



Manley Labs Neo-Classic 250- And 500-Watt Pure Vacuum Tube Amplifiers

PERRY SUN

All-Tube Amplification For Home Theatre

Manley Laboratories, Inc. is a company that is distinguished in both the professional and high-end consumer audio worlds for offering high-performance audio products of particular distinction, and more notably, featuring all-vacuum tube designs. With a fundamental philosophy of delivering the purest possible sonic reproduction and eschewing solid-state components due to what is believed to be their inherently inferior sonic characteristics, the company has consistently appealed to tube devotees for over a decade.

"Their performance with movie soundtracks was outstanding, making them very worthy high-power workhorses, as well as the components to beat for the truly dedicated audiophile."

Manley's roots go back to the late 1980s with Vacuum Tube Logic (www.vtl.com), a company that offers tube-based audio equipment for high-end consumer audio. In 1993, one of the co-founders of that company, David Manley, along with EveAnna Manley spun off a new company, Manley Laboratories, in order to build on their success in the professional audio market. EveAnna gradually assumed the reigns of the operations, becoming exclusive owner of the company in 1999.

Manley offers a wide range of products predominantly suited to professional audio production, including microphones, microphone preamps, mixers, equalizers and much more. But in closer relevance to the high-end consumer audio world, the company also produces stereo preamplifiers and power amplifiers. Many of these have rather interesting names, such as Mahi, Snapper, Steelhead, and Stingray. Manley is primarily a pro audio equipment manufacturer, but enjoys a niche business in high-end audio.

Manley Labs Neo-Classic 250 & Neo-Classic 500



Specifications:

Inputs: Single-Ended (RCA) & Balanced (XLR)
Output: Five-Way Binding Posts
Rated Power Output (Neo-Classic 250): 250 Watts
Into 5 Ohms (Tetrode Mode), 100 Watts Into
5 Ohms (Triode Mode)
Rated Power Output (Neo-Classic 500): 500 Watts
Into 5 Ohms (Tetrode Mode), 275 Watts Into
5 Ohms (Triode Mode)
Distortion: 1.5% THD At Full Power Output
Frequency Response: 10 Hz-30 kHz
Dimensions (WHD In Inches): 19 x 9 x 13
Weight (In Pounds): 73 (Neo-Classic 250), 82

(Neo-Classic 500)
Price: \$9,000 Per Pair (Neo-Classic 250),
\$12,000 Per Pair (Neo-Classic 500)

Manufactured In The U.S.A. By:

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Although Manley is not a household name in home theatre circles, several of Manley's power amplifiers are appropriately suited to home theatre applications by virtue of their substantial power output capability, and therefore buck the commonly held notion that vacuum tube amplifiers are too weak in wattage to be of practical use for high-energy movie soundtrack playback. The two models reviewed here are part of Manley's Neo-Classic design series, one of them offering 250 watts and the other delivering 500 watts output. They were specified by EveAnna Manley for use in *WSR's* Reference Holosonic™ Spherical Surround™ Home Theatre Laboratory.

Exterior Build And Features

The Manley Labs Neo-Classic 250 and 500 amplifiers are identical in terms of appearance. Both have a rugged, rather assuming, unconventional industrial design, and are derived from the company's previous Reference amplifier designs. Only the front panel has the look of a "normal" power amplifier, featuring a gray-bluish brushed-aluminum frame with openings through which the vacuum tubes are partially visible behind the black stainless steel mesh. Two polished black handles allow for convenient



transporting of the amplifiers. There are several indicator LEDs, and a series of rocker switches for powering up the unit, cycling through standby and “Soft-Start” (normal operation) modes, switching between two different operating modes of the amplifier, and muting. The black oval plate is removable, revealing behind it a series of trim pot adjustments for setting the bias current for each of the tubes (more on this later).

When powered, the circular “Manley 500” (or “Manley 250”) moniker illuminates. It should be noted that under dark or low-level lighting conditions (for optimal video viewing), the illumination is rather noticeable. This can be resolved simply by removing the tube cover and disconnecting the wiring to the light. Of course, you will still have the subtle orange glow of the tubes to contend with.

Upon examining the physical chassis of these tube amplifiers, they are radically different looking than any solid-state amplifiers I have had. The tubes all reside within a perforated casing, a necessity of course in order to allow the substantial heat generated by the tubes to dissipate. Behind this casing are two large 3,800-microfarad capacitors and the power and output transformers, the latter of which are major contributors to the considerable weight of the amplifiers (about 75 to 80 pounds each). The output transformers, which are probably the single-most critical component in the amplifiers, are designed and manufactured by Manley.

The Manley amplifiers have a minimal rear panel that is sloped, which is where the IEC socket, balanced (XLR) and single-ended (RCA) line-level inputs, a toggle switch to select between the two inputs, speaker binding posts (made by WBT®), and mains and B+ rail fuse holders reside. The units sit on large rubber feet which are screwed into the base covers.

Interior Components And Design

The amplification topology for the Neo-Classic 250 and Neo-Classic 500, as well as all Manley amplifiers is entirely tube-based, with no solid-state components. (The only solid-state circuit elements used by these amplifiers are diodes in the power supply for AC-to-DC rectification.) The input and driver stages operate in Class A. The Class AB output stage works in Class A for most of its power output range, transitioning over to Class AB at extreme power levels. These are push-pull designs, meaning that the positive and negative phases of the audio signal are treated as separate components in the output stage.

For both Neo-Classic amplifiers, the input stage uses a paralleled dual-triode 12AT7WA vacuum tube. Its output is fed

into the driver stage, which uses two EI 12BH7A tubes (from Yugoslavia) and also serves to separate the positive and negative phases of the audio signal. For the Neo-Classic 250, the output stage employs ten Electro-Harmonix EL34EH tubes, five for each signal phase, while the Neo-Classic 500 uses the more powerful Yugoslavian KT90 output tubes and a different output transformer to achieve its higher wattage rating.

The output transformer transforms the thousands of ohms seen at the tubes' anodes to a lower impedance appropriate for loudspeakers. These amplifiers are designed for an optimum loudspeaker load of 5 ohms for maximum power transfer from the output stage into the loudspeaker.

Two output operation modes are selectable for these amplifiers via a toggle switch on the front panel. “Tetrode” mode hooks the screen grids directly to the B+ supply and produces the most power. “Triode” mode (when the screen grids are put to the plates) is less efficient, delivering half the power of Tetrode mode for perhaps more “pure” vacuum tube performance. For the former, a more dynamic sound with greater “pop” is possible, but the latter is said to produce the more characteristic tube-like sound, that is, a sonic character that high-end audiophiles, especially tube fans, consider to be musically pleasing and accurate. For the purposes of home theatre, you'll probably want to engage Tetrode mode more often whenever playing back high-energy movie soundtracks, and use Triode as the dominant mode during dedicated music listening sessions.

The Neo-Classic 250 is rated to deliver 250 watts of power output into a 5-ohm load in Tetrode mode, and 100 watts when operating in Triode. The Neo-Classic 500 is said to output 500 watts in 5 ohms in Tetrode mode and 250 watts while operating in Triode.

Installation, Operation, And Maintenance

The Manley Labs Neo-Classic 250 and Neo-Classic 500 mono amplifiers were installed in *Widescreen Review's* primary reference home theatre laboratory (see page 7). Six Neo-Classic 250 amplifiers were used to power five Dunlavy Signature Series SC-V tower monitors and a Dunlavy HR-CC center loudspeaker for the six main channels (front left, right, and center; surround left, right, and center). Two Neo-Classic 500s were dedicated to the LFE channel, driving the twin Dunlavy TSW-V tower subwoofers. AC power for each of these amplifiers was drawn directly from the 20-amp wall outlets. As a basis for performance comparisons, I used our reference amplifiers, custom-made

California Audio Labs two-channel power amplifiers with a rated output of 1,000 watts per channel (into 6 ohms).

To reduce in-rush current-induced stress on the amplification circuitry, the main black power switch needs to be switched up first, while the red rocker (or Soft-Start) switch is flipped down. This allows the amplifier to be powered up in its standby mode, in which all of the power supplies are held at half power. The Soft-Start switch should not be flipped up to fully power the amplifier for at least a minute, in order to allow for some warm-up. The Tetrode/Triode rocker switch should be selected while the amplifier is off or at least in standby mode. If so-desired, the amplifier can be left in standby mode instead of being fully powered down when not in use.

In addition to the “sweet” sonic signature and heat dissipation as characteristics that distinguish tube amplifiers from their solid-state counterparts, vacuum tube amplifiers also require some periodic attention. The tubes operate within a specified range of idle current that yields optimum performance and life span. Manley Labs recommends that the bias for each of the tubes be checked every two to three months. Trim pots to adjust bias, as well as voltage measurement points for each of the tubes are located behind the removable black oval plate on the front panel. All you need is a multimeter and a small flat screwdriver. The flip side of the oval plate even provides instructions on how to check and adjust the bias setting for each tube.

Vacuum tubes have a definite life span, and their failure can sometimes be predicted simply by paying attention to the bias settings. According to Manley Labs, these output tubes should have an average life span of about four to five years, or more. Replacing tubes is easy, and spares are available for purchase from Manley Labs or elsewhere.

Listening Tests And Performance

Whenever I describe the sonic characteristics and performance of an audio component, I generally aim to be reasonably objective, detailing the tonal and imaging attributes in a manner that is as identifiable to you as possible. But for this particular review, I found it somewhat more difficult to do so. The reason was simply because there was a certain tangible, engaging character of the sound produced by the Manley Labs amplifiers that was just difficult to put into words.

Audiophiles and vacuum tube fans like to describe the pleasing, attractive sound of tube-based audio equipment as “sweet.”



But to me, even "sweet" is not easy to define in words. Perhaps it would be best if I just took a stab at a "like it is" description of the sound, breaking this down into the usual "objective" wording that you've encountered in my past reviews, and as well, the more subjective assessment of the Neo-Classic amplifiers' performance.

I devoted the majority of my listening evaluations to music, sometimes two-channel but mostly from SA-CDs and DVD-Audio titles. I also used a number of movies on DVD-Video with distinctive music score mixes. For all of these instances, I engaged the Triode operating mode of the Neo-Classic 250 and 500 amplifiers. Immediately, I sensed a special sense of intimacy with the sound of these amplifiers. The audio had both a tonal, and more distinctively, a spatial presence such that I seemed to sense being emotionally closer to the music than previously. Some reviewers like to refer to this perception of intimacy as the "seductive" element of the sound. While I do not very much favor this terminology when writing audio reviews (since it is a very subjective description), I do have to admit that there is at least some worthiness to the use of this word here.

To be sure, the Neo-Classic amplifiers exhibited a compellingly natural, musical sonic character. Acoustic instruments sounded impressively authentic, from the crashes of cymbals, to families of stringed instruments, to the electric bass guitars. Midrange tonality was slightly smooth in nature, yet full of definition. Tube amplifiers sometimes may be judged as possessing some tapering in the upper-midrange to high frequencies. There was never any of this from the Manley Labs amplifiers to the extent which aroused my objection, despite my finding that the California Audio Labs amplifiers exhibited a touch more of an "open" midrange presence. If anything, I thought that the slightly smooth character of the sound contributed in a positive manner to the audio seeming to be natural.

Low frequencies produced by the Neo-Classic amplifiers exhibited very good definition and tautness, noticeable with the various bass lines heard in the jazz recordings I used for this review, including *Flesh On Flesh* by Al Di Meola (Telarc) and Diana Krall's *When I Look In Your Eyes* (Verve), both on SA-CD. Though not quite as weighty and fast-paced as the low-end from the California Audio Labs amplifiers, the Neo-Classic amplifiers sounded slightly richer, giving natural instruments a little more emotional appeal.

The Neo-Classic 250s portrayed very compelling, definition-laden sonic images. Most audio components are capable of

contributing positively to the lateral placement of sounds between loudspeakers. But the ability to impart a sense of depth is generally much more variable. The Manley Labs amplifiers excelled at both, but I found their portrayal of depth-of-field sounds to be astonishingly convincing, and somewhat distinguished from the soundstaging I'm used to hearing with our California Audio Labs amplifiers. An SA-CD title that proved to be a fantastic demonstration in this respect was Kitaro's *Sacred Journey Of Ku-Kai* (Domo Records). I was able to sense the various sound effects and music floating around in air, all residing within a holosonic sound space that was three-dimensional and extending from myself to the loudspeakers, and even beyond them.

These listening observations were all with the amplifiers in their Triode modes. The reason was because I had discovered early on that the sound produced by the amplifiers when operating in Triode, in comparison to Tetrode, was noticeably more intimate in nature, having somewhat greater musical appeal and also a more refined spatial presence. The Tetrode mode offered slightly greater dynamic output capability, with transients sounding a bit more distinct. But I also felt that the sound was a little more distant in comparison to Triode, with three-dimensional image seeming to have "flattened" slightly. For serious music listening, the Triode mode definitely seems to be the preferred choice.

Because of the sheer acoustical output capability of our reference system, I switched to Tetrode mode whenever playing movie soundtracks of substantial energy and intensity, such as *Star Wars: Episode II—Attack Of The Clones*, *K-19: The Widowmaker*, and the first two installments of *The Lord Of The Rings*. The same amplifiers which delivered a warm, inviting musical sound became reliable, powerful workhorses in reproducing the sheer sonic power and dynamics demanded of these soundtracks. The Neo-Classic amplifiers were able to play downright loud, and did not yield any objectionable sign of distortion or distress.

"The Bridge Of Khazad-Dhûm" in *The Lord Of The Rings: The Fellowship Of The Ring* was one example of a high-intensity sonic spectacle that the Neo-Classic amplifiers handily reproduced without hesitation. This is a scene that is characteristically loud as well as a bit heavy in the upper-midrange, and therefore can be fatiguing to some when played at or near film sound reference level. The Manley Labs amplifiers seemed to lift just a bit off the high-end to make the sound a little more comfortable and neutral-sounding, yet still retained essential detail and articulation.

For movie soundtracks which were more quiescent in nature and didn't have prodigious sonic output requirements, I elected to use the Triode mode, especially if the soundtrack featured an enveloping, engaging music score and atmospheric effects. Depending on the sound mix, holosonic imaging was generally very enveloping and panoramic. Essentially, the sound really wrapped all around you, making the experience of the movie all the more enjoyable.

Conclusion

The Manley Labs Neo-Classic amplifiers delivered the sound I expected from them and much more. They not only delivered the true audiophile high-end accuracy and musicality, but also seemed to enable a more intimate appreciation of the sonic nuances than you would likely encounter with most solid-state amplifiers. Their performance with movie soundtracks was outstanding, making them very worthy high-power workhorses, as well as the components to beat for the truly dedicated audiophile. Score a really big one here for tubes in home theatre! ■

More power to you



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"...trust me on this: you don't know what you're missing"

-Doug Blackburn, WSR

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