

Naim NA CDS CD player

By Robert Harley • Posted: Feb 8, 2010 • Published: Aug 8, 1992

"A reasonable man adapts himself to the world around him. An unreasonable man expects the world to adapt to him. All progress, therefore, is made by unreasonable men."

Although George Bernard Shaw didn't have Naim Audio's founder Julian Vereker in mind when he wrote those words, they seem tailor-made for Julian's audio design style. Rather than make products that conform to what the rest of the audio world is doing, Julian builds them the way he thinks they should be. The result is often, shall we say, idiosyncratic.



Nothing exemplifies this thinking more than the Naim CDS (for Compact Disc System) CD player. Everything about the CDS's design, from its overall configuration down to its tiny disc-clamping mechanism, flies in the face of conventional wisdom about how digital front-ends should be built. The \$7395 CDS is a study in optimizing the mechanical aspects of CD playback. Although the unit uses conventional electronics (4x-oversampling Philips chip set, op-amp-based analog output stage), the mechanical design is, to say the least, unconventional.

Like the Linn Karik/Numerik CD player that I reviewed in January, the Naim CDS is the first CD player from a UK company long known for its aversion to digital. Until recently, Naim preamplifiers had no input marked "CD," clearly a statement about how they felt about the virtues of analog. Now Naim has broken the digital barrier with their CDS.

Technical description

Although the CDS is a two-box CD player, it isn't split along the usual transport/processor lines. Instead, the bottom box is the power supply and the top box contains the transport and digital-to-analog converter—a CD player with an outboard power supply. A multi-pin cable connects the CDS power supply to the player. Both chassis are housed in Naim's standard extruded aluminum cases, and

maintain the Naim look. In fact, the CDS power supply looks identical to both the NAP 250 power amplifier and NAC 52 preamp power supply.

The player's front panel contains a large and prominent green LED display (showing either track and index number or elapsed time) and six square pushbuttons. The latter duplicate many of the remote control's functions: Play, Stop, Next, Previous, Display, and Pause. The remote also has a keypad for directly entering specific track numbers, and repeat and programming features. The front-panel buttons and display are very large, easy to use and read, and the buttons are accompanied by back-lit displays indicating their functions.

The top-loading transport is accessed by a small smoked-plexiglass hinged cover that is flush with the chassis top. Opening the cover reveals a well containing the transport mechanism. When a CD is placed on the transport, a small clamp secures the disc to the spindle. After the lid is closed, the disc spins briefly, enabling the player to read the disc's table of contents. (If the lid is closed without the clamp in place, the disc flies off the spindle.) A safety interlock prevents the laser from turning on when the lid is open.

The CDS's power supply—the most massive I've seen in a CD player or D/A converter except for the Mark Levinson No.30—is the size and weight of many power amplifiers. The analog supply starts with a 300VA toroidal transformer with two center-tapped secondary windings. The transformer secondaries are filtered by a pair of 15,000 μ F capacitors and rectified by two halves of two full-wave bridges. The analog supply output is then regulated to ± 24 V by a pair of TO-3 3-terminal regulators (footnote 1). The analog supply rails appear on the 13-pin rear-panel jack for connection to the player. Inside the player, the ± 24 V supply is re-regulated to ± 18 V.

The digital supply also uses a huge, dual-secondary toroidal transformer, with one secondary winding supplying the transport and servos and one supplying the digital electronics. The ± 24 V transport/servo supply and 13V digital supply are each filtered with a pair of 15,000 μ F caps and regulated with TO-3 regulators. In all, the power supply has six TO-3 regulators and an astonishing 90,000 μ F of filter capacitance. All this regulation is merely the first stage: these regulated supply rails are re-regulated inside the player by 19 TO-220 devices.

Footnote 1: The TO-3 is the round metal can that power transistors are often packaged in. This is a much beefier package than the more common TO-220 flat pack.

In the first release of the CDS, the digital and transport/servo supply rails were regulated only in the player itself with TO-220 regulators. The second iteration of the CDS added four TO-3 regulators inside the power-supply box (footnote 2).

Overall, the CDS's massive and elaborate power supply is impressive. Further, the execution is superb, with a high level of craftsmanship. At Naim Audio, assemblers build an entire component themselves rather than repeating the same operation on an assembly line. This is a more expensive way to build electronics, but the CDS's beautiful, meticulous build seems to exude a sense of pride.

The transport, based on a custom version of the Philips CDM-4 mechanism, is implemented in a unique way. The mechanism is mounted on an aluminum subchassis and suspended on three leaf springs.

Three small pins protrude from the subchassis bottom and fit into three tiny cups mounted at the ends of the leaf springs. The suspension's "Q" and resonant frequencies in each axis were chosen to avoid multiples of servo frequencies. This technique reportedly reduces servo current demands, transmits less vibration to the disc, and eases stress on the power supply. According to Naim, servo current draw feeds vibration to the disc and degrades the HF signal recovered from the disc. The mechanism was thus tuned for minimum servo current draw. Additionally, the subchassis is painted flat black to absorb any stray light.

Because the subchassis is not secured to the leaf springs, the player must not be transported or tilted more than 15° from horizontal without first locking the transit screws.

Conventional wisdom says that adding mass to a spinning CD is a good thing: the disc is rendered less prone to resonant vibrations, thus decreasing servo current demands. This is the rationale behind CD mats, heavy clamps, and stabilizing discs. Naim, however, has taken the opposite approach; the CDS's clamp weighs virtually nothing. Here's how it works.

After putting a CD on the spindle, the clamp, looking like a tiny top hat, secures the disc to the transport. The clamp uses magnetism rather than weight to hold the disc down. A *very* tiny rare-earth magnet inside the clamp—a magnet so powerful that it takes a firm pull to remove it from the spindle when changing discs—meets the metal spindle. The idea was to get solid clamping action without adding mass to the spinning disc. According to Naim, heavy clamps tend to couple motor vibration to the disc, degrading the sound and taxing the power supply. Additionally, a heavy clamp forces the motor to draw more current, further adding to the vibration imparted to the disc. The CDS's clamp is the smallest, lightest design possible. The clamp also has a tiny loop of rubberlike material on the bottom that makes contact with the disc at only one point. According to Naim, the size, shape, and material of this tiny loop had an extraordinarily large influence on the CDS's sound.

The single printed circuit board that contains the local power-supply regulation, decoding chips, DAC, and analog output stage is mounted on a 5mm-thick plate that floats on a suspension. This isolates the chips from mechanical vibration—primarily acoustic energy from loudspeakers—and reportedly improves the sound.

The processor section is based on Philips's SAA7220 4x-oversampling digital filter and TDA1541 S1 "Crown" 16-bit DAC—nothing esoteric here. The "Crown" version of the 1541 is the highest grade, selected for best low-level linearity. A pair of OP42 op-amps (one per channel) serve as current-to-voltage converters. The direct-coupled analog output stage is also based on the OP42, with two of these devices cascaded per channel. De-emphasis is active, formed around a 711 op-amp and switched in with relays. Another pair of relays mutes the output until the circuit has stabilized. Polycarbonate and polystyrene capacitors are used throughout, and components are matched between left and right channels. The DAC, I/V converter, and output-stage circuits are very close together for the shortest pcb traces. As previously mentioned, all power-supply rails are re-regulated on the player's pcb.

A huge benefit of this design—integrated CD player with outboard power supply—over the more conventional transport/processor configuration is the absence of the S/PDIF interface and its associated problems. Rather than trying to recover a clock in the processor (and introducing jitter in the process), the CDS's single-box approach puts the clock right there on the pcb. No muss, no fuss. Naim believes that the problems inherent in the S/PDIF interface make it impossible to design an outboard

converter to equal the sonic performance of a single-box design. In my review of the Linn Karik/Numerik, I was able to audition the unit with high or low levels of jitter in the S/PDIF interface. The sonic improvement obtained from lower jitter levels was dramatic (footnote 3).

Overall, I found the CDS attractive and very well built. I especially liked the player's ease of use: the large, back-lit transport control buttons were readily accessible and intuitive. Further, I was intrigued by the level of mechanical design that went into the CDS, especially the clamp, transport subchassis suspension, and floating pcb.

But let's find out how the Naim CDS sounds.

Music

To its credit, the CDS had no salient sonic characteristics that called attention to the player. Many digital products have a certain interpretation of the music that makes them immediately identifiable—a lightweight bass, overly bright treble, or forward midrange, for example. The CDS was remarkably free of such departures from neutrality.

Footnote 2: Adding these regulators reduced noise on the digital supply rails from -110dB to -130dB . This may seem academic, but the effects were certainly audible. Naim will announce an upgrade program for owners who bought the original CDS without this additional regulation.

Footnote 3: See the sidebar on pp.166–167 of Vol.15 No.1 for a more complete description of problems inherent in the S/PDIF interface.

More specifically, the CDS had a natural smoothness and sense of ease, particularly in the treble. This is one player I could listen to for hours without fatigue. The upper treble had a nice sense of air, with cymbals sounding delicate yet not rolled-off. In the lower treble and upper midrange, the CDS was extremely smooth, lacking the glare and grain often heard from digital. Consequently, instrumental textures were well portrayed, with a sense of natural timbres. There was, however, a slight "darkness" in the upper mids and lower treble rather than a crystalline clarity, a characteristic that contributed to the CDS's unoffensive presentation. Although less aggressive than most digital processors and CD players, the CDS was more incisive and up-front than the Linn.

Where the CDS clearly excelled in relation to the Linn, however, was in its ability to better involve the listener rhythmically in the music. The CDS was more exciting and upbeat, better conveying the music's energy. Music was more rhythmically involving through the CDS, particularly with some jazz, rock, blues, and fusion. However, I felt that the CDS was ultimately bettered in this regard by the Kinergetics KCD-55p, the Musik System Zero, and especially the latest Theta Generation III processor.

The CDS had a weightier presentation than I remembered the Linn having, but the CDS's bass tended to lack focus, snap, and speed. The mid- and upper bass, though a little lean, didn't cause the presentation to sound thin—perhaps because of the CDS's exceptionally smooth treble. Similarly, bass extension was good, but lacked the "center-of-the-earth" solidity exemplified by the sound of the Theta.

Despite the CDS's smoothness and listenability, I felt there was something missing. Extended auditioning—on its own and in comparisons with other processors—suggested that the CDS lacked the last measure of low-level detail. It was as though there was a threshold below which the CDS didn't resolve musical information. This no doubt contributed to the CDS's smoothness, but I found music overall less *interesting* and compelling despite the player's excellent sense of pace. Compared to the Bitwise Musik System Zero, PS Audio UltraLink, and particularly the Theta DS Pro Gen.III, the CDS's presentation of detail was much more subdued. On the *Mokave* CD (AudioQuest AQ-CD1006), the intricate percussion work (frame drums) that makes this music so interesting rhythmically was less immediate, detracting from the music's intensity. The fine inner detail that gives the listener a greater sense of instruments existing in the listening room tended to get lost through the CDS. There was just less information presented to the listener.

I should make clear that I'm not a detail freak. Many processors are etched, bleached, and hyped to sound more "exciting." Such products wear thin very quickly. I much prefer a slight loss of detail to an artificially analytical presentation. Nevertheless, I continually felt the CDS was missing part of the music (footnote 4).

Similarly, dynamics were less than impressive. Drums lacked the leading-edge sharpness and impact that contribute to some music's life and rhythmic drive. Transients sounded a little slow and subdued, rather than quick and tight. This was true of both fine dynamic structure and overall slam. This impression was confirmed by playing my drum recording on the second *Stereophile Test CD*. Through the CDS, it lacked the impact, immediacy, and quickness I remember from the recording session—and have heard from other digital front ends.

Soundstaging was good, but not superlative. The CDS didn't throw as great a sense of space and air as the Musik System Zero or Theta Gen.III. Listen to "Spontaneity," from Mike Garson's musically *and* sonically superb *The Oxnard Sessions, Vol. One* (CD, Reference Recordings RR-37CD). This recording's stunning spaciousness has the potential of turning the front half of a listening room into the Oxnard Civic Auditorium. With the CDS, I never got the same sense of depth or three-dimensional layering heard with the Gen.III or even the modestly priced Musik System Zero. The hall seemed smaller, there was less bloom and air around the instruments, and the CDS lacked the same degree of see-through transparency.

I attribute these characteristics to the CDS's apparent loss of low-level detail; low-level information provides the subtle spatial cues necessary for throwing a fully developed soundstage.

The presentation thrown by the CDS didn't differentiate individual instrumental outlines as well as many other processors. There wasn't the same sense of individual instruments hanging in three-dimensional space. This tendency to fuse image outlines had musical consequences. On the Bach Sonata in e, BWV 1034, from Gary Shocker's excellent *Gary Shocker, Flutist* CD (Chesky CD46), for example, the cello was less of an individual entity, resulting in a reduced sense of the counterpoint between it and the flute. Listening to the same piece through the Theta Gen.III and Musik System Zero, the counterpoint was much more apparent; the two processors better conveyed the music's intent.

Overall, the CDS's shortcomings were those of omission rather than commission. This made the

CDS smooth, unfatiguing, and easy to listen to, but at the expense of not resolving all the information in the music. Although I enjoyed listening to the CDS, particularly the manner in which it conveyed the rhythmic values of the music being played, it never passed the threshold of totally immersing me in the music.

Conclusion

I enjoyed my time with the Naim CDS. It was smooth, natural, and always easy to listen to. I never felt affronted by the CDS, a quality that may endear it to many music lovers.

Ultimately, however, the CDS didn't quite measure up to the formidable competition of the identically priced Theta Data transport driving a Theta Generation III via ST-type optical interface. By contrast, the CDS was missing a layer of musical detail underneath the presentation. The CD player also lacked the Theta's rock-solid bass, quickness, and impression of instruments hanging in three-dimensional space. I also felt the CDS was bettered in many areas by the \$1500 Musik System Zero processor. Some listeners, however, may prefer the CDS's softer, less incisive presentation.

Another logical comparison is with the [Linn Karik/Numerik](#) CD player; both are the first digital products from venerable analog-leaning UK manufacturers. The Linn had a greater smoothness, sense of ease, and more naturally portrayed instrumental and vocal textures. The CDS, however, was more rhythmically exciting, with a weightier bass presentation. Ultimately, however, despite its lightweight tonal balance, I did feel the Linn to be the more musically involving machine.

In short, the CDS's flaws were of omission rather than of commission. It added no unmusical characteristics to the music, yet it failed to involve me sufficiently musically. These criticisms, however, must be taken in the context of the CDS's not insignificant price: the standards of performance to earn a recommendation should be high at this price level.

Don't get me wrong: the CDS is a very good-sounding CD player. But at \$7395, the competition is fierce—particularly from the Theta Data/Generation III. Those listeners who tend to shy away from the Theta's type of presentation and prefer a more easygoing rendering would be better off spending \$1600 less for the Linn Karik/Numerik, in my opinion.

Footnote 4: The Mark Levinson No.30 had an extraordinary detailed rendering, yet the detail was so subtly and naturally presented.

Naim NA CDS CD player Specifications

Sidebar 1: Specifications

Description: Two-box CD player with 4x-oversampling digital filter. Frequency response: 10Hz–18kHz \pm 0.1dB. Output level: 2V at 1kHz, full-scale (0dBFS) signal. Phase response: linear phase. Output impedance: 100 ohms. Analog output: DIN jack. Protection systems: DC offset

sensing, relay muting, laser current interlock.

Dimensions: 17" W by 3" H by 11.8" D (each box). Shipping weights: 19 lbs (player), 33 lbs (power supply).

Price: \$7395. Approximate number of dealers: 25. Warranty: 5 years.

Manufacturer: Naim Audio Ltd., Southampton Road, Salisbury, England. North American distributor: Naim Audio North America Inc., Chicago, IL 60614 (1992). Naim Inc., 8481 Bash Street, Suite 1800, Indianapolis, IN 46250. Tel: (317) 842-7224. Fax: (317) 842-7241. (2010).
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