Audio Note

# DAC4.1x IZVOR Balanced Signature

DIGITAL TO ANALOGUE CONVERTER

**OWNER'S INFORMATION**

Audio Note

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# ! IMPORTANT SAFETY INFORMATION !

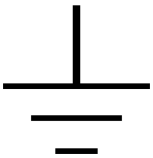
**RISK OF SHOCK OR ELECTROCUTION! INTERNAL OPERATING VOLTAGES ARE LETHAL!**

Do not remove top cover, unless specifically instructed to do so in the user manual.

This unit contains fuses and other safety components in accordance with BS60065 requirements.
In the event of failure, replacement fuse or safety component must be of the same part type and value.

**SUCH REPLACEMENT MUST ONLY BE CARRIED OUT BY A QUALIFIED SERVICE TECHNICIAN.**

Do not attempt to replace any fuses without first disconnecting the unit from the mains electricity supply.



This product must be earthed – ensure that the mains supply cable earth / ground is correctly connected.

This product generates high levels of heat. Adequate ventilation must be provided. Do not restrict airflow through any ventilation slots or place the unit on any surface that may restrict airflow.

Valve equipment operates at extremely high temperatures;
**KEEP OUT OF THE REACH OF CHILDREN AND ANIMALS.**

Do not store or operate this unit in areas of high humidity or in close proximity to water / moisture.

Do not expose or immerse the unit in liquid of any kind.

**OTHER SAFETY PRECAUTIONS: -**

Never touch the power cord with wet hands.

Always remove the power cord by grasping the plug, not the cable.

Never expose the unit to excessive heat or magnetism.

Never let an inexperienced person repair or reassemble the unit.

Never put anything, especially metal objects, inside the unit.

Never place excessive weight on the unit.

# CE DECLARATION OF CONFORMITY

We declare under our sole responsibility that this product is in conformity with the following standards or standardized documents:

BS EN 60065 in accordance with the regulations 73/23/EEC, 89/336/EEC (from 1 January 1997)

CE 94

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RH13 8RA
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**DISPOSAL**

This product must not be disposed of as normal household waste. To prevent possible harm to the environment please separate the product from other waste to ensure that it can be recycled in an environmentally safe manner. Please contact your retailer or the appropriate local government office for collection facilities.

**POWER REQUIREMENTS**

Power requirements for electrical equipment vary depending on your geographical location. Please ensure that your unit meets the power requirements in your area. The power requirement for your unit is marked on the serial number plate, located on the rear panel.

If you are in doubt, please contact your dealer before plugging the unit into the mains supply.

# INTRODUCTION

Thank you for purchasing this Audio Note (UK) product. With the correct care it should give you many years of pleasure and enjoyment.

Please take the time to read all of the information in this manual before connecting your new component to an electrical supply or your system, to ensure both your safety and satisfaction.

Please note that due to our desire to continually improve products, specifications are subject to change without notice. Therefore it is important to refer to the manual that is supplied with your product for the most accurate information; manuals downloaded from our website or obtained from other sources may no longer fully apply to your product.

If you have any questions regarding the information contained within this document or your new component, please feel free to contact us: -


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Audio Note (UK) Ltd


Audio Note

# Audio Note (UK) Digital to Analogue Converters

Ever since its introduction, we at Audio Note have been highly critical of digital music reproduction. This dissatisfaction was the instigating force in our quest to make digital playback more dynamically realistic and less fatiguing. Although we cannot defeat the inherent limitations of the format (and its recording engineers), we have elevated digital reproduction to a previously unattained level of quality and performance, and with the IZVOR technology, we proudly present our most radically advanced and iconoclastic digital circuit design so far.

To understand the path that led us to the development of our current range of Digital to Analogue Converters, it is worth looking back at our 'digital history'.

Extensive research into the fundamental properties of the data stream itself have shown beyond doubt that, regardless of the theoretical advantages of the signal manipulation employed in our competitors' products, such as higher over sampling, noise shaping, re-clocking or jitter reduction, these corrective measures greatly interfere with the critical time domain requirements of the signal.

Music is a time continuum from start to end which when broken is irreparably damaged, and no amount of clever manipulation can restore it to its original time / frequency / amplitude duration or relationship, regardless of what the theorists may tell you.

As a result, we developed a way of excluding or bypassing all these corrective measures, to allow the conversion from digital to analogue to be done without any manipulation whatsoever. All we do is to reformat the data stream to allow the converter to be able to interpolate the incoming information correctly.

Our first defining assault was made in 1992 when we introduced the DAC3, which, with its patented transformer / filter interface circuit, revolutionized CD playback. What we learnt from the experiments with the digital / analogue interface transformers and filters in the DAC3 was that there had to be more information available on the discs than previous believed. Digital filters and the associated over sampling had been broadly discussed, analyzed and criticized, but what no one had done at this time was to remove them altogether, to see what their real effects on ultimate sound quality were. So, that is exactly what we decided to do, and the results were dramatic, to say the least.

The improvements this completely new circuit topology introduced resulted in a level of CD playback quality that was previously unimagined. To this day, we combine these purely analogue filters (dubbed 1x oversampling™ direct from disc™ technology) with the finest components and materials available, including transformer interfaces and the highest quality vacuum tube circuitry to produce a range of Digital to Analogue Converters that are both refreshingly lifelike and free from conventional digital restraints and mechanical artifacts. No over sampling, no jitter reduction, no noise shaping and no re-clocking. All filtering is done in the analogue domain where it is easier to retain wide band phase-frequency and dynamically coherent behavior.

# DAC4.1x IZVOR Balanced Signature

Congratulations on your purchase of the Audio Note (UK) DAC4.1x IZVOR Balanced Signature Digital to Analogue converter.

It has been specifically engineered for sonic performance rather than technical specification, and fulfills all Audio Note (UK) Level Four criteria: -

Pure Class A operation
Zero negative feedback
Single Ended circuit topology
Valve rectification
Materials and component quality

After many years of research and development, we have now completely dispensed with the need to us a conventional Digital To Analogue converter chip. Instead, inside the unit you will find the IZVOR DAC module, a groundbreaking development in the world of digital audio processing and reproduction. Darko Greguras, the designer of the IZVOR DAC, spent twelve years creating and refining the system and the final result is nothing short of a breathtaking revelation. Never before has digital playback sounded so full bodied, tonally rich, naturally flowing, and 'real'.

Part selection has been optimized to provide the most natural and realistic sonic reproduction.

IZVOR Module; 1w non-magnetic Nichrome resistors, silver lead-outs
Audio Note (UK) 1 Watt non-magnetic Tantalum resistors
Audio Note (UK) copper foil signal capacitors used in critical areas
Audio Note (UK) Standard and Kaisei NP electrolytic capacitors used in critical areas
In-house designed and manufactured copper / copper interface transformers
In-house designed and manufactured copper / copper UHiB core output transformers
In-house designed and manufactured I-E mains transformer
In-house designed and manufactured I-E PSU choke

On the next page you will find a description of the development process from Darko: -

# Development of the IZVOR DAC

*"The word 'Izvor' can have many meanings but one stood out and best reflected the intention behind this project. For me, 'Izvor' represented going back to the fundamentals of digital-to-analogue conversion: exploring the engineering essence while staying in harmony with the materials and metallurgy.*

*This project has been driven for years by a passion to return to the basics, using selected, well-known and refined components to create a harmonious, discrete multibit digital-to-analogue converter.*

*Why? Because when you apply a carefully balanced group of parts, every step forward yields a fuller, smoother, and richer performance. In much the same way musical instruments are built, the key lies in harmonious and complementary properties.*

*Sound wise, the goal was to achieve greater contrast and grip, improved authenticity and timing, but at the same time a very composed and lush presentation.*

*This project did not come without its challenges. The resistors I wanted to use have a tolerance of 1%, which (if used in a conventional way, as other manufacturers do) is insufficient even for 14-bit performance in a discrete segmented DAC. So we had to think creatively and look for innovative solutions.*

*The technical design target was to stay within the AD1865 DAC chip specification, but to improve on it both objectively and subjectively, especially at very low signal levels. This Discrete DAC was modelled and designed around a segmented structure; 3 bits in the MSB and 16bits in the R2R sections. Particular attention was given to performance below –60 dBFS, where ambience, decays, and subtle details live. Izvor's settling time was never in question due to a specific choice of the analogue switches and very careful decoupling.*

*To achieve this, we developed fast I²S real-time compensation and used measurement equipment with reliable 1-ppm accuracy. Corrected values were stored individually on each DAC board, each being effectively unique. This kept my friend and colleague Andrejs very busy!*

*There is no oversampling and no digital or analogue filtering, only a circular I²S buffer.*

*We tested everything at DC-level precision using an 8.5-digit laboratory instrument. The final result exceeds the AD1865's measured dynamic range by more than 4 dB and, subjectively, the way the DAC loads the room feels far closer to an analogue source.*

*None of this would have been possible without a proper shunt power supply to support such demanding requirements and it was designed, specifically for the DAC, by Andy Grove. It is a solid-state interpretation of our patented Galahad feed-forward power supply, making it possibly to reach –130 dB noise floor.*

*Was the effort worth it? Absolutely!"*

# UNPACKING AND INSTALLATION

Please take care when unpacking your DAC4.1x IZVOR Balanced Signature. Choose a clean, clear location to unpack your unit. Be aware that the unit is very heavy; before attempting to unpack or lift it, check the weight and if necessary use more than one person so that it can be moved safely and easily.

We recommend that you retain and carefully store all of the original packing materials, in case transportation / shipping is required at a later date.

Select a suitable location for the unit. This should be a dry, dust free and level area, preferably shielded from direct sunlight and free from vibration. Also ensure that the location is stable and capable of carrying the weight of the unit.

A suitable mains power outlet must be close to the location; power cords must not be pulled or stretched tightly in an attempt to reach a wall socket. If the power cord will not easily reach the socket, choose a closer location!

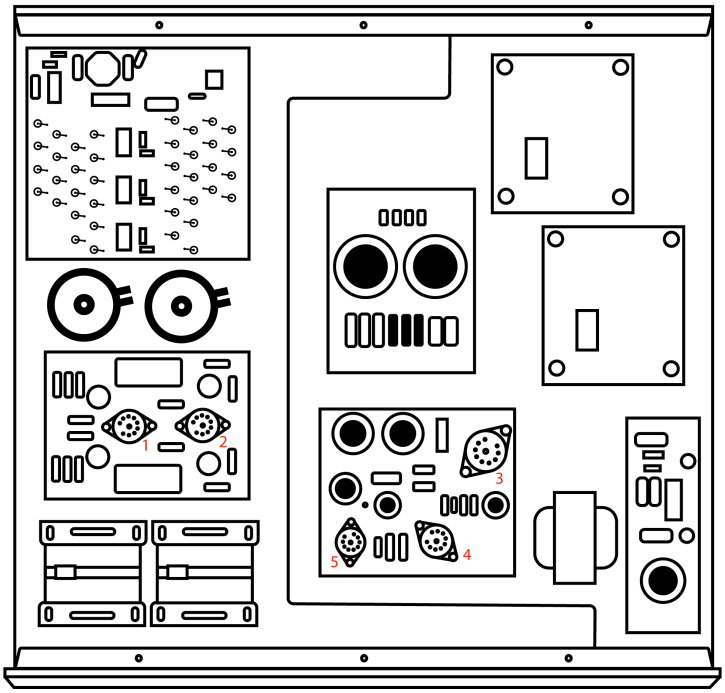
Please ensure that adequate ventilation for the unit is provided, and that airflow through any ventilation slots in the unit is not restricted.

We recommend a distance of at least 20cm free space is maintained above the unit.

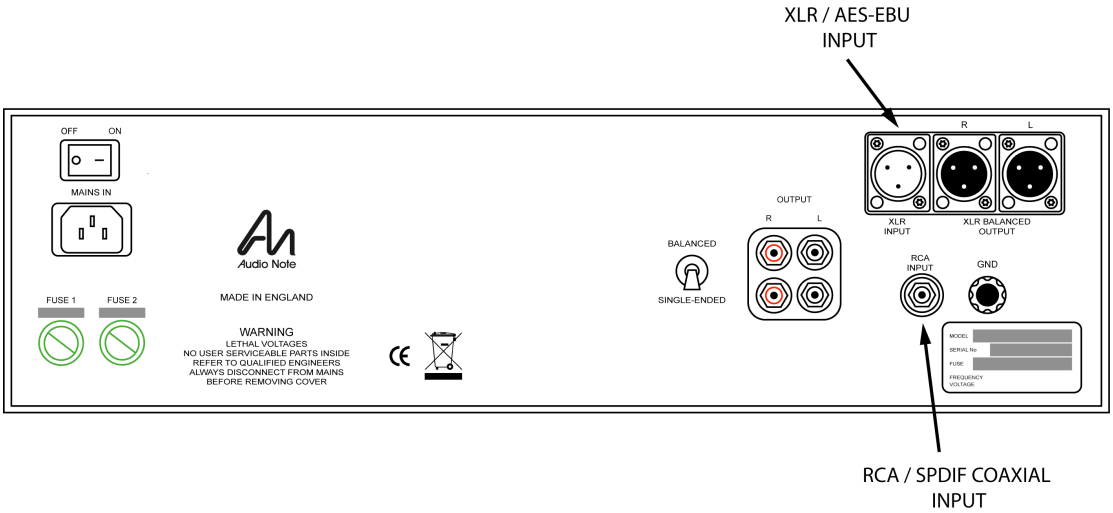
Please also remember that valve equipment operates at extremely high temperatures, so a position that is inaccessible to children or animals is essential.

**DAC4.1x IZVOR BALANCED SIGNATURE VALVE COMPLEMENT**

| | |
|---|---|
| V1 | ECC82 |
| V2 | 6463 |
| V3 | 6X5 |
| V4 | ECL82 |
| V5 | 5651 |



# CONNECTION




*Special Note – Make sure that all connections are tight and clean. For best results use good quality audio interconnects. Although it is perfectly acceptable to use cables manufactured by other companies, for best results and performance, we recommend our own* Audio Note (UK) range of interconnects and loudspeaker cables. For further information, please consult your nearest Audio Note (UK) dealer, or alternatively please feel free to contact us directly.

**Inputs**

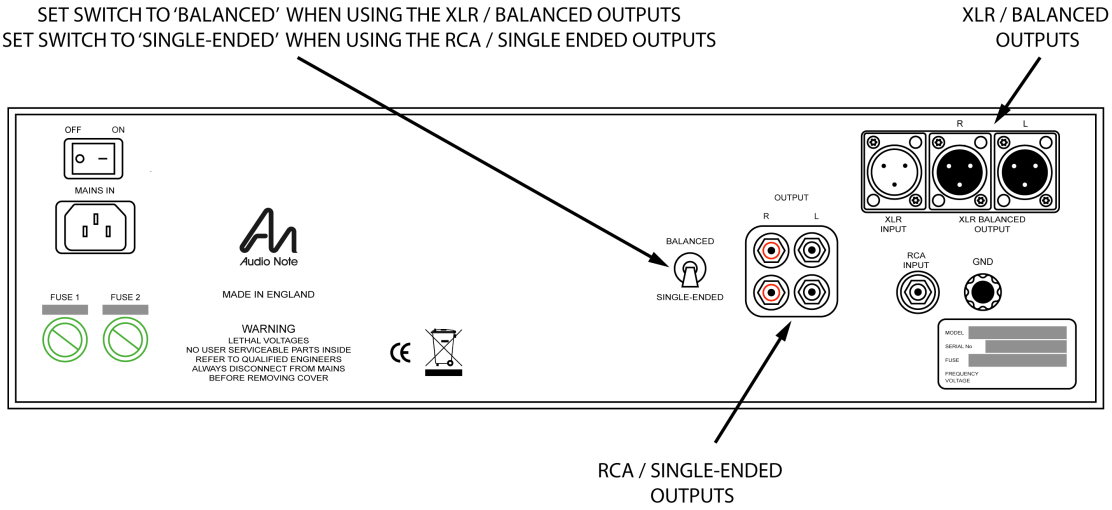
The DAC4.1x IZVOR Balanced Signature is equipped with two digital inputs; one RCA / SPDIF coaxial socket and one XLR / AES-EBU socket.

Both are correctly designed transformer coupled inputs, using our own in-house designed and manufactured digital transformers.

*For best performance, we recommend only connecting one input, but it is possible to connect both inputs to different digital sources of you wish. If you choose to do this, only have one source powered-up / switched on at a time.*

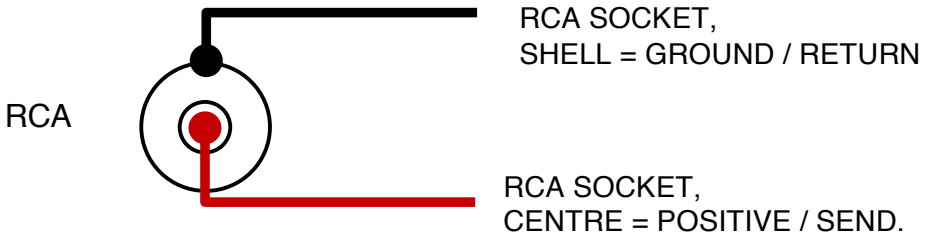
***The DAC4.1x IZVOR Balanced Signature can process incoming audio digital signals up to a sampling rate of 24-Bit / 96kHz. However, the DAC is 'native' at 18-Bit and anything above this will be automatically truncated down.***

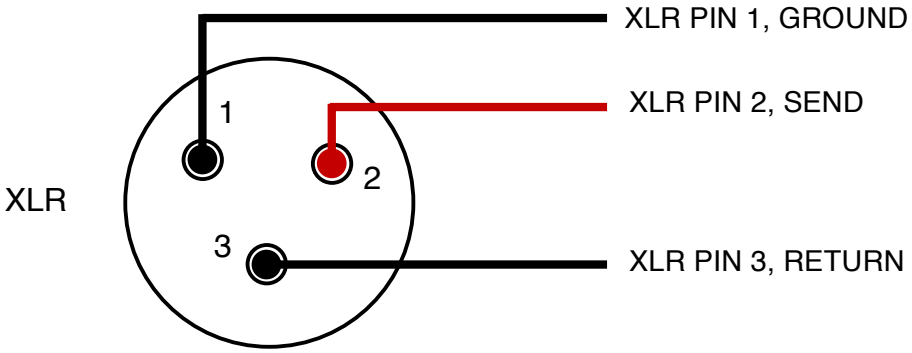
# CONNECTION continued…




**Outputs** The DAC4.1x IZVOR Balanced Signature provides two output options. There are two pairs of colour coded RCA / Single Ended sockets; RED is for RIGHT channel connection, BLACK is for LEFT channel connection.
There is also a balanced output, consisting of a pair of 'male' XLR sockets (see 'Balanced' section, below).

The two pairs of RCA / Single Ended outputs are identical.

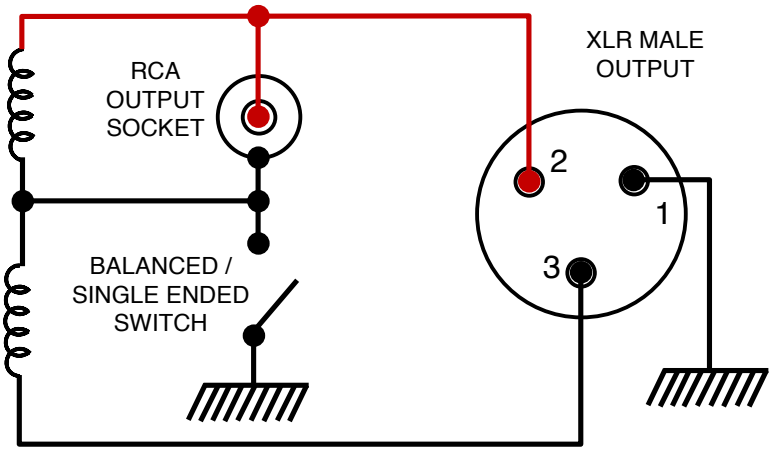


# CONNECTION continued…

**Balanced**

The DAC4.1x IZVOR Balanced Signature is equipped with custom designed and manufactured output transformers, which use an improved output and grounding scheme to provide the best possible connection to the pre amplifier.
Below is a description of the various cable and connection options: -




The pin configuration for all Audio Note (UK)
XLR / BALANCED connections is as follows: -

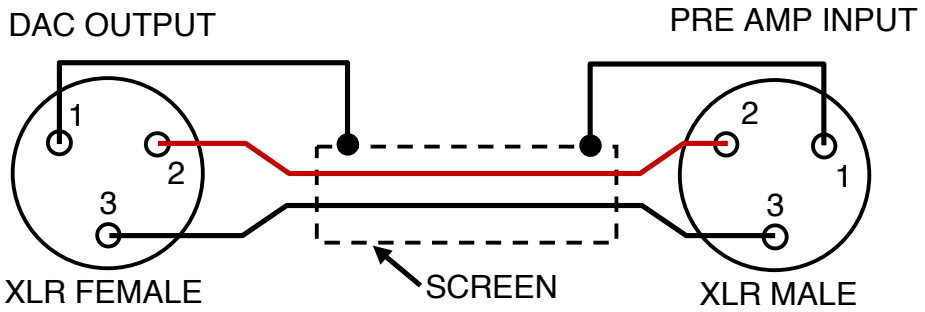
| | |
|---|---|
| PIN 1 | Ground / Shield |
| PIN 2 | Positive / Send |
| PIN 3 | Negative / Return |

***The balanced and single ended outputs cannot be used simultaneously;*** select the appropriate output using the toggle switch.

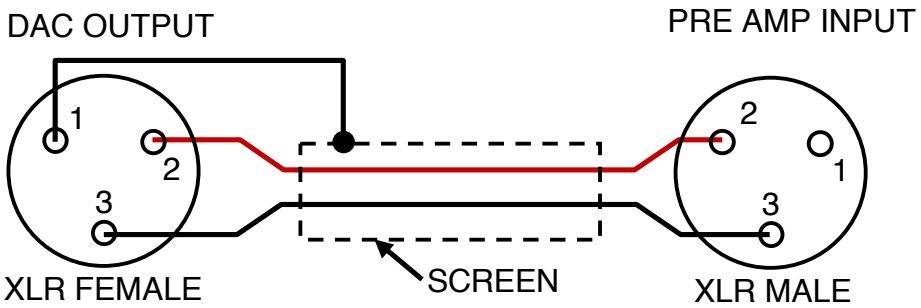
When using a pre amplifier with a true balanced input, the 'BALANCED / SINGLE ENDED' switch may be set in either position. When set to the 'BALANCED' position, the centre tap of the output transformer secondary is connected to the DAC's ground. When set in the 'SINGLE ENDED' (unbalanced) position, the secondary 'floats' in relation to the DAC's ground. This provides the option of either a low or high common mode impedance to ground at the output. Experiment with both positions to achieve the lowest background hum from the system.

# CONNECTION continued…

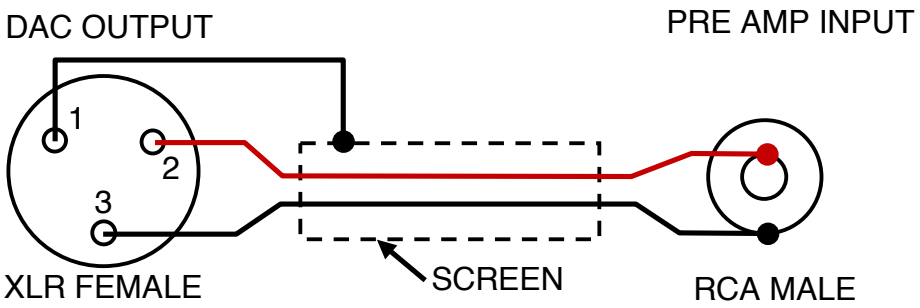
## CABLE CONFIGURATION OPTIONS




CONVENTIONAL: SCREEN CONNECTED AT BOTH ENDS



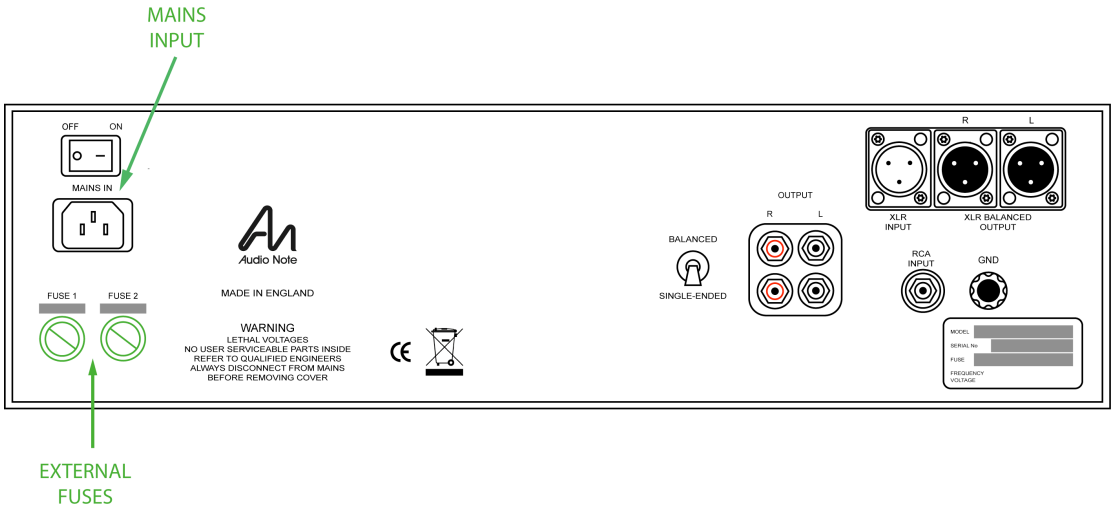

SCREEN CONNECTED AT DAC SIDE ONLY, TO ELIMINATE GROUND LOOPS




CABLE CONFIGURATION FOR XLR BALANCED OUTPUT TO RCA UNBALANCED INPUT

*When connecting the **XLR / BALANCED** outputs to a pre amplifier with an RCA / Single Ended input, the switch must be set to the **'SINGLE ENDED'** position.*

# CONNECTION continued…




**Mains** The DAC4.1x IZVOR Balanced Signature is fitted with an IEC 320 mains inlet socket. Use the supplied mains cable to connect the unit to the local mains supply.

**Ground Post** A ground post is provided for connection to the ground terminal located on the following pre amplifier, or the preceding CD Transport. If, after all connections have been made, you experience any 'hum' problems, experiment with linking the ground posts / terminals with a short length of wire.

**Fuses** There are two protection fuses mounted in the circular fuse holders on the rear panel, underneath the mains IEC input socket (please refer to the drawing above). These fuses are for your own protection and will operate only in the event of an electrical issue with the unit. Fuses can fail for a variety of reasons and it is not necessarily the sign of a fault if a fuse should blow. Momentary mains electrical issues can cause a fuse to operate / blow for instance, as can a valve that momentarily draws more current than usual at switch on.

The fuses are user-replaceable and should only be substituted with **EXACTLY THE SAME VALUE AND SPECIFICATION as the factory installed example.**

**We DO NOT RECOMMEND OR SUPPORT THE USE OF ANY KIND OF 'AUDIOPHILE' FUSES**. Damage to the unit caused by the use of such products will not be covered under warranty.

Fuse values are as follows

***Only use 'Timed / Slow Blow' fuses of the correct value for your local mains voltage*: -**

110 / 120V; Fuse 1 = 500mA Timed / Slow Blow, Fuse 2 = 1.6A Timed / Slow Blow

230 / 240V; Fuse 1 = 400mA Timed / Slow Blow, Fuse 2 = 800mA Timed / Slow Blow

# OPERATION

Once all the connections are completed and checked, ensure that the volume control on your preamplifier / integrated amplifier is at the minimum setting.

**Ensure that the CD Transport connected to the DAC4.1x IZVOR Balanced Signature is switched ON**. Source components should always be the **FIRST** components to be switched on and the **LAST** components to be switched off.

**Ensure that all pre and power amplifiers connected to the DAC4.1x IZVOR Balanced Signature are switched OFF.**

The above procedure minimizes the possibility of loud noises produced by components at switch on being passed to the loudspeakers and possibly causing damage.

Turn on the DAC4.1x IZVOR Balanced Signature by using the rocker switch located on the rear panel, above the mains inlet IEC socket. The red 'power on' indicator LED located on the front panel should now be illuminated.

Turn on your pre amplifier / power amplifier / integrated amplifier. If you are using a pre / power combination, always turn on the pre amplifier BEFORE the power amplifier(s).

The DAC4.1x IZVOR Balanced Signature is now ready for operation!

**Bedding in**

The DAC4.1x IZVOR Balanced Signature requires around 200 hours of initial use (called "bedding in") before the circuitry becomes stable and optimum performance is realized. As the device "beds in" the sound will become increasingly more smooth, detailed and open. A warm up time of approximately 30 minutes is required each time the device is switched on before optimum sonic performance is reached.

**Cleaning**

No special maintenance is required for the DAC4.1x IZVOR Balanced Signature. Use a soft, clean lint free cloth to remove any surface marks from the casework. For finger marks / grease, use a soft, clean lint free cloth, lightly moistened with a solution of warm water and mild detergent. Do not use any alcohol or solvent based cleaning products, as they may damage the finish.

**ENSURE THAT THE DEVICE IS SWITCHED OFF AND DISCONNECTED FROM THE MAINS ELECTRICITY SUPPLY BEFORE UNDERTAKING ANY CLEANING.**

**Valve Life**

The valves supplied with your DAC4.1x IZVOR Balanced Signature should provide approximately 5 years of operation. They are specially selected by us, and should only be replaced with valves of the same type and specification. Please consult your Audio Note (UK) dealer should your valves need replacing. Alternatively, feel free to contact us directly.

# TECHNICAL SPECIFICATIONS

| | |
|---|---|
| **INPUT** | RCA 75Ohms SPDif<br>XLR 110 Ohms AES/EBU |
| **OUTPUT IMPEDANCE** | 600 Ohms, Balanced or Single Ended |
| **REFERENCE OUTPUT** | 3.2V RMS (XLR / Balanced) |
| **CHANNEL BALANCE** | Less than 0.2dB |
| **VALVE COMPLEMENT** | 1 x ECC82<br>1 x 6463<br>1 x ECL82<br>1 x 6X5<br>1 x 5651 |
| **FUSE RATING**<br>**(ALL FUSES ARE TIMED / SLOW BLOW TYPE)** | 500mA / 1.6A (110 / 120V supply)<br>400mA / 800mA (220 / 240V supply) |
| **UNIT WEIGHT** | 22 KG |
| **SHIPPING WEIGHT (ORIGINAL PACKAGING)** | 25 KG |
| **UNIT DIMENSIONS** | 145mm (h) x 450mm (w) x 425mm (d) |
| **SHIPPING DIMENSIONS (ORIGINAL PACKAGING)** | 245mm (h) x 550mm (w) x 525mm (d) |
| **DIGITAL SYSTEM** | 18-Bit IZVOR DAC MODULE<br>44.1 / 48 / 96KHz input capability. |
| **MAX. POWER CONSUMPTION** | 81 Watts |
| **NOTE** | Due to Audio Note (UK)'s ongoing research and development program, specifications are subject to change without notice. |

# WARRANTY INFORMATION

Audio Note (UK) warrants this product to be free from defects in materials and workmanship for two years from the original date of purchase from an appointed Audio Note (UK) dealer, and agrees to cover the cost of parts and associated labour required to correct such defects, subject to terms & conditions.

This Warranty is offered to the first purchaser only.

Any valves supplied with the unit are warranted for three months from the original date of purchase.

If the product fails in normal domestic use and during the Warranty period due to the above described faults or defects, Audio Note (UK) will, at its discretion, repair or replace the item free of charge within a reasonable time once it has been returned to Audio Note (UK) or an appointed Audio Note (UK) dealer or service engineer.

Audio Note (UK) is not liable for any shipping charges incurred whilst transporting the product to or from Audio Note (UK) or an appointed Audio Note (UK) dealer or service engineer, should the item require service or repair during or after the Warranty period.

If the product must be shipped, please use the original packaging materials and include a copy of the original sales receipt along with a note explaining, in as much detail as possible, the problems you are experiencing with the unit.

**Only use a reputable Courier Service or Shipping Agent, and ensure that your product is insured during transit.**

**Any servicing, repairs or modifications not authorized by Audio Note (UK), or carried out by persons other than appointed Audio Note (UK) service engineers will invalidate any warranty.**

This Warranty does NOT cover: -

Damage sustained whilst in the possession of a shipping agent, retailer or consumer and not caused as a direct result of defects in materials or workmanship.

Damage caused by normal wear and tear.

Damage or defects caused by abnormal or unreasonable use.

Damage caused by accident, acts of nature, misuse or neglect.

Damage caused by a failure to follow the operating and installation instructions supplied with the product.

Damage caused by improper or careless cleaning.

Audio Note (UK) reserves the right to refuse warranty for any component of which the serial number has been removed, defaced or tampered with.

# CONTACT INFORMATION

If in the future your Audio Note (UK) product requires servicing, or if you require technical support or have any questions regarding this or any of our other products, please contact your local Audio Note (UK) dealer.

Alternatively, please feel free to contact us directly: -

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