



# Marantz SA-10

MARANTZ TAKES UPSAMPLING TO A NEW LEVEL WITH A REFERENCE SERIES SOURCE, THAT'S MUCH MORE THAN JUST A CD PLAYER

The Marantz *SA-10* isn't a CD player – well, at least it's not just a CD player, and neither is it a DAC, at least not in the literal sense of the word, in that the design team behind this new machine has built it without using a conventional digital-to-analogue converter. Some will argue that this 'DACless' DAC is indeed a DAC, in that it takes in digital inputs – either from its own disc drive or *via* a number of recognisable connectors – and outputs analogue audio to an amplifier. Digital in, analogue out is surely a DAC, isn't it?

We-e-e-ell yes, but what's going on here is rather different, and built that way to overcome what the Marantz team sees as some of the drawbacks of normal conversion technologies. To that end it draws on an accumulated experience of bitstream conversion, originally developed when Marantz was part of Philips (originators of that technology), and DSD, the enabling technology behind Super Audio CD, which of course was a joint Philips/Sony project, as had been the Compact Disc before it.

Before we get into the details of that – and there is quite a bit of detail – it's worth looking at the main task the development team set itself. Under the guidance of the estimable Ken Ishiwata and his colleague Rainer Finck (a 30+-year Philips/Marantz

veteran), the ambition was to replace the celebrated *SA-7* SACD/CD player and the *SC-7* pre-amp and *MA-9* power amps with 'new *Reference*' models.

As both will admit, that was something of a daunting task, and one which the company says involved 'an extensive research, development and – of course – listening, leading to the incorporation of new thinking and new architectures alongside Marantz' established technologies and strengths.'

Some idea of the amount of work involved was seen when the new system first 'broke cover' at the 2016 High End show in Munich, driving a massive pair of concept speakers from long-term collaborator Karl-Heinz Fink. The system sounded good enough for the speakers to become a product now about to be sold, but Ishiwata was sanguine at the time, saying both the player and the amplifier were 'almost' there, but needed quite a lot of work before they were finished.

So another six months elapsed before the pair was officially launched to the press, at the beginning of December last year, this time in Ishiwata's own listening facility in Eindhoven, driving a pair of Q Acoustics *Concept 500* speakers – another design in which the Essen-based 'Fink Team' had a significant involvement.

ANDREW EVERARD

After inevitable delays, as every last foible of increasingly complex products is ironed out, the player is available for £5,999, and the *PM-10* integrated amplifier for £6499. Marantz has kept the amplifier resolutely analogue, eschewing the modern trend for a built-in DAC stage. All the digital ‘heavy lifting’ in this new *Reference* pair is handled by the *SA-10*, which is rather more than simply a conventional disc-player with a couple of digital inputs thrown in (as you might appreciate when heaving its 18.4kg from the box). (By the way, the amp is an even heavier 21.5kg.)

Little apart from Marantz’ Hyper-Dynamic Amplifier Modules (HDAMs) has been carried over from past designs. From the disc drive to the digital signal path, just about everything else is new here. Indeed, the disc-playing mechanism is particularly interesting: rather than opting for an off-the-shelf drive mechanism, the *SA-10* uses a new and very substantial SACD-M3 transport built specifically for this machine. Ishiwata comments: “From the time of CD players the transport was one of our strengths, and with SACD it’s the same. Of course it’s expensive, but if we want something special we have to do it – and besides, there aren’t many SACD mechanisms available today.” Will this mechanism find its way into other Marantz products, through the usual ‘trickle-down’ process? Perhaps not: Ishiwata says “there really is no way of making this kind of mechanism cheaply, so it’s limited to our top-of-the-range.”

That said, it does give the *SA-10* some remarkable abilities beyond the playback of SACD discs and of course CDs: it’s also compatible with data discs, both CD-ROM and DVD-ROM, and can play FLAC files from 32kHz to 192kHz, at up to 24-bit resolution, and DSD64 and DSD128, well as ALAC (Apple Lossless), AIFF and MP3 files. All of which opens up some intriguing possibilities, in that hi-res compilations can now be made using a computer DVD burner just as easily as we used to make compilation CDs on CD-R/RW discs. And the *SA-10* can also play hi-res up to 192kHz/bit, and DSD128/5.6MHz, from USB storage media plugged into its Type A port.

Still not enough flexibility? Hook up your computer to the asynchronous USB Type B input, run a suitable software player such as Audirvana, and the Marantz will handle DSD up to 256/11.2MHz and PCM up to 352.8/384kHz and 32-bit – in other words, DXD quality. There are also conventional S/PDIF optical and co-axial inputs good for 24-bit/192kHz. (And if you really must you can even connect your iThingy to the USB-A and use it as a playback device.)

### DAC-less D-to-A

Beyond the disc drive and the digital input block, the Marantz becomes genuinely unique. Marantz Musical Mastering up-converts all digital signals to 11.2MHz, single-bit DSD. Then, taking advantage of the fact that a DSD bitstream is analogous to the audio waveform it carries (as Ishiwata puts it: “DSD is analogue”), the player then passes it through a low-pass filter to remove extraneous noise, before sending it to the audio outputs.

That’s the ‘DACless DAC’ concept, but implementing it has involved not just the Marantz Musical Mastering system, but also design of the filter output stage. In fact the latter drew on the work that Reiner Finck had carried out when he was with Philips Semiconductors, and part of the team behind the development of bitstream conversion.

The Marantz Musical Mastering system has been used in past products, but this is the first time it has been based around the 11.2MHz DSD256 standard, thus pushing any noise even further out of the audible band. It’s a two-part process: MMM-Stream does the upsampling, while MMM-Conversion replaces conventional DAC technology to produce the analogue output, which is available *via* single-ended RCA and balanced XLR outputs, and a dedicated headphone amplifier.

The up-sampling is done in DSP (Digital Signal Processing) with 32-bit floating-point precision (rather than the 24-bit integer system used previously), and while the up-conversion is nominally to 11.2MHz 1-bit, it’s not quite that simple. In fact, two system clocks are used, to ensure the most accurate up-conversion of the incoming signal: the 44.1kHz of CD, and its multiples – 88.2kHz, 176.4kHz and so on – are up-sampled to 11.2896MHz, while 48kHz and its multiples are taken up to 12.288MHz. This avoids any need for sample rate conversion between the two.

User-selectable filtering is also provided at this stage: the filters – one with a slow roll-off and very short impulse response, the other having a medium roll-off with short pre-ringing and longer post-ringing – are essentially the same as those found in Marantz’ *SA-11* disc player and *NA-11* network music player, but implemented at a much higher oversampling rate here. Straight after this the signal is reduced to 1-bit and passes through Sigma Delta Modulation, thus creating the DSD signal.

And the reason for all this is, according to the Marantz team, all down to sound quality: it had already tried up-conversion and conventional DACs, but: “we found big sound quality differences when PCM signals got converted to DSD outside of a



*“From the disc drive to the digital signal path, just about everything else is new here”*



**Manufacturer's Specifications**

|                    |   |
|--------------------|---|
| Make               | Marantz   |
| Model              | SA-10   |
| Type               | CD/SACD player/<br>digital converter              |
| Discs supported    | SACD, CD,<br>CD-R/RW, DVD-R/RW<br>and DVD+R/RW    |
| Digital inputs     | Optical,<br>Coaxial S/PDIF<br>USB Type A, Type B  |
| Outputs            | single-ended RCA phono<br>XLR balanced Headphones |
| Dimensions (WxHxD) | 44x12.7x41.9cm                                    |
| Weight             | 18.4kg  |
| Price              | £5999   |

Contact:  
www.marantz.co.uk

conventional DAC and then fed to the DSD input of a conventional DAC. The conclusion of our finding was that for the best sound quality we would have to do the conversion ourselves.”

The result of all this is an unusually elegant conversion system, and clearly a very effective one, as is obvious whether the SA-10 is used with the partnering PM-10 integrated amplifier, or fed into an existing system.

**Sound Quality**

Quite simply, this is not just the cleanest-sounding digital player I have encountered but also, alongside my reference Naim NDS (which uses rather more conventional technology), the most fluid and organic source of music from all kinds of files. Fed directly via USB from a Melco N1ZS20/2 (which just happened to be ‘passing through’ at the time), the Marantz was able to deliver everything from large-scale orchestral works to live acoustic Nils Lofgren with free-breathing power and poise.

It did just the same when using my usual computer audio USB source: a cheap secondhand MacMini, shorn of anything superfluous to the business of making music, and running Audirvana Plus 2.6.8. What’s more, comparing DSD rips played on this set-up to SACDs played on the SA-10’s internal drive (or indeed the same rips burnt to DVD-R), showed that the different ‘versions’ were indistinguishable, which is certainly a testament to what the Marantz Musical Mastering system can do.

That the player can also pull off this trick with 24-bit/192kHz content, or indeed Red Book 16-bit/44.1kHz tracks, means that admiration for this player keeps on growing the more one listens. The sound is ‘very Marantz’, a description which will strike a chord with anyone who’s experienced one of Ishiwata’s demonstrations, but which is perhaps best qualified by saying that the presentation is all about effortlessness, whether in the weight and precision of the bass, the way vocal and instrumental timbres are conjured up, or the solidity, focus and three-dimensionality of the soundstage images created. In other words, ‘very Marantz’ is definitely a good thing.

So often with products of this kind – meaning

disc players with extra digital capability – some part of the functionality shines while another suffers; not so here. The SA-10 sounds as convincing on the end of a computer as it does when spinning SACDs or even standard CDs. That ability to burn a compilation to a DVD-R disc might be a quirky throwback, as I’d usually play content of this kind from USB drives or my computer, but the flexibility is good.

Beyond doubt the Marantz SA-10 can sound magnificent when playing DXD files or DSD256, even though there’s little such content out there. Most listening at these limits of current audio resolution was sourced from 2L and specialist download site Native DSD. While content being played at top-resolution clearly has a more direct signal path, simply because it doesn’t require the up-conversion, even music at lower DSD resolutions still sounds wonderfully direct and ‘undigital’, with an impressive combination of warmth and generosity, detail and focus. The poise with which music is played, be it delicate trio jazz, close-miked vocals, thundering rock or ‘big band’ classical works, is particularly striking about the SA-10.

**Conclusions**

Ishiwata has long advocated the benefits of DSD, way beyond the short-lived peak of SACD interest. Four years ago he marked the company’s 60<sup>th</sup> anniversary with a demonstration program of music he’d ripped from analogue or up-sampled to that single-bit ultra-high sampling rate format. The process then was slightly cumbersome, involving pre-processing using a computer before the music could be presented to the input of a DSD-capable DAC, and the DACs used then were also employing conventional architecture.

Now, in the SA-10, the whole up-sampling/up-conversion process has been automated, using hefty digital signal processing within the player and becoming entirely transparent to the user. Feed in any digital signal and the Marantz Musical Mastering process just happens. It can’t be bypassed: that’s the way the SA-10 does things, and in doing so presents a vindication of the company’s faith in this application of DSD technology beyond simple SACD playback.

By any standards this is a remarkable player/source, and a major achievement that fully justifies its Audio Excellence label, joining the top flight of digital hardware with much the same consummate ease it displays when playing music. Dramatic, totally involving and more than a little addictive, the SA-10 looks destined to achieve the same classic status as that enjoyed by its SA-7 predecessor.