Audiolab

8000CD CD Player

Audiolab's new 8000CD player is radically different from any CD player in Audiolab's long and glorious history, including the previous one that shared the same model number. It's because the International Audio Group, which now owns Audiolab, gave long-time Audiolab designer, Nick Clarke, a free hand to re-design the 8000CD player, so he took the opportunity to completely redesign the circuitry, taking advantage of Crystal Semiconductors' latest generation of 24-bit, 192kHz sigma-delta digital-to-analogue converters (DACs) that lift CD sound to a level that rivals—some say betters—that of the DVD-A and SACD super-fidelity formats.

Even better, Clarke has built in added flexibility by allowing owners control over the way these new DACs convert the digital signals into music, permitting a choice of a standard 'brick-wall' filter—preferred by those who like a more clinical sound—or a less aggressive filter, for those who like their music to sound sweeter and more musical. He's even built in a circuit that allows you to 'de-activate' the SPDIF digital output so that if, like many people, you don't use this output, you can benefit from a reduced r.f. field and an increase in power supply capacity.

The Equipment

The very first thing you'll notice about the 8000CD is that it's solid! The reason is that its solid steel chassis is not only double-skinned, but also fully galvanised. The reason it has to be solid is that it has one of the largest power supplies I've ever seen in a CD player. Indeed the left and right channels are each powered by their own independent power supplies, each of which has its own toroidal transformer.

The second thing you'll notice is the superb front-panel display. Instead of those arcane little symbols to tell you what's going on inside the player, Audiolab's display uses plain English. What a great idea! Rather than displaying two vertical bars when you're in the paused mode, for example, the Audiolab instead just shows the word 'Pause.' This may seem like a small thing, but when you actually use the player, it makes operation more comfortable and 'friendly.'

Many manufacturers cut costs by stripping functions from their players that they think you might not use—which is very annoying if you're one of those who use them. The only feature I could find missing from the 8000CD is an A–B repeat function, otherwise the Audiolab has everything you could need, including the other repeat modes (Repeat Track, Repeat Disc and Repeat Program). The track programming mode is far more extensive than usual, allowing you to program up to 60 tracks to play back in any order and allows multiple use of the same track number.

Not only are there the standard track search functions; there's also a search function that allows you to locate index points within a track, which will make

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Brand: Audiolab
Model: 8000CD
Category: CD Player
RRP: $1699
Warranty: Three Years
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the 8000CD a favourite with classical music buffs, since a great many classical CDs contain index marks so you can easily locate individual movements within a work, or the start of particular variations, such as the 33 in Beethoven's Variations on a theme by Diabelli, or the 32 in Bach's Goldberg Suite.

Display brightness is adjustable through four different levels and can be switched off entirely. Audiolab notes in its manual that '*Some listeners prefer to listen with the display switched off. Others feel that sound quality improves when the digital traffic involved in the display is disconnected*.' Presumably it's those who are concerned with unnecessary 'digital traffic' that will be pleased by Audiolab's inclusion of an 'SPDIF Off' facility, which turns off the digital output on the rear panel. Turning the SPDIF output on and off is a simple front-panel procedure that can be altered very quickly any time you like—though it does involve having to turn the player on and off, so unfortunately, you can't make a quick A–B comparison to see which mode you prefer.

The same is true of the process for selecting your preferred output filter. Rather than use arcane technical terminology Audiolab refers to these two filters as 'Fast' and 'Slow'—the 'Fast' setting being the 'Brick Wall' filter. Although I said in the introduction that the Fast filter would be preferred by those who like a more clinical sound, and the Slow filter by those who like their music to sound sweeter and more musical, this is not strictly true because it is complicated by the fact that your preference for one or the other will be enormously affected by the design of your amplifier and your speakers. To use the most extreme example, you'll find that if you use an amplifier with a Class-D (digital switching) output stage, you'll find the 'Fast' setting will give far better performance than the 'Slow' setting. This will also be true—but to a lesser extent—if your amplifier has a conventional linear output stage, but a switch-mode power supply. Once it's set to your preference, the player stores the filter type in memory until you change it, even if you switch the player on and off.

For those who need a refresher course on filtering, all CD players contain filters to remove frequencies above 20kHz so they can't interfere with music playback. The filters that cut in very gradually, so their action is like a gentle slope, removing higher frequencies only little by little with increasing frequency, are known as 'Slow' filters. The filters that cut in quickly and dramatically above 20kHz are the 'Fast' or 'Brick Wall' filters. The most significant effects on sound, other than those mentioned previously, are that fast filters have no effect on the level of sounds below 20kHz, but do affect their phase, whereas slow filters don't affect phase, but do have a small effect on level, tending to roll-off response slightly between 10 and 20kHz.

Listening Sessions

As usual, I checked the transport drawer logic first with an old CD, just to see if it would stop properly in the case of an accidental disc misload, or a tray blockage, (for the simple reason that I don't want to ruin any discs in my collection—as one player did once) and found the Audiolab's tray logic was impeccable, with the tray stopping almost the instant I deliberately blocked it, and the motor turning itself off automatically, to prevent a potential burn-out. Not only this, but that 'Plain English' display read-out sprang into action, showing the words 'Tray Blocked' rather than some arcane error code (or worse still, no display at all!).

Once a disc was playing, however, I did find the 8000CD's time read-out a tad confusing, because I couldn't see any indication of whether the digits that were being displayed represented the elapsed or remaining time or whether they pertained to the particular track that was playing or the entire disc. It's pretty easy to work out which is which by pressing the 'Time' display on the remote handset, which quickly cycles through the four available time modes, but a front-panel indicator would make things even easier. It's a simple-enough software update, so it could be included on future models.

Operationally, the Audiolab 8000CD is a delight to use, with a quick, rapid response to key presses, whether on the front panel or the infrared remote. It'll

play CD-R and CD-RW discs as well as ordinary CDs. The front panel switches have a longer travel than you'd expect, but they felt good to use. I loved that the remote gives direct track access to double-digit tracks just by pressing the two numbers in succession. That is, pressing '2' followed by '3' sends the player to track 23. The 'autoplay' also speeds things along.

I'd like to be able to write here that I preferred one filter over the other, but I didn't. Certainly I thought the sound was brighter and a little 'sharper' with the Fast filter, but although this worked well for many CDs I played, mostly—but not exclusively—orchestral works, I found a great many discs where I greatly preferred the 8000CD's sound using the Slow filter setting. Again, as a generalisation, I liked the Slow filter setting for listening to jazz and rock CDs. Since the differences were relatively subtle, I'd probably set the Audiolab to 'Slow' for day-to-day use (and in fact this is the default setting) and only switch to 'Fast' for a critical listening session with a CD I'd established sounded better with the 'Fast' filter.

In either mode you'll find there's a nice weight and feel to the bass, so it comes through hard when required, but doesn't sound overly heavy or ponderous, and the pitching is impeccable. The midrange performance was wonderful as well, with a clean, very detailed sound and a great delivery of presence—and ambience!—on properly-recorded discs. It's across the midrange particularly that you can hear how the total background quietness (yes, I had the SPDIF switched off) allows you to pick subtle vocal inflections and instrumental details that are glossed over by lesser CD players—and the music sounds all the better for it.

Treble performance is balanced beautifully against the midrange. Speaking only in terms of balancing volume levels—yes, the extreme highs are perhaps a touch forward in the 'Fast' mode, and perhaps a touch recessed in 'Slow'—the differences are so slight that a third setting, midway between the two, would be an exercise in futility. However there's more to the filter differences than mere level, and it's here that your CDs, amplifier and speakers that will come into play in determining which mode to choose. The biggest point to note here is the obvious: that with the 8000CD at least you're in control of the choice!

Conclusion

This is a fabulous CD player, but so unprepossessing that you really have to use one—and hear one—to fully appreciate just how great it really is!

greg borrowman

LAB REPORT

Readers interested in a full technical appraisal of the performance of the Audiolab 8000CD should continue on and read the LABORATORY REPORT published on the following pages. All readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

Test Results

Audiolab's 8000CD turned in a superb performance in every respect. Distortion was exceptionally low, with the overall THD+N figure coming in at 0.009%—though this is increasingly looking like it's actually the limit of the CD test disc, since many new high-end players are returning exactly the same result. What many can't do is deliver the clean –20dB signal shown in the accompanying graph of the Audiolab's output. This is the average level you'll typically find on CDs (allowing 20dB of headroom for peaks) and you can see that played on the Audiolab, there's absolutely no distortion visible at all. Equally important is the noise floor: you can see it's right down at –130dB. This superb result is reflected in the signal-to-noise ratio (which includes the contribution from the power supply, visible as the peak at the far left of this graph) which came in at 101dB.

Distortion at very low levels was equally good. The graph shows the output spectrum with a dithered test signal at –90.31dB. You can see that once again, no distortion is visible. The elevated level of the noise floor (to around –125dB) is an artefact of the dithering process.

Frequency response was exceptionally flat across the bass and midrange, but rolled off a little above 2kHz, to end up 0.15dB down at 20kHz. Remember to take into account the extraordinarily expanded scale on this graph (0.05dB per vertical division). Channel separation was also exceptional, averaging more than 125dB right across the audio band.

You can see the effect of the two filters in the two graphs showing distortion with a 20kHz/0dB test signal. With the slow filter, there's a 24.1kHz signal sitting at around –30dB that's caused by

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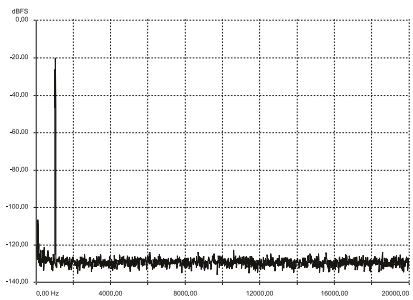
interaction between the 20kHz test signal and the 44.1kHz sampling frequency, along with a second harmonic peak at –105dB (at 48.2kHz). With the fast filter, the level of the 24.1kHz signal has been reduced to –110dB and the second harmonic completely eradicated. (The peak just to the right of the 38.4kHz line is 44.1kHz signal that, because it's introduced *after* the filter, is the same in both graphs).

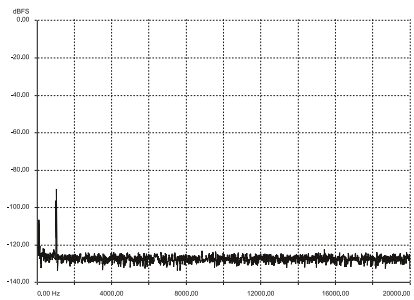
IMD (not shown) was particularly low, with regenerated 1kHz coming in lower than –90dB. However, it's the tabulated results that contain perhaps the greatest surprise, in the form of the spectacularly low jitter: a set of the best I've ever seen and particularly important in light of the fact that low jitter levels have been proved to correlate with high marks in listening sessions. Overall, the technical performance of the Audiolab 8000CD is nothing less than excellent.

Steve Holding

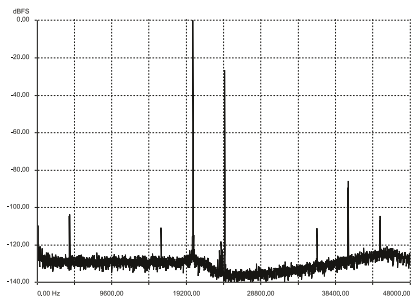
Audiolab 8000CD THD @ 1kHz @ -20dB



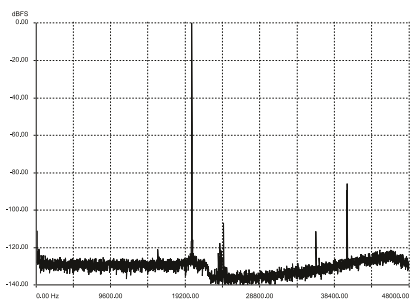
Audiolab 8000CD THD @ 1kHz @ -90.31dB



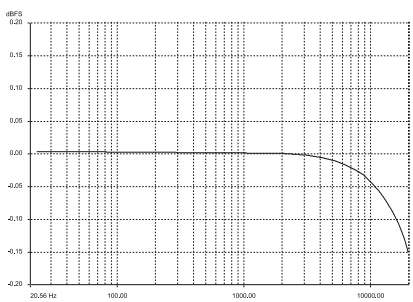
Audiolab 8000CD THD @ 20kHz @ 0dB



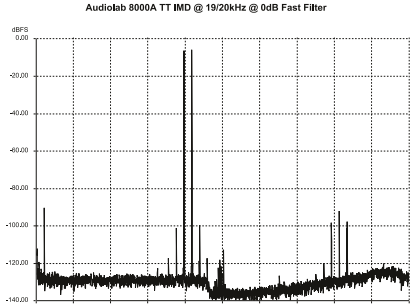
Audiolab 8000A THD @ 20kHz @ 0dB Fast Filter



Audiolab 8000CD Frequency Response at 0dB



Audiolab 8000A TT IMD @ 19/20kHz @ 0dB Fast Filter



Audiolab 8000CD Compact Disc Player Serial #: 231G001938		
Analogue Output Measurements:	**Result**	**Unit/Comment**
Output Voltage	2.3878/2.3872	volts (Left/Right)
Frequency Response:	-0.15/+0.003	dB (20Hz-20kHz) Slo Filter
Channel Separation:	125dB	1kHz
THD:	0.009%	@ 1kHz @ 0dBFS
Channel Balance:	0.0021	dB @ 1kHz
Channel Phase:	0.03/0.00/0.07	16Hz/1kHz/20kHz (degrees)
Group Delay	-5.35/+1.45	degrees (1k-20k/20k-1k)
S/N Ratio (No Pre/emp)	101	dB (weighted)
S/N Ratio (Pre-Emp)	101	dB (weighted)
De-Emphasis Error	0.15/0.84/0.35 dB	(1kHz/4kHz/16kHz)
Linearity Error @ –60.00dB/–70.00dB	0.04/0.01	dB (Not Dithered)
Linearity Error @ –80.59dB/–85.24dB	0.01/0.04	dB (Not Dithered)
Linearity Error @ –89.46dB/–91.24dB	0.09/0.18	dB (Not Dithered)
Linearity Error @ –80.70dB/–90.31dB	0.04/0.06	dB (Dithered)
Digital Output Measurements:		
Digital Carrier Amplitude	132mV	Audioband
	1.13V/1.35V	Differential/Common Mode
Audioband Jitter	3.8/0.023	nS/UI (p–p)
Data Jitter	3.5/0.019	nS/UI (p–p)
Deviation	-54.3	ppm
Frame Rate	44097.603	
Eye-Narrowing (Zero Cross)	0.6/0.002	nS/UI (p–p)
Eye-Narrowing (200mV)	3.3/0.02	nS/UI (p–p)
Absolute Phase	Normal	Normal/Inverted
Bit Activity	23	At Digital O/P
Power Consumption	8.04	watts