dCS Rossini DAC & Rossini Clock

By Michael Lavorgna   Posted: Feb 18, 2016

Rossini DAC

Device Type: Digital to Analog Converter/Network Player
Input: Ethernet (UPnP), USB (DAC), USB (storage), 2x AES/EBU, 2x Coax
S/PDIF (RCA, BNC), 1x Toslink, 2x 75 ohm coaxial (Wordclock), 2x RS232 (Power Link, RS232
Control)
Output: unbalanced RCA, balanced XLR, 1x 75 ohm coaxial (Wordclock)
Dimensions: 444mm/17.5" x 435mm/17.2" x 125mm/5.0"
Weight: 15.6kg/34.3lbs
Price: $23,999.00

Rossini Master Clock

Device Type: Master Clock
Input: 2x RS232 (Power Link, RS232 Control)
Output: 3x 75 ohm coaxial
Dimensions: 444mm/17.5" x 435mm/17.2" x 64mm/2.6"
Weight: 8.3kg/18.3lbs
Price: $7,499.00

Availability: through authorized dealers
Website: www.dcsltd.co.uk

Trickle Down

John Atkinson praised the dCS Vivaldi stack ($114,496) in his <u>Measurements</u> section of Michael Fremer's review; "Without any doubt, this was the best digital playback I have experienced." and "When I measured the company's earlier four-box system, the Scarlatti, in 2009, I concluded that it offered 'state-of-the-art measured performance.' The Vivaldi improves on the Scarlatti's performance in almost every way. Wow!" The dCS Rossini DAC inherits a number of things from the Vivaldi including the dCS Digital Processing Platform.

I asked John Quick, General Manager dCS America, for some details on the company's proprietary Ring DAC:

The patented dCS Ring DAC™ is a discrete and balanced design, through and through. It is comprised of two critical elements: the Control (digital processing) Board, and the Analog (digital-to-analog) Board. The version of the Analog Board used in Rossini is the fifth generation of the design that was originally designed for our flagship Vivaldi range. The Control Board used in Rossini is brand-new and was specifically designed for Rossini.

All incoming data is oversampled and digitally filtered by the Control Board's FPGA processing engine that is configured by software written by dCS. This data is ultimately re-encoded and noise-shaped into Ring DAC™ format, which operates synchronously with the incoming data at 5-bits and about 3Ms/S. This data- in Ring DAC™ format- is then passed from the Control Board to the Analog (Ring DAC™) Board where it is mapped onto an array of 48 latches (current sources) and precision resistors which are at the heart of the Ring DAC™ topology.

Each latch makes the same contribution to the output, which means accurate ratio-matching of current sources in a binary sequence (which ruins low-level linearity) is not needed. Additionally the "mapping" of these 48 current sources is managed by a carefully-designed algorithm that allows any mismatch between latches or resistors to appear as a small amount of extra noise that can easily be filtered downstream, rather than distortion that is correlated to the music signal. This ensures excellent linearity, even at very low signal levels.

The summed latch outputs drive the second portion of the Analog Board: a balanced, Class A mix amplifier and filter stage. The mix amplifier and filter stage removes any unwanted noise and switching artifacts created by the high-speed latch mapping, and provides a variable-voltage, very-low output impedance, balanced analogue output signal.

It's important to note that the dCS Processing Platform can be easily updated and upgraded via firmware, giving the Rossini a longer shelf life than chip-based solutions. Here's more from dCS:

dCS views a product's introduction as just the start of product development for the product's lifecycle. With past product lifecycles between 6 and 10 years, there have been anywhere from three to six meaningful upgrades in all past products- and much of this is in software that is free to the original owner and those who purchase dCS products through authorized sales channels.

Balanced or unbalanced
Analogue outputs to
pre- or power amplifier
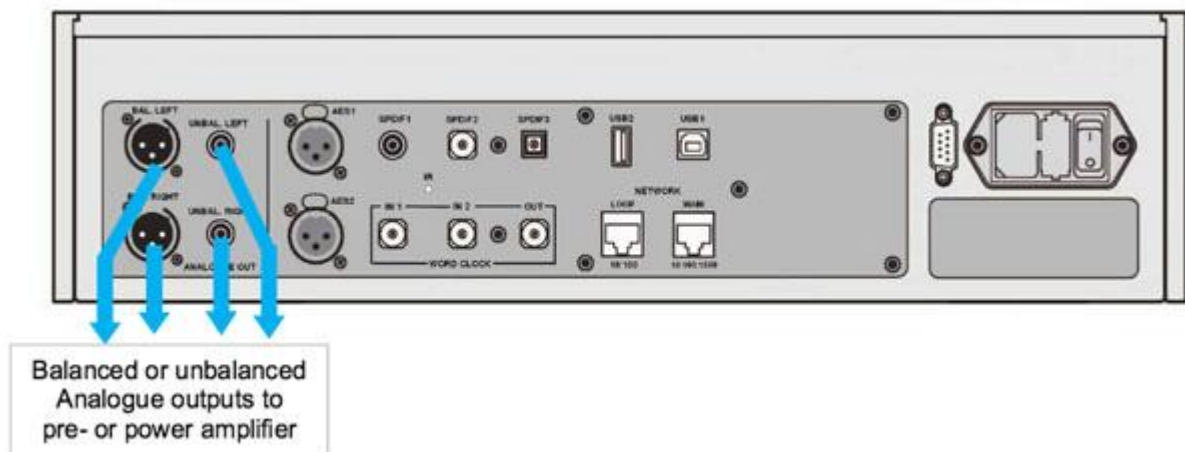
The Rossini is more than a 24-bit/384kHz and DSD128 capable DAC as it also includes a volume control for use as a digital preamp and a UPnP streamer controlled by the "Rossini App" for iOS devices. The app also allows for on-the-fly switching between DXD and DSD upsampling, as well as the ability to select from 6 PCM filters and 4 DSD filters. Of course the app also controls playback and I found it to be on par with most other good UPnP apps, which means not as enjoyable as Roon. Additional app-based control features and settings include channel balance, phase, channel swap, Sync
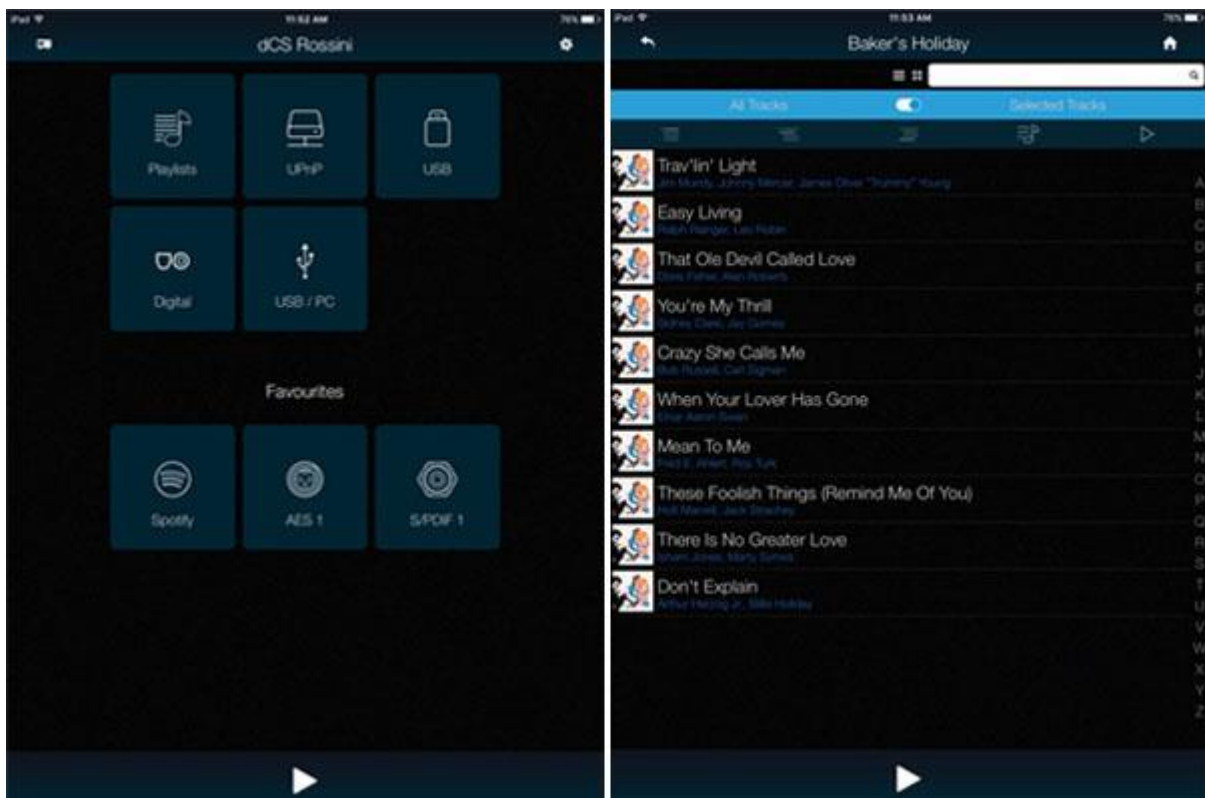
Mode (Master for use with an external transport or Wordclock when using the outboard Rossini Clock), Output level, and Display brightness.

You can also select among the unit's inputs, which consist of AES/EBU, UPnP, USB (storage), Digital (Coax, Toslink), and USB/PC as well as stream from Spotify from within the app. The unit's rear panel also houses a set of 75 ohm coaxial (BNC) inputs for attaching the external Rossini Clock. An IEC inlet for the included power cord and an RS232 input for use with home automation products finishes out the rear panel.

The Rossini's front panel includes a display which illuminates a number of playback and setting information including input source, bit/sample rate, selected filter, selected Wordclock, volume level, and when playing back from your network artist, album, and track name or file name. There are also buttons for power, menu, filter, input, and mute. I preferred using the remote app since it includes all of these functions. On the far right resides the volume control knob.

The Rossini's chassis, which comes in silver or black, is milled from aerospace-grade machined aluminum and the front panel, as you can see, is sculpted into a dimensional wave-like form. Under the hood reside "acoustic damping panels to reduce sound-degrading mechanical vibration and magnetic effects" and multi-stage power regulation with a pair of transformers which isolate analog, digital and clock circuitry.
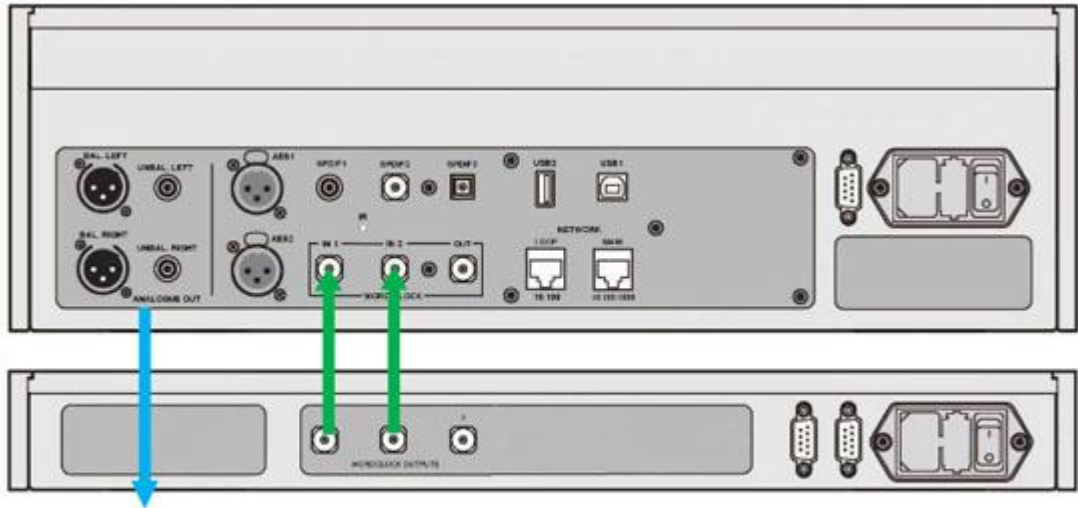
Analogue outputs to
pre- or power amplifier

Figure 1 – Using the Rossini Player and Clock together

The matching Rossini Clock is a Grade 1 Master Clock which, as defined by AES11, is the highest quality clock[1] and is based on a multi-stage Phase-Locked-Loop (PLL) system employing dual crystal oscillators. According to the company, "Rossini Master Clock uses a sophisticated microcontroller system to ensure smooth frequency correction as the temperature changes, and this approach gives a more stable result than either oven-controlled crystal oscillators or even atomic clocks." The Clock outputs a 44.1kHz or 48kHz signal via Output 1 and 2 respectively. When in use with the Rossini DAC, the Auto Wordclock setting automatically selects the appropriate input.

Look, let's be clear about the Rossini's looks: They add cost. Exactly how much cost is something I don't know but my best guess is significant. What I mean by significant is I'm certain the chassis cost alone is a multiple of some of the DACs we review here on AudioStream. I'd also wager that Rossini buyers appreciate this care, quality, and attention to detail. I know I do and this coming from someone who drives a car that cost about the same as the components under review.

Trickle Up
I spent a month or more listening to the dCS Rossini DAC all by its lonesome; hours and hours, day in day out, and I could have gone on doing so pretty much forever. The Rossini DAC very easily and rather quickly slid into a spot which has so far been inhabited by a pair of DACs from France's totaldac and I'd call that spot beyond digital. While most every DAC I've heard fits on a digital scale, the Rossini DAC has moved beyond those confines.

Perhaps the best place to start talking about what I mean is to talk about texture, music's tactile fabric. When playing music, any music, through the Rossini, I was struck by a physicality in the sense of touch, texture, and tone both between musical elements and as they exist in space—completely apart from the loudspeakers. Musical images hover in the air feeling and sounding natural: Not too hard, not too flat, not too hot, not too cold or dry or arid. They damn near feel just about musically right. In a word, lovely.

Individual voices sing and ring out true in timbre while appearing and disappearing into space as dictated by the recording and/or nature. There's an ease to music's impact that sounds very much like what I'm used to hearing in real life, as opposed to typical digital reproduction which can fall flat by comparison. For reference, I've lived with pianos for many years, saxophone, trumpet, and a whole bunch of guitars which still inhabit the barn, both acoustic and electric, and I've been attending concerts for 40+ years. These concerts match my musical fascination and are not limited to one genre going from Sonic Youth at the Kennel Club to Roy Buchanan at a strip club, to Teatro La Fenice, Carnegie Hall, and in a few weeks Le Butcherettes in Brooklyn to name just a few. I also inhabit the real world so I get to hear real sounds constantly.

With the Rossini DAC converting digital to analog, I found it very nearly as easy to fall into music's embrace as falling for the cello played a few feet in front of me. There is obviously a divide between live and reproduction, they are after all different kinds of experiences, but what I want from my hi-fi is a connection to music without the distractions of reproduction and the dCS Rossini DAC delivers that sense seamlessly.

Then the Rossini Clock arrived. For those readers and/or writers who disdain "flowery language" when describing the enjoyment of music, I'll warn you up front that things we'll be getting into a fuller bouquet.

The Rossini Clock expands the Rossini DACs presentation in every dimension. There's also a sense of increased resolution as if the musical image has been fine-tuned to a more perfect pitch. In addition to tons of new music, I also put the Rossini through my test track paces. This includes Tom Waits "I'm Still Here" from *Alice*, a simple short bittersweet song about aging and fading love. There's a very faint violin, most prominent at the beginning and end of the song, whose presence is ghost-like mimicking longing, at least to my ears. The Rossini combo unraveled and presented this violin like no other DAC I've ever heard, adding a more tactile sense of longing and loss.

Also on the test track heart-string puller list is Nick Cave's "Love Letter" from *No More Shall We Part*. Cave's plea, petition and kind of prayer for his letter to bring his lost love back gains in intensity as the song moves through hope and regret, coming to an emotional high with the lines "Rain your kisses down upon me". In order to feel these shifts in Cave's voice, you need what the Rossini combo offers; nuance and the infinitely small, especially if you've heard this song a couple hundred (thousand?) times.

Jordi Savall's *Bal-Kan: Honey and Blood* is a treasure trove of ancient sounds and sorrow. Here's Savall from an interview on NPR, "'Bal' means in Turkish 'honey,' and 'kan' 'blood.' [The Turks] found a beautiful country, but they found also a very strong population who resist in a very exceptional way. And they tell that this is the country of the honey and blood." He adds, "It's a way to reflect this extremely big diversity of ways to sing, to play music — to believe also."

Listening to *Bal-Kan* is to travel to another time and place and the sheer diversity of sounds and singing is otherworldly for this NJ-born listener. In my experience, the poorer the digital reproduction, the more all of this otherwise wonderful variation becomes homogenized, with a digital haze of sameness dulling its life. The Rossini duo deliver as much life, color, and mind-bending variation as I've heard from this record. Stunning.
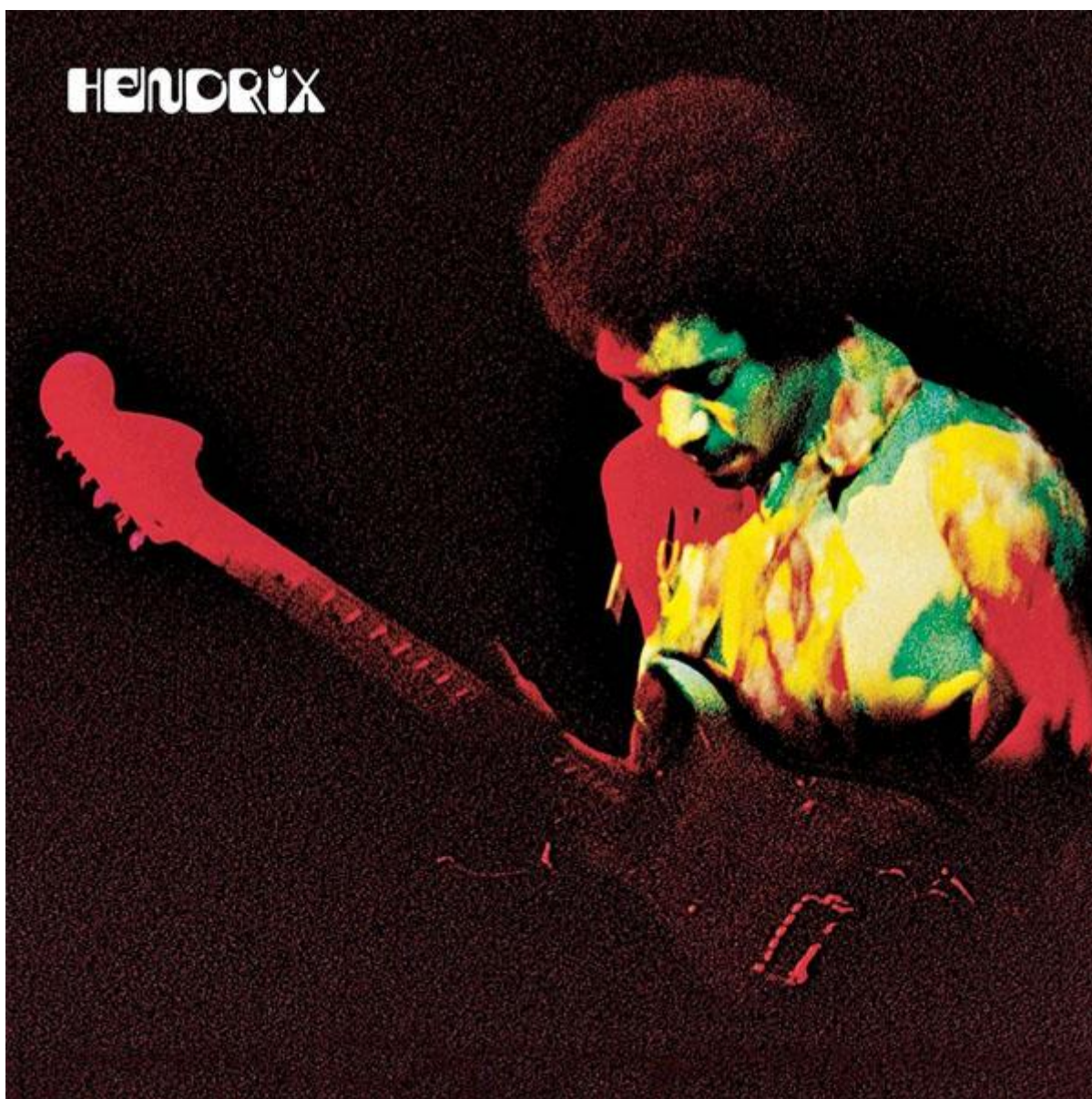
Grinderman 2, from Nick Cave's rage against age band Grinderman, was all ballsy badass goodness as was FKA twigs, Wolfgang von Schweinitz's *Messe*, Jimi Hendrix's *Band of Gypsys*, Milford Graves *Grand Unification*, Miles' *Tribute To Jack Johnson*, Ninos Du Brasil's *Novos Mistérios*, Fritz Hauser's *The Mirror*, and that was just yesterday. I could go on, I did go on, but I think you've got the idea.

With a total of ten filters, DXD or DSD upsampling, and the two dither options in the Rossini clock, owners can tap away 'till their heart's content to subtly tailor the Rossini's

sound. I settled on DSD upsampling as music sounded richer and more rounded out as compared to DXD, but that's just me. Options are nice because they're options. I'm not going to mention which filter I preferred since there's no correct answer when dealing with preference.

In terms of other choices, whether or not you prefer feeding the Rossini DAC via Ethernet or USB will come down to the interface you like most. I did not spend much time sweating over sonic differences as my preference for interfacing with my music and Tidal is best delivered by Roon. dCS will be rolling out Tidal support shortly so I'll be doing a brief follow-up (yea, that means I get to keep the Rossini for a while longer ;-).

To take the Rossini's volume control for a spin, I substituted my Shindo Cortese amplifier for the Ayre integrated. My feeling is anyone choosing to run the Rossini direct into their amp will not be disappointed. I personally prefer a preamplifier in the picture but that certainly depends on all kinds of things including what preamp we're talking about.

Tickle Me Pink

When my father-in-law first stepped into our then new house many years ago, he looked around and said with a tear in his eye, "I'm not used to so much goodness." Life is rich, life is emotional, life is beautiful. If you substitute "music" for "life", you'll know how I feel about this wonderful hobby of ours. So yea, I get truly excited when things click, when listening to music on the hi-fi becomes a completely captivating journey.

The dCS Rossini DAC and Clock are capable of exploding the listening experience into a fabulous psychedelic adventure constrained only by imagination and time.

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[1] "A grade-1 reference signal shall maintain a long-term frequency accuracy within ± 1 part per million (ppm). Equipment designed to provide grade-1 reference signals shall only be required to lock to other grade-1 reference signals", *AES recommended practice for digital audio engineering — Synchronization of digital audio equipment in studio operations*