Amplifier Review – ZED Audio Leviathan

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You might never have heard about Zed Audio. Formed in 1983, they got their start by designing and manufacturing amplifiers for a well-known brand, Hifonics. I remember installing one amplifier called the Colossus, it was big, powerful and drew so much power that a couple of them could stall a mini-truck at idle. It was OK for then, in fact it was quite cool.

Fast forward to today. Car manufacturers have responded to consumer demand by building more fuel-efficient, smaller and lighter cars and trucks. Having more electronics with the same size alternators, newer vehicles have less available power for and aftermarket stereo systems. Zed Audio realized this and designed Leviathan for today's demands. How well does this amplifier meet the demands of the 21st century? Let's find out.

First Look

The Leviathan is a full range Class D 6-channel amplifier housed in a gunmetal gray anodized aluminum chassis with a clear see-through Plexiglas top. The interior of the amplifier is clean and quite striking. Special attention to detail is made with the arrangement of blue LEDs that spell "ZED" when the amplifier is powered up. It serves no practical purpose but it sure looks cool. The Leviathan is designed to be a very flexible system amplifier. Typically, when an amplifier is more flexible, the setup is more involved. The Leviathan is no exception to this. As a result, summing up its features is also more involved. So here we go…

The Leviathan has six very high-quality gold plated RCA inputs on the same side as the level & crossover controls and indicator lights. Each pair of channels has a different crossover configuration. Channels 1 & 2 have a high-pass crossover from 80Hz to 4kHz. Ditto for channels 3 & 4. Also, channels 3 & 4 have a low-pass crossover from 80H to 4kHz. Channels 5 & 6 have a low-pass crossover from 40Hz to 240Hz and finally Channels 5 & 6 have a subsonic filter (actually it is a infrasonic filter) from 10Hz to 48Hz. All the crossovers are continuously variable 24db per octave Linkwitz-Riley filters. There are six LED peak indicators (one for each channel) along with a power and protection LEDs.

On the other end of the Leviathan, the gold plated power and speaker connections are designed to accept bare wire. All terminal connections are secured with Allen head screws. There is no built-in fuse protection. All connections and adjustments are clearly marked which is a feat considering the density of the end panels.

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A Closer Look

Looking at the design of the Leviathan, it is obvious that its purpose is a system amplifier. At 16.1" x 9.7" x 2.1", the seven pound Leviathan is quite small for the power it packs. For each channel, there is a peak indicator. These LEDs are designed to light up when the amplifier is hitting peak power output while listening to music. I found that this worked well with music. A protection LED will illuminate when the amplifier enters a protection mode. When in the protection mode, you must turn off the amplifier in order to reset the amplifier.

The amplifier is designed so that you can configure the channels to fit pre-determined system configurations. Yes, it will do the common front, rear channels with subwoofer, but it can also be configured for a very capable and flexible three-way system configuration with tweeters, midranges and subwoofers for channel 1&2, 3&4 and 5&6 respectively. The Leviathan's crossovers are flexible enough to use channels 1&2 for both tweeters & midranges with channels 3&4 dedicated for separate midbass drivers.

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Cool Technology

To maximize efficiency, the Leviathan uses a unique dual rail power supply that mimics the cylinder de-activation mode advertised in V8 power GM vehicles. In low-power mode, when the amplifier is delivering less than 36 watts per channel, the Leviathan uses its lower rail power setting. When the Leviathan detects a high power demand, it switches to higher rail power. If the amplifier does not detect a high power demand for 4 seconds, it seamlessly reverts back to the lower power mode. Why go to all that trouble? The lower power rails wastes less power and hence increases amplifier efficiency. The result is up to a 30% increase in amplifier efficiency at low power levels. Awesome.

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Installation

The installation of the Zed Audio Leviathan went well. The connections are well marked and logical in their layout. Mounted to the bottom of the amplifier, machined bars serve as very solid mounting feet for the amplifier. All the speaker and power connections are turned down at a slight angle. While this cosmetically looks better, the real purpose is to improve on the angle at which the Allen keys tighten the connection.

The downside to internally fused amplifiers is a reduction in amplifier efficiency due to the internal resistance of the added internal fuse and connectors. This is where the Leviathan takes a different path. Zed Audio assumes you are going to install the Leviathan properly by including a fuse near the battery. With the Leviathan, the fuse should be chosen carefully as it serves double duty. In the manual, it recommends different fuse ratings depending on the configuration of the amplifier. For the 2-ohm rating the recommended fuse is 80A.

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Manuals/Web Support

The manual for the Leviathan is broken into two main parts. The first part goes in-depth about the philosophy of the Leviathan, why it was designed that way and how it should be used. The second part includes all the possible system configurations (even ones that you would probably never use) with detail and good explanation of what controls what. I really liked the explanation of why the Leviathan was designed the way it is. Also, I found the set-up pictures useful when installing the amplifier.

The website, http://www.zedaudiocorp.com is in a transitional state. On the site, they stated a new site was under development. Even so, I was still able to find product information on the Leviathan and other new products. Basic performance and feature information was available for the Leviathan but there was no owner's manual available for download at the time of writing this article.

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Sound Q & Performance

I began by testing channels 5&6. Here, the Leviathan delivered 186.3 watts per channel into 4-ohms with less than 1% distortion. Into 2-ohms, the output increased to 285.6 watts per channel into 2 ohms and over 571 watts when bridged into 4-ohms. When I lowered the battery voltage, to 12.6 volts, the power did drop but still well above its rated spec. I tested the other sets of channels and measured similar results.

The next part of my testing was how it would be used in a system environment. In this situation, I bridged channels 5 & 6 with channels 1 through 4 running stereo into 4-ohms. Again the Leviathan did not disappoint. I was able to get a continuous 148.8 watts x 4 into 4-ohms with the bridged power still just above 540 watts.

Amplifier efficiency is where the Leviathan's performance exceeded any other amplifier I tested. Normally, I start by the most impressive figure. For the Leviathan, that figure is 66.8% efficiency. Not impressed? You should be. Taken at 1/3-bridged power with all channels, this is the LOWEST efficiency I measured during the Leviathan testing. With all six channels driven in stereo 1/3 power, the efficiency increased to a staggering 73.3% efficiency. When testing channels 5&6 at 50Hz, the Leviathan delivered an impressive 79.7% at 1/3 power. The overall peak efficiency measure was full power stereo mode two channels driven. The result is a whopping 85.3%.

To put this in context, many manufacturers claim super high-efficiency on their Class D amps, some as high as 90 – 95%, but this spec does not reflect the actual, real-world efficiency, including the power supply, only the "amplifier" portion of the amp. The Zed Audio Leviathan sets the high bar for others to aspire to in this regard.

The CEA-2006 standard references the noise floor against 1 watt into 4-ohms or an amplifier output of 2Vrms. Using this standard, the Leviathan's signal-to-noise ratio at 76.5dBA is well below reported spec. However, when using the traditional noise floor measurement that compares noise floor to maximum power output, the Leviathan measure in at 98.4dBA. The CEA-2006 signal-to-noise specification penalizes high power amplifiers and should be revised.

To listen to the Leviathan, I ran the amplifier in three-channel mode with bridge channels driving my left and right a/d/s/ monitor speakers and the subwoofer channel driving a single JL Audio 8w7. The amplifier sounded great with none of the digital artifacts that are notable on lesser full range digital amplifiers. The amplifier has impressive dynamics and rather smooth high-frequency response. I think what is most impressive is how it is able to drive my system to high volume levels without the typical demand on the electrical system.

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Summary

When you consider the amplifiers relatively small size, low-weight, extreme high-efficiency, system flexibility and low relative cost, the Leviathan is a great value for the money. The same level of performance can cost hundreds more from other companies. Of course, the most important spec of an amplifier is how it sounds. Here, the Leviathan really delivers. Unlike many other Class D amplifiers, the Leviathan presents itself as great sounding audio amplifier; no Class D excuses for poor sound quality need apply. If you are looking for an amplifier to drive your entire system without breaking your wallet or your vehicles electrical system, the Zed Audio Leviathan is on a short list.

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Strengths: Great sound, flexible design, compact footprint, super high efficiency

Weakness: None to report.

Best use: Perfect for high-power complete systems that sips power from your electrical system.

Performance Value:

4 out of 5

Performance vs. weight
5 out of 5

Power vs. efficiency:
5 out of 5

Manuals, Online Support:
3 out of 5

None to report.

Test Voltage 14.4Vdc
Test Results
Measured output power (At 14.4Vdc<1%THD+Noise):
186.3 watts into 4 ohms stereo, 285.6 watts into 2 ohms stereo, 571.2 into 4 ohms bridged*

Measure Amplifier Efficiency (At Max Power):
85.4% into 4 ohms stereo, 73.5% into 2-ohms and 4 ohms bridged*

Measure 1/3 Amplifier Efficiency: 73%

Signal-to-noise dBA (Reference 1 watt): 76.5dBA

Rated Output power: 150x6@4ohms, 250x6@2ohms, and 500x3 4ohms bridged

Frequency response: 10Hz-25Khz +0 -0.5db

S/N ratio (A wtg) : > 98dB
Channel Separation: 80dB
Input sensitivity: 250mV-8.6V

Crossover: (All 24dB/Octave)
Ch1&2 80Hz to 4kHz HP
Ch3&4 80Hz to 4kHz HP, 80Hz to
4kHz LP
Ch 5&6 40Hz to 240Hz LP

Subsonic Filter:
10Hz to 48Hz 24dB/Octave on Channels 5&6
Fuse: No internal fuse
Dimensions: 16.1” x 9.7” x 2.1”
Shipping Weight: 3.16kg/7lbs

* Power and efficiency measurements reported were only two stereo channels or one bridged channel.