BRYSTON

NEWSLETTER

JUNE 2025

DEFY THE ORDINARY

SCIENCE MATTERS

VALUE MATTERS

THE DEMO IS EVERYTHING

BRYSTON CLASS ‘D’ LINEAR POWER SUPPLIES

Advantage of Linear Power Supplies

By combining a Class D amplifier with a substantial analog power supply (toroidal transformer and a large storage capacitance) instead of the typical switching power supply, you have the necessary power to deliver where it's needed, when it's needed. This ensures clean sound that doesn’t clip, overheat, or run out of headroom.

Adequate Power

Without sufficient power, dynamic scenes in music and movies lack realism. When a system runs out of dynamic headroom, it often clips, adding distortion to the signal and reducing the energy of the sound. Providing pure, clean power helps those scenes come to life with greater realism.

Power is not solely about loudness; it’s about combining dynamic and clean elements to create depth and dynamism, responding instantly to signals from the source material. This drives the system to its full potential without distortion, allowing higher volume levels without becoming annoying due to amplifier clipping and associated distortion.

Understanding Amp Power

Amp power specifications can be complex, requiring a consideration of several factors to determine available power for playback. The standard measurement involves a steady tone at 1 kHz into a resistor at either 2 ohms, 4 ohms, or 8 ohms and a

POWER IS LOGARITHMIC

maximum distortion of 1%. This provides consistency for comparison but does not fully account for dynamic playback needs.

High wattage numbers can be emphasized by companies, often at the expense of more important metrics like clean dynamic headroom, which considers time and distortion. As soundtracks are not constant tones, it's crucial to understand how an amplifier handles brief, loud dynamic peaks.

Power output is logarithmic, requiring double the wattage for every 3 dB increase in output. To achieve 15 dB of headroom for playback, substantial power is required to avoid clipping or shutdown:

Continuous Average Output @ 100 watts

- 3 dB of Dynamic Headroom: needs 200 watts
- 6 dB of Dynamic Headroom: needs 400 watts
- 9 dB of Dynamic Headroom: needs 800 watts
- 12 dB of Dynamic Headroom: needs 1600 watts
- 15 dB of Dynamic Headroom: needs 3200 watts

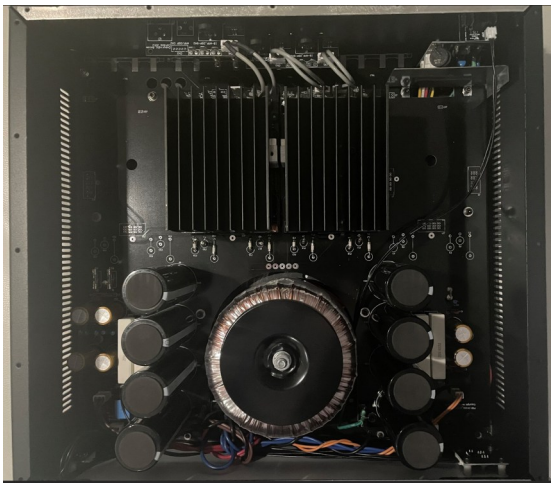
This highlights the importance of an amplifier's ability to exceed its rated continuous output briefly. If an amplifier has no headroom beyond its rated continuous power, reverse the equation:

- 15 dB peak requires 400 watts
- 12 dB peak requires 200 watts
- 9 dB peak requires 100 watts
- 6 dB peak requires 50 watts
- 3 dB peak requires 25 watts

Continuous Average Output is 12.5 watts

Amplifiers using switching power supplies with max rated power equal to their continuous rated power, limited to one channel with minimal capacitance storage, restrict real output capabilities. This is typical of most receivers.

All Bryston Class D power amplifiers use linear power supplies, combining a toroidal transformer and substantial storage capacitance to provide usable power far surpassing continuous rated power, resulting in dynamic and distortion-free performance.



High Efficiency With Class D

This large analog power supply works with the Bryston Digital Amplifier Module to achieve over 90% efficiency. In contrast, typical Class A/B designs waste nearly half the amplifier output as heat.

Regular North American wall plugs produce up to 1800 watts on a 15 amp circuit. Bryston's efficient Digital Amplifier offers up to 1500 watts of total continuous output, roughly double that of typical Class A/B designs. The significant capacitance storage and large toroid transformers in Bryston Class D amplifiers provides clean dynamic power multiple times the continuous RMS wattage rating.