Hot Head

Nothing like a hot filament to warm the head with great sound. Noel Keywood reviews Icon Audio's new HP 205D valve headphone amplifier.

Well, it does look good doesn't it! Even those not into olde-worlde aesthetics must be intrigued by what is going on here. Icon Audio's new HP 205D is an exotic valve headphone amplifier with a difference – it is equipped with a Bluetooth receiver, to play music wirelessly from a mobile 'phone or tablet. Price is £2999.

There are two sides to this headphone amplifier: functionality and appearance. It's a boutique item with honed good looks, yet it has a function to perform. The two are intertwined.

The HP 205D is available without Bluetooth but just by fitting a modern technology such as this to a valve amplifier – styled for the steam age – rather makes a point: it's for users who want the best of today and yesterday – in what can be an uneasy match.

Those old fashioned looking onion-shape 205D valves are in fact recent production from China, not originals from 1924 that (untested) are currently priced at £400 apiece on eBay.

Let me go over just what this headphone amplifier does first. It can accept an analogue input from a preamplifier, an integrated amplifier with Pre Out sockets, a CD player or a phono stage, having both sufficient gain and an Alps Blue high quality volume control. But there's no remote control of volume; this must exist in the source, as it does with Bluetooth.

Whilst there's Bluetooth input, there is no Bluetooth output; connection to 'phones is wired. An independent Bluetooth transmitter can be bought to overcome this.

To slide into valve issues, there are three output settings: for high, medium and low impedance headphones, ranging from 1000Ω down to 16Ω they say (most are 300Ω or 40Ω). The High Ω (250Ω-1000Ω) is suitable for sensitive in-ears (In Ear Monitors, IEMs), the Low Ω (8Ω-32Ω) for magnetic planar types and Medium (32Ω-250Ω) for anything in-between,

meaning most. This function exists because the HP 205D matches its 205D output valves to headphones through output transformers, housed in big black screening cans at rear.

The amplifier is single-ended (SE), not push-pull, avoiding crossover distortion. It means each headphone earpiece is driven by one 205D triode valve only – for purity that comes from simplicity and a valve that, even in its time, was rated at having less than 1% distortion for best audio quality. At this point I'll quickly note distortion measured 0.02% so is not an issue. In front of each 205D is an ECC88 (6922) double-triode preamplifier valve.

In keeping with this level of audiophile sophistication Icon Audio use a top quality Qualcomm

The open electrode assembly of a 205D valve makes its glowing heater obvious. A visual treat from 1924.

CSR8675 Bluetooth receiver hooked up to an ESS ES9018 DAC. There is aptX and aptX HD to improve audio quality but note that iPhones don't have this. Think Samsung for aptX. However, measurement shows an iPhones' iOS audio (24bit and 48kHz sample rate) manages full 24bit quality within Bluetooth 5 and that appears to be the case here (see Measured Performance). So this is high quality Bluetooth, not just budget functionality.

There are two Hum adjusters but since all feeds from the power supply are d.c. they presumably minimise ripple on the 4.5V d.c.

The unit is hard-wired with sturdy discrete components. At low left lies a screened Bluetooth receiver and DAC board.

heater supply. Icon say they need only be set once; I heard no hum at all. There is no bias adjustment.

Power comes from an external supply that follows thermionic best practice, notably a valve rectifier (GX34, 5AR4, 274B) feeding a choke for smoothing. This delivers out 300V H.T. There is a 6.3V d.c. heater supply for the ECC88s, 4.5V d.c. for the 205Ds and a 13V supply for the digital circuits. This little lot is piped in by a power cable 122cm (4ft) long and the main unit can sit up to 1m above the power unit. The supply accepts 110V or 230V, drawing 50W.

The main amplifier is relatively compact, measuring 220mm wide, 320mm deep and 170mm high. It will just squeeze onto a 12in shelf taking into account rear cables. Weight is 7.5kg. The power supply is slightly heavier at 8.5kg, and also higher at 190mm with the 5AR4 rectifier but 230mm high with the 274B option. Chassis depth is the same but width is 130mm. The power switch is on the supply so it has to be accessible.

Build quality is superb, as is standard of finish – higher than in products of the past. Icon design and wind their own transformers in-house, by hand they say rather than with auto-winders, for smoother and more dense layering.

Now, take a deep breath. A new pair of Psvane 205Ds will set you back £700 from Icon Audio. There are cheaper U.S. prices but carriage, insurance and taxes will probably make differences small. Tian Jin Full Music also make this valve. Icon say that at a push a 300B can be used as a substitute

At rear, analogue input and loop-through output. An earth terminal and stubby Bluetooth aerial. At right a 10-pin input socket for power.

– but they're not cheap either. Few people around the world use 205Ds, making production quantities small so they're made by hand in China. Expect a life of around 3000 hours minimum I suggest, Icon putting it as 4-6 years.

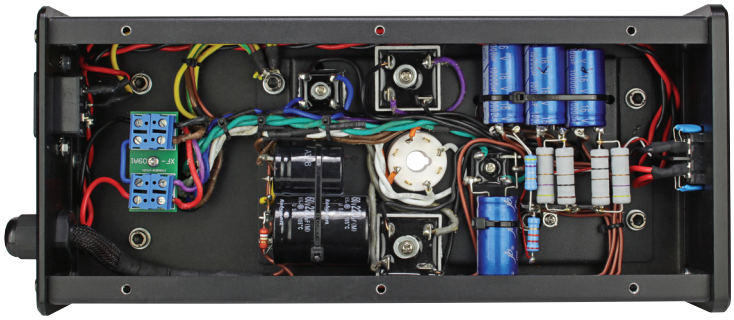
SOUND QUALITY

This took me by surprise. I'd expected a deeply smooth spacious sound, emotionally atmospheric like my 300B amplifier. Instead the HP 205D struck me by its speed, solidity of images and cosmic stereo positioning. By this I mean little fine percussive details like a maraca in Holly Cole's Train Song, were coming at me from outside the immediate sound stage, as if from a space beyond. And that effect continued: the HP 205D was

The 274B rectifier stands high and glows brightly. This is an optional extra.

peculiar-to-surreal in this respect when driven from the analogue outputs of our Oppo UDP-205D CD player with its ESS ES9038Pro convertor. Pure coincidence that it is a '205D' also.

Warm sound? Not at all. It had a pushy midband, forward and 'in my ears', with extraordinary revelation of timbral richness – to the bouzouki and plucked bass at the start of Loreena McKennitt's Gates of Istanbul for example. For air and space there was little I have heard to compare. There was also an almost peculiar form of tight, expressive bass, something the Oppo PM1 magnetic planar headphones I used are intrinsically



The power supply carries heater rectifiers (centre), a valve HT rectifier, and a supply for Bluetooth and DAC boards.

good at, but only when driven well. The Icon propelled them along with seeming ease.

Whilst the midband and upper midband were quite forward, high treble was not. There was no sting or tizz.

Bluetooth is – potentially – a big plus point for the HP 205D. It turns it into a mini hi-fi in its own right, of outlandishly exotic nature. I mean, a single-ended 205D amplifier is barely imaginable in thermionic hi-fi land. But hooked up to an iPhone via Bluetooth? I was intrigued by the idea.

Playing hi-res tracks from an Onkyo HF music player on my iPhone 11X Pro, sound quality was exceptional, Norah Jones' vocals sounding silky smooth and breathy in Come Away With Me (24/192). Cosmic imaging made itself known with Cyndee Peters singing House of the Rising Sun (DSD64) where hand drum came from beyond one earpiece and triangle strikes from beyond the other.

Quite how the Onkyo's (paid for) hi-res folder processes music I'm unsure, but it seems to leverage the ability of iOS to handle 24bit resolution, giving a smoother, deeper sound. Even CD tracks like The Eagles 'Somebody' raced out of this folder and through the HP 205D in slick fashion, this being a track that seems to get easily mashed. Instead I heard sparkling cymbal strikes, Glen Frey at the mic and the whirling Hammond that brings feeling to the track. Pity that in actuality this track is compressed upward to an inch of its life, but somehow here it came over as fast, funky and listenable.

On a different tack, playing The Battle of Britain March by the Central Band of the RAF I was delivered a wonderfully wide sound stage with identification of the individual instruments of the band; there was a sense of their character within the scope of the performance in a big space. Very enjoyable and organically real in true thermionic fashion. Nothing quite like hearing a military band to get a dose of the real instruments.

I do a lot of headphone listening with YouTube, to live performances especially. Would the HP 205D make a difference here? Feeding the analogue output of an Audiolab M-DAC+ in, sound quality took a whole jump up. The HP 205D brought its deep analysis and firm delivery into play, bringing vigour to the sound. Much of this came from fast, dynamically resolved bass – not something valves are associated with. But the Icon brought speedy heft into the sound, livening up YouTube – even extracting detail from its seemingly bland output.

A conventional IEC mains input socket, plus sturdy output cable with 10-way socket.

Seeing music coming in at 96kHz sample rate from YouTube (displayed by the M-DAC+) sent me to my Mac's Audio/Midi player to re-set sample rate and it was clear that every setting had a different sound, something I have not noticed before. Higher specs were not better: I settled on 24/48 from the Mac to the Audiolab, to listen to YouTube through the Icon. The HP 205D was brutally revealing, but that is to be expected from such purist circuitry.

Listening brought up the fact that there is a lot of gain in the system: with Bluetooth if phone volume was at max then the HP 205D's volume had to be cranked down to little above zero. I ended up balancing the digital control on the 'phone against the 205D's volume control for best result. This amount of gain may explain my need to hook up an earth wire from the rear earth terminal to the M-DAC+ to cure a slight RF whine audible at maximum volume.

Supplied as standard is a 5AR4 rectifier from Tung-Sol.

CONCLUSION

The HP 205D is a strange headphone amplifier. Wonderfully wrought, peculiar in concept. But then, valves invite such scenarios. Running Bluetooth through amplifying devices from 1924 isn't the most obvious thing to do but Icon Audio have done it here – in glorious fashion.

Sound quality from the analogue inputs was beyond superb. Bluetooth gave a great result too, in conjunction with a good software player and mobile 'phone. Eyes wide about long term running costs, with a valve pair coming in at £700 but – hey! – no one else will be using an amplifier so unique.

A MATTER OF SUPPORT

If you want to see glowing valves then this amplifier is surely it. The 205D was designed by Western Electric (U.S.) in 1924 as a simple, directly heated triode (DHT). There's no cathode surrounding the glowing heater filament, making it easy to see. The wire grid surrounding the heater is also visible, as are the external plates that form the anode. Clearances are enormous but gain is low. This is something of a display valve, showing how they work in basic form.

The electrode assembly must be rigid in itself and well supported to avoid microphony. I have encountered wildly microphonic Chinese onion-envelope valves in the past. Walk across the floor or speak loudly and ringing sounds emerged. Modern valves steady the top of the electrode structure against the envelope to prevent this, but for authenticity that cannot be done here. Psvane instead use a thick internal support pillar. Their 205Ds are improved replicas, not exact copies. Getters are used but there are no flash marks to spoil appearance.

The basic 5AR4 rectifier within the power supply is unlovely in appearance, but the 274B alternative is as attractive as the 205Ds – but you pay an extra £195 for this. David Shaw (MD) says it sounds better however. It certainly looks better.

MEASURED PERFORMANCE

The High Ω setting delivered 14V max and had a gain of x65 (36dB), into a 300Ω load (650mW).

The Low Ω setting delivered 4.6V max. with a gain of x18 (25dB) into a 40Ω load (530mW).

Since headphones need no more than 1V to go very loud, there is enough output swing here. The High setting is for IEMs, the Medium for dynamic types and Low for magnetic planars.

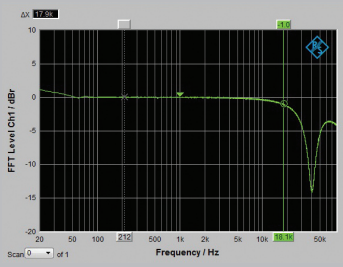
Frequency response measured flat from 30Hz to 20kHz through High Ω and Low Ω outputs (300Ω/40Ω loads), via the analogue Line input. Via Bluetooth response was similar except bass rolls off below 30Hz. Response did not change with volume position.

Distortion via Bluetooth (0dB) measured 0.05% at 1V out. There was good resolution, a -60dB signal being well resolved, distortion here measuring 0.3% – mostly noise. EIAJ Dynamic Range came in at 104dB, which is fractionally above CD (typically 100dB), so the Bluetooth transceiver is a good one, able to provide hi-res, curtailed by thermionic noise in this setting.

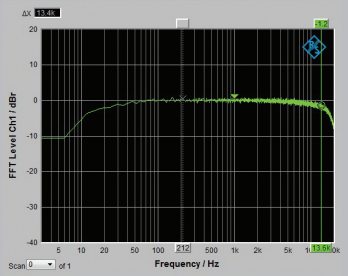
The HP 205D gave an unusually good set of performance figures all round considering its archaic valve technology. The Bluetooth transceiver performed very well in a supportive setting. **NK**

Frequency response (-1dB)	**30Hz-20kHz**
Distortion (10kHz, 1W, 4Ω)	**0.02%**
Separation (1kHz)	**88dB**
Noise (IEC A)	**-82dB**
Gain (High Ω/LowΩ)	**x65/x18**
BLUETOOTH	
Frequency response (-1dB)	**40Hz-18kHz**
Distortion (-60dB)	**0.3%**
Dynamic range	**104dB**

FREQUENCY RESPONSE



FREQUENCY RESPONSE BT



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