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Eastern Electric MiniMax DAC

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Specifications

Sampling rates : 32bit 32KHz 44.1KHz 48KHz 192KHz (except USB)

Dynamic Range : 129dB

Digital Input Impedance : 75 ohm Output Impedance : Tube 22K

Solid State 10K

Output Voltage : Tube 3V +- 0.5dB Solid State 2.5V +-0.5dB

S/N ratio : Tube 90dB Solid State 95dB

THD : 0.5%(Tube) 0.02%(Solid State)

Dynamic Range : 129dB

Power Consumption : 12W

Weight : 6.6lbs

Size: 7 $\frac{3}{8}$ " x 11 $\frac{1}{8}$ " x 2 $\frac{7}{8}$ "

Price: \$750, from Morningstar Audio (importer) <http://www.morningstaraudio.com>

DAC in Black

Back in the 1990s, digital audio was advancing at a pace that had us all convinced the only way to build a good front-end was to pair a specialized transport with a state of the art DAC, and audio forums, such as they existed then, were full of discussions about the value of transports, the use of pucks, the quality and even the length of digital cables needed to get the best sound. As the years rolled on, better single box digital solutions started to emerge and the value of reducing cable connections gained attraction. I travelled that path, moving on from my original entry level Rotel to a highly rated (and highly priced for me at the time) Parsound belt-drive CEC-sourced transport and DAC, replete with expensive Tara cable. From there, I progressed, if that is the right word, to a single box Denon 2900 at a third of the price, and convinced myself that the dual-box ideal was a thing of the past. Dropping prices in the digital realm had me convinced that it was better to upgrade to a new single box player every 2-3 years than to invest big bucks one time in a CD player or some state of the art DAC. But in the great kharmic wheel of audio development, DACs never really went away and over the last few years seem to have staged a real comeback. Indeed, less emphasis is now placed on the transport, and many believe any old player will suffice to get the music off the disk, the business end of the sonic chain being determined primarily by the quality of one's DAC. Add in the demand for better sonics from computer-sourced music and the growth of new designs has created something of an audio arms race in DAC development.



The Eastern Electric MiniMax DAC is a relatively new entrant to the field, a product of Hong Kong based designer Alex Yeung's creation, and exploiting the Sabre 32-bit 9018 chip, a fact sufficient in itself to whet the appetite of those convinced in the power of specs. This same chip is the driving force behind the all-conquering Oppo universal players which have won unanimous praise from reviewers and owners alike, proving that it is possible to deliver cutting edge technology in an affordable package. But the use of this super chip is only part of the story here. The Eastern Electric MiniMax is no one-trick pony. As well as offering the standard coaxial connectivity, it gives users a range of options for processing the signal. Toslink, BNC, USB and AES/EBU connections are also provided, giving you the chance to play with connections or run multiple digital sources through the DAC. It offers a phase switch to play with polarity (yes, some people do even note which CDs sound better one way or the other). On top of this it also can serve as a preamp with its adjustable gain control, allowing you to create a minimalist set up without preamp. But wait, in the style of a cheap infomercial, there's more! The EE Dac also has a tube circuit, selectable simply with the push of a button so you can toggle it in or out of the signal chain to great effect. Yes, you can tube roll simply to dial in the sound you like, or leave the DAC running in solid state. And on top of this, the piece actually looks and feels good too, is easily placed with it's smaller footprint, and has pleasing ergonomics with it's elegant rotary dials for volume(output) and input selection. If I told you nothing more, I'd have to ask already, what is not to like about this component at an asking price of \$750?

Enough with the parts, what does this thing sound like?

The geeks among you can argue over the specs and parts endlessly, as people have on the many forums where this DAC has been noted. For me, the technology is interesting only in as much it might explain the sound, for it is the sonics that matter. So what have we got here that warrants your attention?

I hooked the DAC up to my reference player, the Marantz SA11-S1, a \$3500 player in its day now updated to S2 level but nonetheless a lovely player that has a musical texture more in keeping with warmth than detail I suppose though not lacking in the latter department much to my ears. I connected primarily via coaxial, allowing the Marantz to feed my SMCAudio VRE-1 preamp both directly with its balanced outputs, and indirectly via the EE Dac, which took the coaxial feed and passed it along to the preamp via a pair of single ended cables, in both instances Huffman interconnects. This enabled me to play a cd and switch between direct and DAC-fed signals on the fly, a process that was not as seamless as I hoped since the balanced feed was clearly louder than the single-ended one, though with careful monitoring and experience, I learned to make the necessary volume adjustment fairly quickly while a track played. Ultimately though I gave up the quick change and spent hours one way or another to determine the differences.

If I told you the differences were crystal clear, I'd be lying, or at least exaggerating. For the first couple of listening sessions I went back and forth listening very intently to hear the differences. The EE DAC seemed to clean the music up a little but at first I could not be sure. I resisted all temptation to even hear the tube stage until I had figured this out and that process took time. For those who report that this DAC changed their world upon first powering up, congratulations, I can only say you weren't listening to it in my rig. That said, differences did become apparent to me once I had spent serious time with the DAC and they were of the kind that I found easy to identify over the weeks that followed.



Put simply, the MiniMax cleaned up the lower frequencies of the Marantz's output to the point that bass just seemed subtly but consistently clearer. This might not sound earth shattering but it really does make a difference. With bass notes shed of any overhang (which previously I'd not recognized as particularly true with the Marantz) the music seemed to have a little more space, some more room to breath, particularly in the mid-bass and lower midrange. Classic tests for me include Haden & Metheny's *Under a Missouri Sky*, where a flick of the input selector on my preamp allowed me to identify the slight cleaning of the music offered by the DAC. Ditto on Holly

Cole's *Temptation*, a recording that can intrigue or overwhelm with its strong bass, depending on your system. Curiously, I did not notice this effect at the upper frequencies, even over the months that followed, my ears being drawn again and again to that reduction of ripeness in the SA-11 which then enabled a little more detail, a little more space to emerge in the music through the EE Dac.

Trying to put this in perspective is no simple feat. If I were comparing two different CD players, one sounding like the stock SA11, the other an EE Dac-fed player, it became clear to me over two months of listening that I preferred the other player. The difference was not huge but it became apparent in my listening room and I found myself again and again defaulting to the EE Dac output when listening just for pleasure. It was more than any one aspect such as bass or detail but the combined musical picture that the EE Dac seemed to provide. Music such as long-term favorites Ronnie Earl or Tord Gustavsen just sounded better my ears, slightly but surely more musical and pleasing in my room. It's difficult to truly explain this improvement, but it is not just detail, there was a balance to the music that seemed truer to the instruments with the MiniMax processing the digital stream.

Once I had a handle on this, I started to play with the options, and what options the little EE offers. Naturally, the tube circuit is a magnet for some and with good reason. Utilizing a single 12AU7 tube, the DAC offers simple and affordable entry to the old exotica of valves even while selling you the latest digital chip technology for analog signal conversion. If it didn't work I'd think this was a pure gimmick but man, this thing works. Now we can argue til doomsday about the merits of solid state versus tubes but when a product offers you the chance to hear both a the flick of switch without worrying about burnout, expensive replacement parts or biasing, it's hard to find fault. Despite preconceptions, the tube stage does not radically alter the sonic picture but it does shift it slightly, offering a little of that tube magic in the midrange, especially at low volumes, that can make late-night listening a guilty pleasure.

The tube does take a few minutes to really warm up, and even when fully warmed, I still found the further volume change to be noticeable over the solid state output, but nothing that could not be adjusted. Roll out the cliches about presence, glow, palpability, it really is the case that tubes have something that pleases human ears when done right. I've had problems in the past with tube buffers (see my review of the Audio Horizon's tube stage last year) but I'd give this little DAC shelf room in my system for its tube circuit alone. String reproduction, particularly of cello, were truly enriched by the little tube, and low-volume reproduction of vocals from Norah Jones on *Come Away with Me*, and Patricia Barber's great short live set, *Companion*, just invited you to listen late into the night. It is sometimes hard to admit that some music sounds better one way rather than another, or that your listening context requires one kind of reproduction over another, as there is supposed to be an absolute sound to serve as reference, but over three months with this DAC, I learned to love the ability to tailor the sound to my mood and listening time. In this regard, it's almost as if the MiniMax gives you the chance to build both a great solid state digital rig and a small tube-based set up in one place. I don't want to underestimate the value of the new Sabre chip here but this little box does a few extra things so well that you just

have to wonder why other manufacturers cannot manage it at similar prices.

The DAC also offers basic (24/96) USB and Toslink connectibility which many feel have their own limitations but in offering these, the MiniMax does give you the chance to connect your computer easily to the DAC for decent sound, and as a Mac owner, I did not feel the differences between USB or Toslink were noticeable in my short listening tests but then, I am not a computer audio guy yet. That said, I really enjoyed the ability to tip my toes in this new world of audio easily, and for those evenings when just running something conveniently from my laptop was required, the Eastern Electric fit the bill. Of course you can add better interfaces to extract higher quality music from your computer and there is a promise of future improvements in the next version of the MiniMax which will allow processing of higher resolution signals in this architecture. Not having BNC or AES/EBU connectors on anything to hand, I did not try those inputs.

How far can a new DAC take you?

For all the variability however, there is another intriguing questions raised by this DAC. Could it create top class digital sound when fed by a transport of more modest quality than my Marantz? To learn if CD playback really had made significant progress over the last couple of decades, I pulled out my trusty old Rotel 945AX, a \$245 player when I purchased it in 1994, and so reliable in the years since that I've always kept it around for a second system or breaking-in review items. Sure, it's old, and you can probably find them or their equivalents used on Ebay for \$50, but if the progress is really in the DAC end, not the transport side of digital players, how close can you get to great sound by pairing the Minimax with some old CD feeder via coaxial? Only one way to find out, so I pulled the Rotel into the rig and familiarized myself once again with its sound directly feeding my preamp. I almost hate to say it but in a great rig, that cheap old CD player didn't sound too shabby on its own. Sure, the air and resolution was lessened from my reference Marantz SA11 but this seemed more an act of tasteful omission rather than a significant loss for the initial listening, though it became more noticeable to me as I went back and forth. On Haden & Metheny the bass was warmer and less resolved, and the separation of lines between stringed instruments, a key index in discriminating component performances, was less clearly outlined. All in all, while I'd not be content to go back to the Rotel as my reference front end, this still sounded better, as a complete system, than others I've heard, proof again that the best bang for the buck in building your rig is not to be found at the digital front end but elsewhere (and I am a major believer in the preamp's role here). And just think of all the review lines that have been written about new and better players since the Rotel first appeared!

OK, so what does the EE Dac bring to party in this context? The answer is a major, and I mean a major breathing of life into the uppers and a cleaning up of the bass, enough to say that yes, DACs matter and seem to matter more than the transport -- the old Rotel feeding the EE MiniDac made music that I had a hard time distinguishing from the Marantz when used itself as a transport. I think the Marantz had the edge in giving the overall music a little more smoothness but I would not swear to it and gave up forcing the comparison after a while as the cable changing became tedious. In fact, I'd go so far as to say that with the Eastern Electric MiniDac

in the system, I would take the Rotel as my transport rather than live with the SA11-S1 on its own. Yes, these differences are not huge but over several months I came to realize that I just plain enjoyed music more with the EE Dac in the loop, and if I had the opportunity to hear it partnered with a cheap CD player serving as transport while out shopping for a new digital front-end, I doubt I'd have paid more money for anything fancier. It really is an ear-opener in this regard. While I was eventually impressed with its polishing of the Marantz sound, I was convinced within minutes of the DAC's value when fed by the cheap old Rotel. It's all in small details, the upper frequency articulations of cymbals and air, the timbre of a wooden-bodied guitar, the little reproduced rub of skin on string, that extra bit of rasp in a human voice, but once you hear it, you never want to give it up, and the MiniMax takes what it's fed and does what it does to make sure that the music comes out sounding like music. For those of you on the fence about expensive new digital toys, here's your product. Add a cheap transport and have superb digital sound, with room to grow, for under a grand. Bravo Mr. Yeung!

Conclusion

So where do we put this \$750 box of tricks in the grand scheme of audio design? I'd say, the Eastern Electric MiniMax DAC is up there near the top in terms of sonics, and at the very top in terms of value. If you have a half-decent CD player which you know could be bettered but are disinclined to drop serious dough on something new, I suspect the addition of this DAC to your rig will please your ears. With either a 15 year old budget player or a well-reviewed \$3k Marantz that can still hold its own, the MiniMax brings you a step closer to state of the art digital sound. That it offers so many other features is almost a bonus, but the tube circuit has its own qualities that you can take or leave according to your taste and at the asking price not feel you've ever over-paid for something you don't need or want. This DAC is a tribute to a new world of audio engineering where affordability and good sound can be found in one small package. Definitely and highly recommended.

Associated Equipment

Marantz SA11-S1 SACD player, Rotel 945AX CD player
SMcAudio VRE-1 preamp
Spectron Musician III Mk2 mono amps with Bybee upgrade
Grover Huffman interconnects, Elrod speaker cables