

PAGANINI

Upsampler/Digital-to-Digital Converter



Our design philosophy behind the Paganini range was to build a system as close as possible in performance to Scarlatti, but more accessible. The same high engineering standards and electronics are common throughout the *dCS* product ranges.

The Paganini range has a similar feature set to Scarlatti with the main differences being in the chassis, transport mechanism and the remote handset. These differences mean little is lost in the resulting musical performance and we think Paganini has a very special kind of magic.

The patent pending (GB0817141.5) Paganini Upsampler or digital-to-digital converter (DDC) converts digital audio data at one sample rate to a higher sample rate, providing listeners with higher levels of performance from any industry standard digital source, including PC/Mac and Media Servers.

Upsampling to progressively higher sample rates makes progressive improvements to fine detail, sound stage depth and image separation. This means the sound quality increases as you upsample CD data first to 24/88.2, then to 24/176.4, then to DSD.

Using the Paganini Upsampler to present data with a higher information capacity to the *dCS* Ring DAC™ results in



extraordinary performance as our patented *dCS* Ring DAC™, which is a discrete balanced design, does not use any off-the-shelf DAC chips commonly found in other manufacturers' product.

All of the Paganini products benefit from our 'soft' approach to programmable logic, which allows new software to be loaded from a *dCS* update disc to add new features or adapt to changes in digital formats.

The Paganini Upsampler's USB interface operates in "asynchronous" mode (NOT to be confused with asynchronous rate conversion), where the Upsampler synchronises the audio by providing a feedback pipe to the PC/Mac. The computer then is effectively locked to the Upsampler, which can have a much more accurate clock and much lower jitter.



Technical Specifications

Type	Digital-to-Digital Converter
Colour	Silver or Black.
Dimensions	(W) 460mm x (D) 400mm x (H) 110mm (W) 18.1" x (D) 15.8" x (H) 4.4" Allow extra depth for cable connectors.
Weight	10.6 kg/ 23.3lbs.
Digital Inputs	USB2.0 interface on a B-type connector. Operates in asynchronous mode. AES3 on a 3-pin female XLR connector. 2x SPDIF on 2x RCA Phono connectors. All digital inputs will accept PCM data at up to 24 bit PCM at 32, 44.1, 48, 88.2 or 96kS/s.
Digital Outputs	IEEE 1394 interface on 2x 6-way connectors. In DSD mode, the interface outputs dCS-encrypted DSD (1 bit data at 2.822MS/s). 2x AES3 on 3-pin female XLR connectors. Each outputs 24 bit PCM at 32, 44.1, 48, 88.2 or 96kS/s, OR as a Dual AES pair at 88.2, 96, 176.4 or 192kS/s. 2x SPDIF on RCA Phono connectors. Each outputs 24 bit PCM at 32, 44.1, 48, 88.2 or 96kS/s.
Word Clock I/O	Word Clock Input on 1x BNC connector. Accepts standard word clock at 32, 44.1, 48, 88.2 & 96kHz. Sensitive to TTL levels. Word Clock Output on 1x BNC connector. Outputs standard word clock at a frequency equal to the (single wire) output data rate, or 44.1kHz when set to output DSD.
Upsampling Rates	Data from any input may be converted to 24 bit PCM at 32, 44.1, 48, 88.2, 96, 176.4 or 192kS/s or DSD (1 bit data at 2.822MS/s). The output sample rate must be equal to or greater than the input sample rate.
Spurious Responses	Better than -100dB0 @ 20Hz - 20kHz for $F_s > 32kS/s$, 20Hz - 14kHz for 32kS/s.
Filters	PCM mode - 4 filters give different trade-offs between the Nyquist image rejection and the phase response when converting 44.1 > 88.2, 44.1 > 176.4, 44.1 > DSD, 48 > 96, 48 > 192 or 88.2 to DSD.
Software Updates	Loaded from CD.
Local Control	An optional metal-cased IR remote control will be available from November 2009, or RS232.
Power Supply	Factory set for 100, 115, 220 or 230 V AC, 49 - 62Hz.
Power Consumption	12.7 Watts typical/ 15 Watts maximum.

Key Features

- USB input forms a gateway to a **dCS** Ring DAC™, allowing listeners to obtain true high end sound from their computer based music.
- USB is isochronous. This means that the host (Computer) and client (Paganini Upsampler) both know how much bandwidth is available at the outset, so the host can guarantee that bandwidth will be available all the time.
- All major **dCS** products use a sophisticated multi-mode phase locked loop (PLL), which significantly reduces clock jitter.
- Faster, 100% accurate DSPs (within the bounds of their resolution) give improved filters revealing yet more fine detail.
- Higher capacity FPGAs (Field Programmable Gate Arrays) give more logic capacity and increase the scope for additional features.
- Improved power supplies give lower running temperature and increased tolerance to AC supply variations.
- Our 'soft' approach to programmable logic allows **dCS** products to adapt to changes in digital formats and add new features by loading new software from a CD.
- High grade aluminum chassis and laminated acoustic damping panels, reduce magnetic effects and vibration.
- The Paganini range features a low-power LCD display that makes the user interface easier to read, keeps the power requirements down and minimises electrical noise.

About dCS

Since 1987 **dCS** has been at the forefront of digital audio - creating products that are a unique synthesis of exact science and creative imagination. For people who are serious about music, **dCS** audiophile products offer an unrivalled ability to transform digital audio into real music that you can hear, feel and experience.

dCS products are designed and hand built in the UK to deliver a totally unique listening experience. The best materials combined with decades of experience and skilled manufacturing guarantee amazing performance.

Contact dCS

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