

MUSICAL FIDELITY



roon  
tested  
\*pending

DSD  
Direct Stream Digital

Hi-Res  
AUDIO

MQA

## Nu-Vista DAC

High-End DAC with Upsampling and Balanced Class A Nuvistor Output Stage

### Nu-Vista DAC In Brief

#### DAC

- DAC Circuit: 32 bit Hyperstream II
- DAC Chip: 2x ES9038Q2M (dual differential)
- Low Noise Nu-Vista Class A circuitry
- 4x 7586 Nuvistors in balanced buffer output circuit
- 16-core XMOs and CPLD MAX II Altera processors
- Switchable Advanced Reclocking
- Switchable Upsampling
- Oversampling Bypass
- Selectable digital filters with proprietary optimum transient filter
- Full Hardware MQA Decoding for USB and SPDIF inputs
- Roon Tested
- Super Silent Power Transformer
- Discrete input power filtering and DC blocking circuitry

#### In & Output

- 1x Asynchronous USB: up to 768kHz
- USB: DSD 256 (stereo DoP), DSD512 (stereo native)
- 1x coaxial, 3x optical SPDIF; 1x AES/EBU: up to 24bit/192kHz
- 1x I2S for Nu-Vista CD 2
- 1x RCA, 1x balanced XLR outputs: variable/fixed switchable
- Trigger In/Out

#### Features

- Optional connection for external Nu-Vista Uni PSU (sold separately)
- Colour display with digital playback information, clear selected input and volume display
- Dimmable display
- Nu-Vista Remote Control "Front panel in your hand"



### General Description

The Nu-Vista DAC is our new flagship DAC built around the critically acclaimed ESS 32-bit HyperStream II DAC architecture. The Nu-Vista DAC incorporates our famous Nuvistor circuitry, each channel having a fully balanced stage of Nuvistor 7586 triode tubes involved in

a discrete Class A amplifier buffer. It features RCA and XLR outputs, 3x optical and 1x coax SPDIF inputs, 1x USB and 1x AES/EBU inputs. A I2S input is also there, for a future yet to be announced Nu-Vista CD-player!





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## Technical Talk

Building on our knowledge and experience with Sabre ESS chips, the Nu-Vista DAC uses 2x ES9038Q2M chips in dual differential mode for a pristine dual mono design. Thanks to these converters, the Nu-Vista DAC supports up to

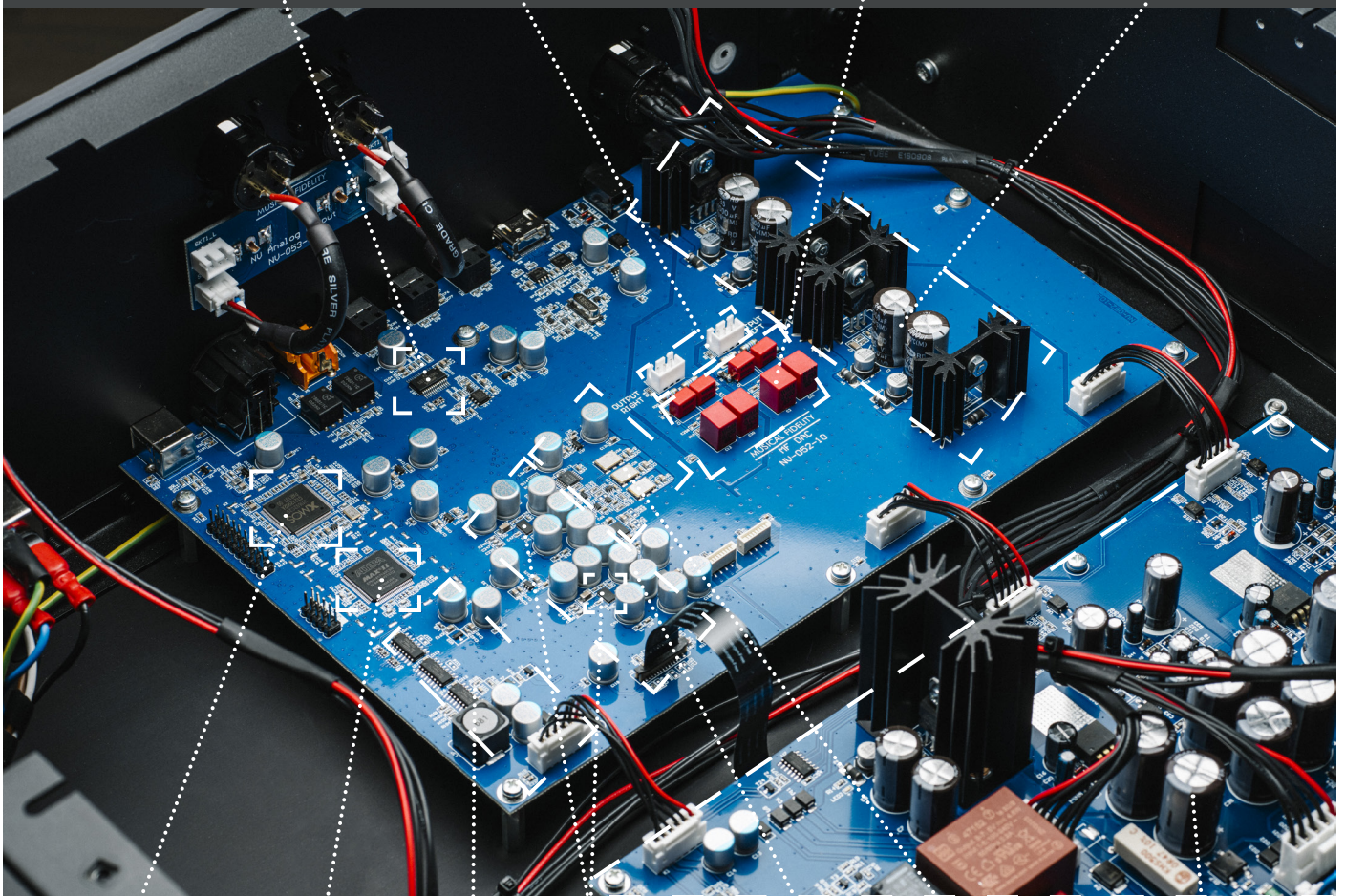
768 kHz files in PCM and DSD256 via DoP and native DSD512 via USB, covering any digital file you can buy or stream. The SPDIF inputs are greatly improved as well, now supporting MQA (up to 384kHz) and DSD (DoP 64) as well!

WM 8805 S/PDIF digital input chip

Connection to balanced Class A Nuvistor stage

Analogue stage with high-performance, fully differential audio operational amplifiers

Separate PSU for discrete operational amplifiers with transistors



16-core XMOS processor with advanced multi-core RISC architecture

Dual ESS Sabre 9038 DACs

Audio master clock and clock circuitry power supply

Altera CPLD MAX II processor

Separate PSU for analogue circuitry

Separate discrete power filtering and DC blocking PCB

Separate PSU for digital circuitry

### Digital Architecture

We utilize an extremely low-noise, low-dropout regulator designed specifically for high-performance audio systems and optimized for high-resolution audio thanks to its revolutionary dual-regulator architecture. The inclusion of a Time Domain Jitter Eliminator results in superb SNR and THD+N performance with unbelievably detailed transient response. Digital audio is the art of time, with our proprietary clock design we have managed jitter rates of unrivalled

and below 100 femtoseconds. This outperforms many renowned and respected audiophile clock generators! Other advances in the DAC section include optional upsampling and reclocking and an oversampling bypass mode. The 16-core XMOS and CPLD MAX II Altera processors ensure there is always enough headroom for these operations, the digital filters, including our own new proprietary filter for optimum transient response, and the MQA processing.



### The Legendary Nu-Vista Stage

Never before in the history of hi-fi have Nuvistor tubes been coupled with state-of-the-art fully balanced and discrete technology and sophisticated modern digital architecture. The DAC section goes directly into a high-performance, fully differential analogue stage with technical characteristics that are astonishing. Each channel has its own fully balanced Nuvistor output stage; the Nuvistor 7586 triode tubes running in a completely discrete Class A setup. The power of the

NuVistor is leveraged as an excellent low-impedance output stage with ultra-low distortion and unfathomably low noise. But dreamlike technical measurements aren't everything. Silky smooth sound with enormous transients and effortless feel that retains all its punchiness and clarity, without any harshness or astringent sound behaviour. This is what the Nu-Vista DAC so masterfully accomplishes. Something that DACs often struggle with.



### Upsampling, Reclocking and Digital Filters

The CPLD MAX II (Complex Programmable Logic Device) Altera is used for re-clocking, which together with the XMOS microcontroller brings high-quality processing of both PCM, DSD and MQA technology. Upsampling and reclocking can be individually turned on and off for PCM signals. DSD and MQA use their own format specific settings and filters. For

PCM signals, the Nu-Vista DAC has eight selectable digital filters. One of them is our proprietary optimal transient digital filter. In this filter we trade off frequency domain performance for optimum time domain performance resulting in a slight frequency roll-off at 20kHz, but zero pre-ringing and zero post ringing.



### Oversampling Bypass

For ultra-high-res audio we have gone the extra step and created our oversampling bypass mode. For sample rates of 705,6k and 768kHz the DAC's oversampling FIR filters are bypassed and the Nu-Vista DAC goes into oversampling bypass mode. At these ultra-high sample rates, the digital signal enters the DAC block directly. Effectively, this turns off all re-

maining filtering, improving audio parameters and the frequency spectrum by yet another step. The oversampling filter is the largest single digital section "block" on the ESS DAC chip by silicon area. By powering this filter block down, we reduce the on-chip PSU / ground noise and consequently lower signal correlated clock modulation on the ESS DAC's silicon die.

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### Musical Fidelity for the Sake of Music

Therefore, musical purists who are simply looking to feel that hypnotic sensation of communication between listener and artist: they will find it here. Just leave it at its standard settings and feel the immediate musical integration: the whole sound is sweet and clear; the treble is completely grain free and extended. The bottom end sounds endless with tactile bass dynamics.

As you get reintroduced to your music library, you might, at some point, want to discover what else is possible and hear it from different

perspectives. It is then, when the customizability, options and settings turn the Nu-Vista DAC into a powerful piece of expert machinery. Explore the sound stage with upsampling or without. See what reclocking does and let yourself be drawn in deeper. Choose between 7 different digital filters, or our favourite, the optimum transient filter.

If you have the ultra-high-res files at hand, experience what the Nu-Vista DAC is truly capable of in oversampling bypass mode.





## MUSICAL FIDELITY



### Super Silent Power Transformers

The Nu-Vista DAC displays our continued development of our Super Silent Power Transformers. Industrial grade power sockets with EMI filter and DC blocker stop interferences and eliminate transformer hum. The encapsulated toroidal transformer with low core saturation is ideal for audio applications and especially perfect for digital audio due to its extremely low electromagnetic radiation. The power supply for digital and analogue circuitry is carefully separated to provide immunity and isolation of the analogue amp and buffer stages from any possible digital HF interference.

### Optional upgrade: Nu-Vista Uni PSU

Optionally, the Nu-Vista DAC can be powered by the Nu-Vista Uni PSU (set to be released in 2024). This will achieve better noise performance, by moving the AC mains power supply from the main unit and build it into another matching box. We are taking advantage of the extra space to set up mains and output filtering a step above what is usually possible in one-box-solutions. This quiets up the supplies and results in almost no mains-borne artefacts getting into the sensitive audio circuitry. The Power supply has ON/Standby LEDs and is controlled from the main unit front panel. If total mains isolation is required, the power supply also has rear mounted mechanical rocker switch for full power off.



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## Heroic Build Quality

Like all Nu-Vistas, their mechanical construction is uncompromisingly rigid and solid in typical Musical Fidelity tradition. Front panel and side panels are milled from extruded aluminium profiles and are extremely massive. The Nu-Vista DAC is basically immune against the effects of vibration from the environment. The same can be said about electromagnetic immunity. The massive aluminium case acts

as a Faraday cage. It protects the incredibly sensitive phono stage internals against outer electromagnetic fields. Also included is the Nu-Vista remote control which is a solid "Nu-Vista" style re-imagination of usual remote controls. Machined from solid, it has the same feel as front panel of unit, has powerful beam, and runs off easily replaceable AAA Batteries.





### Nu-Vista by Musical Fidelity

The Nu-Vista family is a continued labour of love for Musical Fidelity. The brilliant Nuvistor tube never really went anywhere in audio. Until the early 1990's, when Antony Michaelson and his small company named Musical Fidelity - back then located to the west of London in an artisan hamlet named Wembley - started making amplifiers with Nuvistors. They were made in limited editions and sold out almost immediately. To this day these icons of audio individualism are still highly valued. Now, after Musical Fidelity has been passed on to new ownership, our vision is to continue making history.

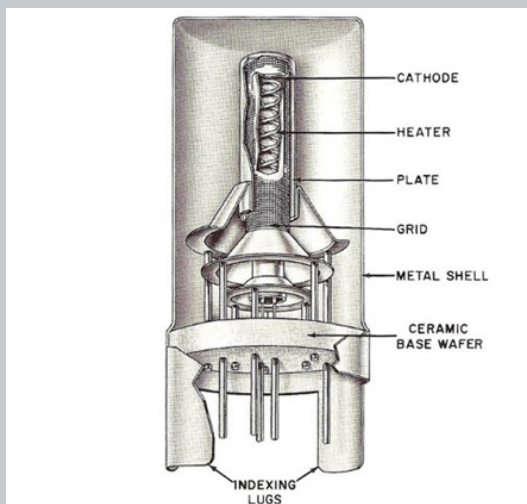
The Nu-Vista DAC merges digital with the analogue Nuvistors. Digital to analogue converters, compared to analogue tube devices, present their own design challenges. They work in different domains, have their own requirements and need to be treated as such. We have always held circuit board design and layout up to the highest of standards at Musical Fidelity. We are not believers of flashy board design just for the sake of looks. The design & layout need to be custom-tailored to each application, measure well AND sound as envisioned. Only then have we done our job. At this point, we have given the listener a palpable sense of the recording venue that places the performers in a real-time holographic space in their own homes. We hope you derive as much pleasure listening to it, as we had creating it.





## Nuvistor tubes

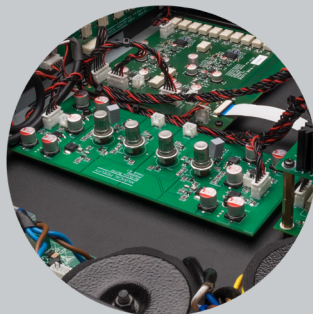
Nuvistor tubes were invented in the 1950s to solve the many shortcomings of conventional tubes. Unlike them, Nuvistor tubes offer very high reliability, low microphony, low noise, consistency from batch to batch, small size, relatively low power consumption and great technical performance.



One famous application was in the Ampex MR-70, a costly studio tape recorder whose entire electronics section was based on nuvistors. Another limited application of this very small tube was in studio-grade microphones from that era, the AKG/Norelco C12a, which employed the 7586, being a good example.

It was also later found in the famed Neumann U 47 studio microphone. This microphone was highly regarded by artists all over the world, and was used by many top recording artists such as Frank Sinatra, The Beatles, and so on. Remarkably, you can currently see a U47 microphone, with its stand, cables and power supply on eBay for \$10,999 „Buy-it-now“.

Unfortunately just as uses for Nuvistor tubes were being explored, the transistor was invented and it was 'game over' for Nuvistors. There the matter rested until about fifteen years ago, when Musical Fidelity created the first of its ground-breaking Nu-Vista series. These legendary, limited-edition products sold out in a matter of months. Today, fifteen years later, they command very high secondhand prices because of their beautiful sound, build quality, and longevity.







Nu-Vista DAC

## SPECIFICATION

### DAC

- DAC chip: 2x ES9038Q2M (dual mono) with 8x digital filter
- Frequency response: -0,5dB at 10Hz and 20kHz
- Total correlated jitter: <100 femtoseconds
- Linearity: <0.5dB down to -130dB
- Channel separation: < 130dB at 10kHz @ 0dBFS
- SNR: > 120dB „A“-wt. at 1kHz @ 0dBFS
- THD+N: < 0,003% at 1kHz @ 0dBFS

### Digital Inputs

- 1x USB input: USB Audio Class 2 requires USB 2.0 or higher on computer
- USB PCM sample rates: up to 768kHz
- USB DSD support: up to DSD256 via DoP and native DSD512
- MQA support: full MQA decoding by hardware
- 3x Optical input: up to 24bit / PCM 192kHz, MQA 384kHz, DoP DSD 64
- 1x Coaxial input: up to 24bit / PCM 192kHz, MQA 384kHz, DoP DSD 64

- 1x AES/EBU input: 1x up to 24bit / PCM 192kHz, MQA 384kHz, DoP DSD 64

### Analogue Outputs

- 1 pair line level RCA fix/var @ 2V RMS at 0dBFS
- 1 pair line level XLR fix/var @ 4V RMS at 0dBFS
- Output impedance: < 10 ohms

### Power requirement

- Mains voltages: 115/230VAC 50/60Hz (factory pre-set); 100VAC 50/60Hz (alternative)
- Consumption: 40 Watts maximum, <0.5 W in standby (orange LED ON)

### General Information

- Trigger In/Out
- Power connections for optional Nu-Vista Uni PSU (sold separately)
- Dimensions (WxHxD): 483 x 188 x 510 mm
- Weight: 21,5 kg net / 29,5 kg in shipping box