

It seems to us that the DAC these days is becoming a species in no danger of extinction! Hardly any time elapses between new product launches, and we have just received a superb little DAC called the “Coffee” from the Korean brand Calyx Audio which offers very good musical performance together with control options we had not yet encountered on a converter.

by Philippe Daussin, qobuz magazine

Calyx is a high end brand created in 2008 by the Korean company Digital and Analog. This company, which was founded in 1999, began by specializing in the manufacture of Class D (called “digital”) amplifiers and collaborated with Samsung, whose industrial capacity was used in making integrated circuits.

With the help of different investors, Digital and Analog developed a number of algorithms for transforming PCM signals (Pulse Code Modulation, the common standard for digital music) to PWM (Pulse Width Modulation, used for amplification in Class D). These were purchased by numerous audio equipment makers.

In 2010, Digital and Analog created a digital-to-analog converter using an XMOS chip and a Sabre 9108 IC. It was shown at CES 2011 at the same time as the new Calyx CTI (“Calyx The Integrated”, a 200 watts per channel amplifier equipped with a USB DAC, which is still on the market). Both pieces of equipment sold well.

The Calyx range at present includes, in order of increasing function and price, of the **Kong** DAC with headphone amplifier, the **Coffee** DAC with headphone amp and 24-bit/96 KHz line output (the subject of this review), the **24/192 DAC**, the **Femto DAC** which is equipped with a very high-performance clock and eight ESS9108 ICs per channel and the **CTI**.

Presentation

Sober, discreet and elegant in a parallel-sided solid aluminum enclosure anodized in a coffee color, dressed up with six little gold-tone buttons and a yellow LED pilot light: that’s the portrait of the Calyx Coffee.

The little beast feels heavy, and we understood why after our teardown when we saw that the base was made of sheet steel 3mm thick. This keeps the DAC stable when it’s resting on a surface and you need to use the control buttons.

These buttons are grouped in threes. The first group is next to the LED and includes the volume and mute commands, while the second group is made up of play/pause, skip forward and skip back. (You can’t fast forward or back in a track during play.)

The connections are utilitarian, a USB input for a link to a computer, a RCA stereo analog pair whose output level is variable and a 3.5mm stereo minijack which cuts off the RCA outputs when headphones are plugged in.

The electronics

As with some other DACs we have tested, the Calyx Coffee is a minimalist design, one which uses only what is necessary to accomplish its design goals.

The USB interface is assigned to a Tenor TE7022L chip (24 bits at 96 kHz) connected via I2S to an ESS Sabre ES9023 digital-to-analog converter, just to its right in the board layout.

This ESS chip incorporates a jitter-reduction circuit and its conversion section uses a “Hyperstream” architecture. Filtering is internal and an op-amp stage boosts output to 2 volts.

You’ll also notice the presence of a “charge pump”. This is used to generate a negative voltage from the positive supply and provide a ground reference for the output signals. This makes it possible to do away with a set of capacitors which might color the sound.

Below the Tenor circuit are two LD117 low-dropout regulators. On the right and above is the headphone amplifier, an eight-pin TS4821 chip from ST Microelectronics.

The system and control buttons are handled by a small Atmel microcontroller chip placed between the buttons.

Use and listening

Plug and play... the Calyx Coffee is a friendly piece of gear which only needs to be connected to its computer and is ready to go a few seconds later, to the delight of the user!

You’ll appreciate having the control buttons, too. Only fast forward and reverse are missing, and stop play, but the first two are absent on most network players anyway. This is hardly worth complaining about, since we can normally use these functions via the computer.

That’s two points in the Coffee’s favor, then, and we hope they will be emulated. The results of our listening trials were very good as well, both with the RCA outputs and with the headphone jack.

Used it with a very good system, our reference for example, or else on the reviewer’s own system, the Calyx Coffee was never once embarrassed by its “democratic” price tag or its “minimalist” design, indeed far from it, and musically it performed really well.

On the subject of its minimalist design, we’ve been told that the designer of an internationally successful French “economy” DAC was surprised that the Coffee could work with so few components. What surprised us was the surprise of this gentleman, for

whom the technology probably has few secrets and who surely knows what it takes to build a DAC!

In fact, as we are fond of saying, what it takes to make a working digital-to-analog converter is this, and only this: a digital signal receiver interface (usually USB or S/PDIF, sometimes HDMI or FireWire) with its clock, a digital-to-analog converter chip, a low-pass filter (which is unneeded if the converter already includes one) and a power supply, which can even be derived from the 5V line in the USB link, if the DAC has one.

So much for the anecdote. As for the sound output of the Calyx Coffee DAC in a hi-fi system, this turned out to be very convincing, and held up very well in the test sessions.

Listening to one of our reference albums, Henry Wood's *Fantasia on British Sea Song*, we found great musical joy in timbres and nuances, the liquidity and sweetness of the strings in *Home Sweet Home* (track 8) and again in the dynamics in *Jack the Lad* and in the triumphant finale, which starts off with the brass shining in all its colors.

The Calyx Coffee was perfectly comfortable with high-res Studio Master 24/96 files, like the particularly striking first movement of Mahler's *5th Symphony* played by the San Francisco Symphony Orchestra and conducted by Michael Tilson Thomas. It had no trouble at all delivering the large dynamic peaks of this piece.

Through the headphone output, Freddie Mercury's *La Japonaise* with Montserrat Caballé, in Studio Master 24/96 quality, lost none of its grandiose form in spite of the limits on the soundstage imposed by headphone listening, and we were able to listen at high level without feeling that the sound was being compressed.

Overall, the quality of the built-in headphone amp seemed to us to be up to the standard of the conversion stages, although ST Microelectronics provides no information on the technology it uses. (We do know, however, that this manufacturer specializes in integrated amplifiers using MOSFETs, a type of transistor which functions rather like a tube.)

In conclusion, even though it only samples up to 96 kHz, the Calyx Coffee DAC is an excellent multifunction unit. It could be used in a fixed sound system just as well as in an "easy-to-move" setup built around a portable computer and a pair of headphones. In fact it is this second possibility which we think is best indicated to take advantage of its compact, robust build and its control buttons—which are, as far as we know, make the Coffee unique. Offered at a reasonable price, this unit can be highly recommended, even, we think, for very high-performance installations.