally large, bulky and weak construction, DHT tubes tend to vibrate with the tiniest external stimuli, so it is almost impossible to use a DHT small signal reproduction without breakthrough engineering solutions to inhibit sympathetic vibration in the DHT tube. Allnic's patented GEL tube damper socket, based on liquid elastomer, mitigate micro-phonic vibrations in the DHT tube.

- Difficulty of properly matching transformers to DHTs

There is no significant tradition of manufacturing DHT audio signal amplification devices, so there are really no perfectly matching transformers immediately available in the marketplace. It is, therefore, essential to have in-house capability to design and wind the transformers specifically required for production of a pure DHT small signal amplification device. Allnic has long experience with designing and winding custom transformers, so it is quite natural that a perfect DHT DAC output stage could be made in the Allnic factory. For example, Allnic has already developed and produces a very small output transformer for DHT phono amplification. The smaller the transformer, the better sound will be reproduced due to the reduced size of the magnetic field of the core material, while still providing enough inductance for realistic low frequency reproduction.

- Designing a clean, strong but balanced power supply for noise-free DHT small signal amplification

Since DHT amplification is so sensitive, and has the potential for extremely low noise reproduction, an all tube, high-speed, automatic voltage regulation (AVR) circuit is most appropriate for the power supply. AVR enhances the signal to noise ratio for noise free operation in dual mono mode. This design results in a superior signal to noise ratio.

WAVERSA SYSTEMS CUSTOM DIGITAL PROCESSING

With a digital section designed by Dr. C. Shin, principal of WAVERSA SYSTEMS and an expert in high-resolution digital and digital to analog design for both military and commercial applications, the D-5000 DHT DAC is unique in the marketplace. Except for the DAC chip it employs, the ES9018K2M SABRE 32 Reference DAC (“Sabre DAC”), none of the D-5000 DHT DAC’s digital components are sourced from the audio supply market. In addition, the USB interface and SPDIF receiver are specifically customized for use in the D-5000 DHT, and custom built high end up-samplers are utilized for user selectable DSD conversion and PCM up-sampling.

The D-5000 DHT offers the listener the flexibility to select listening directly to:

- the source drive’s audio signal at its native sampling rate, or down-sampled if that signal is above the limits of the D-5000 DHT’s digital inputs, 192 KHz (so long as the source is of sufficiently high quality – see “Operation”);
- a PCM signal from the source drive converted to DSD 128 in “real time”; or
- a PCM signal up-sampled from the source drive’s native rate by a custom up-sampling chip.

The ES9018K2M SABRE 32 Reference DAC is a high performance 32-bit, 2-channel audio D/A converter with sampling to 32/384 KHz, DSD 128 and a 1.5 MHz up-sampler using a field-programmable gate array (“FPGA”) USB interface. In the D-5000 DHT, however, the Sabre DAC chip is used for digital to analog conversion only; all audio signal processing is performed by a Waversa Systems custom designed processing chip set.

The D-5000 DHT converts PCM to DSD in real-time when CONV (“Conversion”) is selected using the D-5000 DHT’s chassis face or remote controls. When conversion to DSD is selected, all PCM input samples are converted to 128 DSD via a custom built internal 5.6 MHz up-sampler and FPGA DSD converter.

The D-5000 DHT up-samples PCM when UPSAMPLE is selected using the D-5000 DHT’s chassis face or remote controls. When up-sampling is selected, all PCM input samples are up-sampled using the Waversa Systems custom built 1.5 MHz audio signal processing chip, which also then down-samples to the selected sampling rate prior to sending to the Sabre DAC for digital to analog conversion.

The USB interface is implemented through network player hardware by Waversa Systems and is UAC2 standard compliant. This provides an extremely clean digital audio signal through complete galvanic isolation, which strips the digital signal of any PC noise commonly created by a server’s internal power supply. Firmware updates and music data are also communicated through the single provided USB input. This is accomplished by a special interface, again unique to Waversa Systems.

Data under-run or over-run and, therefore, distortion can occur when a source’s word clock and a DAC’s internal word clock are not synchronized absolutely. When an external clock is used, potential errors caused by data under-run or over-run inside a DAC can be eliminated. The D-5000 DHT provides connections for an external word clock. In addition, it is planned to update the D-5000 DHT’s current high-end internal word clock implementation to an even more highly advanced mode

in the next update phase, currently planned for within a few months of initial release of the D-5000 DHT DAC.

It is also intended to provide an I2S input in the near future. This separate system will be connected to the D-5000 DHT DAC by a proprietary method through the AES port. The I2S system will provide not only PCM but also DSD and have the capability to support extreme up-sampling and cross conversion between DSD and PCM. Details will be published at a future date.

INTRODUCING THE D-5000 DHT DAC

The D-5000 DHT is Allnic Audio's first digital product. With an Allnic designed pure DHT analog output section and a unique digital section by Waversa Systems, the D-5000 DHT is a true, ground-breaking product.

Like all Allnic Audio products, the D-5000 DHT uses Permalloy (iron and nickel alloy) for its signal transformer cores. Allnic is grateful to Mr. G.W. Elmen of Western Electric for inventing Permalloy for transformer core use, and in so doing, providing an enormous service to recorded music listeners everywhere.

Key Features of the D-5000 DHT DAC:

The Allnic D-5000 DHT DAC has many special features. Waversa Systems' digital features include:

- operations via Linux OS with UAC2 and MAC OSX 10.6, which do not require download of a driver; and with the Thesycon driver, for example, downloaded to your computer for use in Windows OS environments
- dual mono ES9018K2M SABRE 32 Reference Audio DACs
- real-time PCM to DSD 128 conversion using a custom built 5.6 MHz up-sampler and FPGA DSD converter
- custom built, FPGA based, 1.5 MHz processor up-sampling to 384 KHz
- all digital inputs and a customized S/PDIF receiver accommodating rates up to 192 KHz (so long as the source is of sufficiently high quality – see "Operation")
- a UAC2 standard compliant custom audio interface design, with Cypress FX2/FPGA USB input handling:
 - DSD 64, DSD 128
 - PCM 44.1 KHz, 48 KHz, 88.2 KHz, 96 KHz, 176.4 KHz, 192 KHz, 352.8 and 384 KHz.
- in and out reference word clock connectors for use with an external clock

On the analog side:

- the D-5000 DHT is Permalloy transformer coupled; no coupling capacitors are used.
- to help prevent microphonic interference from vibrations, the D-5000 DHT's main PCB is suspended with a specially made drum rubber.

- Allnic Audio's patented and newly designed "Absorb GEL tube damper" technology prevents harmful vibrations from reaching the signal / gain tubes and, therefore, prevents micro-phonic noise propagation in the tubes. The Allnic Audio Absorb Gel damper technology effectively solves a problem that plagues most tube amplification systems. Provided other tube components do not introduce micro-phonic noise into your system, with the Absorb Gel damping system, you will enjoy a degree of transparent sound that will surprise and please you.
- the D-5000 DHT uses NOS DHT 3A5 tubes, DHT tubes that were nonetheless manufactured in a very sophisticated and modern way, and that have a frequency range of 20 Hz to 50 KHz (-3 dB) with an extremely beautiful square wave form at 20 KHz
- low voltage and temperature operation of the 3A5 DHT tubes ensures tube longevity

In addition, the D-5000 DHT also has the following features:

- Zero negative feedback design
- Pure Class A operation
- Fully balanced circuit from input to output
- As are all Allnic Audio products, the D-5000 DHT DAC is fully RoHS (EU Reduction of Hazardous Substances regulation) compliant in construction and materials.

The D-5000 DHT DAC has been designed and manufactured to work most synergistically with Allnic Audio preamplifiers and amplifiers.

WHAT IS IN THE BOX?

Please check that the shipping box contains the following:

- One (1) Allnic D-5000 DHT DAC – in natural aluminum or black, depending on your order specification
- One (1) Apple remote control
- One (1) IEC type power cord
- One (1) Owner's Manual

Note:

- 1) The D-5000 DHT DAC ships with the tubes installed and equipped with an O-ring each.
- 2) The D-5000 DHT will work with most IEC type aftermarket power cords. Of course, only you can determine the power cord that works most synergistically with the D-5000 DHT in your system.
- 3) Be sure the D-5000 DHT DAC is labeled for the AC voltage of your location. If it is not, please contact Hammertone Audio.

We advise that you keep the box and other packing materials that your D-5000 DHT DAC came in. They will be useful if you sell your D-5000 DHT, or in the unlikely event you need to ship the unit for service.

SAFETY!!

- Disconnect power cords by pulling the plug, not the cable.
- Do not attempt any repairs. Do not remove the unit's chassis cover without specific authorization from Hammertone Audio.
- Keep all cables away from heat sources.
- Ensure there is plenty of free space around and above the unit.
- Keep the unit away from liquids – do not allow any liquid to enter the interior of the unit.
- When the unit is moved from a cold to a warm environment, allow sufficient time for any condensation to evaporate before plugging the D-5000 DHT into an AC connection.
- See the notes on “Location, Location, Location”.

CLEANING

A. Chassis

Use only a soft, lint-free cloth dampened slightly with water only (NO cleaning fluids!) to clean the faceplate and chassis of the D-5000 DHT DAC.

B. Connectors

You may use any good quality contact cleaner recommended for such applications to clean the contacts from time to time, as you deem appropriate.

INITIAL SET-UP

A. LOCATION, LOCATION, LOCATION

Like all audio products using tubes, the Allnic Audio D-5000 DHT needs to be placed on a solid base that is not subject to vibration or sudden shock, and that provides good air circulation around, above and below the unit.

- DO NOT cover the top of the D-5000 DHT tube chimneys.
- DO NOT drop the unit! For those who may want to place the D-5000 DHT on some kind of after-market isolation feet or similar devices, dropping one side of D-5000 DHT, or the whole unit may result in damage to the unit or tubes that will not be covered by warranty.
- DO NOT place the unit near a strong light or heat.
- DO NOT place anything heavy on the unit.
- DO NOT allow rubber or vinyl materials to rest on the unit's chassis for long periods of time. This could discolour the metal.

- DO place the unit on a shelf or stand that is stable and not subject to vibration or sudden shock.
- DO consider using a high quality power cord, as well as inter-connects for both inputs and outputs. The D-5000 DHT is a highly sensitive piece of electronic designed for neutrality and will output what you put into it.
- DO try to place the D-5000 DHT well away from major sources of RFI and EMI; though well shielded, the D-5000 DHT will function best away from large power transformers and other sources of such interference.

B. POWER CONNECTION

The D-5000 DHT DAC uses a standard three prong male IEC connection for AC input on the right hand of the rear of the unit's chassis. You need a power cord with a female three prong IEC connector at one end (See Figure 2).

The D-5000 DHT will be set internally for your location's electrical system characteristics. Please check the setting for electrical input on the label on the rear of the unit to confirm that your D-5000 DHT matches your location's electrical system. For North American customers, the D-5000 DHT is set internally for AC 110/120 volt – 60 HZ operation. There is no way to change this to another AC setting without return of the unit to the factory for re-wiring, at the owner's cost, including transport both directions.

C. INPUTS

The D-5000 DHT DAC has the following inputs (See Figure 2):

- One optical ("Toslink") digital
- One USB
- One AES/EBU digital
- Two (2) coaxial digital

To select the input you want to play, rotate the knob on the right of the D-5000 DHT's front panel clockwise and counter-clockwise, (See Figure 1) or use the appropriate part of the remote control (See Figure 4 and the section "The Remote Control" below).

The D-5000 DHT utilizes a non-PLL digital receiver for lower noise. To avoid introduction of noise and/or connectivity issues, the user should be sure to use high quality digital sources and cables that meet applicable standards for the selected input (e.g., AES/EBU, S/PDIF).

D. OUTPUTS

The D-5000 DHT is equipped with one pair of unbalanced or "single-ended" (RCA) outputs and one pair of true balanced (XLR) output connections. Each output pair is oriented horizontally. WHEN FACING THE REAR OF THE DAC (see Figure 2), the:

- XLR and RCA output connections are to the left of the IEC power connection;
- switch to change between balanced and unbalanced connection is between the AC power IEC connection and the XLR (balanced) output connector pair;

- RCA (unbalanced) connectors are to the left of the XLR (balanced pair); and
- left channel output connector for each output pair is to the right of the right channel connector.

The left channel output connectors are labeled “L”, and the right channel output connectors are labeled “R” (See Figure 2).

As noted above, the switch to change between balanced and unbalanced connection is between the AC power IEC connection and the XLR (balanced) output connector pair. The switch is labeled to indicate that the upper position is for the balanced (XLR) output connectors, with the lower position being for the unbalanced (RCA) output connectors. You may have both balanced and unbalanced outputs connected at the same time without introducing hum PROVIDED you have the output switch set to unbalanced output.

E. EXTERNAL CLOCK CONNECTION

The D-5000 DHT is equipped with BNC type in and out reference word clock connectors for use with an external clock (see Figure 2).

INITIAL POWER-ON

Once you have your D-5000 DHT DAC in place, connected it to the electrical source, and all connections have been made to your digital sources and preamplifier, you are ready to turn on the power for your D-5000 DHT.

Before you power up the D-5000 DHT, though, be sure you have:

- checked that all your connections are snug
- selected the output connections that you want to use, single ended (RCA) or balanced (XLR), on the switch on the back of the DAC (See Figure 2)
- turned the volume down or muted your preamplifier

To turn on the D-5000 DHT, press in the rocker switch on the left side panel near the front of the unit and marked with on and off icons. To turn on the D-5000 DHT, press the top of the rocker switch in. Of course, the “Off” position is the reverse, pressing the bottom of the rocker switch in.

OPERATION

When the D-5000 DHT DAC is powered on, the current meter on the left of the front panel will illuminate. When the D-5000 DHT is connected to a powered on source and the appropriate input for that source is selected, the LED in the top centre of the front panel, labeled “Link”, will illuminate (See Figure 1. Note: In some cases, the “Link” LED might not illuminate until signal is passing from the source).

The USB input accommodates:

- DSD 64, DSD 128
- PCM 44.1 KHz, 48 KHz, 88.2 KHz, 96 KHz, 176.4 KHz, 192 KHz, 352.8 and 384 KHz.

Please note that the digital inputs and the customized S/PDIF receiver accommodate rates up to 192 KHz (so long as the source is of sufficiently high quality). However, because it utilizes a non-PLL digital receiver for lower noise, users may find occasionally that some signals over 96 KHz may be problematic, particularly with the optical/Toslink input. Users may mitigate this problem with appropriate down-sampling at the source.

From this point on, operation is straight-forward. All functions can be accessed from the front panel. The button “in” position makes the selected function “active”, and the associated LED/LEDs will illuminate. The button “out” position means the function is inactive; the associated LEDs will not be illuminated. The desired input is selected by rotating the knob on the right of the D-5000 DHT’s front panel clockwise and counter-clockwise, (See Figure 1) or by using the appropriate part of the remote control (See Figure 4 and the section “The Remote Control” below).

DSD Playback and “CONV” (Conversion to DSD)

In the case of playback of a native DSD signal from the source, the D-5000 DHT employs DSD over PCM (“DOP”). The user should set up the source software to output for the DOP standard. Whenever the D-5000 DHT is used to playback DSD files, the DSD LED indicator will illuminate, as well as the LED indicator for one or the other of the 176/192 or 352/384 sample rates, indicating the DSD rate. The 176/192 indicator means the input signal is DSD 64, and the 352/384 indicator means the input signal is DSD 128. During playback of a native DSD signal from the source, the “CONV” and “UPSAMPLE” buttons are not used.

The button labelled “CONV” is used to implement real-time conversion to DSD (See Figure 1). The LED indicator for CONV illuminates when CONV is selected (this will occur even when playing a DSD file and CONV is selected; however, in that case, no conversion is occurring). You may notice that gain in the DSD conversion mode is slightly lower than that in the source input sample rate and up-sampling modes. This is normal and is compensated for by adjusting your volume control.

Please note that the DSD indicator light has two meanings; it indicates either that the D-5000 DHT is playing a native DSD signal from the source, OR that conversion to DSD has been selected by the user.

PCM Playback and UPSAMPLE

When the D-5000 DHT is playing a PCM signal from source, the appropriate LED indicator for the source sample rate will illuminate.

Please note that some high sample rate PCM signals may carry background white noise in addition to the audio; this is because many freely distributed high resolution PCM files are generated using either a software or hardware up-sampler that is not of sufficiently high quality. It is recommended that, if possible, the source software or device is used to down-sample such signals to improve the sound quality.

Please also note that while the D-5000 DHT filters incoming low quality SPDIF interface signals, some source devices in the market do not meet S/PDIF standard or are otherwise of insufficient quality and can be noisy.

The button labelled “UPSAMPLE” is used to select the desired up-sampling rate (See Figure 1). Repeated presses of the UPSAMPLE button move the unit through the available up-sampling rates as indicated on the front panel.

NOTE: The user cannot control the up-sample rate for conversion to DSD; the D-5000 DHT’s conversion to DSD and PCM “UPSAMPLE” functions are discrete processes.

Drivers are not required for Mac/Linux operating systems. The Thesycon driver is compatible for Windows applications and is available on-line. It is currently planned to have a Windows compatible driver that will specifically recognize the D-5000 DHT DAC available for download from the Hammertone Audio (www.Hammertoneaudio.com) and Allnic Audio (www.Allnicaudio.com) websites.

Of course, BE CAREFUL about differences in gain between your sources. Generally, disc players and tuners will have greater gain than phono-stages. That means the volume setting for listening to your turntable might be too high for listening to CDs.

When you are finished listening, turn off your power amplifier(s); then turn off your preamplifier and then turn off your sources last, including the D-5000 DHT by pressing in the bottom of the on/off rocker switch, located on the left side panel near the front of the unit.

NOTE: While the D-5000 DHT DAC is run in and tested at the factory, users have reported that the sound improves steadily through the first two to three hundred hours of use.

In the case of any failure, please contact your Allnic dealer for assistance.

THE REMOTE CONTROL

The remote control allows remote operation of all the functions on the front panel of the D-5000 DHT. It does not support the on/off function. The remote control provided is a standard Apple product. All functions controllable by the remote are manipulated by using the large button at the top of the remote control, which is surrounded by a black ring with a white dot at its top and bottom and left and right sides (see Figure 4).

The DAC functions are selected as follows:

- Pressing the upper part of the black main button ring selects the various inputs from right to left on the face of the unit
- Pressing the lower part of the black main button ring selects the various inputs from left to right on the face of the unit

- Pressing the right side of the black main button ring toggles CONV, conversion to DSD, on and off, i.e., between conversion to DSD and a source's incoming sample rate, or one of the up-sampling rates (the latter only if you were previously in up-sampling)
- Pressing the silver central "enter" button toggles UPSAMPLE on and off and when on, cycles through the various up-sampling rates

The remote control's "left" side of the black main button ring, the "Menu" and the "Play/Pause" buttons have no functions for the D-5000 DHT DAC.

If you are using an Apple device as a source or controller, or have any other Apple device nearby, it may also respond to the D-5000 remote control. If you need to use an Apple device at the same time as you are using the D-5000 DHT and cannot move your Apple device out of range of the D-5000 remote control, you should be able to disable the remote control sensor of the Apple device in the device's System Preferences. Instructions for doing this are available on-line.

THE CURRENT METER

The illuminated meter on the D-5000 DHT's front panel indicates the current supply to the tubes in the D-5000 DHT. The meter will indicate failure or damage to the function of the unit. The needle should be between the two almost vertical lines just to the right of centre on the meter face. Any failure of the tubes or circuits in one or the other of the D-5000 DHT's channels is indicated by the needle on the meter moving out from between the two lines. If the needle moves to the right of the two lines, a type of tube short circuit is indicated. If the needle moves to the left of the two lines, either a tube is losing emissions or has an open filament, or the power supply circuit requires adjustment. It would be highly unlikely for any of these events to occur; however, if the meter should indicate an issue, please contact your Allnic dealer for assistance.

TUBES

The D-5000 DHT uses the following tubes (See Figure 3):

- Four (4) x 3A5
- One (1) x 5654
- One (1) x 7233

It is optional to remove the O-rings from the tubes. Some customers prefer them on; others off. Allnic Audio recommends leaving them on.

All consequences of changing or attempting to change tubes are borne by the user unless by express agreement between the owner and the Allnic dealer. The Allnic dealer, Allnic Audio and Hammertone Audio are not liable in any way whatsoever for any injury or loss incurred by the user or for damage to the D-5000 DHT, any of its parts, or tubes or replacement tubes resulting from the user changing or attempting to change tubes.

SPECIFICATIONS FOR THE ALLNIC AUDIO D-5000 DHT DAC

Inputs:

- One (1) X optical (“Toslink”) digital
- One (1) X USB
- One (1) X AES/EBU digital (XLR)
- Two (2) X coaxial digital (RCA)

Outputs:

- One (1) pair X unbalanced (RCA)
- One (1) pair X balanced (XLR)

Output Frequency Range:

- 20Hz - 20KHz flat

Output RMS Voltage:

- 2.5 volts

Output Impedance:

- 150 Ω (Constant)

Total Harmonic Distortion (THD):

- Less than 0.1%

Signal to Noise (S/N) Ratio:

- - 86db (CCIR, 1KHz)

Power Consumption:

- 23W at 230 V / 110/120 V / 50 / 60 Hz

Tubes:

- Four (4) x 3A5 – Output stage tubes: equivalents are DCC90 and CV808
- One (1) x 5654 – Voltage error detector: equivalents are 6AK5W, E95F, M8100, 6096, CK5654, 5654W, GL-5654, CV4010, CV850, 5654RT
- One (1) x 7233 - Voltage regulator: no equivalents

Fuse:

- AC 2A, 250V

Dimensions:

- 430mm (16.93 inches) x 290mm (11.42 inches) x 150mm (5.91 inches) (W x D x H)

Weight:

- 9.2 Kg (20.3 lbs.) unpacked
- 11 Kg (24.3 lbs.) in original packing

WARRANTY

All Allnic Audio amplifier products are warranted against materials and manufacturing defects for parts, excluding tubes, and labour for two (2) years from date of purchase. Tubes are warranted against materials and manufacturing defects for one (1) year from date of purchase. The warranty is transferable for the balance of the original purchaser's warranty period, provided, as stated below, no unauthorized repairs or modifications have been performed on the product. Date of purchase is the date indicated on the invoice for the product issued by your authorized Allnic Audio dealer.

For the warranty to be valid, a defective product must be returned to your authorized Allnic Audio dealer for service prior to any unauthorized attempt to repair. Any repair work on an Allnic Audio product not expressly and specifically authorized by your authorized Allnic Audio dealer will void the warranty on the product.

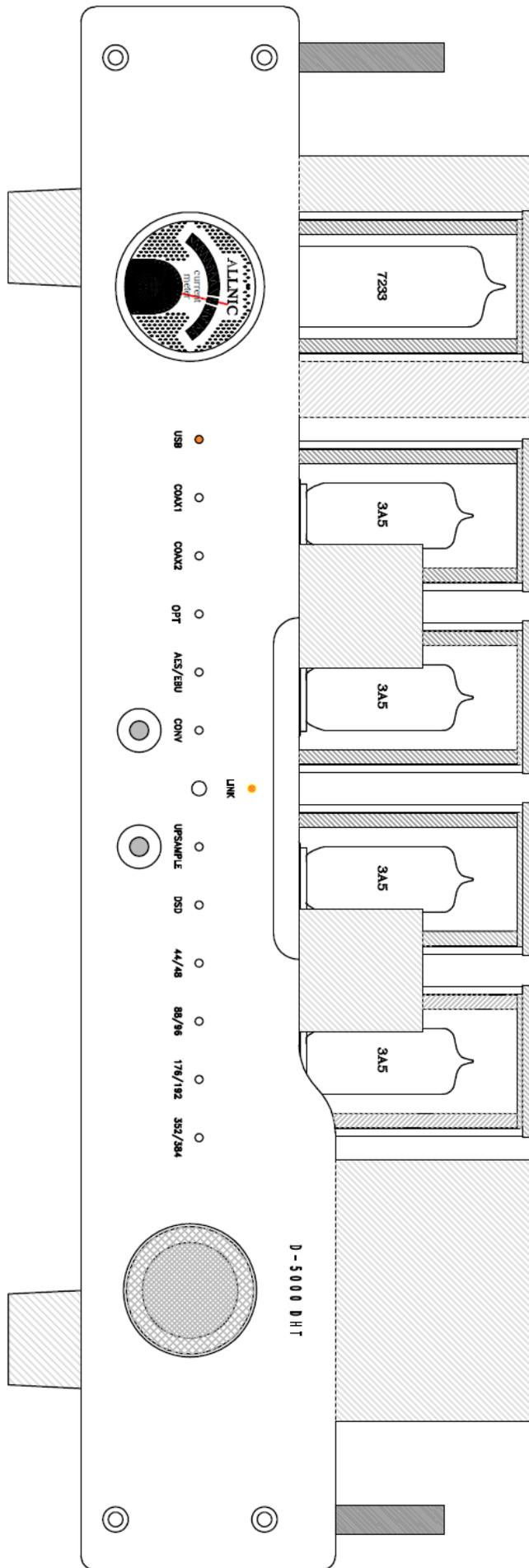


Figure 1

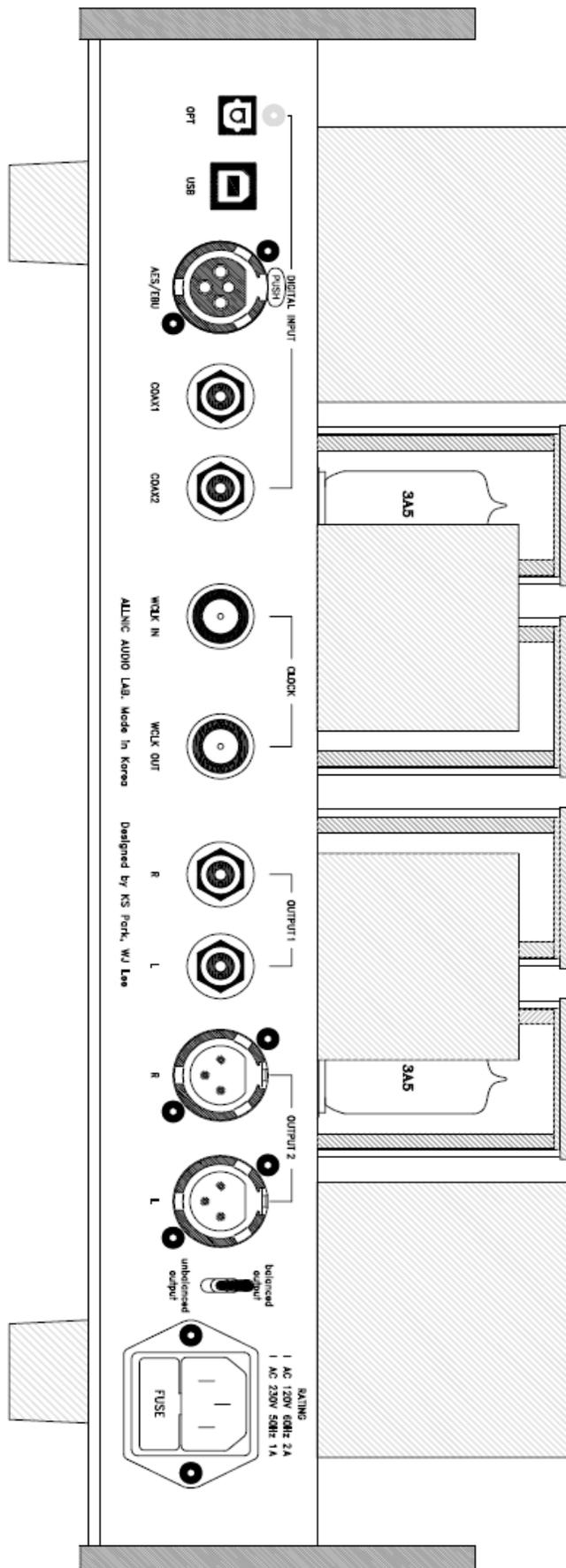


Figure 2

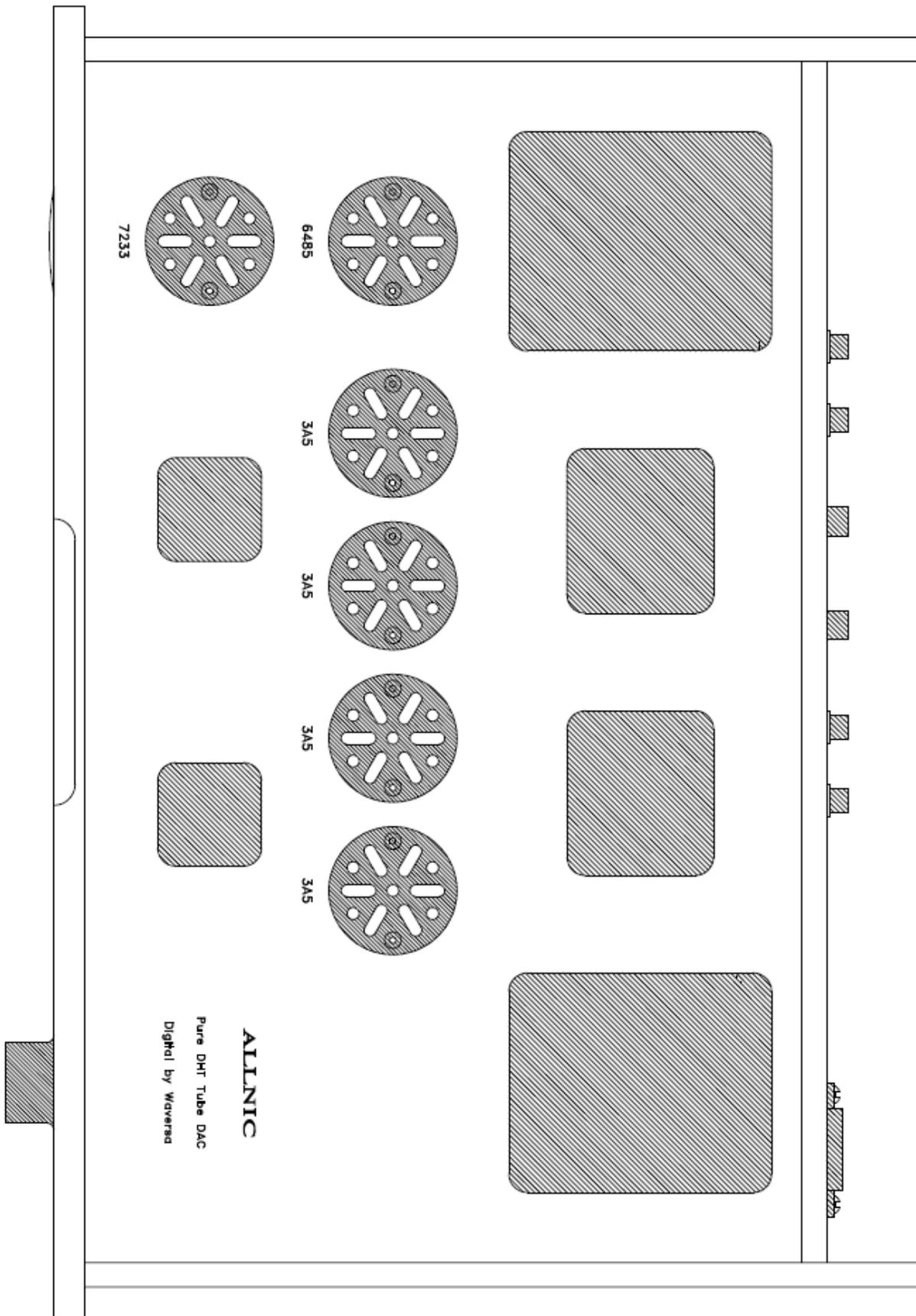


Figure 3

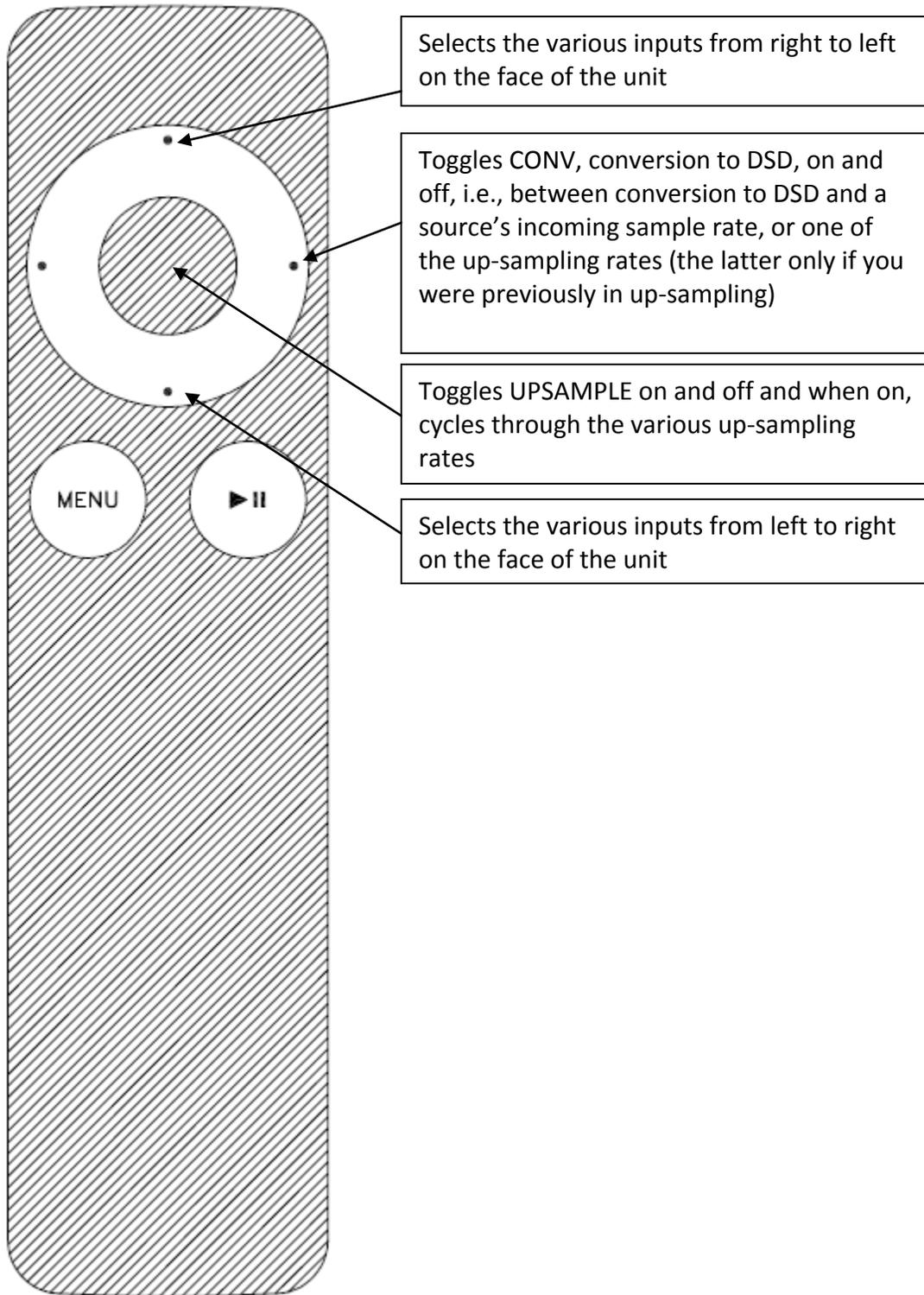


Figure 4



MUSICAL
TRUTH

David Beetles CEO

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