

Review by Head-Fi.org(2011)



INTRO

There are plenty of audio based websites around these days. Here at HeadFi, the primary topic is of course headphones. But those of us who make this community our home understand that HeadFi has become much more than that. These forums are home to all manner of discussion topics – DACs, media players (both portable and desktop), computer playback software and hardware, and much more. Many of the people here also have full sized speaker setups, or at least they would if they could. I receive questions asking for recommendations for speakers and non-headphone amplification on a regular basis, and have had many stimulating conversations on the topic. Clearly this forum is about more than just headphones.

There is an abundance of amplifiers, pre-amps, and integrated amps already on the market. For someone requiring a compact unit to fit on a desk, the majority of these are unsuitable. The average entry in these categories will be a “full size” component – roughly 17 inches wide, 14 inches deep, and 4 inches tall. That makes most of them unsuitable for tight spaced such as a desktop environment. And that’s just the integrated amp section – you would still have to supply it with some type of signal from a CD player or a DAC, as well as the necessary cabling to get it all connected.

Enter [Lead Audio](#) with their [LA-200 integrated](#). This small device (just 8 inches wide, 8 inches deep including front knobs and rear jacks, and 2 inches tall) is able to accept practically any type of signal you feed it whether analog or digital, process it, amplify it, and send it out to a pair of speakers or headphones. It is so small, and does its job so well, that it makes the process seem quite simple. As I’ll discuss in the next section, there is actually quite a bit going on under the hood of this compact device.

You may find yourself wondering about Lead Audio; I admit that I did as well. Lately it is easy to get lost in a sea of brand names that you’ve never heard of. Many of these brands are imported from China and sold exclusively through eBay. There’s nothing wrong with that, and in fact some of these brands have some solid engineering behind them (see Yulong Audio as a prime example). I initially assumed Lead Audio was yet another one of those types, but it turns out I was way off. The LA-200 is in fact designed in Denmark and manufactured in Korea. Danish designer Søren Mac Larsen is in charge of product development. Søren was formerly with the high end firm Copland for many years, which gives Lead Audio a certain pedigree. As I said, there are plenty of talented designers out there that come from more humble backgrounds, and I don’t mean to take anything away from them. But knowing that the LA-200 is designed by a guy whose last

few projects include the Copland CD822 and CD823 players (\$2500 each) as well as the DRC205 room correction processor (\$3000) gives me confidence in the LA-200, as well as somewhat high expectations.



DESIGN

The LA-200 is much more complicated than one would initially surmise. When I read that this was a “digital” amplifier with an integrated DAC, my expectation was that it would be a standard design: convert digital to analog, and then send the signal to an

integrated class-D amplifier. What is actually happening is that the signal remains “digital” from input to output, although I realize the term “digital amplifier” is somewhat of a stretch. But we’ll get to that.

Basic specs: The LA-200 is a 24-bit/192kHz upsampling DAC with integrated digital amplifier. There are a total of seven (!) inputs total – toslink, USB, and a pair of coaxial digital inputs, an RCA input for analog signals, as well as dual 1/8th inch inputs for use with iPods or other portable music players. That’s a lot of flexibility for such a small device. It also conveniently features another USB port that is strictly for power delivery. I found this useful for charging my iPod and Sansa Fuze while using them.

The LA-200 features a dedicated asynchronous sample rate converter which processes incoming signals, strips them of jitter, and converts them to 24-bit/192kHz. This process is not defeatable. The coaxial inputs are able to accept high-resolution signals of up to 24/192, with optical going as high as 24/96. The USB input is supposedly limited to 16/48 but in practice can go higher than that, which I’ll discuss later. USB is operated in adaptive mode. One big thing that is presented as an important part of the design is the reference clock: Lead Audio calls it a “discrete low phase noise Collpitz oscillator with an AT cut fundamental crystal and 2 step buffering.” In layman’s terms, they are saying that the ASRC process is tied to an extremely accurate clock, which means that jitter is less of an issue. They list the specs as <100ps which is in fact low, although not as low as some state of the art designs which can drop jitter into the single digits.

The amp delivers 25 watts per channel into an 8 ohm load, or 14 watts per channel into 4 ohms. This is contrary to most designs where power increases as impedance decreases, but is apparently a required byproduct of this specific design. Lead Audio seems quite proud of their work, and refers to their design as being on the cutting edge of digital technology. Here is the way they explain it:

The amplifier is based on advanced digital signal processing techniques with noise shaping and 400khz sampling frequency. This means the DAC is built into the power amplifier and also the volume control is done in the digital domain. The output stage is a balanced type, and though it is more expensive, its advantages are important. Amongst other advantages, distortion is lower and power output is higher. But also power supply rejection is better and this is important in digital amplifiers, because they switch ON and OFF directly to the power supply.

This design also has feedback from the output, thereby also improving the power supply dependence. The (passive) output low-pass filter is a modified 4th order, specially designed for real speakers, different from the more commonly used 2nd order filter. Components used here are first class: Wima capacitors and high saturation shielded inductors.

In this case “balanced” is being used to mean a differential design rather than the use of XLR inputs or outputs. Speaking of the power supply – this device uses an external switch mode power supply, which is not exactly thought of as ideal in the audiophile realm. In this case it is the larger variety – think full size laptop power supply rather than small wall wart style. I asked Søren about this, and this was his response:

We use an external SMPS because it is superior to a transformer in a number of ways (for this application): Stable output voltage, no audio frequency ripple (60, 120, 180, 240, 300, 360 Hz), no mechanical “humming” and independent of mains voltage.

The drawbacks (for audiophile applications in general) are: High frequency ripple, limited current output.

The high frequency ripple is reduced because the SMPS placed away from the sensitive electronics, and we are filtering with big capacitors (> 10.000uF). So the wiring is acting as a filter, at high frequencies.

The limited output current is helped by using large capacitors on the power supply.

The large capacitors could potentially be a big problem for the SMPS, because the inrush of current is very large, and then it will not start. We had to make a special "power on" circuit to deal with the large capacitors.

Their website further explains the design:

The electromagnetic field from a main transformer is very large, and distance is the most efficient (and cost effective) cure for this.

The power supply for the power amplifier is supplied through a number of medium capacitance paralleled capacitors instead of one big capacitor. This gives the advantage of lower power supply impedance (ESR), and this gives a better transient response, because power can be delivered faster to the amplifier.

The power supply is converted separately for the analog part and the digital part. Local series and shunt regulators are used in sensitive places (e.g. reference clock). Power consumption is very low even when playing (typical 5W), due to the high efficiency of the digital amplifier. And in power off it is < 1W.

I believe it will be easiest to explain the inner workings of the LA-200 by simply following the signal. There are actually 4 possibilities here since analog inputs take a different path than digital inputs, and speaker outputs take a different path than the headphone output. So I'll present all 4 scenarios, as far as I understand them:

1) Digital input, speaker output

TI SRC4392 acts as digital receiver, also reclocks the incoming data while stripping it of jitter. In the case of USB input, a TI TAS1020B receives the data and sends it over to the SRC4392 for processing. The newly generated 24/192 signal is sent to the DSP for additional processing and filtering, and is finally amplified via Lead Audio's proprietary pulse-width-modulation technique. At that point it heads out to your speakers.

2) Digital input, headphone output

Things start out the same as above until the path separates after leaving the ASRC section. At that point the signal goes to a Burr Brown PCM1796 DAC chip for conversion to analog. The DAC chip outputs a balanced current, which gets converted to voltage and then converted to single ended output using three LME49723 opamps (which is a dual channel model). The headphone output uses inverting amplifiers that are paralleled for higher power output (using another pair of LME49723).

3) Analog input, speaker output

Analog signals get fed through a Wolfson WM8775 ADC chip. The resulting digital signal then gets processed by the ASRC circuit and moves on just like it did in option number 1.

4) Analog input, headphone output

Analog signal fed through WM8775 ADC, processed by ASRC, sent to PCM1796 to be converted back to analog, lastly sent to LME49723s for filtering and headphone output.

As you can see, this is a more complex device than the relatively compact and simple exterior would suggest.

Despite already having a good built in headphone amplifier, I did wonder about powering headphones directly from the speaker taps. Orthos such as the HiFiMan HE-6 are so power hungry that people have been driving them straight from their speaker amps, with phenomenal results. I inquired about the possibility of doing this, but apparently it is not the best idea. This is what I was told:

Digital amplifiers have a problem with high impedance speakers, because the (necessary) output filter is designed for 4-8 ohm, and if the load is 50 ohm then there will be a lot of ringing at the high frequencies. You could add a series RC network (8ohm-10uF) across each output to remove it.

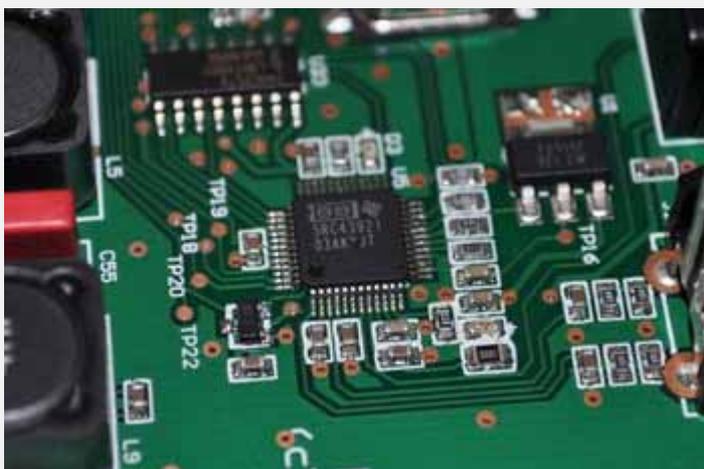
I'm sure it wouldn't be too difficult or expensive to build that or have it built for you. But since it requires an extra step, we can't consider the LA-200 for driving the HE-6 as is, right out of the box. In contrast, I see no reason why it wouldn't be a great match with the Woo Audio WEE electrostatic converter, used to drive headphones like Stax. The LA-200 is nearly a perfect match in size for the WEE so they could even stack together. I can totally see using the LA-200/WEE combo to power some midrange Stax like the Lambda series. Add something like a Beyerdynamic DT990 for an alternative sound, and some monitor speakers, and you have a very complete and versatile system with the LA-200 at the center.

Lead Audio does sell another product called the LA-100. It is basically the DAC and headphone amp sections of the LA-200, but without the speaker amplification. The LA-200 uses all the same parts as the LA-100, missing only the RCA outputs. You can even see a spot on the PCB where they were supposed to go. Lead Audio also has an "active speaker module" called the ASM-200, which seems geared towards DIY speaker builders who want to turn their creations into active speakers. Lastly, they will soon be releasing the LA-300, which is the LA-200 with built in room correction functionality. That sounds very interesting since room correction is usually reserved for mainstream surround sound units rather than 2 channel audiophile oriented designs. The fact that designer Søren Mac Larsen has experience with this sort of thing at Copland makes me think that the LA-300 could be a very significant release, really putting Lead Audio on the map. But getting back to the present topic, I think the LA-200 deserves to be heard as well.

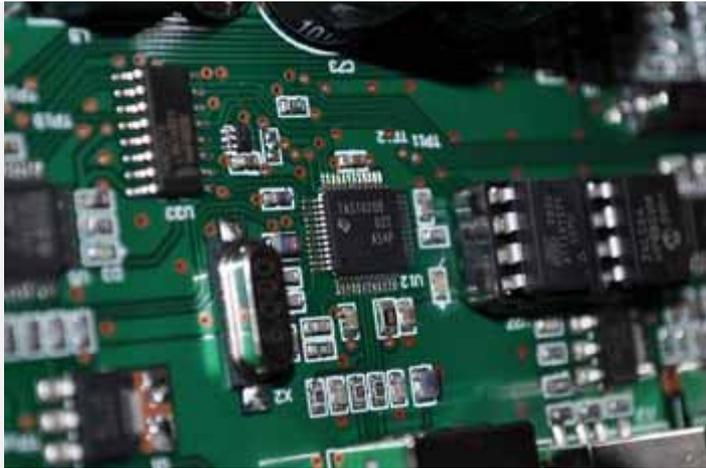
I did mention the term "digital" amplification as being somewhat of a stretch. It's a very interesting topic which goes beyond the scope of this review. The best quick synopsis I can find is from a review of the high end NAD M2 integrated amp (\$5,999), which originally appeared in the April 2010 edition of German HiFi magazine fairaudio.de:

Most of you already know that class D stands for neither class Digital nor means that this class of operation is digital per se. While the basic operation of this very energy-efficient approach does resemble digital by consisting of just two switch modes of the output devices—on and off like 1 and 0—the more common pulse width modulation technique is actually defined by the duration between switch changes. And in theory, this duration—very non-digital at that—can assume endless intermediate values to not be limited to given samples. "PWM is definitely analog" is how Nelson Pass once put it succinctly.

This sums it up about as well as can be done without getting deep into the subject. I will point out that the NAD M2 has many similarities with the LA-200. The M2 is clearly a much more "large scale" design, with 250 watts per channel and tons of inputs/outputs. But it exists as a good example of the fact that, when done well, this sort of design can compete with some of the best "traditional" amps available.



Texas Instruments SRC4392 asynchronous sample rate converter



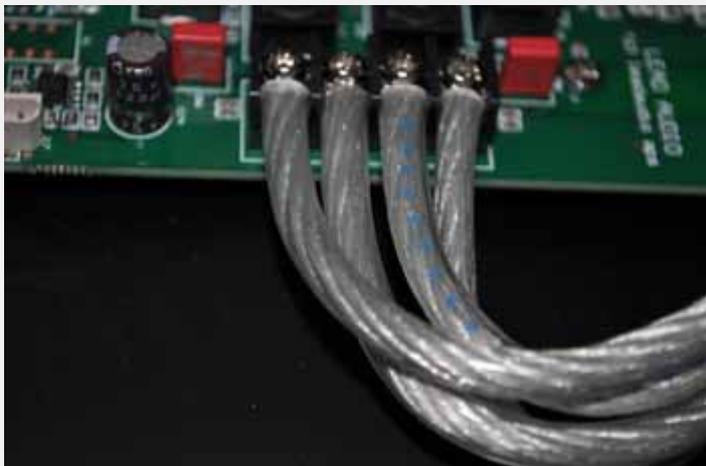
TI TAS1020B USB receiver



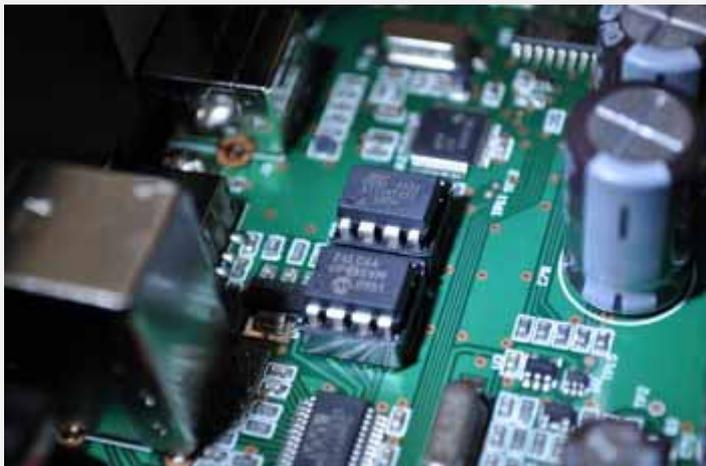
Wolfson WM8775 analog to digital converter



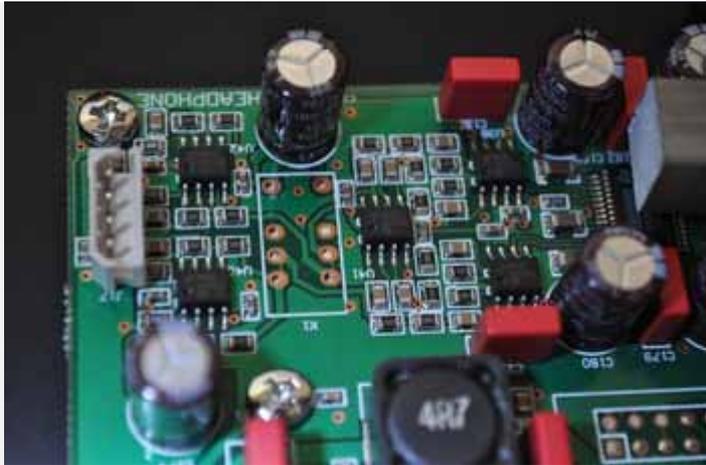
Burr Brown PCM1796 digital to analog converter



Quality internal wiring to the binding posts



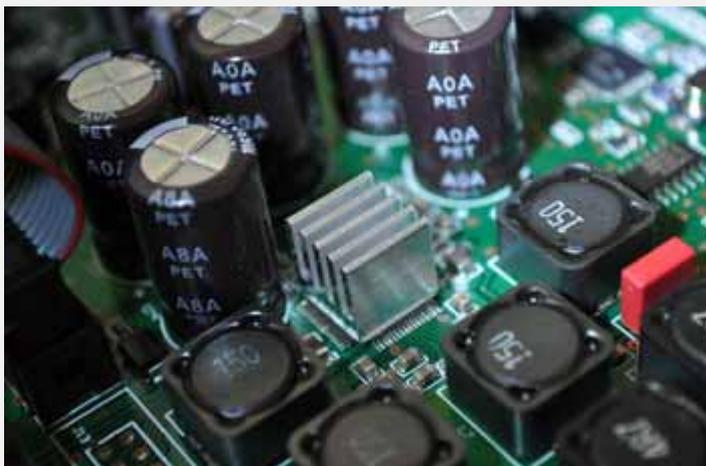
This is the EEPROM that might get upgraded to allow for 24/96 over USB



Output stage - see the 5 LME49723 opamps



Vestigial RCA output markings leftover from the LA-100 product



Mystery chip under the heatsink - Søren didn't want to give away all his proprietary secrets for the amplifier, so he wouldn't tell me what this was

BUILD QUALITY

The LA-200 breaks one major audiophile rule when it comes to build quality – it is not heavy enough. Yes, it has a nice thick front panel. The external design and lettering is of good quality, and the knobs feel appropriate for the price. The rear connectors are suitably high quality and the speaker posts accept most types of connections. The textured steel enclosure is somewhat utilitarian in appearance but feels solid enough and certainly gets the job done. But the old-school audiophile in me still equates weight with quality: indeed, if this was a traditional class A/B design, the light weight might actually mean something. As it stands the weight is merely a distraction. By all other (more relevant) factors, this is a well built product, if not particularly flashy.

From a usage standpoint, the LA-200 gets high marks. It runs completely cool and silent – without the LED indicators lighting up, you wouldn't even know it was on. The sides of the case are vented but I have yet to feel any actual heat emanating from them. This, combined with its compact dimensions, means the LA-200 is usable in nearly any situation.

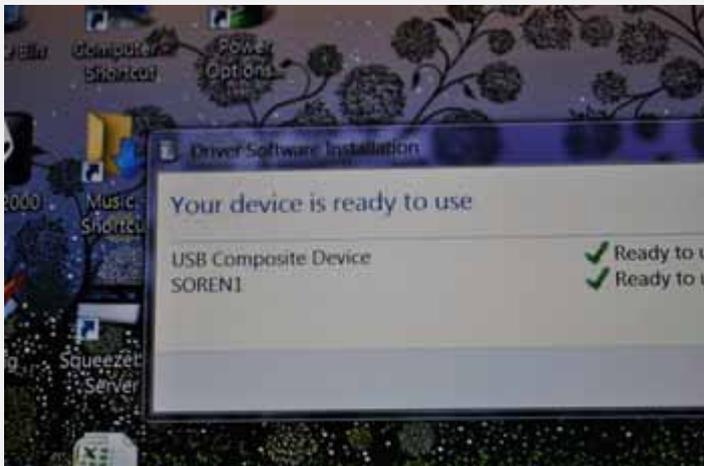
As would be expected from a digital volume control, there is no static or tracking issues to speak of. The downside of digital volume control is a loss of resolution at lower volume levels. I listened for this but was unable to notice any significant limitations. I generally listened at 50-75% volume levels, so that may explain why it was not noticeable. Higher end companies such as Wadia have been using digital volume control for years with good results, so apparently it isn't always the great compromise that some claim it to be. With 24-bit upsampling it is theoretically possible to retain full resolution for much of the volume range, only losing a few bits at low volume levels. It is my opinion that Lead Audio has done a good job in this area and their implementation is transparent under normal listening conditions.

One obvious omission here is the lack of a remote control. With the unit handling volume in the digital domain, I see no reason why Lead Audio couldn't have easily included a remote. I suppose the argument could be made that the unit is likely to be used in a desktop situation where it would always be close at hand, but I don't find that convincing enough. The power delivery is such that users aren't limited to just near-field listening, so this situation feels like a missed opportunity.

The front panel has a knob labeled "output" that allows you to select options "low", "high", "direct", or "phones". The "phones" option is the most obvious – it mutes the speaker output and routes the signal to your headphones. I spent most of my time listening with "direct", which is listed as the recommended setting for normal use. "Low" has a reduced output to limit volume, which I suppose could be useful in some situations. "High" uses some sort of special algorithm in the DSP to increase levels and avoid clipping. This could be useful with less sensitive speakers used in larger rooms. I found that this was not required with any of the three speakers I tried, since I had more than sufficient headroom while using direct mode.



Plug and play over USB



Device shows up as Soren1

PACKAGE

The LA-200 comes in a nice looking, retail style box. It is well protected so it managed the trip overseas without issue. Opening the outer package, we find the amp itself nestled in a foam cutout. Remove that and we find the power supply and a long USB cable stored in the compartment underneath.





EQUIPMENT

This is the associated gear I used to evaluate the LA-200:

Source: custom music server fronted by a Squeezebox Touch, Rotel RDV-1092 player, Sony BDP-S360 player, iPod 5g 60GB (to test analog input)

Headphones: Beyerdynamic DT880/250, Sennheiser HD600, Grado RS1, AKG K701, Westone AC2, AKG K240DF, Audio Technica W1000

Speakers: Insignia NS-B2111 (heavily modified), Pinnacle BDC-1200, Octet Matrix DE7





LISTENING

First off, I have to admit that this testing took far longer than I had anticipated. I've discovered that comparing headphone amplifiers takes a lot less work than comparing speaker amps. It is fairly easy to swap headphones back and forth between two different headphone amps - just a single plug. With speaker amplification, there is more work involved in the physical connection itself, not to mention the size and weight of most amps exceeds that of headphone oriented models. Also, swapping out multiple pairs of speakers to use as a reference requires much care for proper placement. I wouldn't want to judge the amp based on the imperfections in my room. So with that being said, I'll start by discussing the performance of the integrated headphone amp on the LA-200.

I started with the Grado RS1. Listening to the usual audiophile testing fare (Diana Krall, Aaron Copland, Hotel California, Dark Side of the Moon, HeadFi Open Your Ears), I could tell that this device had a good grasp on the essentials. Overall it had a very natural sound, and struck me as quite musical rather than detail oriented. Bass was solid and deep (by Grado standards) and the famous Grado highs had good detail without being overbearing. I've heard better from other setups, but those would generally consist of a dedicated DAC and separate headphone amp where each individual piece costs more than the LA-200. So the comparison is not a good one.

Switching to the Beyerdynamic DT880, I found the LA-200 to be a very good match. The detail that had been somewhat missing on the Grados came shining through, while the overall musicality remained. Soundstaging was big and natural, with a very open feel, and imaging was pleasingly accurate. I especially liked how it kept the highs very well controlled. Highs are not my favorite aspect of the DT880 but this amp did its best to make them presentable. This was a higher level of performance relative to my first attempt with the Grados – where those had sounded merely “pretty good”, the DT880 was excellent.

I kept swapping headphones until I discovered a pattern: the LA-200 does a better job with higher impedance headphones than lower impedance models. My low impedance Grado RS1 and AKG K701 certainly sounded acceptable, as did the sensitive Westone AC2 custom in ear monitors. This level of performance is more than plenty for the occasional headphone user. But switching to higher impedance models like the 250 ohm Beyerdynamic DT880, 300 ohm Sennheiser HD600, or 600 ohm AKG K240DF, and this becomes a high quality DAC/amp combo worthy of consideration by serious headphone aficionados.

I found that I generally kept the volume control somewhere between 12 o'clock and 3 o'clock on the dial, which corresponds to roughly 50% to 75% of maximum. This is more than I usually do with my other headphone amps. There was basically zero background noise so it wasn't really a drawback. With the digital volume control, it is probably more desirable to operate in the higher ranges anyway; the lower you go, the more digital attenuation is applied, which translates to loss of resolution. So perhaps this was intentional. The one drawback here is that there probably won't be enough volume when using difficult to drive Orthodynamic headphones. Even the LCD-2, which is relatively easy to drive, didn't reach earsplitting levels.

Now focusing on using the device to power speakers. The first set I tried was my heavily modified Insignia NS-B2111. They have totally new crossovers from GR Research, additional bracing, lots of resonance treatment, and a few other tweaks. These \$90 speakers with maybe \$140 worth of mods now compete with models selling for \$600 or so based on my direct comparisons. Original sensitivity was 90dB and I imagine it should be somewhere in that same ballpark after modification. These are 8 ohm speakers so they get the full power that the LA-200 has to offer.

These speakers still aren't perfect, but they have a certain tone about them that just puts a smile on my face. Much like the higher models of Grado headphones, they have a very enjoyable punch, though they fall short in the lowest regions for bass. My first impression of the LA-200 was that it really drove them with authority. In the smallish room I used for listening, the LA-200 at 40% volume was quite listenable, and 80% was bordering too loud. I was surprised at both the volume and the authority that the LA-200 could produce.

The sound was very articulate, with quick transients and accurate imaging. On the album Nice 'n' Easy (the excellent Mobile Fidelity CD version, not the funky Capitol release with questionable "remastering" from Bob Norberg), Frank Sinatra's voice has the proper weight and authority, and sounds mostly lifelike. The limitation here is clearly the speakers rather than the amp. Frank's accompaniment displays the proper sense of scale though, which is an area where the Insignias excel.

After spending a good amount of time with the Insignia/LA-200 combo, I came to the conclusion that the speakers were weakest link in the chain. So I swapped them out with a pair of Pinnacle BDC-1200 towers (\$1100). Like the Insignias, these speakers are easy to drive: 8 ohms and 91dB sensitivity.

Despite using a 3-way, 5 speaker design, the LA-200 proved more than able to drive these speakers to very loud levels. I believe this combo would be adequate for all but the largest listening rooms. Bass response was surprisingly good once I found a good placement. You would still need a sub to make this qualify as true full range sound though. Imaging, probably the strongest point on these speakers, was spectacular. Frank sounded similarly real as far as tonality, but now he was present in the room with me. Unfortunately these Pinnacles highlighted what I consider to be a missing feature of the LA-200 – a lack of tone controls. I know music purists are supposed to scoff at the idea of tweaking bass or treble response with a knob. But in this case the speaker in question is undeniably bright, by a small but noticeable amount. I normally pair them with a JVC RX-D701S (another "all digital" amplifier) which has a nice EQ handled in the digital domain, and I find that a 4dB reduction centered at 4kHz really helps to get a more neutral top end out of them. With the LA-200 not having that feature, I did get some sharpness that I would almost call sibilance but not quite. On the other hand, this extra information in the vocal presence region really made Frank seem clear and palpable, with excellent definition on the way he enunciates his consonants. So it was a bit of a trade-off.

This problem didn't always manifest itself with every song, and with many tracks they sounded great. The LA-200 helped the Pinnacles present a high level of micro-detail, which speaks to the quality of the entire chain being done in the device itself. It is impossible to separate the performance of the different parts – we have jitter reduction, upsampling, DA conversion (or at least the PWM equivalent), DSP, and amplification all taking place in one box. If any one of them was sub standard, it would bring down the performance of the whole machine. As far as I can tell that is not the case.

Lastly I tried my newest acquisition, the DE7 monitors from Octet Matrix Audio (\$350, review coming soon). I'm still waiting for some proper stands to be shipped to me, so I made makeshift stands out of old shelving units, just as I had done with the Insignias. I've had these speakers for less than two weeks but already I can tell that I prefer them to the Pinnacles and the modified Insignias. These things image like crazy both on and off axis, have a very smooth even tone with plenty of detail, and really capture the timbre of instruments in a lifelike fashion. Once again the LA-200 has all the hallmarks of a more expensive chain of components. I'm hearing clarity and inner detail that I would normally associate with a much higher class of equipment. With the DE7 being a less sensitive speaker (85dB) I wasn't sure how loud they would get. That proved not to be an issue either – these things get LOUD in my room, which is on the smaller side but certainly not tiny. I even have some volume to spare, generally running at about 80% or so of maximum. Someone with a very large room who wanted to hear music at live-performance levels would likely be disappointed with this setup, but for those with more reasonable demands I can't see this system being topped for the price. I'll go into more detail as I log more listening hours with these speakers.

I tried various analog sources in order to determine the quality of the ADC process. As far as I can tell, the conversion is transparent when using low to midrange sources. So things like iPods, Blu-Ray players, or even nicer players in the sub-\$500 or so price range will not lose any quality when fed through the LA-200. I did feel like I lost a bit when using a higher end source like the Audio GD Reference 7 DAC (\$1750). It seems like the LA-200 imparted a somewhat fuzzy layer over the sound, collapsing the presentation into a more 2 dimensional affair with less clarity and focus. I see the analog inputs as more of a convenience feature, and I don't think people would usually be using them with really high end sources. But they do work well enough for most situations.

USB is an interesting discussion here – it is limited to 16-bit/48kHz audio for now. I was able to get it working with 24-bit/96kHz files if I converted down to 16-bit word lengths, but the full 24-bit signal caused it to show an error in Foobar2000. I spoke with Lead Audio about this and they advised that a USB upgrade might happen sometime next year. This would be available to current owners as well – it would simply be a drop in replacement for the EEPROM chip, much like swapping out a socketed opamp. Aside from the lack of true high-res playback, I found the USB input to sound utterly transparent compared to SPDIF. If anything I thought it actually sounded a bit better at times, but that could have been my imagination. Either way, it is extremely well done, and the lack of asynchronous mode should not deter users from enjoying fabulous sound from their computer sources.

When you think of a "digital" amp, the expectation is that the device would be stereotypically clinical. These types are often accused of having an overly analytical tone that excels in detail but lacks musicality. I have experienced this somewhat with other amps in the past, specifically the old Sonic Impact Super T amp. That device had some very good traits but ultimately I couldn't get past the higher levels of grain on female voices, as well as the overall thin feel to the sound. The LA-200 exhibits none of those problems. The sound is rich, full, and musical, while also displaying the clarity and detail that you might expect. I found that using the headphone amp with higher impedance

headphones gives you a very similar voicing to the speaker amp section. Using lower impedance headphones takes away some of that detail and refinement but still gives a decent result.

COMPARISONS

Comparing the LA-200 is a difficult task since there are very few similar devices on the market. I'll run through a list of some possible competitors just to show what else is out there. Without hearing these for myself (with the exception of the Maverick) I'm in no position to comment on the quality of sound they produce, so this is only a feature comparison.

The Peachtree Decco2 sells for \$820. It is a hybrid design with a tube pre-amp section and solid state amp section which is traditional Class A/B. It has USB, toslink, and coaxial digital inputs, as well as two analog inputs. Power output is listed as 40 watts per channel into 6 ohms, and I can't find the specs into 8 ohms.

The Peachtree MusicBox sells for \$720. It is also a hybrid design, with three digital inputs and one analog input. Power is listed as 25 watts per channel into 6 ohms, and unknown specs into 8 ohms. It has an integrated iPod dock.

The NuForce Icon 2 goes for \$350 and is available in several colors. It has an integrated USB DAC as well as two analog inputs. Power output is 18 watts per channel into 8 ohms and the amp is class D.

Next we have actual full size integrated amps that are priced on the low side. These would obviously require a source to feed them an analog signal, so you would have to factor in a fairly high quality DAC. Something like the Matrix Cube DAC (\$300) would probably be roughly on par with the DAC section of the LA-200, so that would need to be added with the price of the integrated to arrive at a total cost.

Marantz PM5004 is \$449. It is rated at 35 watts per channel and has plenty of inputs.

Cambridge Audio AM10 is \$349. It is also rated at 35 watts per channel with lots of inputs.

NAD C316BEE is \$349. It is rated at 40 watts per channel and again, plenty of inputs.

Lastly there is the little Maverick Audio A1 integrated amp at \$200. It offers 20 watts per channel at 8 ohms and doubles that into a 4 ohm load. It has a hybrid tube pre-amp section and solid state Class A/B amp section. It offers a warm and smooth tube sound which is not in the same league as the LA-200 but is still enjoyable.

I'm sure there are more options that I'm missing but this should give you the general idea. I'm not aware of any other device out there that delivers the same amount of performance and features as the Lead Audio LA-200 for less money. Granted, some of these devices have unique aspects that the LA-200 don't have. The big receivers have tone controls, more analog inputs, and probably deliver more power into a 4 ohm load. The MusicBox has a dock that takes the digital stream from your iPod and processes it through the higher quality internal DAC. The NuForce Icon 2 has a subwoofer output and can accept 24/96 material over USB. The Maverick is very low priced. Each of these would have their own merit for certain situations. As for me, I would easily choose the LA-200 over all of them.

While talking strictly about headphones, the LA-200 operates on a pretty high level. Again, it is difficult to compare the individual components since they all work together. But I did try comparing the LA-200 as DAC and headphone amp to my Yulong D100 (\$470) used in the same capacity. Overall the two were very competitive. The D100 had a distinct advantage when using low impedance headphones, and the LA-200 was preferable with higher impedance models. I think overall the D100 had a slightly more detailed presentation and the LA-200 was fuller sounding from top to bottom, but they were definitely competitive with one another. This impressed me because the D100 is an excellent performer.

CONCLUSION

The Lead Audio LA-200 packs a lot of great features into a compact unit. As I mentioned before, it would take very careful selection of a best-in-price-class DAC, headphone amp, and power amp in order to match this level of performance. And that system would be more complex, take up more space, and require several pairs of interconnects. I find it hard to believe that a better result could be obtained for under \$750.

The obvious weakness of this product (or any other device with a similar power output) is that it has limits to the speakers it can power, and particularly to the rooms it can fill with sound. In my smaller room it did great with speakers rated at 85dB, and once you move into the 90dB range I suspect most mid sized rooms would be fine as well, provided the speakers are 8 ohm models. The other things worth mentioning are the lack of tone controls and the absent remote. In my daily use I don't find myself missing those very often but some people might find them more important.

Designer Søren Mac Larsen brings with him a wealth of experience in the high end audio industry, and I feel like that really shines through with the LA-200. Anyone interested in a compact integrated with this particular feature set should look no further. With the right speakers and a higher impedance headphone, this device can easily take the place of a much larger system without any audible compromise.

posted by John Victor from USA