



## DAC/HEADPHONE PREAMP

USB DAC/headphone preamp  
Made by: Copland, Copenhagen, Denmark  
Supplied by: Absolute Sounds Ltd  
Telephone: 0208 971 3909  
Web: www.copland.dk; www.absolutesounds.com  
Price: £1998

# AUDIO FILE

# Copland DAC215

Tube-driven headphone amplifiers are now all the rage, so Copland's long-anticipated and compact DAC215, with its DSD-ready USB input, looks set to paint the town red  
Review: **Steve Harris** Lab: **Paul Miller**

**R**etro styling can be a dangerous game, and 'old-skool' design elements can lead to products that are awkward, outlandish or just silly. But most people will surely agree that Copland's efforts with the £1998 DAC215 have been entirely successful.

A digital product that's designed to look comfortably 'analogue', the DAC215 is an inspired visual match for the Copland CTA506 power amp [HFN Jun '12], but it's not just a pretty face. It's described as a 'Universal high-resolution preamplifier, DAC and headphone amplifier' and at the same time, being a Copland product, it has a couple of tubes for good measure.

Unlike many current DAC/headphone amplifiers, the DAC215 has one stereo pair of analogue line inputs, in addition to its array of digital inputs. So if you're building a system to play vinyl records as well as digital sources, you need only add a phono stage to make the DAC215 function as your main preamplifier, although it won't give you remote control.

### RETRO GRILLE

As you'd expect, the DAC215 handles all the high-resolution digital signals you might care to offer up, including LPCM up to 384kHz/32-bit as well as DSD64 and DSD128. It's based on the ESS Sabre ES9018 Reference 8-channel DAC, used here in double-differential mode, as distinct from the 2-channel ES9018K2M 'mobile' (lower power consumption) version that's used in Pioneer's XDP-100R [see p68].

With the outputs of four of the DAC's converters combined for each of the two stereo channels, this promises an improved signal-to-noise ratio and reduction in even-order distortions, the impact of the tube stage notwithstanding [see PM's Lab Report, p49].

Dominating the front panel is the slatted or 'laterally perforated' section that's

visually reminiscent of a 1950s/1960s radio set speaker grille. Behind the slats, instead of a paper speaker cone, you will see a gentle glow from the tube headphone amp output section. These are only the usual small-signal ECC88 double-triodes, and the glow actually comes from red LEDs that back-light them.

Below the grille section are an analogue volume control, not an 'endless' rotary encoder, and a source selector to switch between the one analogue line input and four digital options: USB and S/PDIF (coaxial and two Toslink optical) inputs. At far right and left respectively are the power button – in fact this is a main on/off switch and not a standby control – and a single ¼in headphone socket. To the left of the volume control is a small toggle with built-in LED indication, which switches the unit's amplifier section in or out of circuit.

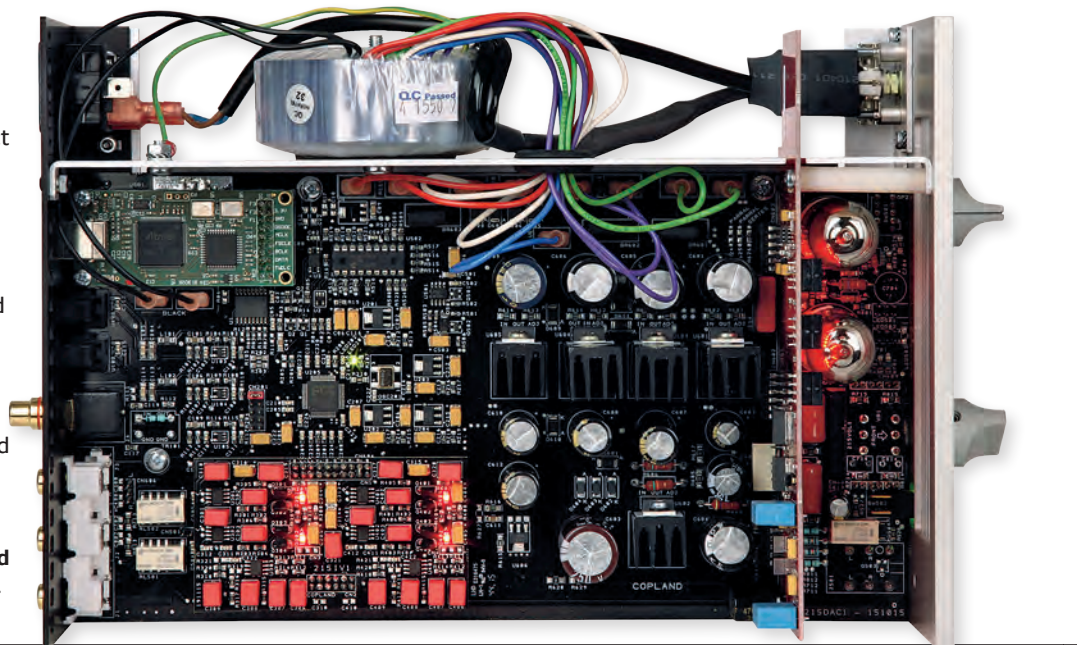
With this set to 'Amp', indicated by a green light, the DAC215 functions as a preamp, providing a volume-controlled variable output from its rear-panel

'Amplifier Output' sockets. Usefully, this output automatically mutes to a low level when headphones are plugged in. Setting the toggle to 'Off' puts the unit in DAC-only mode, shown by a red light. The internal amplifier section is now bypassed, and the DAC215 sends a fixed-level analogue output to the 'DAC Output' sockets.

*'It gave an almost tremulous quality to the voice and the air around it'*

### INFORMING LEDs

Finally, between the two main control knobs, is an array of six discreet LEDs which light to indicate the incoming sample rate of digital sources. Copland has kept this as simple as possible, with the three LEDs in the left column being labelled DSD, 48 and 44.1(kHz). The other three LEDs are labelled x2, x4 and x8, and will light appropriately along with one of the left-hand ones to indicate 'double speed' DSD and the higher PCM sample rates, from 88.2kHz (44.1 x2) and 96kHz (48 x2), and so on up to 384kHz (48 x8). This might seem a slightly obscure way of doing things, but it's actually a lot nicer



**RIGHT:** The ESS Sabre 9018-DAC based digital section is joined by an Amanero USB input board and an ECC88 tube-based headphone amplifier. The red LED illumination can be switched off!





**LEFT:** Red LEDs assist the warming glow of the ECC88 triodes within. This 'Amp' stage and volume knob (feeding headphone and line outs) is engaged by a switch on the left of the precision-milled fascia. Input sample rates are indicated by two columns of lights but the screen-printed '48.2' should read '48.0', of course...

than having a crude numeric LED display, which would have spoilt the retro effect.

At switch-on, the unit remains muted for 40 seconds while warming up, during which time the 'Amp' toggle-switch LED will flash red or green according to its position. Ironically perhaps, you don't have to wait for the 'valve glow' to start, because those red LEDs behind the tubes snap on immediately, which is really a bit of a give-away.

Actually, it is possible to switch these backlight LEDs off by means of a small slide switch on the circuit board placed vertically behind the tubes. To access this, or to replace the tubes, you remove the four screws holding the small ventilation cover on to the unit's top surface.

To set up the DAC215 for USB connection to a Windows PC you need to download a suitable driver, but as usual, no

driver is required for Mac use. Incidentally, the DAC215 appears in the computer's sound output preferences pane not under its own name but as 'Combo 384 Amanero' – Copland has used a modified version of the Amanero USB module.

### EFFORTLESS QUALITY

First I used the DAC215 purely as a DAC, via its USB inputs and fixed-level, solid-state DAC output, to listen through my usual amplification and speakers. And the Copland immediately seemed just to let the music get through without hindrance, with a great sense of purity and 'rightness'.

Listening to Jimmy Webb's 'P F Sloan' from the well-known Chesky hi-res sampler collection, you felt the force of passion in the song and at the same time appreciated the superbly crafted arrangement. From the same source, the 96kHz file of Marta

Gomez and 'Lucia' from *Entre Cada Palabra* was entirely captivating, with the DAC presenting the delicate, almost tremulous quality in the singer's lovely voice and also conveying the air around it. And the DAC215 really brought out the relaxed and effortless quality that's achieved by the accompanying musicians.

With ripped 44.1kHz material, the DAC215 was admirable too, allowing the music to flow easily and freely. On 'Easy Money' [from *Rickie Lee Jones*, Warner 256 628] the track came over with an infectious rhythmic quality, a light and almost jaunty bounce that's often lost in the hi-fi chain.

On that other female-vocal fave, 'Kalerka' from Rebecca Pidgeon's *The Raven* [Chesky SACD 329], again the rhythmic qualities of the track were brought out well, the barcarolle-like accompaniment really conjuring up the feeling of a boat gently riding the waves.

Used purely as a DAC with a CD-transport source, the DAC215 could give impeccable results. With the great piano/bass duo album *Jasmine*, recorded by Keith Jarrett and the late Charlie Haden in 2010 [ECM 273 3485], it seemed alive to the special atmosphere of the recording, made in Jarrett's home studio. The big, warm sound of Haden's double-bass was very well conveyed and, more intangibly, so was the feeling of peaceful homecoming that pervades this striking musical reunion.

When I settled down to listen via headphones, in this case the admirable Oppo PM-1s [HFN Jul '14], I discovered a tube-amp sound that was rich and warm

## DANISH BY DESIGN

Traditionally, Copland products have tended to appear at long intervals and after a lot of thought, but even so the company's website sometimes takes a while to catch up. Still firmly at the helm as Copland's principal designer is Olé Møller, who founded the company in 1984 after having worked at Ortofon on phono stage circuits. Copland's first product was the 12W CTA15 tube power amp. From 1990, Copland products were built under license by Xena in Sweden, until production was moved back to Denmark in 2001. By then Copland had established its distinctive aesthetic with classy signature control knobs, and had introduced an innovative CD player as well as a series of hybrid amps, starting with the CSA14. Multichannel amps were also added in the mid 2000s alongside the all-tube CTA305 stereo pre and CTA405 stereo integrated. For 2010, Copland launched its no-compromise top-loading CD player, the CDA285. Then in 2011 came the CTA506, a big power amp based on the then-new KT120 output tube, whose elegantly louvred front panel styling is now echoed by the DAC215.



# LAB REPORT

## COPLAND DAC215

A product of two halves, Copland's DAC215 offers a direct line-level output that adds some very slight 'colour' to the performance expected of ESS's Sabre 9018 converter. The maximum single-ended output is 2.14V with a 110dB A-wtd S/N ratio and distortion rises from as low as 0.00015% through bass and midrange at -10dBfs to 0.0014% at 20kHz [see Graph 2, below]. A standard sharp FIR digital filter profile is adopted, offering an 82dB stopband rejection and exceptionally flat response: within ±0.02dB from 20Hz-20kHz with 44.1/48kHz media, ±0.07dB from 20Hz-45kHz with 96kHz files and out to -2.2dB/90kHz with 192kHz files. There's a suggestion of granulation noise (a slight roughness) and jitter, while low at ~80psec via both S/PDIF and USB, is not as vanishingly low as possible with the ES9018 DAC.

The tube-driven headphone output enjoys a similarly ruler-flat response of ±0.02dB from 20Hz-20kHz, its low ~1.5ohm source impedance equivalent to a loss of just 0.2dB into a nominal 25ohm load. Distortion does increase with falling headphone load, however, lifting from ~0.009% unloaded to a very consistent 0.09% (20Hz-20kHz) at 40mW/25ohm. Maximum voltage output with high impedance phones is 8.7V or 880mW/25ohm for low impedance types [see Graph 1, below]. Despite the tube complement, and unlike some other valve headphone amps, residual noise is low at -90dBV and the A-wtd S/N ratio usefully wide at 91dB (re. 0dBV). Readers may view comprehensive QC Suite test reports for the S/PDIF, USB DAC and analogue headphone performance of Copland's DAC215, when available, by navigating to [www.hifinews.co.uk](http://www.hifinews.co.uk) and clicking on the red 'download' button. PM



**ABOVE:** Coax and two optical S/PDIF digital ins are joined by 384kHz/DSD128-ready USB and analogue line-ins on RCA. Fixed (DAC) and variable (Amp) line outs are offered

in character. Listening to the Naim recording of Tim Hugh playing Kodály's solo cello sonata, from the album *Hands On Heart* [88.2kHz - NAIMCD118], I found myself completely absorbed in the music, marvelling at the sheer depth and solidity of the sound he makes, and its consistency from top to bottom of the instrument.

### A WALLOW IN THE DOOM

Moving on to the Elina Duni Quartet and 'Kur të kujtosh' [96kHz/24-bit download - *Matanë Malit*; ECM 2277], the singer's emotive delivery really struck home, the little tremble in her voice clearly outlined by the perceptible studio 'air' around it. Again there was warmth, especially in the insistent and heavily-recorded piano, but this never started to become overwhelming.

For a contrast in vocal and recording style, I returned to Marta Gomez and 'Lucia', where the background produced by her musicians is miraculously light and spacious. With the Copland serving purely as a DAC, I'd found this track particularly enticing, and here it was just as attractive, the sound a little fattened-up with a kind of creamy quality, and with Gomez's voice cooingly intimate.

Focused on orchestral sounds, I then listened to David Chesky's amazing *Venetian Concertos* [Chesky JD 379; 48kHz/24-bit download], which have been described as 'contemporary music for those who don't like contemporary music'. This composition is intense and densely-textured but the Copland/Oppo combination was more than able to meet its demands, never losing the inner detail in the string writing and

conveying the sheer energy of the composer's vision.

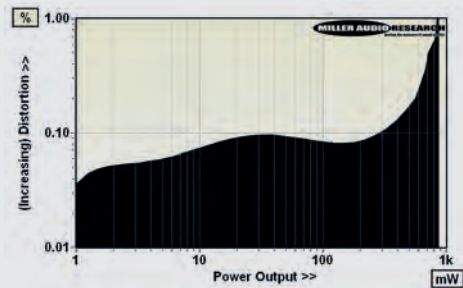
Returning to CD-quality material, I ran through some favourites and was agreeably impressed every time. With Florence & The Machine's 'Dog Days Are Over' [*Lungs*; Island/Moshi Moshi 2709059], the DAC215 offered an intelligible, exciting performance, free of any harshness or confusion. With 'Loan Me A Dime' from Boz Scaggs' *Greatest Hits Live* [Gray Cat GCD 4001], it was a treat to wallow in the doomy descending chords, supported here by what seemed like a bottomless bass and framing Scaggs' own richly-textured guitar intro and vocal.

Staying with the blues, I went back to an old track from *Sang Mêle* [Nocturne NTCD 101], by the late French keyboard wizard Eddy Louiss. With its wild and impassioned synth against a churchy organ background, 'Blues For Klook' was Louiss's heartfelt tribute to jazz drummer Kenny Clarke. And with the Copland, he was more soulful than ever. ☺

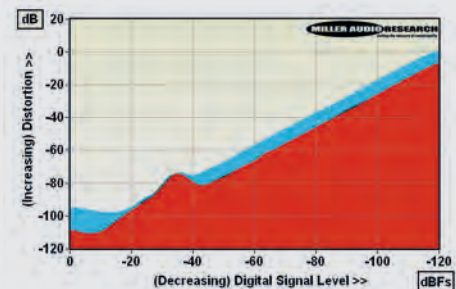
### HI-FI NEWS VERDICT

Here is an excellent USB DAC/headphone amp that can very happily serve as a main system preamplifier too, as long as you don't need more than one (unbalanced) analogue input and can do without remote control. It provides truly enjoyable, satisfying headphone listening from digital sources, especially via USB but also via its S/PDIF input. It's nice to use and the attractive retro look is a bonus. Great value.

Sound Quality: 85%



**ABOVE:** Continuous power output versus distortion into 25ohm 'headphone' load



**ABOVE:** Distortion versus 48kHz/24-bit digital signal level over a 120dB dynamic range (S/PDIF input 1kHz, red; USB input 1kHz, black and 20kHz, blue)

### HI-FI NEWS SPECIFICATIONS

Maximum output (re. 1% THD into 47kohm)	8.7V (2.14V DAC out)
Max. power output (re. 1% THD into 25ohm)	880mW
Output Impedance (20Hz-20kHz / DAC out)	1.25-1.9ohm / 96ohm
A-wtd S/N ratio (re. 0dBV / digital re. 0dBfs)	90.8dB / 109.5dB
Frequency response (20Hz-20kHz/25ohm)	+0.02dB to -0.02dB
Distortion (20Hz-20kHz, re. 40mW)	0.088-0.095%
Digital jitter (S/PDIF / USB)	80psec / 75psec
Power consumption	30W
Dimensions (WHD) / Weight	200x115x280mm / 3.8kg