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Product Review

Audio Research Reference 110 Stereo Amplifier

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**"A populist amplifier –
all that most audiophiles will want or need!"**



[http://www.soundstagenetwork.com/measurements/
amplifiers/arc_reference_110/](http://www.soundstagenetwork.com/measurements/amplifiers/arc_reference_110/)

Few terms in high-end audiophilia evoke a more positive reaction than "mono amplifier." Long considered the gold standard in amplification, mono amplifiers are nearly always a company's most powerful offerings, and its most expensive too. Using an entire chassis for only one channel opens the door to design possibilities that stereo amps often can't match. There's room for more circuit boards, extra rows of tubes, or additional banks of output transistors. With all of this comes greater power—double the stereo output or more—and commensurate dynamic capabilities. There is also a sense of pride, knowing that you have the biggest, baddest amp that a company makes.

What if you don't need all that power but still want the sonic refinement inherent in a company's flagship product? You're almost always out of luck. For some reason, audio companies create mono versions of their stereo amps, but they don't often go in the opposite direction, making a stereo version of a mono design. Maybe the marketing department thinks that such an amp would siphon off sales of the more expensive monoblocks, or they figure that it's better to sell two boxes to a customer instead of one. In terms of engineering, it's easier to go from stereo to mono; there are stereo amps that have built-in switching specifically for this.

While some products with "Reference" in their name cause only the dilution of the word's meaning, the folks at Audio Research have used the term well, reserving it for only the very best products they make. I've been watching the rollout of Audio Research's latest Reference line with keen interest that has morphed into *self-interest*. Early on, I heard ARC's Reference 610T and Reference 210 mono amplifiers in systems with which I am familiar—ARC's in-house rig as well as David Wilson's system. Later on, I purchased a Reference CD7 CD player and then reviewed the Reference 3 preamp, which I

Review Summary

Sound

"Through the mids and into the upper bass, the Reference 110 sounded suave, even a touch rich, and absolutely engaging. Voices conveyed a full measure of the bodies from which they emanated, while drum strikes and plucked strings showed the transient speed needed to suspend disbelief." "Huge—in all dimensions," say my listening notes about the Reference 110's soundstaging."

Features

"The topology Audio Research uses for the Reference 110 is directly descended from that of the Reference 610T. It's a hybrid, fully balanced push-pull circuit that uses direct-coupled JFETs in the input stage and matched pairs of 6550C output tubes. The amp's 6H30 gain stage is used in ARC's Reference 3 preamp and Reference CD7 CD player, while the 6H30 cathode follower is new to Audio Research amplifiers."

Use

"The Reference 110 has a fan for each channel. If the default high setting creates too much noise, you can adjust downward as needed." "Experiment" with the amp's 4-, 8- and 16-ohm outputs; one set may sound better than the other two regardless of the speaker's rated load.

Value

"Very close in performance to the much pricier Reference mono amps, and for this reason a particularly astute purchase."

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also purchased. Amidst all of this, I wrote about the amazing synergy that ARC's Reference products exhibit, singling them out for my annual "Editor's Choice" article on the best products I personally came across in 2006, making them the very meaning of a reference.

So I guess you could say that I am tuned in to what Audio Research has been doing with its Reference line. The latest addition is the Reference 110, a stereo amplifier that costs \$9995 USD—a substantial sum, but a fraction of what the mono 610Ts and 210s cost and the first Audio Research stereo amp to carry the Reference tag. Can a stereo amp be considered "a reference" when mono amps are "the reference" in the minds of audiophiles?

Three amps, one circuit

The topology Audio Research uses for the Reference 110 is directly descended from that of the Reference 610T. It's a hybrid, fully balanced push-pull circuit that uses direct-coupled JFETs in the input stage and matched pairs of 6550C output tubes. The amp's 6H30 gain stage is used in ARC's Reference 3 preamp and Reference CD7 CD player, while the 6H30 cathode follower is new to Audio Research amplifiers. The output stage is a combination of ultralinear and Audio Research's "partially cathode-coupled" circuit, which is said to yield better sound than conventional pentode or triode operation.

The main differences among the Reference amps are in the number of output tubes used (and corresponding power output) and power-supply energy storage. The Reference 610T uses 16 6550C output tubes per chassis to produce 600 watts, while the Reference 210 cuts that number to six and produces 210 watts. The Reference 110 uses four output tubes per channel to deliver 110 watts of stereo power. The Reference 610T stores 1000 joules of energy in its power supply, the Reference 210 767 joules, and the Reference 110 520 joules. In addition to the eight 6550Cs, the Reference 110 uses four 6H30s. The output tubes are biased via test points and pots inside the amp. You'll need a digital volt/ohm meter to do this, but as shipped from the factory, the amp is properly biased.

The Reference mono amps have a prominent feature that the Reference 110 omits: a front-mounted vacuum-fluorescent display that gives all manner of information about the amplifiers' operation, including power-line voltage, power output and tube life. (Inside the Reference 110 is a small LCD meter for tracking the life of the amplifier's tubes, however.) All three Reference amps are fan cooled and accept only a balanced input. The Reference 110 has a fan for each channel. If the default high setting creates too much noise, you can adjust downward as needed. In my room, I could hear the fans as they were set at the factory during soft musical passages, but only then. I always meant to change this—you have to remove the amp's cover to do so—but I never got around to it, an indication of exactly how intrusive the fans' noise actually is. Speaker connection is via gold-plated all-metal binding posts. The Reference 110 has sets for 4-, 8-, and 16-ohm loads.

The vacuum-fluorescent display used for the mono amps (and the Reference 3 preamp) has been somewhat controversial for what it does to the look of each. In my opinion, the Reference 110 is the most handsome of the Reference amps precisely because it omits the display, which I never found gaudy, just not as attractive as if it weren't there. The Reference 110 has a classic look. It's not a small amp, measuring 19"W x 8 3/4"H x 19 1/2"D and weighing 70 pounds, and not overly big either. At first glance, you know it's an Audio Research amplifier. Its profile is as immediately recognizable as that of any piece of audio electronics made today.

Setting up

I used the Reference 110 along with a full complement of Audio Research Reference electronics and with products from other companies. Other than the amp's need for a balanced input and the sound of the fans, I had no in-use issues with the Reference 110, which is not standard operating procedure with tube amplifiers. Transformer hum or background hiss often spoil things to some degree, but the Reference 110 worked as I expected given the company that made it, and it didn't cause problems when used with non-ARC products.

Preamps were an Audio Research Reference 3 or Aurum Acoustics Integrus CDP, which, as *SoundStage!* readers know, is also a top-flight CD player. Digital sources were an ARC Reference CD7 CD player, an Ayre C-5xe universal player, or Esoteric P-03/D-03 transport/DAC combination. Adding to the digital riches, a Zanden Model 5000 Signature DAC and Model 2000 Premium transport came home with me following CES for some reacquaintance. Other amps were Lamm ML2.1 SET and M1.2 Reference hybrid monoblocks and a Conrad-Johnson Premier 350 stereo amp. Speakers were Wilson Audio Sophia 2s or WATT/Puppy 8s, both simpatico with the Reference 110. Interconnects and speaker cables were from either Shunyata Research (Antares Helix and Orion Helix) or Crystal Cable (Ultra all around).

Power products were from Shunyata Research and included the latest Anaconda Helix and Python Helix power cords (both Alpha and Vx variations) along with Hydra Model-8 and V-Ray power conditioners. The Reference 110 needs a power cord with a 20-amp connector, and Audio Research supplies a very good one with the amp. I used it for the vast majority of my listening and never felt the need to swap it out. Only after I listened for a few weeks with the amp plugged directly into the wall did I use the Reference 110 with either of the Shunyata power conditioners.

The Lamm amps sat on Silent Running Audio Ohio Class XL Plus² platforms, while the Aurum Integrus CDP, ARC Reference 3 and Reference CD7, and Ayre C-5xe rested on a Silent Running Craz 4 Reference isoRack Plus equipment rack. The Zanden digital separates were on top of Harmonic Resolution Systems aluminum-and-granite bases, which increase their overall resolving power and focus.

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Wilson Audio's Sophia 2 and WATT/Puppy 8 speakers are both considered a 4-ohm nominal load. However, when John Giolas set up the WATT/Puppy 8s, he experimented with the Reference 110's 8-ohm outputs, which made the amp's prodigious soundstage swell in size and tightened up the bass as well. I'm not exactly sure why this would occur; there were no tonal aberrations with either set of outputs indicative of an impedance mismatch, for instance. The point of this anecdote isn't to say that you should use the 8-ohm outputs of the Reference 110, but rather to encourage you to experiment. If your speaker is considered an 8-ohm load, try the 16-ohm taps as well.

Reference sound

As I mentioned at the beginning of this review, I've heard the huge, heavy Reference 610T mono amps a couple of times. I am more familiar, though, with the Reference 210s, which have made impressive music driving speakers I know well. Each time I listen to the 210s, I think they are one of the most complete-sounding amps I've ever heard and they *must* be among the best amps available at any price. Their combination of realistic tonal color, acute resolution of instrumental detail, dynamic prowess, and soundstage spaciousness makes them masters of all kinds of music. Small ensembles sound intimate and truly beautiful, while a full orchestra takes on a majestic sense of scale. In general, single-ended amps, with their low tube counts, have a monopoly on midrange naturalness and purity, but the Reference 210s challenge this, sounding full but not syrupy through the mids, and detailed but not etched. That they do *all* they do, and have tremendous power reserves, makes the Reference 210s a rarity. Their last watt sounds as good as their first.

Thus, when the Reference 110 arrived, it had big expectations to satisfy. It's a half-power Reference 210, I reasoned. Listening quickly confirmed that this is the most accurate way to consider the Reference 110: less power, but *the same* power. Like the Reference 210, the 110 has ravishing tonal color—not "coloration," but "color," what makes music, like people, appear human. Through the mids and into the upper bass, the Reference 110 sounded suave, even a touch rich, and absolutely engaging. Voices conveyed a full measure of the bodies from which they emanated, while drum strikes and plucked strings showed the transient speed needed to suspend disbelief.

A recent CD find that I've been recommending is the Wood Brothers' *Ways Not to Lose* [Blue Note 0946 3 4312Q 2 8]. This is distinctly American music, an earthy mixture of pop, jazz and country that manages to sound new and old at the same time. The Reference 110 seemed made for it. Vocals were prominent because of their tangibility, and each instrument bustled with tone and overtone. The songs are filled with hooks that are missing from so much popular music, most conveyed by acoustic guitar and upright bass. It's great stuff.

Ways Not to Lose is also a demonstration-quality recording whose soundstage makes the most of the Reference 110's

ability to portray size and space. "Huge—in all dimensions," say my listening notes about the Reference 110's soundstaging. I wasn't talking about unnatural proportion—triangles turned into tympani—but the sense that the instruments fill out the area around the speakers and, with the WATT/Puppy 8s, above them too. Martin Speake's *Change of Heart* [ECM 1831] is a collection of atmospheric jazz that includes Paul Motian on drums. Like many ECM recordings, its sound is dry, which only enhances the recording's intrinsic sense of space. The soundstage with the Reference 110 wrapped around the speakers—in front, to both sides and behind. This vastness is a quality of Audio Research electronics, which bring a lifelike sense of dimension to recorded music—with the right recordings, of course. In this regard, the Reference 110 is without equal among the stereo amps I've heard. It threw a soundstage as big as my room and the speakers would support—"huge" by any sonic measure.

Inner detail was conveyed without any highlighting of more prominent musical elements. On the Wood Brothers' "Tried and Tempted," there is some soft strumming that's captured in its full glory. There was muted attack and feathery decay into nothingness with no attendant razory etch. The Reference 110's tubes don't create a fine scrim of noise that swallows up the diminution of individual notes, and they don't glaze over everything either. The tonal color is omnipresent—just enough of it to notice and admire its effect throughout the midrange especially—but it doesn't dominate. The Reference 110 never tips over into sugary saturation.

One afternoon while my wife was out, I blasted Devo over the WATT/Puppy 8s—a test of the Reference 110's ultimate output. What's "blasted"? "Smart Patrol/Mr. DNA" from *Duty Now for the Future* [Infinite Zero/American 14501-2] at 50 on the Reference 3's volume readout—peaks near 100dB. Yes, the song *begged* me to lean on the volume. Six minutes were all my ears could take, the amp remaining composed at such extreme volume. Played at normal levels, *Duty Now for the Future* ended up being a perfect illustration of the way the Reference 110 works with its Reference mates. When you go Reference all the way, you hear the electronics at their very best. There are no complementary characteristics, no sonic mixology involved. Instead, you get identical performance from laser to binding post—utter coherence. I know mixing and matching is part and parcel of being an audiophile today, but if you own one of the current Reference products, resist your urges and buy the others. There is absolutely no reason not to.

And if you're considering a Reference amp, you're probably wondering at this point why anyone would buy the monoblocks given the Reference 110's capabilities. Cynics would note that the Reference 110 was the last *and* least expensive amp introduced in the Reference series, but they would be overlooking a few things about the Reference 210 and 610T in the process—that's why they're cynics. The greater power and power-supply energy storage of the Reference monoblocks manifest themselves in the sound of both amps, mostly in terms of the way large-scale changes in volume are handled—the fluidity of soft to loud—and

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the music's rhythmic drive. When it comes to these things, there is no substitute for power. The Reference 210s and especially the 610Ts have it in abundance.

Still, the Reference 110 is a powerful amplifier. In no way does it sound deficient or exhibit obvious tradeoffs. There is also price to consider. The Reference 210s are \$19,990 per pair—exactly double the cost of the Reference 110. The Reference 610Ts are \$39,990 per pair—four times the Reference 110's price. As any audiophile knows, price and performance, even among products from the same company, are not proportional. When I consider the three Reference amps and my listening experiences with each, the Reference 110 occupies the fattest part of the value scale, offering the maximum sonic return on investment. If you can afford the Reference mono amps, I doubt you'll be disappointed with them. But as alternatives go, the Reference 110 is pretty special—a peer, not a subordinate.

Versus

The last amplifier I wrote about was also a stereo model from a distinguished maker of tube electronics. The Conrad-Johnson Premier 350 (\$10,000 after a January 1 price increase) is a solid-state amp, however, and quite an astonishing one at that. It's a 350Wpc amp that doesn't try to dazzle with its massive power reserves, instead upholding Conrad-Johnson's reputation for refined, elegant sound. I praised the Premier 350 for its delicacy and naturalness, calling it "a musical muscle amp."

So much of what I wrote about the Premier 350 would apply to the Reference 110, though the two are not mirror images of each other. Putting aside the differences in technology and connectivity (the C-J amp accepts single-ended input only), the Premier 350 doesn't put as much flesh on the bones of performers as the Reference 110, nor does its bass have the 110's tubey fullness and bloom. The soundstage of the Reference 110 swells with big-sounding recordings in a way the Premier 350, as good as it is, can't quite match.

But the Premier 350's power—our measurements show 400Wpc into 8 ohms at 1% distortion—pays dividends in terms of not only absolute loudness but the impact of bass transients like the throbs on Tracy's Chapman's "3000 Miles" from *Where You Live* [Elektra 83803-2]. The Reference 110 makes these low bass tones sound a little poofy, lacking in ultimate depth, while the Premier 350 turns the poof into a very low rumble. The Premier 350 also carves out image outlines with greater precision, which helps it convey the sense of space between performers even better than the Reference 110. The perspective of both amps is neither forward nor recessed, though the Reference 110 makes its presence known more readily because of the weight of its sound.

In the end, the Reference 110 sounds like the exceptional tube amp it is, while the Premier 350 is the best solid-state amp I've heard so far. It's impossible to subtract the sonic differences represented by the contrast in power between these two amps. In that regard, the ARC Reference 210s may be a more apt

comparison for the Premier 350, but the Conrad-Johnson amp still won't take on their tonal beauty or that of the Reference 110. So it goes with amplifiers as significant as these.

Final words

One word that doesn't apply to the Reference 110 is "compromise." The engineers at Audio Research haven't cut corners or made concessions to anything other than the ideal of creating a stereo amplifier worthy of the company's Reference moniker. But what they've accomplished is much more than this; they've brought the sound of the Reference mono amps down to a price point that more audiophiles can afford. The Reference 110's tonal color, expert inner detailing and expansive soundstaging are things often reserved for the very best single-ended amplifiers, but its 110Wpc output makes it able to drive real-world speakers. It is a populist amplifier—all that most audiophiles will want or need. Those with big rooms, big speakers or big aspirations may want to join the well-heeled minority and chase the limits of reproduction with the Reference 210 or Reference 610T monoblocks. But if you covet these amps and don't have the space or budget for them, Audio Research has a very attractive option for you.

Before the Reference 110 arrived, I reasoned that it had to be disqualified from consideration as a Reviewers' Choice. After all, it wasn't Audio Research's state-of-the-art offering, and it couldn't be a screaming bargain at its nearly \$10,000 price. I then began to listen. In reality, it's very close in performance to the much pricier Reference mono amps, and for this reason a particularly astute purchase. When you pair it with the Reference 3 preamp and Reference CD7 CD player, the extraordinary synergy is obvious, and so is the extraordinary sound.

Voilà—a Reviewers' Choice. While the Reference 110 may be the littlest Audio Research Reference amp, the monoblocks casting a wide shadow over it, you won't notice when the lights are out and your favorite music is playing.

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Company Info

Audio Research Reference 110 Stereo Amplifier

Price: \$9995 USD.

Warranty: Three years parts and labor.

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