Vivaldi DAC Digital-to-Analogue Converter

dCS
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The *dCS* Vivaldi range redefines the state-of-the-art in digital audio playback, representing the pinnacle of our no-compromise approach to product design and setting a new standard for the future of digital audio by delivering an unrivalled in-home musical experience.

Vivaldi DAC uses the latest ground-breaking *dCS* technology including 'next generation' versions of the *dCS* Ring DAC™, Digital Processing Platform and Clocking System. As the hub of a digital audio system, the DAC's feature set guarantees superlative performance from any digital audio source.

The unique design of the legendary *dCS* Ring DAC™ combines exceptional linearity with very high speed operation, delivering true 24-bit performance even at low signal levels. The latest generation of our proprietary Ring DAC™ incorporates a number of important technical advances that have resulted in enhanced dynamic range, reduced jitter, improved channel separation and greatly improved musical realism.

The flexible digital processing platform used in the Vivaldi range is based around a powerful Field Programmable Gate Array (FPGA) chip, Digital Signal Processing (DSP) chips and a microcontroller system. All of these use code

developed and maintained in the UK by *dCS*. Vivaldi DAC represents true state-of-the-art in digital audio, providing twice the logic capacity of previous generations, emphasised by its unmatched sonic and measured performance.

dCS pioneered the use of external clocks in digital audio systems. The redesigned multi-stage Phase-Locked-Loop (PLL) system used in Vivaldi DAC sets world-beating standards for accuracy and control of troublesome jitter from the incoming audio stream.

Vivaldi DAC features standard AES3, Dual AES, S/PDIF and SDIF-2 inputs in addition to an asynchronous USB 2.0 interface. The enhanced digital volume control allows direct connection to a power amplifier so that in the majority of systems there is no need for a separate preamplifier. Maximum output can be set to suit different amplifier and speaker combinations.

Featuring a completely new interface designed to handle all high resolution musical formats up to DXD (24-bit data at 352.8 and 384kS/s) plus DSD (1 bit data at 2.822 or 5.644MS/s), the optimised DSP filters available to Vivaldi DAC owners will ensure you can extract every last nuance of musical detail and emotion by tuning the system to suit your personal preference.

The *dCS* 'soft' approach to programmable logic makes it extremely easy for users to update Vivaldi software, whether adding new features, installing performance upgrades or adapting to changes in digital formats.

Used as a standalone DAC or as part of a complete Vivaldi digital audio playback system, the Vivaldi DAC performs with effortless realism each and every time.

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TECHNICAL SPECIFICATIONS

Type	Digital-to-Analogue Converter.
Colour	Silver or Black.
Dimensions (WxDxH)	444mm/17.5" x 435mm/17.2" x 151mm/6.0". Allow extra depth for cable connectors. Allow space for air flow around the unit.
Weight	16.2kg/35.65lbs.
Converter Type	*dCS* proprietary Ring DAC™ topology.
Analogue Outputs	Output Levels: 0.2, 0.6, 2 or 6V rms on all outputs for a full-scale input, set in the menu. Balanced Outputs: 1 stereo pair on 2x 3-pin male XLR connectors (pin 2 = hot, pin 3 = cold). These outputs are electronically balanced and floating, the signal balance ratio at 1kHz is better than 40dB. Output impedance is 3Ω, maximum load is 600Ω (a 10kΩ-100kΩ load is recommended). Unbalanced Outputs: 1 stereo pair on 2x RCA Phono connectors. Output impedance is 52Ω, maximum load is 600Ω (a 10kΩ-100kΩ load is recommended).
Digital Inputs	USB 2.0 interface on a type B connector. Operates in asynchronous mode, will accept PCM data up to 24 bits at 44.1, 48, 88.2, 96, 176.4, 192, 352.8, 384 kS/s and DSD/64 or DSD/128 in DoP format (DSD over PCM) in USB Audio Class 2 mode, can operate in Class 1. 4x AES/EBU on 3-pin female XLR connectors. Each will accept up to 24 bit PCM at 32, 44.1, 48, 88.2, 96, 176.4, 192kS/s & DSD/64 (DoP) OR 2x Dual AES pairs at 88.2, 96, 176.4, 192, 352.8, 384kS/s & DSD/64 or DSD/128 (DoP) plus *dCS*-encrypted DSD. 3x SPDIF on 2x RCA Phono and 1x BNC connectors. Each will accept up to 24 bit PCM at 32, 44.1, 48, 88.2, 96, 176.4, 192kS/s & DSD/64 (DoP). 1x SPDIF optical on a Toslink connector, will accept up to 24 bit PCM at 32, 44.1, 48, 88.2 & 96kS/s. 1x SDIF-2 interface on 2x BNC connectors, will accept up to 24 bit PCM at 32, 44.1, 48, 88.2 & 96kS/s or SDIF-2 DSD (auto-selected). This interface requires a compatible Word Clock input, locked to the data rate.
Word Clock I/O	3x Word Clock inputs on 3x BNC connectors, accept standard Word Clock at 32, 44.1, 48, 88.2, 96, 176.4 or 192kHz. The data rate can be the same as the clock rate or an exact multiple (0.25x, 0.5x, 1x, 2x, 4x, 8x) of the clock rate. Sensitive to TTL levels. Word Clock output on 1x BNC connector. In Master mode, a TTL-compatible 44.1kHz Word Clock is available. In Universal Master Mode a 38.4kHz Word Clock is available for use with the Vivaldi Upsampler.
Residual Noise	Better than -113dB0 @ 20Hz-20kHz unweighted (6V Setting).
L-R crosstalk	Better than -115dB0, 20-20kHz.
Spurious Responses	Better than -105dB0 @ 20-20kHz.
Filters	PCM mode: up to 6 filters give different trade-offs between the Nyquist image rejection and the phase response. DSD mode: up to 5 filters progressively reduce out-of-audio band noise level.
Software Updates	Loaded from CD-R via PCM digital inputs or PC via USB input.
Local Control	*dCS* Premium Remote is supplied as standard. RS232 (controlled by a third party device). Control via a Vivaldi Upsampler / AES3 input from the Vivaldi UPnP controller app.
Power Supply	Factory set for 100, 115, 220 or 230V AC, 49-62Hz.
Power Consumption	23 Watts typical/30 Watts maximum.

KEY FEATURES

■ Utilises the latest generation *dCS* Digital Processing Platform and Ring DAC™ for state-of-the-art measured performance and unrivalled fidelity.

■ Designed for maximum flexibility, accepts audio data from a wide variety of digital sources.

■ New Ring DAC™ encoding system boosts fidelity even higher.

■ Flexible output configuration can be optimised in systems with or without preamplifiers.

■ Comprehensive 'auto-clocking' architecture is simple to use and minimises jitter. An additional Universal Master Mode enables DAC to clock Upsampler when there is no Master Clock in a computer audio system.

■ USB interface allows easy connection to a computer, accepting PCM data at up to 24/384 and DoP (DSD over PCM). The interface runs in asynchronous USB mode, making the DAC immune to jitter from the typical computer's noisy clock.

■ Configuration Menu – Ability to save/restore settings, hide inactive inputs and EasyPlay improves ease-of-use.

■ Improved power supplies give lower running temperature and superior tolerance to AC supply variations.

■ Separate power circuits for the digital and analogue sections plus multi-stage regulation ensures sensitive analogue circuitry is unaffected by digital interference.

■ Aerospace-grade machined aluminium chassis fitted with tuned acoustic damping panels reduces magnetic effects and vibration.

ABOUT *dCS*

dCS has been at the forefront of digital audio since 1987. Its unique expertise in digital signal processing means that it has played a vital innovating role in digital music recording and playback over the years, and makes its products sound like no others.

The company has won numerous awards for its range of class-leading digital converters, all of which use the bespoke, custom-designed Ring DAC™ architecture – created during the company's time working on specialist radar applications for military aviation.

dCS products are unrivalled in their class – not only for sonic performance, but also for build quality. Designed and manufactured in the United Kingdom using only the best materials and components, they offer state-of-the-art sound, superlative reliability and are uniquely upgradeable as new formats appear.

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