



# Go With Grace

**Taking headphone amplification into the high-end along with a bundled DAC, Paul Rigby reviews the Grace M903**

**F**ounder, Michael Grace, started Grace Design, with his brother Eben, in 1994 after working with the hi-fi outfit, the Jeff Roland Design Group. Primarily a manufacturer of studio gear, Grace possess products which cross over into the hi-fi community, like the M903 headphone amplifier with accompanying DAC. The reason? Because Grace take an audiophile ethic into designing its studio equipment. "From a design objective, there are parallels," said Michael Grace. "We look for absolute clarity and musicality. Accuracy is one thing but there are plenty of super analytical and accurate amplifiers and DACs out there and they are fatiguing to listen to over time. When you're working all day under headphones it

can be tiring for the brain".

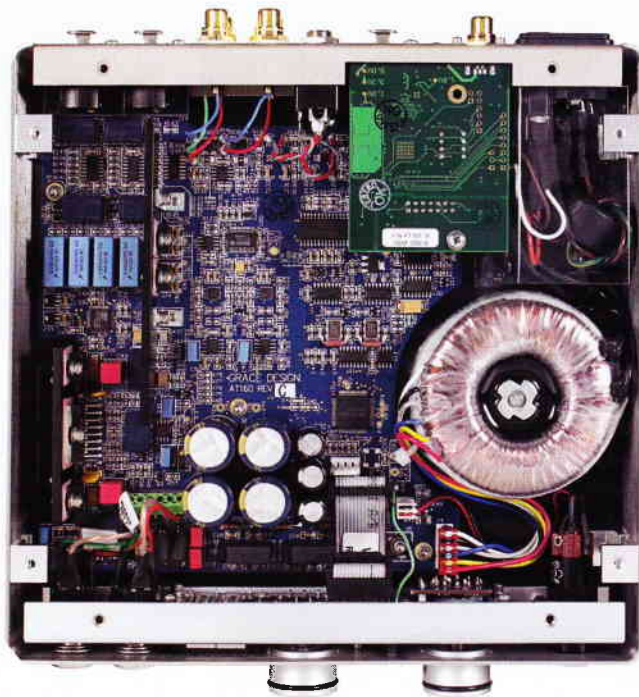
The design of the M903 creates a busy appearance. Looking at the front fascia, there are two, full size, headphone sockets, wired in parallel. One amplifier runs both sockets, "Sound quality is not impaired because the amp can run multiple pairs of headphones with low impedance and a low damping factor" said Grace.

The volume read-out doubles as a display screen for a rather cryptic set-up menu. Behind that is an infra-red receiver for a remote control unit (which can be bought separately). Indicators relate to the output that the volume is referring to "So, if you push the volume knob" said Grace, "it selects between the phones or line outputs. The line outputs can also be individually

selected, if required".

The M903 volume rises in half dB steps, and they are matched within a tenth of a dB on the left and right channels for perfect channel balance, "The advantage of using a digital gain on this unit – which offers low noise and the contacts never wear out – is to enable us to keep control of channel matching and volume steps right down to very low levels. People using highly sensitive, in-ear type headphones often need to be 40-50dB down in overall voltage from what you might need for standard circumaural headphones". Standard attenuator knobs often jump up to 6dB per 'step' when low volumes are tackled.

An intriguing feature on the fascia is the X-Feed light. This circuit simulates listening to loudspeakers



**The internal circuit board is packed with miniature surface mount components. There are ten power supplies, a digital section, balanced input amps and display drivers. This is no simple headphone amplifier.**

in an acoustic space but through your headphones, "It's a simple passive circuit, tonally neutral, that simulates how sound refracts around your face from your right speaker into the left ear and vice versa. Your brain has a difficult time establishing sonic cues for sound staging without it. The circuit helps to minimise listening fatigue. It's a subtle effect that, when used over time, is more noticeable when you turn it off as the soundstage image then collapses into the right and left cans."

The DAC sample rate indicators are also present with a topmost LED, known as the S-LOCK, a dual stage, crystal-based phase lock loop indicating when you are using a digital source that is not USB-based.

Around the back are connections to the power supply (connected to a low noise, isolated, toroidal unit), S/PDIF, USB (which is galvanically isolated from the M903 chassis meaning that there is no ground connection when connected to a computer, to reduce noise), TOSLINK, AES3, unbalanced phono outs, balanced line outputs, unbalanced inputs and balanced inputs.

Inside, the M903 design is notable for purposely not using asynchronous circuits for its USB sampling connection. "They are cheap to make

and work pretty well but our belief is that not altering any of the bits and, instead, presenting the most pristine clock to your DAC that's synchronous to your sound source is the most high fidelity approach. In USB mode, the M903 acts as a clock master to the USB system so, when the data arrives from the computer, the internal crystal oscillators are utilised. The M903 becomes completely immune to any jitter effects".

There are ten different power supplies inside the M903 that minimises interactions between circuits and there are instrumentation amplifier line receivers for the balanced line inputs, which means that any noise picked up by the cable or in the ground is rejected.

"Also, the headphone output is based upon a current feedback amplifier, extremely fast and able to resolve complex harmonic overtones with more fidelity than voltage type amps."

Finally, Grace uses Burr Brown DACs because they have current outputs which allows Grace to make it's own current to voltage converters, "... which is a critical part of a DAC. Where the current from the DAC is converted to a voltage, the conversion is critical because the pulse coming from a DAC is fast. You need a high performance amp to



properly convert them to a voltage. There are plenty of DACs where that process is built in. The sound quality from such DACs looks good on technical specification sheets but they don't sound very good. Which is why, when people ring us and ask us what chip are we using for our DAC, I can tell them the part number but that's only half the equation".

Notable for what this box does not have is electrolytic capacitors in the signal path, "They have lots of non-linearities," said Grace. "They have varying impedances, so they have distortion and a blurring in harmonics giving a metallic and tizzy top end. Also, they are filled with a liquid electrolyte, so they eventually dry out which changes their characteristics which then changes your audio quality. We use film capacitors, they're very stable and will last many years. Longevity and reliability are what we consider in every design decision".

## SOUND QUALITY

To begin the sound tests, I attached my Sennheiser HD650 headphones to a Musical Fidelity X-Can 8VP headphone amplifier for a reference comparison. Yes, it is only worth around £350 but it offers great value and performs out of its skin, exceeding the capabilities of many other, more expensive, units so the Grace needs to be pretty amazing to warrant the extra money. Just 'better' isn't really good enough.

Listening to Skunk Anansie's 'Hedonism', via the phono connections, there are two principle elements that hit you immediately during the first few bars of this song. Firstly, there is an immense sense of integrity in how each instrument is described and presented to the listener, with the M903. How a guitar, for example, is portrayed is a very important part of the M903's make-up. There is real care and attention to detail here that provides an immense sense of truth for each instrument in the band. I have never experienced such 'realism' in a headphone amp before. The other principle element that hit me was more disappointing and involved the lifting of the upper midrange, providing a sound that leaned towards a more well lit upper midrange. Bass was tight, weighty and punchy while mids were backed by a reassuring quietness, emphasising a welcome clarity. Treble, meanwhile, had a light, unforced and very natural quality.

Switching on the X-Feed feature was intriguing. Adding the feature provided a fuller, more rounded, bass. Less one-dimensional and more

musically encompassing. The midrange seemed full of holes when the X-Feed was switched off. When 'on', the soundstage appeared busier, with more information on offer.

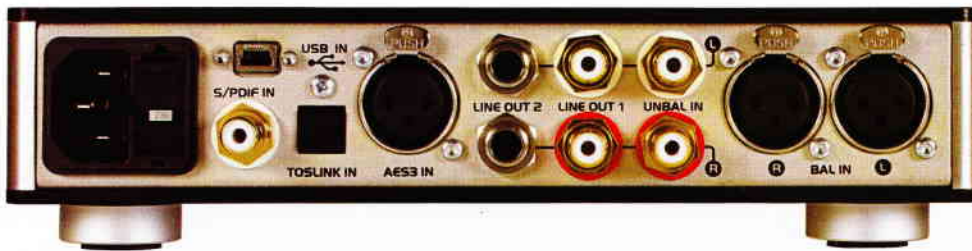
Running the same song though the balanced outputs eliminated the rising midrange problem but also brought a range of additional benefits. Initially, I thought that the unbalanced phonos supplied a more immediate, dynamic presentation until I plugged in the balanced cables which alerted me to the fact that I was merely listening to 'noise'. The balanced connection, after stripping away the distortion, provided an extra magnitude of focus. The previously diffuse and foggy tambourine was

essential husky softness that Christy was known for. Bass was less plummy in balanced mode, providing greater character and note-defined boundaries while midrange was also more finely etched which greatly aided piano. Drum brushes seemed to depict space within the brush stroke itself, as if the fibres of the brush were more distinct.

Replacing the standard power cable with the Tellurium Q Black (£798/metre), removed further distortion while improving dynamics by improving clarity. It was noticeable, for example, that a slight bloom around the vocals had been removed to enable a new focus to occur, while bass received a similar increase in

effects had real shine and gloss to their action. All in all, there was a tremendous complexity via the Grace that allowed it to perform in a very authentic manner.

On the Sugababes' 'Blue', the differences between the Arcam and the Grace were even more stark, because this track is highly compressed and inherently damaged by peak limiting. Firstly, via the Grace, the soundstage was much wider with clearer and more complex vocal harmonies while the lead singer sang in front of a clear blackness, pushing the vocal out from the mix. The bass had a physical punch while the synths, all of a sudden, were a mélange of multifaceted effects and extraneous



**The Grace has a full range of S/PDIF digital inputs, and USB, as well as balanced and unbalanced analogue inputs.**

now immediately recognisable for example, while clarity was much improved, enhancing the entire aural spectrum.

Returning to the phono outputs, replacing the mid-range Sennheiser HD650s with the top-of-the-range HD800s and bringing in my Avid Acutus turntable to spin the June Christy album, 'The Cool School' (Pure Pleasure), as with the CD transcription, vinyl playback appeared more real than from the Musical Fidelity. The M903 provided an informative playback with a more expressive vocal that was both rounded and mature, a voice that hinted at experience and a considered style along with a texture that, while present on the Musical Fidelity, was infused with greater nuance and subtlety on the Grace. Backing instruments now played a greater part in the performance with piano being almost playful but also affecting a greater presence, as did both bass and drums. The feathered percussive brushstrokes had less swish and more personality, while the upper-mid lift problem was curtailed.

Switching to balanced outputs and, again, the connection drew in all of the relatively diffuse, foggy, confused frequencies and corralled them into a far more focused presentation, giving the vocal more power and drive along with that

intensity, double bass relaxing into a rhythmic pace.

Testing the M903 as a DAC, attached to my quad-core PC plus Rega Mira amp and a pair of Mission 70 speakers and comparing it to a my reference, Arcam rDAC, the Grace, via Carol Kidd's 'It Never Entered My

elements that surprised and delighted with each musical bar.

**CONCLUSION**

It might not woo you with a sculptured chassis or fine, cultured lines but the M903 isn't about superficial aesthetics, it's about sound,

"The vocal was now not only clearer but also revealed a series of layers and modulations"

Mind' firstly removed the excessive bloom that surrounded the lower cost unit, providing again more focus to the vocals and the instrumental backing over all frequencies. The vocal was now not only clearer but also revealed a series of layers and modulations that previously only appeared as a solid blob of sound.

Bass had a more complex life too, solidifying into a range of more gradated tones that were expressed by degrees rather than by a single thump. Similarly, the piano and cymbal

that's its priority. As such, this dinky box does a fine job, offering a class-leading headphone amplifier that shines a light on even the finest detail. The DAC will turn your computer into a source that you can use with satisfaction.

**REFERENCE SYSTEM**  
 Icon Audio CD-X1 CD Player  
 Avid Acutus/SME IV/Benz Glider turntable  
 Icon PS3 phono amp  
 Aesthetix Calypso Preamp  
 Icon MB845 Monoblocks  
 Quad ESL-57 Speakers (One Thing Modified)  
 Tellurium Q Graphite speaker cables

**VERDICT** ●●●●●  
 Compact and offering great value, this two-in-one wonder puts sound quality first, providing a top quality DAC and a headphone amp that will please any audiophile.

**GRACE M903 £1,980.80**  
 (optional remote control: £130.80)  
 ☎ +44 (0)1869 600 817  
 www.sound-link.co.uk

- FOR**
- driving bass
  - focus
  - balanced output
  - solid design
- AGAINST**
- runs hot
  - unbalanced rising mids
  - industrial aesthetics