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The Cutting Edge



Pass Labs XA160 and X600.5 Monoblock Power Amplifiers

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A Tale of Two Amplifiers

This is not a review for audiophiles who have blundered into the wrong magazine and think that all amplifiers sound the same. It is an exploration of two new amplifiers from the same designer and firm, of how their sound differs in nuance, and how they differ in terms of their interface with different speakers. It also is in some ways a warning about

amplifier reviews and system interfaces, and about the need to carefully listen to the synergy—or lack of it—between your power amplifiers, speaker cables, speakers, and listening rooms.

I also should stress that the two amplifiers involved—the Pass XA160 and X600.5—do sound very much alike. They should. They are both made by Pass Audio Labs; they are both designed by teams led by Nelson Pass; they are built on

the same chassis; they both have the same basic “super symmetry” and two-gainstage circuit topology. They also are both expensive high-end products where cost is a minor constraint on performance; both sell for \$18,000 the pair.

Both designs are based on long evolutionary experience.

Nelson Pass is one of the most famous amplifier designers in the high end, and the design teams he has led both at Threshold and at Pass Labs have consistently pursued accuracy and sonic purity, not gimmicks or fashion. Like most of the best high-end designers, Pass has gotten steadily better. Each generation of amplifiers he has produced has been a bit cleaner, has better low-level transients and dynamics, and is sweeter and more detailed. He has also been consistent in the way he “voices” his amplifiers: open and detailed, not warm and forgiving; extended highs and flat levels of upper midrange energy; equally flat mid and upper bass, with no gimmicks to give the sound more punch and “rhythm.”

Like most audiophiles, I’m not willing to make one more compromise than I have to. I want both power and nuance. I

want an amplifier that can drive virtually any speaker, regardless of character and load. I want it to sound exactly the same every time I turn it on, so I can be sure that I hear the real differences between the components I’m reviewing in my reference system. I also want it to be both neutral and “musical” in

the sense that it is revealing and does not color or exaggerate, but also is not “analytic” or fatiguing.

Pass Labs has delivered what I personally want in one of my reference components ever since it introduced its Aleph series. I have paid close attention to the Pass X-series ever since, and when the series of events that led to this review began, I was using the Pass X600. Shortly after the XA160 was introduced, however, I replaced my Pass X600.5 with it. I chose the XA160s over the X600.5s because—like many preceding Class A

designs and tube designs—they offered a slight advantage in terms of nuance in low-to-mid-level passages. They improved the air, life, harmonic integrity, and low-mid level dynamics of the music. They also tilted the timbre slightly towards the upper bass and lower midrange—which helps compensate for

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The Key Design and Technical Differences Between the XA160 and X600.5

The primary design and technical differences between the XA160 and X600.5 are in their output circuitry and power. The differences in their specifications for distortion, frequency range, and flatness of response are virtually negligible. The X600.5, however, is a 600-watt amplifier into 8 ohms, and the XA160 is 160 watts; the X600.5 has a maximum current of 25 amps and the XA160 of 7 amps. The X600.5 has a faster slew rate.

The power output of the X600.5 increases to 900 watts into 4-ohm loads. The power of the XA160 drops sharply into lower impedances. The X600.5 has a nominal damping factor of approximately

1000, and the XA160 has a nominal damping factor of 30. In terms of basic design, the XA160 is a pure Class A design while the X600.5 has a Class A initial gainstage, but the output stage only operates in Class A at low-to-medium-low power levels before shifting to Class B.

I asked Nelson Pass to explain the difference in design and sound quality from his perspective, and he put it this way: “The very first X amplifier was the X1000 and was intended to illustrate the capability of the SuperSymmetric circuit by delivering more high-quality power with two gainstages than anyone had ever seen. Of course, we followed that up with the rest of the X product line.

“The Class AB X amplifiers did very

well for us, but this is a company that usually has at least some Class A amplifiers for sale, and as the Aleph series faded, we looked to build Class A X amplifiers. They would not have the higher power of the AB circuits and they would operate less efficiently. An XA160 would deliver 160 watts and the X600 output 600 watts, but they both required the same amount of resources and idled at 500 watts or so.

“The X.5 and XA have a slightly different customer base. The X.5 delivers more power and a lot more current. It is appropriate to tougher loads and for more cost-sensitive customers. The XA sounds better in general, but this assumes 6-ohm impedance or higher, and lesser power requirements.” **AHC**



the bright upper midrange and close-in perspective of far too many modern recordings. Plus my main reference speakers—the TAD-1s and Thiel 7.2s—have very extended highs and more upper midrange energy than most reference-quality speakers.

These differences between the X600 and XA160 occurred, however, as much because of amplifier and speaker interactions as because of the inherent sonic character of the two amplifiers. Moreover, I gave something up in switching to the XA160s. As any reviewer can tell you, there is often only a marginal correlation between the technical measurement of an amplifier's power and its real-world musical performance in a given system. The X600s, however, had much more apparent power than the XA160s with my relatively power-hungry TAD-1s and Thiel 7.2s. There was a very clear loss of high-level dynamic capability and musical energy and life with full orchestral music and grand opera, and not just with sonic spectaculars.

These differences were not significant with more efficient, easier-to-drive, or less-capable speakers. The Polk LSi-15 is efficient enough in any actual system and listening room that amplifier power is less important. It cannot reproduce the same level of dynamics as the TAD-1 and Thiel 7.2. The Quad 989 is a very good speaker, but lifelike, high dynamic levels are also simply not its forte. With the Polks and Quads, the XA160 was clearly the better choice, and one that did not involve any meaningful sonic sacrifices.

At the same time, the XA160 did not do as well with a truly difficult load like the Spendor BC-1. The amp loses nearly half its rated power into four-ohm loads, and my reference speakers are nominally 4-ohm speakers. It did not have the X600's amazing capability to control the speaker almost regardless of load. This became equally clear in terms of some aspects of the Thiel C7.2's performance at more moderate listening levels, and in control over the bass in the TAD-1. The XA160 is not particularly speaker- or cable-sensitive. In fact, it is much less sensitive than many high-end solid-state amps and many vacuum tube amps. It is, however, more sensitive than the X600.

Accordingly, when Pass announced the X600.5 and claimed it had more of the virtues of the XA160, but still had all the power I wanted, asking to audition it was an obvious choice. You don't have to be a reviewer, or even an audiophile, to want the best of both or all worlds in a single option.

Well, I didn't get the perfect solution or the ultimate best of both worlds. The XA160 still outperforms the X600.5 in the areas where it outperformed the X600. This comes through if you compare the two amps with a highly revealing and calibrated recording like the new Dolby Labs "Resolution Project"—an extraordinary musical test record that compares the same selections of jazz and classical music at different digital sampling rates from the lowest up to 24-bit/192kHz.

The X600.5 is, however, a serious sonic upgrade from the

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X600. It does everything better in the areas where the XA160 is still better and is a very close match. It does better in high-level dynamics and the deep bass than the X600. It also shows that power really does make a difference. Music comes more alive. What sometimes seems like a touch of hardness in your speakers or source material is revealed to be the amplifier's limitations in handling sudden loud peaks. The same, strangely enough, can be true of the softness or lack of detail in sustained organ swells.

High-power amplifiers almost always seem to have better control over the speaker, particularly in the bass. This is true even in tube amplifiers with low damping factors, but it is especially true of solid-state amps with high damping factors. The low bass is more powerful and cleaner, the midbass is tighter, and the transition from the upper bass to lower midrange is cleaner.

If you have a speaker that can be biamped, you can have the best of both worlds. Put a pair of X600.5s on the woofer and a pair of XA160s on the midrange and treble. This was the ideal solution with my TAD-1s, although I should stress I live in a detached house with reasonably tolerant neighbors. There is the little matter, however, of cost. The combination of a pair of XA160s and X600.5s is some \$36,000.

Moreover, biamping does impose some minor trade-offs of its own. You'll get an argument on this from some of the best reviewers and designers in the business. But to me, biamping always imposes at least some cost in the coherence of solo instruments, solo voice, and great chamber music and jazz recordings. Important as combining high-level dynamic contrasts with midrange air and sweetness can be at very high levels, there is no such thing as a free lunch (pun intended).

We are talking about two great amplifiers here, some of the

best equipment around. The Pass Labs XA160 and X600.5 should definitely be on your auditioning list if your taste in sound is anything like mine, and if it isn't, you should audition them anyhow simply to hear them and decide whether or not your taste has changed. 

SPECIFICATIONS

Pass XA160

Power Output: 160 watts into 8 ohms

Dimensions 19" x 11.5" x 22"

Weight 150 lbs.

Pass X600.5

Power Output: 600 watts into 8 ohms

Dimensions 19" x 11.5" x 22"

Weight 150 lbs.

ASSOCIATED EQUIPMENT

VPI TNT HX-X turntable and HWJr 12.5 arm; Van den Hul Black Beauty, Sumiko Celebration, and Koetsu Onyx Cartridges; McIntosh MVP-861 SACD/DVD-A/DVD player; PS Audio Lambda CD transport (modified); TacT 2.2X digital preamp-room correction-equalizer-D/A convertor; Pass Xono phono preamp; Pass X0.2 stereo preamp

MANUFACTURER INFORMATION

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Prices: \$18,000 each