

Pass Labs XP-20 Preamplifier and X600.5 monoblock amplifiers Review

By: Doug Schroeder | January 2015



When I first approached Pass Labs to conduct a review of the XA160.5 class A monoblock amplifiers I learned that Pass Laboratories, by virtue of influence from Nelson Pass, was a fun-loving, relaxed company to work with. Consider that Nelson was building a wild amplifier at the time entitled, "The Beast with a Thousand JFET's". Against that backdrop of casual business atmosphere I met with quite serious components, ones made with slavish attention to detail and particular adroitness in design and build quality. The Pass Labs XP-20 Preamplifier and X600.5 Monoblock Amplifier are examples of the win/win situation created for both the company and the audiophile when refined designs are implemented with outstanding parts. For such reasons, Pass Labs has won a reputation in the audiophile community as gear for serious-minded listeners who do not want to work through permutations of gear in order to set up a fine-sound system.

Nelson does not handle all design at Pass Labs these days, but instead tapped the expertise of engineer Wayne Coburn to handle the design of the XP-Series of preamplifiers. Keeping with the traditional sound of Pass Labs equipment, Wayne and Nelson have made a preamp and amp with an open and airy sound – just what the doctor ordered!

The diseased, or there's no cure for Ebola

Audiophiles are a sick lot, a bunch of audio-condriacs who sniff at audio systems and scratch their insecurities by collecting "tweaks." Moping about in a seasonal affective disordered state of the blues, they tumble through ad-hoc systems in search for a cure for disenchantment. While this does not circumscribe the entire demographic of audiophiles, it does encompass a large percentage of them. They return to forums and dealers in droves, seeking a panacea for what ails them – the inability to find contentment with the system they currently own.

I noticed that recently in Guinea a new outbreak of Ebola has surfaced. This is not good, as gruesomely detailed in Richard Preston's book *The Hot Zone*. With a kill rate of 90%, this virus is one of the most feared pathogens on the planet. There is no cure for it; the hope is only to contain the hosts, let them die and prevent its propagation. There is, however, a cure for Audiophilia Nervosa and Upgradeitis; the afflicted need to avail them of the proper gear to suit their needs, such as the Pass Labs XP-20 and X600.5, as they may stop the upgrade impulse cold.

Hospital grade

One does not have to be in the audiophile community long before they encounter the phrase, "hospital grade," particularly in reference to power cords. The designation is supposed to evoke a high standard of construction and supposedly pristine sound quality. If I were to ascribe a general sensation about seeing and using the XP-20 I could do much worse than to call it a hospital grade component. The brushed aluminum casing and washed-out blue LED digits with dual displays for left and right channels evokes images of biological monitors. These are not cuddly kits, but rather cool in a clinical fashion, and they would not appear too out of place next to a centrifuge in a lab.

Pass Labs has been making the X series of preamplifiers since 1998, so a lot of the kinks have been worked out. The XP-20 avoids the absurdity of rows of buttons on the face of the unit, and settles on simple functionality with MUTE, MODE, and INPUT (Left and Right indicated by horizontal arrows) to the left side and a chassis-wide volume dial on the right. A separate, matching power supply unit can be placed either underneath or beside the line stage unit, but don't try it with the monoblock amps!

The Pass Labs XP-20's MUTE button removes the signal from the output of the preamp. The MODE button removes the display from the preamp in three increments, "Bright," "Dim" and "Off." The default setting, which resets every time the preamp's power supply is plugged in, is "Bright." In the "Off" setting the display illuminates as control selections are made for six seconds, then returns to a blank screen. The INPUT select switches toggle through Inputs 1-5.

Input 5 is linked with the PASS THRU (Home Theater) function. It is critical that the gain be reduced to a minimum when first setting the controls for use of the PASS THRU function. Whenever the "Pass Thru" button on the remote is pushed the volume ramps up to 75 in order to prevent serious level mismatches. See the Owner's Manual for further details.

Savor the medical device-like complexity of the micro-controller, which, "... allows all of the preamplifier functions to be repeatable and accurately controlled." The digital controls signals are isolated from the signal path and the digital circuits have their own separate power supply from the analogue supply. If the software controlling the preamp ever needs updating, only a socketed microprocessor needs to be changed – safe and secure!

On the Pass Labs XP-20, five inputs are provided, two of which are balanced/XLR and three single ended/RCA. A tape loop with single ended inputs and outputs is provided. The XP-20

has three pair of outputs, all having identical gain structure, one pair balanced and two pair single ended. Though the single ended outputs are paralleled they have low output impedance and high current capability, so more than one output can be used at a time, i.e. one set to the amp for the main speakers and another to powered subwoofers. More durable than a heart replacement valve, the Owner's Manual states, "The input and output connectors were carefully selected to withstand a lifetime of frequent use." It's good to know that the connections on the preamp will still be snug long after the owner's heart stops pumping!

A couple warnings to ensure healthy use of the Pass Labs XP-20 are in order; the DIN-25 umbilical cable between the power supply and the line stage should never be connected or removed when the power supply unit is plugged into the wall outlet. The power supply has no ON/OFF switch, but rather is powered up when plugged in. Another perhaps overly cautious check is in order upon receiving the preamplifier, that being verification of the unit's voltage and current rating for local power conditions. A tag on the rear of the unit indicates 240 volts, 220 volts, 120 volts or 100 volts. I have once or twice received a component intended for overseas use having the wrong power supply for the local utility voltage.



Particulars of the X600.5

The Pass Labs X600.5 monoblock amplifier is bold and unencumbered both in aspect and operation. The chunky brushed aluminum façade of the amp matches the front of the XP-20 preamplifier and frames the ubiquitous blue Pass Labs meter as if it were an electronic crèche. The obligatory hospital-sized power button is just below.

The meters always draw attention and are often not understood properly, so I repeat here what I was told about them from my article about the XA160.5: "The meters on our amplifiers are different. They reflect the current consumption of the amplifier, and when the amplifier is operating, they don't go down to zero like the meters on other amplifiers. This is because the electrical current consumption of our circuits has a fairly high value at all times, a property called the bias. The bias current runs through the amplifiers at a minimum value, determining the class of operation – Class B, Class AB, or Class A."

Audiophiles can be horridly anal about things like meters, and I'm sure the discovery of the needle on the amp hovering to the side of dead center would be a cause for alarm to some. All it takes to quell fears that the Pass Labs X600.5 is not in operational disease is to scan the images on the Internet, where the needle of the functioning amp is seen most often not centered. So, go ahead and lay that irrational demand for a perfectly vertical needle on the Pass Labs meter to rest.

On the backside are found both an XLR and RCA input, two pairs of output connectors (they accept only spade terminations), a pair of binding post connectors for remote power on, a thermal magnetic breaker switch and a detachable IEC 15A power cord socket.

Built with "Supersymmetry" topology, the X600.5 is said to have, "... a connection between the two halves of the balanced circuit that further perfects the match of common mode artifacts." A balanced power circuitry scheme might typically achieve a 90% reduction in distortion and noise, but Supersymmetry offers an additional 90% reduction, "... such that it has about 1/100th of the distortion of a conventionally simple and otherwise identical amplifier." I take the primary benefit of that extreme design and build quality to be heard in the preternaturally expanded soundstage with a high degree of subtlety as regards the performers and instruments, as will be discussed further.

Regarding warm-up and listening quality

With all this technical prowess Pass Labs opts to keep a lighter tone in its Owner's Manual. Consider the levity of the comments introducing the topic of component warm up:

"There is an Extremely Small (but Non-zero) Chance That, Through a Process Known as Tunneling, This Product May Spontaneously Disappear from Its Present Location and Reappear at Any Random Place within the Universe, Including Your Neighbor's Domicile. The Manufacturer Will Not Be Responsible for Any Damages, Inconvenience or Mental Anguish That May Result.

There is a much higher probability that when you first plug your new pre-amps power supply into the wall and listen to your favorite selections that you will not be experiencing the full measure of performance this product is capable of. These are high bias Class A topology circuits and their performance is largely temperature dependent."

Notice how nothing is said about the impact of warm up upon the condition of Tunneling. This is a serious oversight on part of Pass Labs, and I suggest they conduct research to resolve that question, for surely a few hyper-intuitive listeners will want to know whether a Tunneled amp needs as much warm up!

On to the serious stuff – listening!

One of my favorite stock lines from the old Star Trek series was when – it seemed it occurred nearly every episode – Bones would look at James Kirk while obtaining medical readings on some stricken comrade or alien and say, "Jim, he's dead!" Cue to a commercial.

[Commercial break: Go now to the bathroom, to get something to munch – no problem, I'll wait.]

Resuming our discussion, as an introduction to my listening comments, I have a custom room built specifically for two channel audio, its dimensions 13'x23'x7.5' and it is located in my basement. The room is tuned and has a thick Berber carpet with half-inch underlay. Speakers are typically set approximately four feet from the head wall and from 18-20 inches from the side walls. I typically toe in speakers to just wide of the respective ear and they sit at 12 feet from my listening chair.



I used the Pass Labs XP-20 for an extended period of time, which allowed me to hone my impressions of it. Starting with more affordable gear, an early system I set up involved the Musical Fidelity M1 CDT Transport coupled with the Eastern Electric Minimax DAC Plus, the XP-20, a pair of VAC Phi 200 tube monoblock amplifiers and the Kingsound King III electrostatic speakers, along with a mixture of Clarity Cables and Snake River Audio Cables.

The VAC Phi 200 is a romantic sounding component, not the last word in definition, but unfailingly, tonally rich. It is excellent in terms of depth and fullness of soundstage, and this was enhanced by the Pass Labs XP-20. The XP-20 in contrast to the VAC Signature Preamplifier MkII is more surgical, with analytical precision and a high degree of detail. I have taken a liking to the vocals of Marc Cohn and enjoyed the rich textures of his baritone voice on “Ghost Train”. On this piece, as well as “Perfect Love,” his voice tails off nearly to the point of imperceptibility, and can be lost quite easily if the listening level is not high. The XP-20 and X600.5 dig out these lullaby passages very well.

I had tried a more affordable amplification scheme with the Pass Labs XP-20 in the physically smaller Musical Fidelity M1 PWR Amplifier, a Class D offering. It was not as thick and tonally warm as the VAC, as would be expected. The combination did bring out more detail from the King III speakers, but at higher levels the smaller amp was not able to push the speakers without its yellow clipping warning indicator blinking. The XP-20 preamplifier should be carefully matched to Class D amps; even though they have made great advances it seems so have Class A and A/B amps, so in comparison they still tend toward a whiter, brighter sound. With very forward speakers or ones having extreme definition they could sound irritatingly edgy for listeners who want a mellow experience.

File playback and an all Pass Labs amplification scheme

Previously I had excellent results with the Pass Labs XA160.5 class A mono amps, and was expecting a thrilling time with the bigger and more powerful X600.5 class A/B model. I was not disappointed in that regard, as the macrodynamics improved markedly over the XA160.5 – as was expected. What I did not expect was to holistically enjoy the X600.5 more! I found that the differential in clarity – the XA160.5 is better – can be made up elsewhere in the system, for instance in proper selection of cables. At one point in email conversation Nelson

wondered which I preferred. I will admit publicly, for the kinds of systems I build I would pick the X600.5.

The thrust, the impact and scale of the Pass Labs X600.5 cannot be matched by the smaller Musical Fidelity amp no matter what one does, as the differential is too great. I did have some difficulty getting the XP-20 and X600.5 combo to be warm enough with the King III, and it was altogether too bright and skewed to the top end with the Vapor Audio Nimbus White speakers, a surgically precise (as distinguished from clinically dead) sounding speaker with Accuton ceramic midrange drivers and a RAAL ribbon tweeter. This was the only combination of gear where the Pass Labs amplification scheme was less than commendable.

Audiophiles should not expect that even highly regarded, extremely well made gear matches perfectly with all speakers. It is rare that a component is so well balanced in every parameter that selection of the speaker is a non-issue. I listen to synthesized music as well as acoustic instrumental and jazz vocals. Many of the speakers I review do not handle them all perfectly, and frankly, neither do most amplifiers. If I play “Uphill Racer” by Patrick O’Hearn, or “Journey to Mars” by Peter White, a pre/amplifier combo can have terrific headroom, as the X600.5, but if it is too bright the music will be harsh to the ear. If I were to change the source, cables or speakers, I might not get this impression; the important thing to note is that it is not guaranteed that the combination of XP-20 and X600.5 is incapable of sounding too strident, unless you strike out for the correct style of speaker.



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With the Daedalus Ulysses and Sony SS NA5-ES

Since I had plenty of time with the Pass Labs XP-20 I was able to use it with a wider variety of speakers than usual. I had come to the conclusion a while back that the Pass Labs gear would not be a personal recommendation for audiophiles seeking to drive magnetic planar speakers without true ribbon tweeters, because I have found them as a lot to be more temperamental in the treble. I still feel that is the case, despite the obvious benefits of the X600.5's prodigious power and current capabilities. While it would drive such a speaker easily, the strong upper end of the XP-20 and X600.5 can compound unsympathetic brightness.

The most laid back of speakers in my stable of transducers is the Daedalus Audio Ulysses, which is made more in the tradition of a high efficiency design, featuring a cabinet comprised of solid woods and carrying a slight resonance to it versus the promoted deadness synthetic materials. This speaker has twin soft dome tweeters, which is ideal for the Pass Labs XP-20 and X600.5 combo. I could do nearly anything I wanted in terms of swapping cables or the source and the Pass Labs/Daedalus pairing was never edgy. Such a speaker is romantic sounding versus surgical sounding. I suggest that Pass Labs enthusiasts lean toward designs like the Daedalus in order to avoid any risk of pushing the envelope as regards having too etched or pushed forward treble.

I had a marvelous time running the Sony SS-NA5ES bookshelf speakers with the Pass Labs combo and the Silent Source "The Music Reference" cables in a noteworthy nearer-field listening system. Placed approximately 8 feet from my chair, versus 12 feet normally, the SS-NA5ES speakers were fabulously open on the top end due to their triple tweeter array, something highly unusual in a compact speaker. Where one might think that surely this would put the intensity of the treble over the top, they would be wrong as Sony utilizes, as with the Daedalus, soft dome tweeters.

A pattern emerges in these illustrations. In pairing the Pass Labs XP-20 and X600.5, if the enthusiast is concerned about high-end energy, seek a speaker known to be "laid back," and good synergy should result. If, however, the goal is as vast and open a soundstage can be obtained, and the potential for brightness is a negligible consideration in order to achieve an intensely defined sound, then I recommend the combo with speakers having more aggressive driver sets.

To show how variable the result with the Pass Labs XP-20 preamplifier can be, I made a change of only one component, swapping in the Wells Audio Innamorata solid-state stereo amplifier in place of the X600.5 monos and the music became voluptuous, deep and with the tonality of a tubed system. The Innamorata is the closest I have found to a "tube-like" solid-state amplifier, but sacrifices not much when it comes to openness and precision. As I said, the Nimbus White speakers are sensationally revealing, and the warmer amplifier was a better match.

Here, easily I could hear the glorious crown of Pass Labs design, the unfettered openness of the midrange, a blooming of the center image to touch the edges of the left and right speakers themselves, creating panorama, not a convergence of two discrete channels. Likewise, the sense of ease increased to give the impression that singers were not trying in earnest, but were comfortably expressing themselves. To my ear when there is too much brightness in the system, female vocals remind me of a younger, immature artist, but when the extra high end energy is chased away her voice is transformed closer to a sound in the prime of her career, a bit heavier but accomplished and silkier.

A general conclusion might be drawn here. If using the XP-20 with speakers that you would consider highly revealing, then care should be taken to select an amp with characteristics of deeper, warmer tonality and not extreme definition at the cost of richness.



How important is a gargantuan soundstage to you?

It seems now that “fast exercise” and fast recovery is the real secret to getting the most out of workouts. It must be true; otherwise it might be called a fad. We supposedly derive the most benefit from bursts of frenetically paced effort for 20 seconds, followed by a brief rest; repeat several times and rinse for a fresher, cleaner you! I have begun to incorporate a variation of this routine in my workout a couple days each week. I figure I will keep at it until the next article comes along suggesting we don’t get enough endurance and recommends an entirely different approach.

Like determining whether your workout will be short bursts, long runs, or just pushing around some weights, audiophiles have to determine what system characteristics they are working toward when they hear music from their rig. Is the super-intense high definition thrill the goal, or the lingering mellow soothing nature of the experience, or a super-beefcake bass line? You have to set up your system differently in each case to achieve the goal you are after.

Audiophiles who become quite serious in the hobby determine their “must have” characteristics which will be most pleasing to them. For some tonality trumps all, while others demand extreme definition. Others pay critical attention to the soundstage and want the musicians located a specific distance from their listening chair, the size of the performance stage of a specific size, and the performers scaled to their liking. Also important can be the microdynamics which yield clues to the size of the venue, whether it be a hall-like environment such as a church or theater, or a cozier environ such as a studio.

The Pass Labs gear is ideal for those listeners who are searching for enormous soundstage and a sense of vast openness. The amps are neutral to my ear, and would not necessarily be the best choice for persons seeking a warm fuzzy moment with the music. Rather, they

unflinchingly portray a vitality fit for live recordings, and along with that vitality a space-filling width and depth. The Pass Labs components yield as large a soundstage as any amplification products I have heard, offering enormous headroom. These amps will never run out of oomph; even the tougher-to-drive electrostatic speakers sound effortless when played by the X600.5 at higher listening levels. In contrast to the pure Class A XA160.5, the X600.5 does not as quickly hit a wall in terms of the demand to play the Kingsound King III electrostatic speakers at higher levels. This is one reason I have to give the nod to the X600.5, but if I were only running speakers on the higher efficiency side of systems then I might prefer the XA160.5 instead.

Audiophiles speak of sound beyond the walls, but the truth is components vary widely in how well they can produce a sense of the walls-pushed-out, or an endlessly deep acoustic space. One of the Usher Audio speaker samplers I have contains a track with ferocious Koto drums, which reverberate extensively. The Pass Labs XP-20 preamplifier does not limit the extent to which the sound waves created by the drum race toward the horizon. The drums themselves are rendered with an appropriate thud of the mallet, but more importantly an accompanying inflection of the drum skin and settling. With a lesser preamp there is only the sound of the drum, but with the XP-20 I heard what sounded like a return of the primary wave launch as it reflected off the recording venue's walls! That is exceptional spatial definition and openness.

Healthy habits

An ounce of prevention is worth a pound of cure, and when it comes to system setup reliance upon quality craftsmanship and sound design principles, which are well executed, is worth a lot of days and money spent searching for a fix to a poor sounding system. The person who is correct for a Pass Labs product is one who knows what a seasoned sound is like, who is not interested in the merry-go-round of equipment pursued in the hope of obtaining a perfect system. The XP-20 and X600.5 are the kind of components which fit the buying pattern of "once and done." They bring an intensely pleasurable enormous feel to any system and will always be amenable to relaxed and romantic sounding speakers. To give the reader a sense of what brands I have used which I would consider preferable, consider Wilson Benesch, Chapman Audio, Wharfedale, Tannoy, Salk Sound, Vandersteen, Sony's NA series, and the aforementioned Daedalus.

Further, a Pass Labs device is one which the owner can know with a high degree of certainty that it will likely not wear out for decades, the kind of component having medical equipment durability. Consequently, the XP-20 and X600.5 get this reviewer's healthy endorsement!