HI-FI WORLD

World Beater

Tony Bolton finds himself seduced by the World Designs HD3S valve-powered single-ended headphone amplifier.

Building your own hi-fi from a kit is a hobby that has declined as the complexity of some components, such as CD players, renders them inappropriate for DIY construction, and the cost of pre-built products, relative to disposable incomes, has come down. However, for the enthusiast who likes creating his own equipment World Designs offers a range of products from phonostages and amplifiers through to the HD3S Headphone Amplifier under discussion here.

Unlike the majority of solid state headphone amps that I have listened to recently, this one has no in-built DAC or other extras. Also unlike them, it uses output matching transformers to feed headphones and is fitted with a volume control. Priced at £499 for the kit, or £659 for a pre-built version as used in this review, HD3S is the latest version of the World Designs headphone amplifier. It features an aluminium case in place of the steel of the previous model. It is also equipped with internal dip switches to select output impedance, to match a wide variety of headphones.

The single ended circuit design uses two ECL 83 triode-pentode valves (one per channel). A large toroidal transformer supplies the power and two E/I output transformers drive any load from 16 Ohms to over 300 Ohms depending upon how the dip switches are set. Volume is set by an ALPS Blue Velvet potentiometer.

The fit and finish of the casework (measuring a compact 220 x 310 x 85mm; w/d/h) is excellent with touches, such as the precisely engraved World Designs logo and the heavily chromed volume control knob, ensuring that this product looks considerably more expensive than even its pre-built price tag would have you believe.

A lot of different brands of valves were listened to during the development of this component and original Mullard tubes were chosen for their sonic capabilities. Purchasers are, of course, free to change these for other brands. And with prices starting at around £15 each, valve rolling to fine tune the sound to your preference is an easily accomplished and affordable exercise.

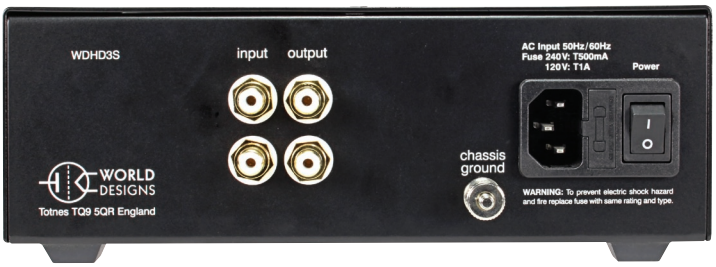
The back of the case is only marginally more populated than the front with the mains IEC input and power switch on the right and two pairs of RCA phono sockets for the signal in and out situated in the middle of the panel. An earth terminal is fitted to allow separate grounding should hum be a problem.

I set the HD3S up on the downstairs system fed by the Tucana II amplifier and also tried it plugged directly into the outputs of my Agena phonostage. Listening came via a pair of ADL H118 headphones. Apart from the music mentioned on the next page I also listened to both the TV and FM radio through it where I was impressed with the amp's ability to create a sensation of a three-dimensional field of sound around my head, making the afternoon play on Radio 4 a thoroughly immersive experience.

Listening through headphones allows an almost forensic analysis of the sound and even with records that I know very well, such as the 'High Society' sound track, I found myself appreciating micro-details in Louis Armstrong's playing during the 'High Society Calypso'. Although this is a mono record, the sense of space between and around the artists was well-described and the details of the tonality of the various instruments excellent. This combined with a good grasp of the Latin rhythm made for a thoroughly enjoyable listening experience.

I was particularly impressed with the bass performance and explored

this further with a recording of Widor's 'Toccata' played on the Exeter Cathedral organ. Although I was not playing loudly (I dislike loud noises too close to my ears) the final majestic chords left me feeling that my insides were vibrating with the power of the bass pipe. I am familiar with the acoustic of Exeter Cathedral, having attended many concerts there, and felt that this amp produced enough detail and texture in the sound to go a long way to convincing me that I was actually present at a performance in that space.



Rear panel lay-out is simple with clearly-labelled and reasonably well-spaced RCA sock-ets for the signal input and output.

I finished off my listening with some classic electronica from The Orb. This style of music makes great use of the spacial capabilities of stereo and I got totally involved with following the quite complex array of sounds as they floated through my head in all directions.

I really like the sound of this headphone amp - which offers a superb ratio of sound quality per pound.

The presen-tation is beautifully textured and detailed, precise in its handling of rhythms and, I would say, uncoloured in the presentation of instruments.

The bass can also go very deep but is not overblown. The midband sounds natural and the treble has that silky smoothness that thermionic amplification does so well.

Whether bought as a kit, or pre-built, I think this is an excellent, value for money product that will provide many hours of undiluted listening pleasure.

The dip switches to the right of the two ECL83 valves allow the user to set the impedance to match the headphones in use.

SYSTEM USED

Clearaudio Master Solution/ Magnify arm/ Benz Micro Wood SL cartridge, Leema Acoustics Agena phonostage, Tucana II amplifier, ADL H118 headphones.

MUSIC USED

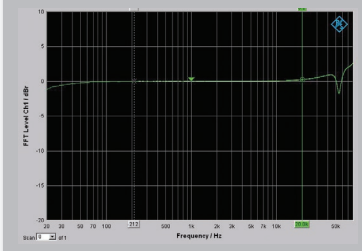
Paul Morgan. 'Exeter Cathedral Organ'. Exon Audio Records. EXCATH 2. 1975.

Various Artists. 'High Society Soundtrack'. Capitol Records. LCT 6116. 1956.

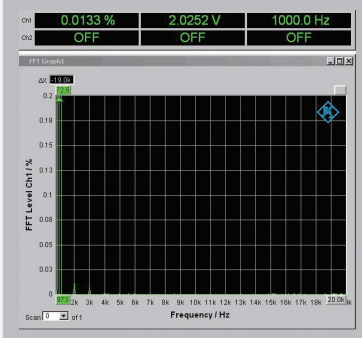
Orb. 'Blue Room'. Waul Mr. Modo Records. BLRT 75. 1992.

MEASURED PERFORMANCE

FREQUENCY RESPONSE



DISTORTION



The World Designs HD3S's output transformers each have four secondary windings. DIP switches arrange these to suit loads of 16 to greater than 300 Ohms. Both gain and maximum output level vary according to settings.

As delivered the HD3S was set to suit 16-50 Ohm 'phones, had a gain of x4 (12dB) and a maximum output of 3.8V – more than enough for any headphone.

This gain is sufficient to work from tape outputs and external phono stages, delivering 800mV output from 200mV input for example. The higher impedance settings give more gain and output, right up to x16 (24dB) gain and 14V maximum output for the 'greater than 300 Ohm' winding.

Frequency response, with a suitable load connected, measured flat across the audio band, our analysis of the 16-50 Ohm winding shows, with a 40 Ohm load connected. The higher impedance outputs gave a similar result. Output starts to rise above 20kHz so the HD3S will not have a dull or warm balance, although valves never have transistor spit, even when treble rises a little. Distortion levels were very low at 0.018%, mainly second harmonic, at 2V output. Noise was low at -90dB when delivering 2V out, a very good result.

The World Designs HD3S measured very well in all areas, offering impressive results. It is able to drive modern 'difficult' high-resolution headphones (e,g, Oppo PM-1s) of low impedance and sensitivity, as well as conventional designs. **NK**

Frequency response (-1dB)	
CD	**20Hz-30kHz**
Distortion	**0.018%**
Separation (1kHz)	**110dB**
Noise (IEC A)	**-90dB**
Gain	**x4 (12dB) ~ x16 (24dB)**
Output	**3.8V ~ 14V**

HI-FI WORLD

WORLD DESIGNS HD3S HEADPHONE AMPLIFIER £499 (KIT) £659 (built and tested)

£

OUTSTANDING - amongst the best

VALUE - keenly priced

VERDICT

A simple but effective circuit using ECL83 valves running single ended in a headphone amp that can be bought as a kit or pre-built.

FOR

- smooth, detailed sound
- wide bandwidth
- excellent spacial presen tation

AGAINST

- nothing

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