



Cover Story: Arcam AV8 Controller and P7 Power Amplifier



What does a million bucks sound like? That's the question I've been asking myself since January 2002's CES show, at which Arcam's John Dawson treated me to sneak a preview of the AV8 and P7 digital controller/multichannel amp system. A cool million is what Arcam spent on design, development, and tooling costs to get this pair to market. I was impressed not only with the scope of features loaded into the 7.1-channel controller/amp combo, but with Arcam's attention to parts and construction-quality additives intended to

improve pure performance. You don't spend a million bucks on one of those "me, too" products that's built on an OEM board. Arcam built this system from the ground up and focused on the parts that count, which counts for a lot with me.

Fortunately, the AV8 and P7 won't cost you a million bucks. The retail price of the combo is \$9500 (\$5000 for the AV8, \$4500 for the P7). So, Arcam spent a lot of money. The question is did they get what they paid for? And more importantly, will *you*, if you decide to throw down on Arcam's surround-sound system?

Performance Starts Inside

The AV8's DACs are top-of-the-line Wolfson WM8740's for all eight channels. The WM8740 is compatible with signals up to 24-bit/192kHz, and is the exact same DAC used in Arcam's FMJ DV27 DVD player, which I raved about in TPV 43 as one of the very best sounding CD/DVD players available at any price. Most controllers don't use such high-quality parts because they're expensive to implement over eight channels, and the few I can think of that do cost substantially more than the AV8.

There's a difference between playing loud, and playing back with high dynamic contrast, displaying the broadest range of sounds in between the softest and loudest sounds—and the Arcam AV8 is as good in that regard as any controller I've heard.

The AV8's three "high-quality" component-video inputs can be set to either YPbPr component video or RGB. Arcam claims the -3dB point of the video switch is a gaudy 300MHz—more than enough bandwidth to pass 1080p, *if you've got it* (yow-za!). The AV8 has a phono input that can be fitted with an optional board for moving-magnet and/or moving-coil phono cartridges. (Unfortunately my review sample wasn't fitted with this option, but how 'bout that, audiophiles?)

On-screen display menus are not only nice, they're practically a necessity for a product like the AV8. But passing video signals through an OSD-generator chip typically induces noise, truncates bandwidth, and degrades video signals. Some manufacturers don't run component and/or S-video signals through the OSD, or shut down or separate the OSD circuits from the signal path when they're not in use. Arcam incorporated a broadcast-grade Elantec pixel-switcher into the analog video output stage that's controlled by an OSD generator. This is the same kind of device used to overlay TV channel logos onto broadcast images (Comedy Central, Discovery, etc.). This switcher turns on and off with lightning speed, overlaying the OSD onto the image pixel by pixel, switching between what are essentially two separate sources—the video signal being passed and the signal of the OSD generator. The OSD is interlaced, but the AV8 lets you view the OSD while switching a progressive signal by blanking the picture and putting up the OSD in interlaced mode. As long as your display can handle the transition, you won't have to switch inputs to use the OSD. Arcam did its homework, *and* the next guy's, when it designed the AV8's video switcher!

But video's not the only place Arcam kicked this controller up a notch. For stereo playback, engaging

the DIRECT button not only delivers a pure analog signal path, it shuts down all DSP processing and much of the digital circuitry. Arcam claims the AV8 is the best stereo preamp it makes. The AV8's power supply is switch-mode, shielded in cans, that synchronizes to different frequencies based on the kind of signals it receives. For analog "direct" mode, the switcher generates its own clock and switches at 75kHz. With digital signals, the switcher syncs to one of two speeds based on the sample rate of the signal. One speed is 44.1kHz and its multiples—88.2kHz and 176.4kHz. The other speed syncs to 48kHz and its multiples—96kHz and 192kHz. Syncing to the incoming scan rate aliases the switching noise to zero, effectively eliminating it. When analog signals are input but DIRECT mode is not selected, the AV8 converts the signal to digital so bass management can be engaged, or so that other forms of signal processing (such as the DTS Neo:6 tools or Dolby Pro Logic II) can be applied. In this case the switcher syncs to the sample rate employed by the AV8's analog-to-digital converter chip.

The P7 is a THX Ultra2 Certified amplifier specified to deliver 150 watts (8 ohms) into each of its seven channels (230 into 4 ohms). Two 1500VA toroidal transformers are used with fourteen separate windings for the seven amplifier modules. Each transformer feeds three channels—one feeds three channels on the left side of the box, the other feeds the three on the right side, and the center channel uses one winding from each transformer for load balancing. Each channel uses four bipolar output devices and has aluminum heat sinks that Arcam claims are very efficient—the P7's cooling fan won't be needed under most circumstances, so the amp will run quietly most of the time. The channel assignments are marked on

the back panel, and connecting the channels properly for stereo listening results in an entire transformer dedicated to feeding each speaker, which should result in increased impact *and* articulation. Inputs are single-ended only, and each channel has a pass-through output.

Getting Connected

The only difficulty setting up this combo results from the many channels and features it offers. Both back panels are crowded (or maybe my fingers are too big). The P7's channel modules place the speaker terminals one over the other at the top of each module, not side by side as is typical, to create the space to fit all seven channels in. Fitting large-gauge wires and spade lugs in sideways *and* getting them to stay put was sometimes a chore. I'm not sure I can agree that this quest by manufacturers for more channels is what's best for most users. Seven-channel surround-sound can be a benefit for some people with larger rooms. But for most rooms, like mine, it's just not necessary. I've crammed 6.1 and 7.1 channels in my room only to find better imaging and performance with just (!) 5.1 channels. I'm about to move to a bigger house with a bigger, dedicated room (25 feet x 18 feet). I'm beginning with the 5.1-channel setup I've been using and will only move to 7.1-channels if necessary. I suspect most people have rooms more similar to the 13-foot x 18-foot theater environment I'm in now.

As you'll read later, I found that the P7 had more channels, but noticeably less impact than my Theta Dreadnaught. What would have been wrong with making a more powerful five-channel amp, and then making a stereo amp for those few who want (or need) all seven channels?

Logical Setup

The THX Ultra2 Certified AV8 has everything you want in digital processing and surround-sound: DTS, Dolby

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Digital, Dolby Pro Logic II, THX Surround EX, DTS-ES Discrete and Matrix 6.1, and DTS Neo:6 for films and music. The AV8 is loaded with digital inputs (five coax, two TosLink) and features a 7.1-channel analog pass-through for external sources (like SACD and DVD-A). The AV8 doesn't have balanced inputs or outputs. Beyond that, rest assured that the AV8 is more fully featured than I can even hint at in the space of a review.

I've never used a controller that is simpler to set up than the AV8. Input sources default to likely inputs, and the digital inputs are completely assignable. The remote control is easy to hold in one hand and is backlit. The user interface is a snap to use, including "on-the-fly" changes like bumping or trimming channel levels or changing surround modes. Combinations of extensive features and usability on this level are rare, and Arcam deserves serious credit for

every area of the AV8's implementation.

Volume control can indicate normal increments or display volume relative to THX reference level. Speaker levels are set in 1dB increments, which frankly, are too coarse for precise adjustments. Speaker crossovers are SMALL THX at 80Hz, or SMALL with any crossover point from 40Hz–150Hz. You can choose up to three subwoofers, although all receive identical signals.

The AV8 has THX post-processing tools that were unfamiliar to me. THX Surround EX can be set to Auto or Manual. Be aware that Surround EX titles aren't always correctly "flagged" to auto-engage. Under BOUNDARY GAIN COMPENSATION, the THX Ultra2 Sub setting allows you to choose "Yes" if you have a THX Ultra2 Certified sub, or if you have a sub with (presumably usable) response down to 20Hz. You

can then choose to roll off "the very low frequency information coming from the subwoofer" to reduce boomy bass in smaller rooms. When THX Ultra2 Cinema is selected as the listening mode, ASA (Advanced Speaker Array) processing sends sound to all 7.1-channels, in addition to engaging THX's entire suite of post-processing tools, including Re-EQ, timbre matching, and adaptive de-correlation.

I prefer to listen with as little processing and electrical manipulation of the signal as possible, although Re-Eq can occasionally be useful with some titles. Although THX's tools have undoubtedly been refined over the years, they were born in the Dolby Pro Logic era that preceded discrete multi-channel surround-sound. Decorrelation, for example, was initially designed to gain some separation in Pro Logic's monophonic rear channels. Timbre-matching is an attempt to elec-



tronically compensate for tonal response differences between front and surround speakers, which is interesting since THX's recommended practice, also born in the Pro Logic era, is to use completely different speaker types—phase-scrambled dipoles for surround speakers and direct-radiating monopoles for L/C/Rs. More and more, today's DVD movie soundtracks have been optimized and equalized for home theater; applying processing and equalization is less necessary than ever before.

Advanced setup allows shelf EQ of bass (at 100Hz) and treble (at 8kHz) for each speaker with an adjustment range of -6dB to +6dB. Arcam wisely recommends using speaker placement first to correct in-room response issues, and EQ only as last resort.

Performance—AV8

I only encountered two problems during my time with the AV8. When first shipped, it worked for a few days then stopped outputting sound. It locked onto digital sources properly...but no sound. Arcam sent a second unit that did the same thing. The problem was traced back to internal wiring problems, which were subsequently solved. The third unit I received ran flawlessly for the three months I had it. The only intermittent glitch it exhibited was an occasional burst of noise when switching digital source inputs.

Initially I put the AV8 into my system by itself to get a handle on its performance. One of the first things I did was spin some discs I'm familiar with, making sure the levels sounded right. One disc I put on is the THX Surround EX demo disc, which has a trippy, audio-only demo piece,

"Jungle Sounds." While I haven't figured out what it's about, spot-on directional effects (gun shots, buzzing insects, even a rocket taking down a helicopter) image with remarkable specificity in between the speaker positions, and the dynamics of this track are staggering. While I liked what I was hearing on the imaging front, I was knocked back in my chair by the dynamic contrast and concussive bass impact of this track with the AV8. There's a difference between playing loud, and playing back with high dynamic contrast, displaying the broadest range of sounds *in between* the softest and loudest sounds—and the AV8 is as good in that regard as any controller I've heard.

Other soundtracks confirmed the AV8's seemingly limitless levels of dynamic range and crushing bass performance, including the scenes in the caves of Moria from the extended edition DVD of *The Fellowship of the Ring* and the D-VHS D-Theater presentation of *U-571: Road to Perdition* on DVD is more subtle, but occasionally gunfire punctuates scenes dramatically, and in this case heightened my sense of the emotional impact that witnessing those murderous acts had on the film's young narrator.

But the AV8 has more than brute power working for it. M. Night Shyamalan's uneven but strangely compelling *Signs* is a movie that establishes real suspense (sometimes unbearably) with little more than well-designed sound effects and the actors' apparent reaction to them. It's not the cavalcade of explosions often heard in demonstrations; it's far more delicate, and in some ways more convincing because these sounds are so believable and accessible in ways that explosions aren't. I've never heard a car explode, but I hear wind sound in

trees all the time. During *Signs* you hear and feel the quiet of the farm, the breeze in the trees and cornfields, things that are imminently recognizable, and then some clicking and chattering, or feet running up on the roof as the aliens visit. The AV8

was able to place these sounds in space very convincingly—good enough to freak me out anyway! Another element of this fascinating soundtrack resolved to that freaky degree was the children's radios picking up the alien chatter—familiar sounds with just enough oddity in them to make the hair on your neck stand up. If I go missing, check my closet, where I'll be huddled up with my TV! This controller delivered these soundtracks in such a way that the intended emotional effects were more than just present; they were genuinely effective. That's the highest praise I can give.

I had two other top-flight controllers to compare the AV8 with: Theta's Casablanca II (Extreme DAC version, \$14,910 as configured) and the Classé SSP-75 (\$7000). With digital music and cinema sources, the Theta is still the best controller I've heard, and still by a wide margin. As fine as it certainly is, the AV8 isn't in that league, but nothing else is, either. And the Theta will typically cost two-to-three times the price of the Arcam. But I also compared the AV8 to the Classé SSP-75, which was no match for its features and user-friendliness. The Classé is just as smooth and refined as the Arcam, but the AV8 is unquestionably more detailed with music and cinema sources, and has more slam and impact.

Although the Classé SSP-75 has the best analog section of any controller out there, the AV8 surprised me. The Classé's analog output section is fully balanced, and at times it pulled slightly ahead, but the contest was ever so close. The AV8 made real music sound warm, natural, and inviting, making it a genuine rarity among digital controllers. Unlike the vast majority of products boasting analog

pass-through, the AV8 is good enough as an analog preamp that you'll actually hear the benefits of DVD-A and SACD.

I evaluated the AV8's video-switching capability using YPbPr component video. I looked at 480i/480p signals from Arcam's FMJ DV27 DVD player, and 1080i HD from a Panasonic TU-HDS20 STB and an Accupel HD signal generator. The display system was a Faroudja DCS scaler driving a Runco DTV-933 CRT projector. I would connect each source directly to the Faroudja, and then insert the AV8's video switch in between the source and scaler. I also took measurements with a Philips color analyzer. With DVDs I simply couldn't see any visible degradation with program material or test patterns. No increase in noise, no loss of resolution. The only difference I could measure was a slight drop in light output (less than 0.4ftL). There were no changes in grayscale, and the color coordinates of red, green, and blue didn't shift a bit. With 1080i HD from my Panasonic TU-HDS20 STB I noticed the slightest loss of snap and perceived impact. The only anomaly I found was a slight loss of distinction between colors in the 37MHz portion of the color multi-burst pattern from the Accupel. In any case, this is best performance I've seen from the video switching of a digital controller.

Together With The P7

Moving the P7 into the system with the AV8, I used four of its channels to amplify my left and right speakers, and the remaining three for the center and surrounds. I was impressed by the tightly woven, integrated sound. When sound effects imaged, it was with solidity and presence. Transients were quick, but smooth, with no unwelcome edginess whatsoever. I know I'm supposed to be talking about movie sound here, which the P7 admirably conveys, but the word that keeps coming to my


mind is "musical." This amp sounds together, cohesive, and natural. This integration of sonic elements made movie scores really stand out. An interesting example is Universal's DVD of *Gosford Park*. Although this movie contains the worst dialogue intelligibility of the modern sound era, Patrick Doyle's score is beautiful and sounds terrific when played back through this combo, imaging like a reasonably nice stereo recording.

Tonally the P7 exhibits a somewhat laid-back characteristic, which is often a sign that a product is a little fat in the bass. But I quickly noticed that the P7 wasn't negating any of that quick, rhythmic bounce that I liked with the AV8, which amps overly warm in the bass often do. Compared to my reference Theta Dreadnaughts, it's actually not as extended or forceful in the low end. My conclusion ultimately was that it's just not as resolved in the midrange and treble as the Theta amp, and simply not as muscular. Sound didn't image as far behind the speakers or as far out into the room or as distinctly between the speakers as with my reference amplifiers, and I didn't hear the layer upon layer of resolution with music or films I hear from my Thetas. Playing some of the tracks mentioned above that showed off the AV8's uncompressed dynamic impact, I noticed immediately that the P7 is less dynamic and powerful than the Dreadnaughts, as one would expect considering the Theta amps are rated at 200 watts per channel. I make the case again that a more powerful five-channel amp might have made me happier, but I should note, too, that people using more sensitive speakers than the Vandersteens I use will hear more oomph from the P7.

But the P7's errors were of omission, not addition. If it were a stereo product I was reviewing for our sister publication, *The Absolute Sound*, I'd describe the P7 as a product that gets the music, but doesn't have that extra resolving power to take the listener into the recording space. When you consider that it's a home-theater product, the forgiving side is not a bad side on which to err. Although the

Dreadnaughts I use are much more expensive than the P7, with the five-channel version of the Dreadnaught II costing \$6500, other products that compete with it sonically are available for less money from Sherbourn and Parasound, among others.

Conclusion

I'm sold on the AV8. It offers great flexibility; it's easy to use; and its performance is beyond reproach. Arcam built the AV8 from the ground up, and it's a product you can be proud to own. I highly recommend it to *anyone* shopping for a controller in its price range, and those thinking of spending more should *really* look up an Arcam dealer first. The P7 does nothing wrong, yet doesn't really get me excited the way the AV8 does. It is a solid and respectable performer, but would be an easier recommendation at a lower price than \$4500. 

SPECIFICATIONS

AV8 Controller

Number of Channels: 7.1

Decoding Formats: Dolby Digital, THX Surround EX, DTS, DTS-ES (Matrix and Discrete) 6.1, DTS

Neo:6, Dolby Pro Logic II

Inputs: Seven digital audio inputs (five coax, two TosLink optical); seven analog stereo; one phono analog stereo; one 7.1-channel analog; five composite and S-video, three component/RGB video

Outputs: One coax digital audio, three composite-video, two S-video, one component/RGB-video

Dimensions: 17" x 5.1" x 17"

Weight: 30 lbs.

Price: \$5000

P7 Seven-Channel Power Amplifier

Power Output: 150Wpc into 8 ohms, 230Wpc into 4 ohms (20Hz-20kHz)

Dimensions: 17" x 7.1" x 18.1"

Weight: 77 lbs.

Price: \$4500

MANUFACTURER INFORMATION

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Manufacturers' Comments

Arcam AV8 Processor

Thanks for a great review, and for sticking with us while we sorted out the teething problems with the intermittent cable. We're pleased that you chose to put the Arcam AV8 up against more expensive processors. While the hot area of the processor market seems to be down around \$3,000 or \$4,000, Arcam's goal was to demonstrate that, by spending just a little more, it's possible to end up with performance that's in an entirely different league.

While many people aren't surprised that the AV8 is one of the best "sounding" processors (it is an Arcam after all), I know the guys in R&D are thrilled when someone notices all the work that went into the video. With several professional/broadcast video engineers on the team, it's obviously no accident.

You'll be pleased to know that Arcam, in keeping with its policy of making improvements retrofittable whenever possible, has just released Version 3.0 of the AV8 software, which adds Dolby Digital Surround EX and also allows the user to customize the names of the inputs.

On the P7 power amp, as you hinted, maybe your speakers weren't the best match. So, I'd like to pass on an alternate opinion from Paul Miller at *Hi-Fi Choice* magazine. "My preferred combination of B&W's 802 and 804 speakers reveled in the capacity of this amplifier, producing a wonderfully clean, clear and detailed sound that lifted free of the boxes to fill every corner of the room." In most cases I think your readers will find the AV8 and P7 a compelling package. Toss in an Arcam DV27 DVD player and they will spend less for a complete electronics package than they would on your favorite price-no-object processor alone. Like you said about the AV8, "those thinking of spending more should *really* look up an Arcam dealer first."

Thanks and best regards,

Gary Warzin, President
Audiophile Systems, Ltd.
U.S. Distributor for Arcam

James EMB-1000 Small Subwoofer

All of us at James Loudspeaker thank Robert Harley for his diligent analysis of our EMB-1000 Small Subwoofer. We appreciate his noting that, unlike most other small subs, ours employs an original proprietary design that eliminates the greatest subwoofer bugaboo—distortion. Knowing Harley's frankness in reviews of other products makes his praise of the EMB-1000 most meaningful to us, especially since we invested untold hours in the development of the technology and bringing it to market. We want your readers to know that we are in the process of developing a 15-inch subwoofer around the same EMB technology. Again, we thank *The Perfect Vision* for its review.

Neal T. Melden

Vice President of Marketing
James Loudspeaker

Sharp SD-AT50DV Home-Theater System

Thank you for publishing Wayne Garcia's multi-product review that included the Sharp SD-AT50DV home-theater system. We are proud that this unique Sharp home-theater system was selected for inclusion. Mr. Garcia correctly identified the design goals of the system—a simple, elegant easy-to-use home-theater solution for use in medium-sized rooms with many of today's flat panel displays. I would like to point out a few additional facts for your readers.

The SD-AT50 includes a series of sound modes that offer preset modifications of both frequency response and dynamic range control to suit particular types of material or listening situations. The default mode is called "Movie," which slightly increases midbass response and mid-to-high frequency response to emphasize low frequency and directional effects. When this mode is used for music, it can lead to an apparent midrange hole that it is not evident with typical movie soundtracks.

The alternative modes include "Music," which eliminates the low-frequency boost, and "Standard," which

does not alter frequency response at all. The SD-AT50 also includes individual level settings for each of the speakers, including the subwoofer. Since the SD-AT50 is primarily a home-theater solution, the subwoofer level default is set at +6 dB above the level of the five satellite speakers. We believe these factors contributed to the author's concern about achieving a musical balance between low and high frequencies when listening to music.

On a different note, the subwoofer driver selected for the SD-AT50 was specifically designed to achieve superior bass response beyond its modest proportions. This is achieved through a high excursion spider design, careful cabinet porting and the high-speed transient capability of Sharp's unique 1-Bit digital amplifier technology.

Thank you again for your review.

Mark Knox
Director of Digital Media, Sharp Electronics