

QUESTYLE'S DOCK TRANSFORMS THE QP2R!

# hi-fi+



ISSN 1465-5950



REPRODUCING THE RECORDED ARTS  
[www.hifiplus.com](http://www.hifiplus.com)

MAY 2018 • 159

## TOTAL CONTROL!

WE PICK THE BEST COMPLETE SYSTEMS  
FOR THE ULTIMATE AUDIO EXPERIENCE



IFI AUDIO, CHORD, FINAL,  
AND CAMPFIRE



AUDIO RESEARCH AND  
SONUS FABER



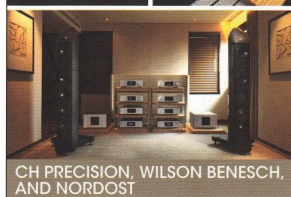
CRYSTAL CABLE



RAV CS 5.2  
ALLNIC CABLES  
ROON NUCLEUS  
NEAT IOTA XPLOER



FOCAL AND NAIM AUDIO  
MULTIROOM



CH PRECISION, WILSON BENESCH,  
AND NORDOST

## SYSTEM REVIEW

# iFi Audio Pro iCAN, Chord Hugo2, Final D8000, and Campfire Andromeda

by Chris Martens

**A**s high performance personal audio systems have evolved, they have become more specialised. Some focus on top class headphones and electronics intended for use within the relative quiet of one's home, while others centre on advanced, high performance universal fit earphones, CIEM's, and associated portable components that can be enjoyed either at home or on the go. For this systems orientated issue of *Hi-Fi+*, we decided to configure a multi-part personal audio system that not only offers some of the best headphone and earphone sound around, but that also offers exceptional versatility for in-home and portable listening applications.

Our system is comprised of four components: the iFi Audio Pro iCAN hybrid valve/solid-state fully balanced headphone amp/preamp (*Hi-Fi+* issue 143); the Chord Electronics Hugo 2 transportable headphone amp/preamp/DAC (*Hi-Fi+* issue 153), the Final D8000 planar magnetic full-size headphones (*Hi-Fi+* issue 157), and the Campfire Audio Andromeda universal-fit earphones (*Hi-Fi+* issue 158). These components are strong individual performers, but also harmonise beautifully with one another as a group. Let's look at each component in turn and then talk about the synergies between them.

### iFi Audio Pro iCAN

At a recent personal audio show an industry colleague told me he was considering purchasing a Pro iCAN. "I've searched all over the personal audio market space and I haven't found any amp that offers the sound quality or versatility that the Pro iCAN does," he said. "Have you found anything that tops it for around the same amount of money?" After scratching my head for a moment I had to admit my colleague was right. iFi's Pro iCAN is that rare product that combines exceptionally high baseline performance plus an expansive set of useful features and functions unmatched at or even above its price class.



The Pro iCAN is a powerful yet also quiet balanced headphone amplifier/preamp. Significantly, it offers three operating modes: Solid-State, employing a Class A discrete J-FET circuit; Tube, employing a Class A valve-powered circuit with moderate negative feedback; or Tube+, employing the same Tube circuit, but with feedback reduced "to a minimum". Users can switch between modes on the fly to choose the mode(s) best suited to one's headphones, earphones, or listening tastes. Pro iCAN also provides switch selectable gain settings of 0dB, 9dB, and 18dB.

The Pro iCAN incorporates sophisticated versions of two proprietary iFi circuits: namely, the firm's XBass Bass Correction System and 3D Holographic System, both of which are switch selectable. The XBass Bass Correction System aims to compensate for low-frequency deficiencies found in some headphones and many loudspeakers, and can apply a maximum of 12dB of bass boost at 10Hz, 20Hz, or 40Hz. The 3D Holographic system addresses spatial aspects of playback with two ASP (Analogue Signal Processing) circuits—one for headphone listening and the other for loudspeaker listening. iFi says the 3D Holographic System is neither a traditional "cross-feed" system nor a DSP-driven system that adds artificial reverb. Rather, the system aims to provide 'out of ►

*"Achingly beautiful with rich, deep, saturated tonal colours and expansive harmonics."*

► head' sound source placement for headphone listeners while rendering "the whole 3D sound field in a manner that strongly parallels listening to loudspeakers in a normal room, all achieved without added reverb."

I tried both systems at some length and found them admirably subtle and restrained in their effects and useful when applied in appropriate contexts. With that said, however, I left the circuits switched off for most of my headphone listening to better appreciate the rich, pure, and unprocessed sound of the Pro iCAN.

Predictably, the sonic character of the Pro iCAN is determined by the operating mode chosen. As a rule, the Solid-State mode yields the most taut presentation with excellent linearity (that is, neutral tonal balance), quick and lively transient response, and crisp, sharp focus. Switching to the Tube mode gives similar linearity with a very slightly more softly focused sound, but with more vividly rendered tonal colours, superior harmonic richness, and even more expressive dynamics. Finally, the Tube+ setting is like listening to the Tube mode on steroids, meaning that, on the right track and with the right headphones, the Tube+ setting is positively enchanting.

When I used the Pro iCAN with Tube+ mode engaged to play the title track of Mary Chapin Carpenter's *Come On Come On* [SBME Special Markets, 16/44.1] through a set of almost clinically revealing headphones the Pro iCAN helped draw forth the headphone's more expressive, magical side. Chapin's voice sounded downright luminous and seemed to float gracefully upon the air, while the backing instruments—most notably the piano and bass—sounded achingly beautiful with rich, deeply saturated tonal colours and expansive harmonics that made them sound almost breathtakingly realistic.

In sum, the Pro iCAN is a versatile, powerful, accomplished, and masterful headphone amp/preamp that is ready to serve as the centrepiece of a very high performance personal audio system.

## Chord Hugo2

The Chord Hugo2 is a major upgrade on the firm's original and critically acclaimed Hugo transportable headphone amplifier/preamp/DAC. What's different and better about the Hugo2? Just about everything.



Chord has given the Hugo2 more power, lower distortion, reduced noise floor modulation, and a more sophisticated DAC section as compared to the original Hugo. For example, where the first-gen Hugo's DAC was a 4-element pulse array design with a digital filter offering 26,000 filter taps, the Hugo2 DAC is a 10-element pulse array design whose digital filter offers a stonking 49,152 filter taps.

Why is the number of filter taps significant? Chord Consulting Designer Rob Watts has long maintained that a properly designed DACs could theoretically deliver just as much sonic information, detail, and analogue waveform accuracy from a garden-variety CD-resolution file as from an ultra high-res file, provided it uses correctly designed digital filters with an extremely large (and ideally, infinite) number of filter taps—an astonishing claim. The only difference, says Watts, is that the CD-version would have a slightly higher noise floor than the ultra high-res version.

Putting theory into practice, the Hugo2 uses Watts' signature WTA (Watts Transient Aligned) filter system, which is implemented via an extremely powerful Xilinx FPGA device. Recognising that the best off-the-shelf DAC devices offer filter taps numbering in the hundreds, Hugo2's 49,152 filter taps obviously represent a huge (and audible) step in the right direction. The end result is a portable DAC that renders transient and timing-related details (and especially three-dimensional spatial cues) in the music with exceptional accuracy. Better still, the Hugo2 is sonically competitive with full-size tabletop DACs more than twice its size and price.

The Hugo2 provides four dome-shaped, self-illuminated, colour-coded switches to provide On/Off, Crossfeed, Input, and Filter selection functions, plus an also dome-shaped and ►

## TECHNICAL SPECIFICATIONS

### ifi Audio Pro iCAN

**Type:** Fully balanced hybrid solid-state/valve-powered headphone amplifier/preamplifier

**Valve Complement:** Two NOS 6E5670 valves

**Inputs:** Three stereo single-ended (via RCA jacks), one stereo balanced (via dual 3-pin XLR jacks)

**Preamplifier/DAC outputs:** One stereo single-ended (via RCA jacks), one stereo balanced (via dual 3-pin XLR connectors)

**Headphone outputs:** Three stereo single-end headphone output jacks (two via 6.35mm headphone jacks, one via 3.5mm mini headphone jack); three stereo balanced headphone output jacks (one via 4-pin XLR headphone jack, one via dual 3-pin XLR headphone jacks, one via 3.5mm balanced—TRRS type—jack)

**Distortion (THD):**

**Solid-State:** <0.0004% balanced/<0.004% single-ended

**Tube:** <0.0005% balanced/<0.005% single-ended

**Tube+:** <0.1% balanced/<0.01% single-ended

**Signal-to-Noise Ratio:** >147dB (A) balanced/>137dB (A) single-ended

**Power Output @ 16 Ohms:** >14,000mW balanced, >4,800mW single-ended

**Dimensions (HxWxD):** 63.3 x 192.5 x 213mm

**Price:** £1,695 UK; \$1,799 US

**Manufacturer Information:** iFi Audio

**URL:** ifi-audio.com

**UK Distributor:** Select Audio

**URL:** selectaudio.co.uk

**Tel.:** +44(0)1900 601954

### Chord Electronics Hugo2

**Type:** High-resolution portable headphone amplifier/DAC.

**Digital inputs:** Micro USB (PCM up to 32/768, native DSD from DSD64 to DSD512); Coaxial S/PDIF via 3.5mm combo jack (32/768); Optical via 3.5mm combo jack (24/192); Toslink (24/192); and Bluetooth (Apt X implementation, 16/44.1/48)

**Analogue outputs:** One 3.5mm headphone jacks, one 6.35mm headphone jack, one stereo analogue output via RCA jacks

**Battery:** Two Enix Energies 3.7V/9.6Wh lithium ion batteries. Sufficient power at full charge for playing time in excess of seven hours.

**Power Output @ 1kHz, 1%THD:** 300 Ohms, 94mW; 32 Ohms, 740mW; 8 Ohms, 1050mW

**Distortion – 1kHz 3V RMS output:** 0.0001% THD

**Signal-to-noise ratio:** 126dB 'A' weighted

**Output Impedance:** 0.025 Ohms

**Dimensions (HxWxD):** 21 x 100 x 131mm

**Weight:** 450g

**Price:** £1,800 UK, or \$2,379 US

**Manufacturer Information:** Chord Electronics Ltd.

**URL:** chordelectronics.co.uk

**Tel.:** +44 (0) 1622 721444

**US Distributor:** Bluebird Music Ltd.

**URL:** bluebirdmusic.com

### Final D8000

**Type:** Planar magnetic headphone with air film damping system

**Driver complement:** Full range AFDS planar magnetic driver

**Maximum SPL:** 98dB

**Impedance:** 60 Ohms

**Weight:** 523g

**Warranty:** 2 years

**Price:** £2,999 UK; \$3,799 US

**Manufacturer information:** Final

**URL:** snext-final.com

**Distributor:** KS Distribution

**URL:** ksdistribution.co.uk

### Campfire Audio Andromeda

**Type:** Five-driver, three-way universal-fit earphone

**Driver complement:** five balanced armature-type drivers grouped as two high-frequency drivers in a Tuned Acoustic Expansion Chamber enclosure, one midrange driver, and two low-frequency drivers.

**Frequency response:** 10Hz–28kHz

**Sensitivity:** 115dB SPL/mW

**Impedance:** 12.8 Ohms

**Price:** \$1,099 US

**Manufacturer Information:** Campfire Audio

**Tel.:** +1 (503) 853-8606, +1 (855) 204-1492

**URL:** campfireaudio.com