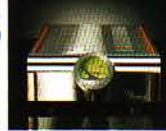


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AV RECEIVERS

SPECIAL ISSUE

- EDITOR'S TOP PICKS AND SHOPPING TIPS
- REVIEWS FROM ONKYO, PIONEER, ARCAM & ANTHEM
- ALL YOU NEED TO KNOW ABOUT SEPARATES VS. AV RECEIVERS



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Test Bench

BY Mark Fleischmann

Arcam AVR400 A/V Receiver

PRICE: \$2,499 **AT A GLANCE:** Rated 90 watts x7 with all channels driven • Dolby Volume reconciles dialogue and effects • First 3D-compatible Arcam A/V receiver

Daddy, Am I High End?



What exactly is a high-end A/V receiver? Is it the most expensive and feature-rich model in a manufacturer's line? Is it a model with power specs above a certain level? Is it a model that sells above a certain price point? Is it any model from a manufacturer with a high-end pedigree? There are some who insist the phrase "high-end A/V receiver" is a contradiction in terms. Before we split any more hairs, let's all favor that kind of person with a dirty look. Under certain circumstances, it might be OK to throw a martini in his smug little face.

Now let's run the Arcam AVR400 through those four filters. Is it the most expensive and feature-rich model in Arcam's line? No, it's the bottom model of three. Does it have power specs above a certain level? By Arcam's standards, the AVR400 is the Baby Bear of the family, with 90 watts into 8 ohms times seven channels driven, versus 100 watts for the AVR500 and 120 watts for the AVR600. Does this new Arcam AVR sell above a certain price point? Well, if \$1,000 and \$2,000 are psychologically significant price points—and I think they are—then the answer is a double yes, although the AVR400 (\$2,499) is less costly than the AVR500 (\$3,499) and AVR600 (\$4,999). Finally, does this AVR come from a high-end manufacturer? The short answer is yes. In general, Arcam products are on the affordable side of high-end, a constructive thing to be.

With two nos and two yeses, we may conclude that the AVR400 is a certain kind of high-end A/V receiver. It's the kind that demands a significant investment, but the name on the

front panel suggests that the product may be worth it.

Curving Green Landscape

Most A/V receivers have a utilitarian look, although Arcam carries it to an extreme. The most prominent elements on the AVR400's front panel are the display, the row of buttons below the display, and the row of logos below the buttons. Each of these three elements is a symmetrically rigorous 8 inches wide on a front panel 17 inches wide. There are no knobs, not even for volume. If you want to change the volume from the front panel, your fingers have to seek out the two buttons at far right. But Arcam does make two concessions to the universal human need for beauty. One is made visible when you turn on the AVR and see the rich green of its display. The other is the faceplate's subtle convex curve.

The remote control echoes the faceplate's silver-grayness and convexity. Although the remote is backlit in blue, which can be helpful in the dark, it is otherwise one of my all-time least favorite

remotes, with volume keys that are hard to find and not distinguished by size, shape, or color. Your custom installer may offer a better solution, but a product at this price should come with a decent remote.

The graphic user interface—in subtle black, white, and violet—is plain but pleasant looking. It's especially well arranged for tweakers; Speaker Types, Speaker Distances, and Speaker Levels are all accorded the status of top-level menu items. There's a fifth definition of high-end AVR: the kind that makes life easier for the knowledgeable tweaker.

This A/V receiver's back panel looks notably different than those of its higher-priced siblings. The other two Arcam AVRs arrange their jacks in columns, which made my plugging-in ritual easier. This one has a more conventional cluster layout. The difference reflects a change in design from the modular approach of the previous AVRs. In the two older models, all of the circuit boards plug into a motherboard, as in a PC. The new model saves money by using a

ARCAM AVR400 A/V RECEIVER
PERFORMANCE ★★★★★
FEATURES ★★★★★
ERGONOMICS ★★★★★
VALUE ★★★★★

non-modular design. Not a deal breaker, just an observation.

Returning to the subject of power: The AVR400's 90 watts fall below another psychologically significant threshold, the all but meaningless 100-watt-per-channel spec. What you need to know is that Arcam rates its 90 watts conservatively, with all channels driven. Squint closely at spec sheets, and you'll see how other manufacturers weasel out—by specifying power into just one or two channels driven. Try driving all channels on those models simultaneously, and you'll often see the power output clamp down—sometimes precipitously. This may or may not be truly meaningful, as no real-world program content would ever tax an amplifier this way. But you'll find the ability to continuously drive all channels at once an indicator of a robust power sup-



SPECS

ARCAM AVR400 A/V RECEIVER

AUDIO DECODING:

DOLBY: TrueHD, Digital 5.1, EX, Pro Logic IIx, Volume

DTS: DTS-HD Master Audio, DTS, ES, 96/24, Neo:6

3D: Yes

THX CERTIFICATION: No

NUMBER OF AMP CHANNELS: 7

RATED POWER (WATTS PER CHANNEL):

90 into 8 ohms, all channels driven

SPECIFIED FREQUENCY RESPONSE:

20 Hz to 20 kHz

VIDEO PROCESSING: Genesis Torino

AUTO SETUP/ROOM EQ: Proprietary

DIMENSIONS (W X H X D, INCHES):

17.3 x 6.7 x 16.7

WEIGHT (POUNDS): 31.2

PRICE: \$2,499

ply, and only the most honestly rated amps and AVRs will make this spec. As always, see our measurements for the final verdict.

I should note in passing that neither the AVR400 nor the step-up AVR500 use the rail-switching amp architecture of the AVR600, which gives the top model tremendous reserves of power. In practice, the AVR400 did a beautiful job of running my Paradigm Reference Studio 20 v.4 speakers.

Arcam doesn't load up its A/V receivers with extraneous features, but the AVR400 does have a few significant pluses. One is Dolby Volume, which I comment on in some detail in my review of the Anthem MRX 300 elsewhere in this issue. It evens out volume levels among source components and within programs and lets you narrow a program's dynamic range in multiple steps—helpful

when you're trying to keep dialogue high enough to be audible and loud effects low enough to be bearable. And it helps maintain the same perceived frequency response at any listening level.

Network audio functions are becoming common now in A/V receivers. This one includes vTuner Internet radio functionality via the AVR's Ethernet port. Once you make that connection to your home network, you can also pull music out of a router-connected PC. And a back-panel USB jack allows access to music files from a stick or external hard drive.

For your iPod fix, connect the irDock (\$285). In a world where iPod docks rarely top \$150, why is this one so costly? Arcam explains: "It's a great-sounding analog dock with carefully regulated power supplies, switchable iPod charging, superior resonance control, and S- and composite video outputs. The serial connection allows full remote control when used with Arcam's AVRs, as well as a separate IR remote control for non-serial-control applications."

On the video side, the AVR400 is noteworthy for being Arcam's first 3D-capable A/V receiver. Whereas previous models were outfitted with only HDMI 1.3, the new one is 1.4a compliant, with support for ARC and CEC. The Pixelworks video processor that Arcam used in its previous two AVRs has given way here to a Genesis Torino. It might be instructive to compare the Video Test Bench section of this review to those of the AVR600 and AVR500 reviews (*HT*, August 2009 and August 2010).

While this A/V receiver does include homegrown auto setup and room correction, the manufacturer urges consumers to solve acoustic problems the old-fashioned way—with correct

speaker positioning and perhaps wall treatment—resorting to room correction as "your next best choice." I ran the auto setup and let the speaker distance settings stand, although I did change the speaker size from large to small and raised the crossover to 80 hertz (my usual settings). Since my room sounds decent without room EQ, barring a little bass bloat, I elected to keep the room correction off, allowing direct contemplation of the AVR's amp quality and other essential characteristics.

Associated gear included the aforementioned Paradigm speakers and an OPPO BDP-83SE universal disc player. All movie demos were Blu-ray Discs.

From Liverpool to Thailand

Nowhere Boy is the acclaimed dramatization of John Lennon's early life. It has a DTS-HD Master Audio soundtrack that adroitly mixes dialogue and music. The orchestral score's strings were warm and realistic, a cut above the bland treatment of most AVRs. In general, I liked the way the Arcam set me free from the usual dichotomy of detailed and harsh versus vague and nonfatiguing. It relayed movie soundtracks in a way most AVRs don't, applying the values that make music sound good and tend to separate the run of the mill from the high end. I don't want to oversell it: It wasn't revelatory. But it was a pleasure to listen to.

Stone, in Dolby TrueHD, is the story of a prison psychologist, played by Robert De Niro, who's manipulated by a prisoner played by Ed Norton. These masterful performances are accompanied by a minimum of showy effects, letting the Arcam show off its



• The AVR400's front panel trades lots of knobs for a super-clean aesthetic.

musically inclined treatment of dialogue, as if De Niro's and Norton's voices were fine instruments, which is, in fact, how they're used here.

Ong Bak 3 is the final installment of a Thai martial arts trilogy starring and directed by Tony Jaa. I liked that it places as much emphasis on spiritual evolution as it does on the kick-boxing scenes. However, the DTS-HD Master Audio soundtrack is shrill and abrasive. The Arcam doesn't have any kind of re-EQ mode, but it does offer bass and treble adjustments, so I tried something I've never done in the course of a review: I applied a draconian 6-decibel treble cut. Bass effects were also on the heavy side, and engaging the room EQ didn't help much. In any case, the treble adjustment allowed the AVR's naturally sweet mid-range to reassert itself, leaving me immersed in the movie's rural/spiritual visions and action scenes. I restored the treble control to its center setting before I moved on to the music demos.

From High-Rez to Low-fi

Eventually, my supply of vintage SACDs will run out, but it hasn't happened yet. Jay McShann's *What a Wonderful World* is mere stereo, not multichannel, so I made my usual comparisons between the original two channels and the 5.1-channel Dolby Pro Logic II Music mode. Arcam's

ARCAM AVR400	3:2 HD	2:2 HD	MA HD	3:2 SD	2:2 SD	MA SD	VIDEO CLIPPING	LUMA RESOLUTION	CHROMA RESOLUTION	SCALING
HDMI to HDMI	FAIL	FAIL	PASS	FAIL	FAIL	PASS	FAIL	PASS	BORDERLINE	GOOD
COMPONENT to HDMI	FAIL	FAIL	PASS	FAIL	FAIL	PASS	FAIL	FAIL	BORDERLINE	GOOD

VIDEO TEST BENCH The Arcam's video processing was below average in both the analog and digital tests. The failures shown here should not be as intrusive on normal program material as in our bench tests (which are designed to trip up video processors that are less than pristine). Nevertheless,

Visit our Website for a detailed explanation of these video tests.



we recommend, if possible, that you use the video circuits in this A/V receiver in passthrough mode, where it performs well, and do any desired upconversion or other video processing in either the source or the display.—TJN

HT Labs Measures

ARCAM AVR400 A/V RECEIVER

Five channels driven continuously into 8-ohm loads:

- 0.1% distortion at 84.4 watts
- 1% distortion at 102.8 watts

Seven channels driven continuously into 8-ohm loads:

- 0.1% distortion at 74.4 watts
- 1% distortion at 83.3 watts

Analog frequency response in Stereo

Direct mode:

- 0.06 dB at 10 Hz
- 0.01 dB at 20 Hz
- 0.07 dB at 20 kHz
- 2.79 dB at 50 kHz

Analog frequency response with stereo signal processing:

- 1.55 dB at 10 Hz
- 0.47 dB at 20 Hz
- 0.22 dB at 20 kHz
- 13.52 dB at 50 kHz

distortion at 123.3 watts and 1 percent distortion at 141.6 watts. Into 4 ohms, the amplifier reaches 0.1 percent distortion at 161.7 watts and 1 percent distortion at 199.6 watts.

Response from the multichannel input to the speaker output measures -0.06 dB at 10 Hz, -0.01 dB at 20 Hz, -0.07 dB at 20 kHz, and -2.85 dB at 50 kHz. THD+N from the CD input to the speaker output was less than 0.003 percent at 1 kilohertz when driving 2.83 volts into an 8-ohm load. Crosstalk at 1 kHz driving 2.83 volts into an 8-ohm load was -84.24 decibels left to right and -81.22 dB right to left. The signal-to-noise ratio with an 8-ohm load from 10 hertz to 24 kHz with "A" weighting was -110.74 dB_{BrA}.

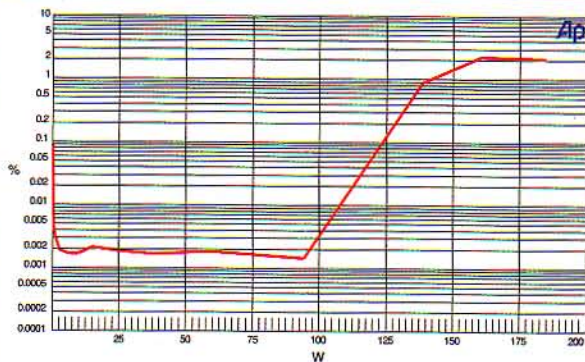
From the Dolby Digital input to the loudspeaker output, the left channel measures -0.00 dB at 20 Hz and -0.13 dB at 20 kHz. The center channel measures -0.01 dB at 20 Hz and -0.18 dB at 20 kHz, and the left surround channel measures -0.01 dB at 20 Hz and -0.17 dB at 20 kHz. From the Dolby Digital input to the line-level output, the LFE channel is +0.04 dB at 20 Hz when referenced to the level at 40 Hz and reaches the upper 3-dB down point at 109 Hz and the upper 6-dB down point at 116 Hz. —**MJP**

Visit our Website for a detailed explanation of our testing regimen, plus a list of our reference gear.

on the web

This graph shows that the AVR400's left channel, from CD input to speaker output with two channels driving 8-ohm loads, reaches 0.1 percent

ARCAM AVR400 A/V RECEIVER



Mode menu—another helpful top-menu item—facilitated the process by giving me a chance to knock out all of the unused modes (the DPLII movie and game modes, DTS Neo:6, etc.). So by pressing the remote's Mode button, I could switch back and forth between the only two modes I care about without endless cycling. Anticlimax: They both sounded good. McShann's Kansas City blues vocals were warmly

human, and his piano a little bland, per the recording. The high-resolution medium made itself known in subtle ways, such as the soft but true metallic sheen of cymbals.

Handel's *Organ Concertos Vol. 3* includes numbers 7, 9, 10, and 12. PentaTone's multichannel SACD presents the 1975 recording in its original configuration of four channels, although the AVR bass-managed frequencies below



CONNECTIONS

INPUTS: VIDEO: HDMI 1.4a (5), component video (3), S-video (4), composite video (4) **AUDIO:** Coaxial digital (4), optical digital (2), 7.1-channel analog (1), stereo analog (6), 1/8-inch headphone, Ethernet (1), USB (1), AM (1), FM (1), IR (2) **ADDITIONAL:** iPod dock (1) **ACCESSORY:** iPod dock **OUTPUTS:** VIDEO: HDMI 1.4a (1), component video (1), composite video (1) **AUDIO:** Stereo analog (1), 7.1-channel preamp (1) **ADDITIONAL:** RS-232 (1), 12-volt trigger (2), IR (2)

80 Hz, sending them to the sub. While I've previously referred to the Arcam's warm voicing, it didn't restrict the fully developed high frequencies of Daniel Chorzempa's organ or Concerto Amsterdam's strings. Some organ registers were warm and mild, while others were more trebly and acidic, as though I were listening to two different instruments or recordings. The Arcam made these strong distinctions effortlessly.

To use Arcam's network audio functions, I plugged in the long Ethernet cable that reaches from my router to my rack. In seconds, a bubble popped up on my PC monitor, asking me to authorize media sharing. To choose network audio sources, I pressed the remote's iPod button, which cycled among Internet radio, USB, and PC. Network receivers can be a trifle buggy when they navigate my magpie music library, but the Arcam was commendably free from weird surprises—there were no anomalies that I couldn't account for by the metadata.

Some desultory surfing through the contents of my PC's hard drive took me through an MP3'd FM broadcast by the Portland Cello Project, the new Blackfield album, and finally *The Complete Stax-Volt Singles 1959-1968*, whose nine discs of hits I have been diligently exploring. I couldn't help noting the contrast between the golden tone of music optimized for AM radio versus the digital death rattle of music optimized for earbuds. Of

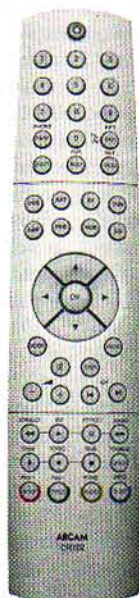
course, I was listening to music files, MP3 encoded at 320 kilobits per second, but the signature Stax-Volt sound was intact. The converted Memphis movie theater that served as the label's hit factory routinely turned out far more listenable sound (even in mono) than today's hit makers obtain with their profusion of often-abused digital options.

The Arcam AVR400 is a worthy addition to an A/V receiver line that already includes two sonic over-achievers. Truth to tell, if you're spending four figures for an AVR and your speakers are even a little bit demanding, you'd be better off going all the way with the swooningly gorgeous-sounding AVR600, whose rail-switching design can operate with a wider range of speaker impedances and sensitivities. But the AVR400

bears a strong family resemblance to its older siblings in terms of voicing, and if your speakers are reasonably sensitive, you might not need the extra power. Well-implemented network audio features are also a big plus. Yup, this is a high-end AVR, and yup, it's worth \$2,499. ⌘

* Audio editor Mark Fleischmann is also the author of the annually updated book *Practical Home Theater* (quietriverpress.com).

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Mark found the AVR400's remote control difficult to use.