



Lina Network DAC, Headphone Amplifier, and Master Clock

by CanJam Global

A new reference Headphone System from dCS

Pros: Flagship Streaming DAC, Solid State Headphone Amp, and Master Clock

Modular design

Small footprint, suitable for desktop placement

Excellent design, and build quality

Roon and Airplay streaming support

Cons: High price of entry

Lack of remote volume control

Introduction

At this point in time, it would be fair to assume that most serious headphone enthusiasts have heard of dCS. The Cambridge, UK based company has been at the forefront of digital audio for many years now, and was the first to introduce asynchronous USB to a standalone DAC, called the Debussy, back in 2008. The company is revered in the high-end, hi-fi space and the dCS Bartok (current MSRP \$19,950) gave us a real taste of its flagship lines, the Vivaldi and Rossini, at a more palatable price level.



Back in 2019, when dCS introduced the Bartok, the company began to realize the potential of the headphone enthusiast market. The Bartok was billed as a hybrid hi-fi product that could also cater to the headphone enthusiast market as it included an option for a excellent built-in headphone amplifier. This appealed to many enthusiasts, as a flagship all-in-one device. For context, I have been using the dCS Bartok as my reference DAC for the past few years and have been enamored with its performance as a daily driver being run every day, for most of the day.

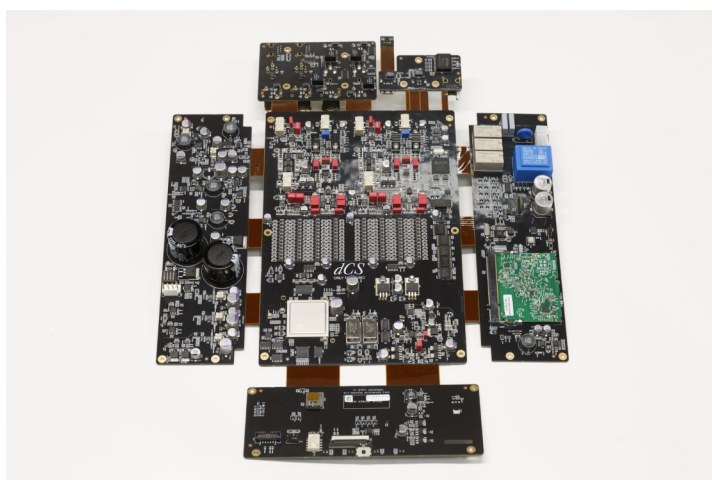
Intrigued by reports from Bartok owners of improved performance by adding the Rossini Master Clock to the Bartok, I had the opportunity to demo and compare the standalone Bartok and the Bartok + Rossini Master Clock earlier this year, at CanJam Singapore 2022. It was a revelatory experience. The addition of the Master Clock added improved soundstage depth, sounded more focused, and seemingly more musical information was able to transfer through. To draw an analogy, it was like looking at a higher resolution photo with more megapixels of information. To be clear, the Bartok already sounds

excellent on its own, and the difference of adding the Master Clock only really becomes apparent on a direct A/B comparison.

Spending time with Steve Smith and Joss Marvie from dCS, I was able to learn more about the Master Clock, and its essential role in reducing jitter. Most exciting of all, I learned that dCS were about to release their first line of dedicated headphone audio products, called LINA. The Lina product line includes the Lina Network DAC, Lina Headphone Amplifier, and the Lina Master Clock.



Some of the most intriguing elements of the Lina system are how the no-compromise designs were able to be housed in the smaller chassis size. For example, the Lina DAC is a full implementation of the dCS Ring DAC with a foldable board design.



The Lina Master Clock performs the same function as the Rossini Master Clock, and is housed in the smaller Lina chassis. Clocking is used to keep the digital circuits, including power supplies, high-speed signal processing and modulation, in sync with the main audio clock and operating at exactly the same time. This effectively serves to reduce jitter and as a result improves the sound quality when using the network or USB inputs.

The Lina Headphone Amplifier is a completely new Class AB design with increased power output (2W per channel) as compared to the Bartok's internal headphone amplifier (1.4W per channel), which

benefits the hardest to drive headphones, such as the Hifiman Susvara, and Abyss line of headphones. I've now had the opportunity to demo the dCS Lina stack over the past several weeks and to also compare the Lina to the Bartok.

Unboxing and First Impressions

The Lina system ships in three separate boxes, each box opens to reveal an interior box which contains the Lina unit, along with all of the cables necessary to connect the system. For the DAC, this includes short XLR cables to connect to the Amplifier, and an Ethernet cable; and in the case of the Master Clock, the BNC cables that connect to the DAC. Additionally, there are power link cables which enable the entire system's power to be managed from one of the units.



The Lina product line was purpose built from the ground up to be a headphone audio product. With the components being in a half-sized chassis measuring 9" wide, 13" deep, and 5" tall, the Lina stack strikes an uber impressive presence on the desk. Yet is also fully compatible with a wide range of placement environments, such as audio racks, and shelving units.



Each unit has an extremely high level of build quality and solid heft, with aluminum casing finished in a beautiful matte black with an ultra smooth finish on the front and rear elements. The key features of each are as follows (taken from dCS source material):

Lina Network DAC

- Supports hi-res streaming via Roon, TIDAL, Qobuz, Spotify, Deezer, AirPlay, and more
- Includes the renowned dCS Ring DAC system
- dCS Expanse technology offers enhanced crossfeed options
- Touchscreen UI for navigation, system can also be controlled via dCS Mosaic app

Lina Headphone Amplifier

- Class AB solid state design with 2 Watts per channel into 30 Ohms.
- Large and ultra smooth volume control knob
- High and low gain switch
- Includes 3 headphone outputs (1x single 4 pin XLR, 1x dual 3 pin XLR, and 1x single ¼" headphone jack)

Lina Master Clock

- Oven-controlled crystal oscillators (one for 44.1kHz based audio sample rates and one for 48kHz) ensure accurate clocking for all audio samples and frequencies.
- Allows Lina Network DAC to be locked to a single master signal for enhanced audio performance.
- Minimizes risk of jitter and timing irregularities which can affect playback.

Setup

The Lina system is designed to be a full digital audio playback system. I normally listen to a wide variety of music and media content from many different sources, including the playback of lossless audio files stored on my computer's hard drives, streaming of lossless and hi-res audio files from qobuz and Apple Music, media content consumption from YouTube, as well as digital audio playback from AppleTV apps such as Netflix, Amazon Prime Video, and others. Using the touch sensitive inputs just under the Lina DAC screen, I can seamlessly switch the input source for my given application. In lieu of a dedicated remote control, the dCS Mosaic app can perform most of the essential functions of the system, including input changes, and the toggling of various DAC options.

For music listening specifically, I used the Lina as a Roon endpoint to manage both my hard drive based music files as well as my streaming music content.

There are a couple of ways to position the Lina system. After initially placing the units in a side by sided configuration in my audio rack, I opted to stack the units on top of each other. Not only does this end up saving space, it is also immensely satisfying to operate the system from a seated desktop position. The large volume control on the Lina headphone amp is buttery smooth and provides extremely precise control, similar to the Bartok.

dCS recommends having the headphone amplifier on the bottom, master clock in the middle, and the streaming DAC on top. Fortunately, dCS includes all of the necessary cabling for the connections between the Lina units in the box, including different AC power plugs for various regions. I have the system set up as follows:

From the DAC:

- Dual balanced XLR cables are connected to the XLR balanced outputs and lead to the XLR balanced inputs on the amp.
- Dual BNC cables connect from the WORDCLOCK input sockets on the DAC to the WORDCLOCK output sockets on the Master Clock
- Toslink Cable (not included in the box) connects from the SPDIF 3 Toslink input to the Toslink output on my Sony TV.

From the Master Clock:

- Dual BNC cables connect the WORDCLOCK output sockets on the Lina Clock to the WORDCLOCK input sockets on the Lina DAC. Once setting the clocking sync mode on the Lina DAC to "Auto", the Lina DAC will then select the appropriate clock input and will lock to it.

From the Headphone Amp:

- Dual balanced XLR cables are connected to the XLR balanced input sockets on the amp and lead to the XLR balanced outputs on the DAC.

My listening impressions were done using my reference Hifiman Susvara and the new (and excellent) Abyss Diana TC.

Operation

The primary ways to use the Lina system are with dCS's own proprietary Mosaic app or with Roon. Both are excellent options and in terms of sound quality are close enough to each other to be able to call a wash. YMMV.

The Mosaic app does have the advantage of being able to function as a full fledged remote control for the Lina system. It has the ability to change inputs, engage the crossfeed and filter functionality, control the Lina DAC display, and to toggle between the various sync modes. In short, nearly all of the functionality of the menu system on the DAC unit itself is accessible through the Mosaic app. On the other hand, the Roon app has the advantage of having a desktop app which is easier to use throughout the day rather than having to use the phone. As the Lina does not have the option for remote volume control, a desktop placement of the system is recommended.



Sound Impressions

Right off the bat, it became quickly apparent that the Lina stack is a top-tier flagship headphone system, and one of the very best I've ever heard, regardless of price.

The dCS Ring DAC incorporated in the Lina uses a modified and foldable version of the Ring DAC board found in the Bartok. The Ring DAC uses a network of programmable FPGA's that are running proprietary dCS software that performs the digital and analog conversion as well as the digital filtering. One of the key advantages of the Ring DAC is its upgradability via free firmware updates. As an example, at the time of this writing, the dCS Bartok is about to receive 2.0 firmware on May 31, 2022 and after an audition, and comparison with the current firmware, I can confirm that it is a significant sound quality upgrade.

The Lina headphone amplifier is a Class AB solid state design that outputs 2 watts per channel at 30 Ohms. dCS manages to balance voltage and current requirements such that the Lina headphone amp can handle both high and low impedance headphones. It also has a physical high/low gain switch at the bottom of the front of the unit. Although I generally do not use IEMs in a desktop environment, I did try out the qdc Anole V14 with the

Lina amp in the low gain setting, and the V14 sounded better than I had ever heard it before.

My impressions of the Lina system were formed by first listening to the entire system as a whole for several days before starting to tinker with listening to the differences with and without the clock, and comparing it to the Bartok DAC and internal headphone amplifier.

Lina DAC + Headphone Amp

The Lina DAC and Headphone amp alone already make an endgame system. This pairing with both the Susvara and Abyss Diana TC is staggeringly good.. The additional power output of the Lina headphone amp is immediately noticeable and

translates to increased air, space, and dynamic range. The overall presentation is so well balanced and is simultaneously ruthlessly transparent and yet incredibly musical and engaging. In my experience, it usually sways in one direction or the other. Lina manages to achieve this harmony in such a powerful and impactful way. It is a truly wonderful listening experience.



Lina DAC + Headphone Amp + Master Clock

Adding the Master Clock to the system is like adding icing to an already excellent cake. The difference in sound is immediately noticeable with everything sounding a little more organic, and lifelike. The more tangible sense of realism makes the musical image sound incredibly cohesive and natural. Music just seems to flow better and I found myself more emotionally engaged. Instead of trying to critically listen to differences in bass, treble, midrange, and soundstage, I was just getting lost in the music.

Overall, it would be hard to quantify the level of improvement gained by adding the Master Clock as the DAC and Headphone Amp alone already provide excellent, endgame performance. However, to my ears, there is a noticeable improvement and it's great to have the option of an upgrade path.

Comparison with Bartok

In comparing the Lina to the Bartok, the most immediate and noticeable difference is the headphone amplifier. The Bartok's internal headphone output is already excellent with the majority of headphones. However, there is a noticeable improvement with the Susvara and Diana TC when using the Lina Headphone amplifier. The increased dynamics, provide a more intimate and visceral listening experience without a trace of sharpness or sibilance. The Bartok by contrast has a slightly deeper, and wider soundstage.

Connecting the Lina Master Clock to the Bartok provided a similar improvement as compared to the Bartok on its own, and sounded similar to the Rossini Master Clock and Bartok pairing that I heard at CanJam Singapore. The Bartok remains an outstanding product and is about to get a major upgrade with Bartok 2.0 firmware.



Conclusion

The dCS Lina stack is a flagship headphone system, and is also the finest solid state headphone system I've heard to date.

The Lina DAC and Headphone Amplifier together compare well with the Bartok in a smaller form factor that is suitable for desktop applications, and the optional addition of the Master Clock only enhances the already excellent performance. Hard to drive headphones such as the Susvara and Abyss will clearly benefit from the additional drive of the Lina headphone amp, and in particular, I have yet to hear the Susvara sound better from a solid state headphone amp.

It's great to see a storied company such as dCS invest resources and their engineering chops in developing an audio system specifically catered for the high-end headphone enthusiast.

The dCS Lina components are individually top-tier flagship products and as a whole headphone system, one of the very best currently available. Having the flexibility of tailoring individual pieces for specific needs, or the ability to build the system incrementally over time is a welcome option.

Overall, I would enthusiastically recommend auditioning the Lina headphone system for anyone looking to build a flagship, endgame setup.