

Esoteric SA-50 CD/SACD Player and DAC

The Swiss Army Knife of the Digital Age

Robert Harley

Esoteric's new SA-50 CD player offers a host of features and capabilities unimaginable to the original designers of the CD format. Not just a CD player, the SA-50 will spin SACDs, decode other digital sources (including a music-server's output via USB), switch between digital sources, and drive a power amplifier directly. If you have no analog sources in your system, the SA-50 obviates the need for a preamplifier. This architecture not only saves money, but provides better sound quality. After all, the best preamplifier is no preamplifier.

Moreover, the SA-50 is packed with sophisticated technology. The unit offers a wide range of user-selectable upsampling options, a two-stage PLL reclocking circuit to reduce jitter from external sources, a dual-mono implementation of a new 32-bit DAC, a clock input, and a new minimum-phase digital filter (selectable) that doesn't introduce pre-ringing (a type of time-domain distortion).

Although well built and attractive, the SA-50

looks more business-like than Esoteric's more costly offerings. Priced at \$5800, the SA-50 is clearly intended to be an extremely high-value product that provides a multifaceted answer to the needs of today's complex digital sources. In fact, it struck me that the SA-50 is nearly functionally equivalent to the \$23,000 dCS Puccini/U-Clock combination I reviewed in Issue 200. The Esoteric lacks an asynchronous USB interface and external clock, but will do much of what the dCS does at a fraction of the price.

How can Esoteric offer so much for so little? The only concessions to cost that I could see were the flat front faceplate (more expensive Esoteric models have sculpted front panels), a plastic rather than a metal drawer, and...that's it. The unit is built like a tank, weighing in at nearly 40 pounds and featuring Esoteric's three-point vibration-isolation feet. The transport mechanism is a more cost-effective implementation of Esoteric's vaunted VRDS transport, known in the SA-50 as VOSP (Vertically aligned Optical Stability Platform). Although scaled down in implementation, the transport nonetheless maintains the key element



of clamping the entire disc surface rather than just a small area at the disc's center. The custom toroidal power transformer is huge, accounting for a good percentage of the unit's heft.

Let's take a closer look at the SA-50's rich feature-set. The Esoteric offers balanced and unbalanced outputs, along with either fixed or variable operation. In the fixed-output mode, the SA-50 functions as a conventional CD player, with the volume controlled by your preamplifier. In the variable mode, the SA-50 drives a preamplifier directly with volume controlled by the SA-50's remote control. The amount of attenuation is shown in the front-panel display. Note that you must go into the set-up menu to activate the variable-output mode (the default is fixed output). This could cause a problem the first time you connect the SA-50 directly to a power amplifier and play a disc, expecting to be able to adjust the volume via the remote control—you'll get a

surprise in the form of a full-level signal driving your power amplifier.

You can specify in the set-up menu whether pin 2 or pin 3 of the XLR analog-output jack is "hot." This allows you to determine if the SA-50 is polarity inverting or not. If used with a "pin-2 hot" power amplifier, choosing "pin-2 hot" in the set-up menu means the SA-50 is not polarity inverting.

Three digital inputs (USB, coaxial, TosLink) are provided along with front-panel source-switching between these inputs. The combination of a volume control and multiple inputs allows the SA-50 to serve as your system's control center, selecting sources and adjusting the volume. Note, however, that the USB input is limited to 48kHz/16-bit data. This is surprising given that most listeners' music servers will be loaded with high-resolution files, and that 96kHz USB is common. The coaxial and TosLink inputs are,

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however, specified at 192kHz/24bit.

The SA-50 offers four upsampling options. The most basic is called “ORG” (for “original”) which simply puts the signal through an 8x oversampling digital filter. In the “2FS” mode, the unit upsamples 44.1kHz (either from an external source or from the internal disc drive) to 88.2kHz (or 48kHz to 96kHz). The “4FS” mode converts 44.1kHz data to 176.4kHz (and external 48kHz data to 192kHz). Finally, selecting “DSD” converts the PCM data to the 2.8224MHz single-bit Direct Stream Digital format for conversion to analog. This latter feature, in my experience with this and other players with the same capability, offers better sound than when the PCM signal is converted to analog. In addition, when playing an SACD, the DSD bitstream is kept in its native format and converted to analog with a single-bit DAC. This is the only way to hear the full glory of DSD.

You also have the option of two digital-filter algorithms, “FIR” (finite impulse response) or “S_DLY” (short delay). The FIR filter is a conventional type that’s been used since the first days of the CD format (although, here, in a more powerful and sophisticated implementation). The S_DLY filter is a minimum-phase type that adds no pre-ringing to the signal. The recent trend has been away from FIR filters, which some believe are responsible for CD’s hardness and flat soundstaging, toward minimum-phase filters. Note that when playing SACDs, or converting PCM to DSD, neither of these filters is used. (The single-bit DSD format doesn’t require a reconstruction filter, which is perhaps one reason DSD sounds superior to standard-resolution PCM.) The filter is the new AK4399 from the Japanese semiconductor manufacturer AKM.

A rear-panel BNC jack accepts a word-clock signal from an external clock. If you don’t use an external clock, the SA-50 uses a dual-PLL for receiving external digital signals. A dual-PLL reduces jitter, although it slightly increases the time the SA-50 takes to lock to a digital input. (The PLL isn’t used when playing a disc in the SA-50’s transport.) Finally, a digital-output jack is provided for driving another digital device.

All these adjustments and configurations are accessed through the set-up menu and front-panel display. The menu system is straightforward and simple to use. I must also comment on the SA-50’s outstanding remote control. It feels great in the hand, the volume buttons are large and fall naturally beneath the thumb, and the buttons are laid-out well.

Inside, the SA-50 uses dual-differential DACs along with a fully balanced analog-output stage. That is, a balanced signal is created in the digital domain, converted to analog differentially by two DACs per channel (one for each phase of the balanced signal), and then amplified/buffered by two analog stages per channel. This is the right way to create balanced outputs. The DACs are a new chip from AKM, the AK4392, a dual 32-bit device with an internal filter and volume adjustment, although the internal filter isn’t used in this application.

LISTENING

I first evaluated the myriad filter and upsampling options to determine which was best in my system. In comparing the FIR filter to the S_DLY filter, I thought that the FIR filter was more immediate and vivid sounding, with slightly better grip in the bass. The S_DLY filter was smoother in the treble,

a little softer overall, less incisive, and more relaxed. The S_DLY filter setting also produced a more spacious soundstage. I preferred the S_DLY setting, although you should listen to both. I can imagine some listeners preferring the FIR filter’s more up-front presentation. This filter choice was, however, rendered moot by my preference for the PCM-to-DSD conversion mode, which doesn’t invoke either filter. The conversion to DSD was decidedly superior to any of the PCM upsampling modes, which all had a trace of glassiness overlaying the treble compared with the DSD conversion. Converting PCM to DSD resulted in a smoother and more relaxed treble, along with a greater sense of ease overall.

With these settings, and with the SA-50 driving the Pass XA100.5 amplifiers directly via its balanced outputs, the Esoteric player exhibited some outstanding qualities that were surprising given the machine’s extensive capabilities and reasonable price. The SA-50’s most salient characteristic was a palpability and immediacy in the midrange that fostered a sense of “you are there” realism. The presentation was incisive, upfront, and vivid, with crystal-clear delineation between images and the space around them. In its ability to present the music as individual instruments existing in space, the SA-50 was exceptional. The soundstage was the antithesis of thick, confused, or opaque. In addition, the SA-50 presented instruments against a jet-black background, along with a halo of air around the images.

The SA-50’s immediacy was partly the result of a slight tendency toward forwardness in the upper midrange that emphasized certain instruments. In addition to giving the presentation

greater presence, this slight “spotlighting” also tended to somewhat dilute the saturation of tone colors. For some systems, the SA-50’s somewhat forward rendering may be a liability. For my system and taste, the SA-50 was right at the threshold of being too assertive. Nonetheless, I greatly enjoyed the sense of palpability and the feeling that nothing was coming between me and the instruments. For example, Buddy Guy’s great fusion of modern and traditional blues, *Sweet Tea*, starts with a track that features just him and an acoustic guitar. The SA-50 beautifully conveyed the track’s eerily realistic presence and intimacy (both sonically and in the expression of the lyrics), projecting the images just a little farther in front of the loudspeakers than I’ve heard from my reference digital playback.

Going back to the SA-50’s soundstaging, the Esoteric’s excellent separation of musical lines greatly contributed to the player’s ability to convey a recording’s musical values. The clarity with which the SA-50 resolved the timbral and spatial qualities of instruments was no doubt a factor in the consistently powerful sense of music-making it produced. That is, the presentation never sounded like a collection of sounds. Rather, I heard a strong sense of musical coherence, meaning, and expression that not all digital front ends get right. It’s an intangible quality that has nothing to do with treble balance, timbral purity, or most other sonic criteria, but one that in many ways defines the listening experience.

The SA-50’s bottom end was full, tuneful, and articulate, with good dynamic impact on kick drum. I also enjoyed the Esoteric’s powerful rhythmic drive and expression. The extreme bass was slightly rolled off compared to that of

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other digital front ends I had on hand for comparison. This had only a very slight effect on the impact of bass drum, for example, but was audible with very low frequencies such as organ pedal point. Again, the bass roll off didn't affect the timbre of instruments, only the sense of weight and room pressurization from organ pedal tones such as those on Track 7 of Rutter's Requiem [Reference Recordings].

Esoteric has always been at the fore front of delivering great sound from the SACD format and the SA-50 continues that tradition. When playing SACD, the gap between the SA-50 and my reference narrowed considerably. SACDs through the SA-50 had tremendous resolution, ease, spaciousness, and delineation of instruments.

However, when I used the SA-50 as a DAC for my music server (connected via the USB input), I found that the sound noticeably dropped in quality. Switching to the USB input made the sound hard, grainy, and bright, lacking air and transparency. But even comparing CD playback from the SA-50's disc drive against the same music that had been ripped to the server, the disc playback was significantly better sounding in every way. This is at odds with my previous experience, which suggests that music read from a hard drive sounds better than the same data read from a CD (and decoded by the same DAC). The culprit is not the SA-50's digital-input circuitry

or DACs, but rather the USB interface itself. I discovered this by running USB from the server into a dCS U-Clock, which receives the data via USB and converts it to S/PDIF, and then feeding this S/PDIF to the SA-50. The U-Clock's Asynchronous USB interface eliminated the detrimental sonic effects heard when driving the SA-50 directly from the server. If you plan to connect a music server to the SA-50 via the USB interface, I suggest adding a USB-to-S/PDIF converter such as the \$495 Bel Canto USB Link 24/96. The Bel Canto lacks Asynchronous USB, but nonetheless should produce better sound than going straight into the SA-50 with the server's USB output. Moreover, I expect to see stand-alone Asynchronous USB-to-SPDIF converters on the market later this year.

Out of curiosity, I also used the U-Clock's clock output to drive the SA-50, resulting in another improvement in sound quality. One would probably never use a \$5000 clock with a \$5800 player, but the comparison was interesting, nonetheless. It's fascinating to listen to the effects of timing precision on digital-audio reproduction, and I jump at any opportunity to expand my knowledge and experience.

CONCLUSION

The Esoteric SA-50 is a remarkable piece of equipment, performing many of the different functions required of today's

evolving digital front ends. The SA-50 is the ideal solution for those with no analog sources who would like to forego using a traditional preamplifier. Even without these features, the SA-50 would stand on its own at the price for a CD/SACD player. The Esoteric also delivers musically, with a tremendous sense of palpability, clarity, transparency, and resolution. The presentation tends toward the incisive and vivid side, a characteristic that will suit some systems and listeners more than others.

My only reservation about the SA-50 is that the sound through the USB input doesn't begin to suggest the full quality of which the SA-50's outstanding DACs are capable. This is a fundamental limitation of an "adaptive mode" USB interface, but one that can be overcome with an outboard USB-to-SPDIF converter.

With that minor caveat, I can enthusiastically recommend the Esoteric SA-50—the Swiss Army Knife of the digital age. **tas**

SPECS & PRICING

CD/SACD player and DAC

Disc formats: CD, SACD, CD-R/CD-RW

Analog outputs: Unbalanced on RCA jacks, balanced on XLR jacks

Digital inputs: USB ("B" type connector, input up to 48kHz/16-bit), coaxial (input up to 192kHz/24 bit, TosLink (inputs up to 192kHz/24 bit)

Digital outputs: Coaxial, TosLink

Word clock input: TTL levels, 75 ohm, BNC jack (can lock to 44.1kHz, 48kHz, 88.2kHz, 176.4kHz, 100kHz)

Dimensions: 17 3/8" x 6" x 13 7/8"

Weight: 39.6 lbs.

music server (built by Goodwin's High-End), Classé Audio CDP-502 CD/DVD-A player, Berkeley Audio Design Alpha DAC, dCS Puccini/U-Clock CD/SACD player and DAC; Pass Labs X20 preamplifier; Pass Labs XA100.5 power amplifiers; MIT Oracle MA interconnects; MIT Oracle MA speaker cable; Running Springs Audio Dmitri, Shunyata Hydra-8, Hydra-2, and V-Ray AC conditioners, Shunyata Anaconda, Python, and King Cobra CX AC cables; Shunyata Dark Field cable elevators; room custom designed and built, acoustic design and computer modeling by Norm Varney of AV RoomService, acoustic treatment and installation by Acoustic Room Systems (now part of CinemaTech)

ASSOCIATED COMPONENTS

Wilson Audio Sasha loudspeakers, Basis 2800 Signature turntable with Basis Vector 4 tonearm, Air Tight PC-1 Supreme cartridge, Aesthetix Rhea Signature phono stage; PC-based

U.S.

Price: \$5800

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