

Parasound CD 1

Bucking the trend towards DAC/CD drives, US company Parasound has worked with Holm Acoustics of Denmark to produce an innovative player that's purely for CD
Review: **Steve Harris** Lab: **Paul Miller**

These days we expect an expensive CD player to double as a high-resolution DAC, and in fact the ability to play those old-fashioned silver discs may be a secondary consideration. So you might wonder why a feet-on-the-ground American company like Parasound should launch a new high-end player that does nothing but play CDs.

The answer, in a word, is that this is no *ordinary* CD player. Says Parasound's founder and owner Richard Schram: 'Billions of CDs are in circulation. It stands to reason that there are some people who don't have any interest in computer audio and simply want to play their CDs on a fabulous-sounding player.'

RED BOOK ONLY

Anyone who doubts that Parasound has its finger on the pulse need only take a look at the company's other recently-launched CD player, the Zcd. Priced at £399, this doesn't pretend to act as a DAC, but it plays MP3 files from CD-R or USB flash drive, and accepts analogue input from a smartphone. The CD 1 has no truck with any of that stuff. As the manual warns, 'The CD 1 plays only Red Book CDs (and CD-Rs)' – which means audio CDs, the CD layer of SACD discs, and CD-Rs that are burned as audio CDs.

And the CD 1 is a complete contrast to the last disc player in Parasound's upmarket Halo range. Discontinued in 2008, this was the Halo D 3, a high-end universal AV/hi-fi player that would handle almost any kind of disc you threw at it including DVD-A and SACD. 'We had no reason to build another universal player,' says Schram, 'Because a small company simply cannot build a superior product at a competitive price, nor can it redesign and retool new models frequently, to keep up with rapidly changing technology. The CD 1 wasn't intended to be a successor to the D 3.'

RIGHT: The fanless (green) ITX PC motherboard has its own switchmode PSU as does the (dark brown) audio board and CD-ROM drive. The PC and DAC boards are connected via a USB link

Before I met Holm Acoustics we had no plan for a new source component, other than our Zcd.'

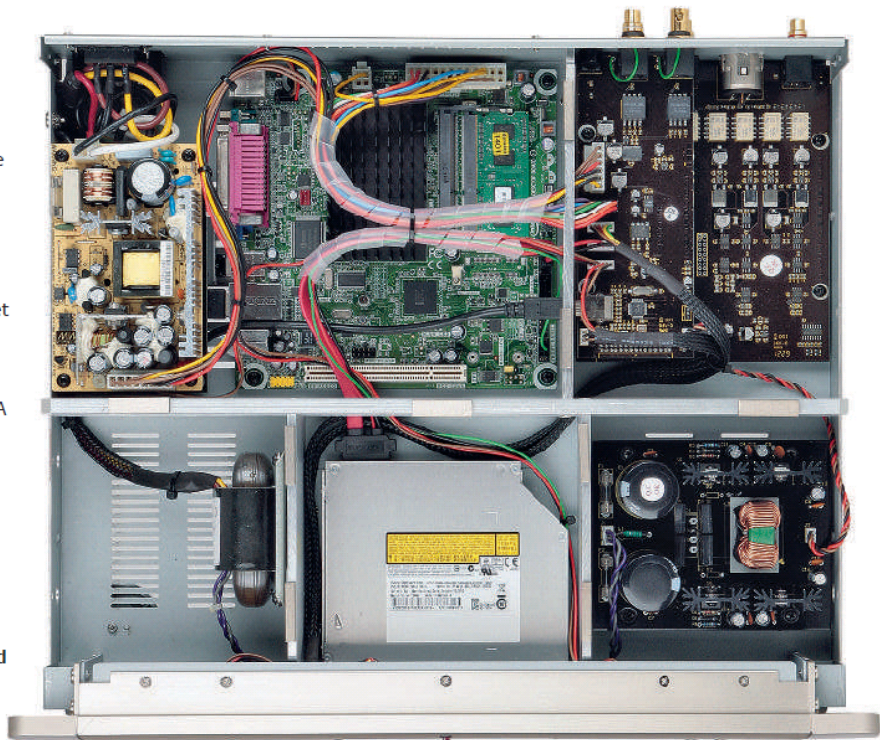
Schram encountered Thomas Holm and one of his software engineers at CES three years ago. 'One only needs to spend a few minutes with these guys to realise that they have prodigious insight and talent,' he says. 'They had developed and built a small number of the Holm Acoustics two-chassis CD 1. We borrowed one and were utterly amazed by it – at this stage in my career an audio product has to be very special to amaze me!'

'I thought it would be relatively easy to modify it to become a Parasound product. This was one of my biggest miscalculations in my career, because the CD 1 design and user interface was more ambitious, and the hardware and software needed to be revised countless times.'

What Holm Acoustics had devised, and what Parasound has embodied in its own product, is claimed as 'a new method of playing compact discs'. It's effectively a computer which is used to improve disc-reading accuracy beyond what can be achieved by a conventional CD drive. Instead, it uses a CD-ROM drive, set to run at four times CD speed, which is connected to an Intel ITX computer that uses Holm's proprietary software.

ELIMINATING ERRORS

The high speed means that there is time for the drive to read each section of the disc more than once to eliminate errors, passing the data into a very large buffer memory that equates to 30 seconds of play. Each data sector is initially read twice, and if the two reads match, this indicates no errors and the data is passed into the buffer.





If the two reads do not correspond, the sector is read repeatedly until good data is obtained. Only if a maximum-repeat-read threshold is reached and space in the buffer is about to run out will the system resort to interpolation.

For the DAC stage, Holm chose the Analog Devices AD1853 converter 'for its neutral, highly resolving, but still warm sound'. The Halo CD 1 uses a single AD1853 in stereo mode, upsampling to 352.8kHz. The analogue output stage is derived from the design used in Parasound's DAC-2000 back in the 1990s, with LME49990 op-amps.

On the outside, the CD 1 follows the long-established Halo fascia styling. All the control buttons are lit by little 'halos' of blue light as soon as you power-up, by touching the oval-shaped on/standby key to the left. The other two oval buttons are for Stop/Eject and Play/Pause, while two small buttons above give search and skip, pressed briefly to skip tracks, or held down for fast-forward or reverse.

Fast search is normally silent, but one arrow key can also access a menu option to give two seconds of sound every 20 seconds in fast mode. From first switch-on, you need to wait around 20 seconds while the CD 1's internal computer boots up before a disc can be read and played.

After this, a disc will start to play within ten seconds after pushing it into the slot.

Parasound warns that the CD 1 isn't designed to play 'CDs that have had anything applied to them, including so-called damping mats or dots, fluids or treatments that are purported to improve CD reproduction', but the player throws a crumb to tweekers with its choice of 'Discrete' or 'Op-amp' analogue output stage, selected by the lone small button to the left of the transport. The manual explains that 'the discrete output stage uses discrete transistors that operate in the feedback loops of the op-amps so that the specifications for distortion and noise are the same for both settings. The Discrete output setting subtly changes the sonic character of the CD 1 and there is no "wrong" choice.'

Back-panel connections include XLR balanced outputs as well as the usual unbalanced RCA phonos. Three digital outputs include a 75ohm BNC connector as well coaxial phono and Toslink optical.

Functional, rather than arty or elegant, but easy and pleasant to use, the plastic remote [see p57] duplicates all the front-

ABOVE: Available in silver or black, the CD 1 has a slot-loading ROM drive, running at 4x CD speeds. It also offers optional 'Discrete' and 'Op-amp' analogue output modes

panel functions except the Discrete and Op-amp switching feature. It also provides numeric keys for direct track selection, a control for display brightness (three levels or off) and phase-invert.

ALERTED TO SUBTLETIES

To start with, I had to try the Discrete and Op-amp output stage options. Making the comparison on vocal recordings ranging from Jennifer Warnes to Rosa Passos, the differences were indeed subtle but they were discernible. On the Discrete setting, with Jennifer Warnes and *Famous Blue*

"Op-amp" mode highlighted the subtle vibrato of Pepper's sax'

Raincoat [Classic Records RTHCD 5052], there seemed to be a slight extra warmth on the voice, as if it had a bit more body, more of a 'purring' quality, while distant backing instruments seemed less sharply-etched. Conversely, with the Op-amp setting, the voice was just a little less smooth at the top end and yet it seemed easier to hear into the detail of the various backing instruments.

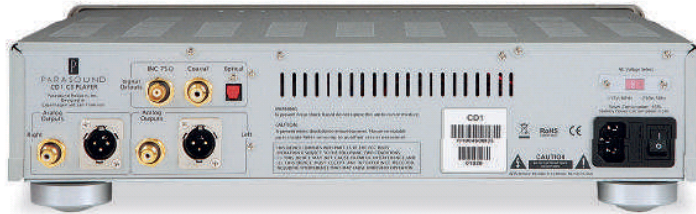
Making the same comparison on *Art Pepper Meets The Rhythm Section* [Contemporary 0025218633826], I found that switching initially from Op-amp to Discrete gave a sound that seemed subjectively a bit quieter, almost recessed. Yet the sound of Philly Joe's brushes was somehow actually more realistic, while I felt that the double-bass sound could be heard more completely as a line, rather than just a series of notes.

On the other hand, the Op-amp setting seemed to highlight the very subtle vibrato audible on Pepper's saxophone notes, perhaps giving a slightly different insight into his playing style. But in the end, ☺

THE PC CD

While Parasound's CD 1 looks just like a conventional player it is, in effect, a PC with CD-ROM drive and external USB soundcard combined into a less 'audiophile-threatening' chassis. Switch on the CD 1 and the Linux OS, running on a passively-cooled Intel D425KT Mini-ITX desktop PC board, boots to engage its proprietary disc management software. The motherboard still has its PS2 mouse/keyboard, serial/parallel ports and SATA connections in place, one of the latter hooked up to a Sony AD7800 (rewritable) CD/DVD drive. There's also more than sufficient RAM on the board to accommodate 30 seconds of buffered 16-bit/44.1kHz audio which is finally clocked out via one of its USB sockets. There's even a short USB cable running between this USB port on the PC board across to the (USB) DAC PCB sitting in the adjacent cubby hole. This internal USB DAC utilises an Analog Devices AD1853 converter, a very early-generation 24-bit/192kHz compatible part first launched in the late 1990s. PM

CD PLAYER



ABOVE: Outputs are via balanced XLRs or unbalanced (RCA) phonos, plus BNC, coaxial or Toslink optical digital outs. Remote [below] allows polarity selection

almost out of sentiment, I stayed with the Discrete mode.

Listening further, I found that I was able to relax into an enjoyable sound, while at the same time being pleasingly alerted to previously unnoticed subtleties in the music. The sound was relaxing because it just seemed to do things right without effort, and yet at the same time it piqued your interest with new nuances and discoveries in the presentation of familiar favourites.

On one of the most familiar of all, Rebecca Pidgeon's *The Raven* [Chesky SACD 329], right from the opening notes of 'Kalerka', the CD 1 showed that there was still more to catch the ear than I'd thought. It gave a fabulous treatment of the voice, which seemed fresher and more alive than ever, focusing attention on the words and phrasing. At the same time there was great realism in the detail around it – for example in the way you'd hear the sweep of the studio echo as it followed the singer on a sliding upward note.

CLUES UNCOVERED

With well-tried instrumental recordings on the Halo player, I quite often felt that it was helping to uncover subtle acoustic clues, which other players had not revealed so clearly. Sometimes it could bring a little more life and resonance to what I'd previously thought of as a dry recording. This was so with Myriam Alter and *Where Is There* [Enja 9312], when the whole recording sounded less damped or over-controlled than it often does, with a feeling of a natural acoustic.



The CD 1 seemingly brought out good dynamics in the piano sound, a great singing quality to the cello and a nice woody feeling to the clarinet. On this recording there is some rather strange brushwork on the drums that can sometimes just sound amorphous and odd, like Hoffnung's famous vacuum cleaner. But here those sounds were well-defined and self-explanatory, making sense as part of the arrangement.

Live recordings seemed to benefit from the CD 1's ability to place low level details within a large and unstressed stereo space. Stacey Kent's *Dreamer In Concert* [EMI 5099968093228] is a really well-balanced and natural live recording that conveys the sound of the singer and her group as she delights her French fans on a big, wide stage in the broad but well-padded space of La Cigale theatre in Paris.

Here you could get absorbed in the occasion, as the player was able to present a sound picture that had audience sounds in a convincingly scaled venue while Kent's musicians inhabited their own more intimate space on the stage, working together with tangible rapport. ⤵

HI-FI NEWS VERDICT

Unlike so many of its competitors, this player can't be used as a DAC for hi-res downloads, and indeed Parasound says that including a DAC of appropriate quality to do this would have made it much more expensive. But thanks to the innovative technology from Holm Acoustics, it does play CDs exceptionally well, and its pure, engaging sound on disc is easily enough to justify the price. Warmly recommended.

Sound Quality: 83%

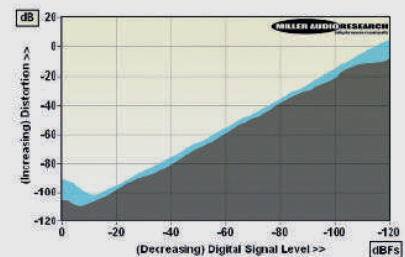


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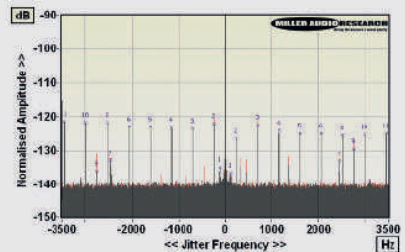
PARASOUND CD 1

According to Parasound's literature, the CD 1's 'discrete output stage uses transistors that operate within the feedback loop of the op-amps, so that the specs for THD and noise are the same.' Parasound isn't kidding for while its numbers are basic in the extreme (THD <0.06% at 1kHz and A-wtd S/N ratio >108dB) even our state-of-the-art measurements revealed little significant difference in output level, distortion or noise (or, indeed, the 50ohm balanced output impedance). Nevertheless, simply flicking the switch between 'Discrete' and 'Op-amp' may be enough to 'suggest' a difference! Maximum output is 3.9V via the balanced XLRs, yielding a 107.4dB A-wtd S/N ratio and distortion as low as 0.0004% at 1kHz/-10dBfs, rising to 0.0006% and 0.0027% from 1kHz to 20kHz at 0dBfs [see Graph 1, below]. Unusually, distortion is highest at lowest frequencies (0.035% at 20Hz/0dBfs) just as the noise floor is not completely 'white', spectral analysis revealing some granular components whose regularity looks to be associated with one or more of the (switchmode?) power supplies.

While Parasound states that the default output mode is phase positive, like so many of today's players it's not, so the output phase is the opposite of what's indicated. There are no fancy DSP filters at work – the standard FIR oversampling filter defined by the legacy AD1853 DAC – but the frequency response is astonishingly flat from -0.05dB at 20kHz to within ±0.01dB thereafter up to 20kHz. Clock accuracy is superb at 3ppm and jitter at the limit of the 16-bit CD test at 120psec [see Graph 2]. Readers may download a full QC Suite test report for the Parasound CD 1 by navigating to www.hifinews.co.uk and clicking on the red 'download' button. PM



ABOVE: Distortion versus digital signal level over a 120dB dynamic range (black = 1kHz, blue = 20kHz)



ABOVE: High resolution jitter plot. Jitter is at the measurable limit for 16-bit data at 120psec

HI-FI NEWS SPECIFICATIONS

Maximum output level/impedance	3.90Vrms/50ohm (Bal.)
A-wtd S/N Ratio	107.4dB
Distortion (1kHz, 0dBfs/-30dBfs)	0.0006% / 0.0032%
Distortion & Noise (20kHz, 0dBfs/-30dBfs)	0.0026% / 0.0013%
Frequency response (20Hz-20kHz)	-0.05dB to +0.00dB
Digital Jitter	120psec
Resolution @ -100dB	±1.0dB
Power consumption	32W (1W standby)
Dimensions (WHD)	437x105x350mm