

# CLASSE

## SIGMA SERIES

### **Sigma MONO** monaural amplifier



The Sigma MONO amplifier is the reference amplifier for a design group that began with the Delta series CA-D200 and extended to include the Sigma AMP2 and AMP5. These are proprietary Classé designs, not to be confused with the common approach of employing third-party modules. They are fully consistent with previous Classé designs sonically but offer notable virtues of their own. While the basic topology is the same across all four models, the Sigma MONO includes enhanced circuitry and offers additional power. The Sigma MONO amplifiers are designed to pack tremendous power (over 700W continuous into 4 $\Omega$  loads) into a relatively small and energy efficient chassis, while pushing performance and value to the highest level.

The basis of the design is advanced switching technologies, used in both the power supply and audio stages. A Classé-designed Switch Mode Power Supply (SMPS) and Power Factor Correction (PFC) circuit, each operating at over 90% efficiency, provides a crystal clear reservoir of over 1kW of power. The low frequency dynamics, extension and control of these amplifiers and their ability to effortlessly drive difficult speaker loads can be credited in large part to the powerful and sophisticated power supply they employ. This combination of SMPS with PFC allows the Sigma series amplifiers to draw current from the wall throughout the entire voltage cycle, avoiding the sharp spikes of current drawn by conventional power supplies. Such sharp and short current demands cause high-frequency harmonics on the AC mains. By creating no such disturbance, the Sigma series amplifiers deliver their prodigious power while remaining effectively silent as far as the AC shared with preamp/processor and source components.

Sigma MONO audio circuits use a true digital architecture, taking advantage of DSP to solve an issue called dead-band-time, the greatest source of distortion in otherwise well-designed class D amplifiers. Dead-band-time, similar to switching distortion in a class A/B amplifier, is the time when the plus and minus halves of the amplifier are both off; it should be as close to zero as possible and in this design it is less than three nanoseconds.<sup>1</sup> With inherently low distortion,

the Sigma series amplifiers use only a small level of overall negative feedback, helping to achieve low intermodulation distortion. Proprietary driver stage FETs ensure quick and precise switching of the output stage, contributing to the amplifiers' vanishingly low dead-band-time and maximizing their efficiency. The critical output stage filters are then used to filter only the 384 kHz switching frequency, leaving the amplifier with a neutral, extended and open upper midrange and high-frequency performance.

The Sigma MONO includes a special pass-thru feature, enabling the input signal to be fed through an output, in either balanced or single-ended form, to drive a second amplifier for bi-amping or to a powered subwoofer. The advantage is that only a single interconnect from the preamp/processor is required and additional amplifiers may be daisy-chained using short interconnects.

Compared with the Sigma AMP2 and AMP5, the Sigma MONO utilizes even higher performance analog input circuitry, incorporates changes to the DSP to optimize performance for its higher output power, and includes upgrades to passive components in the power supply and output filters. Combined, these changes put the Sigma MONO amplifier's performance a clear step ahead of the remarkable achievement introduced in the AMP2 and AMP5, making it a true reference amplifier design.

<sup>1</sup> For more detail on this and other design features, please refer to the CA-D200 brochure.

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#### **Sigma MONO Specifications**

<b>Frequency response</b>	10Hz – 20kHz, -1dB into 4 $\Omega$
<b>Output power</b>	350W rms into 8 $\Omega$ 700W rms into 4 $\Omega$
<b>Harmonic distortion</b>	0.012% @ 1kHz driven to 1/8th power into 8 $\Omega$
<b>Peak Output Voltage</b>	151V peak to peak, 53.4V rms no load 151V peak to peak, 53.4V rms into 8 $\Omega$
<b>Input impedance</b>	100k $\Omega$ Balanced / 50k $\Omega$ SE
<b>Voltage gain</b>	29 dB
<b>Input level at clipping</b>	1.88Vrms Balanced/SE
<b>Intermodulation distortion</b>	>80 dB below fundamental into 8 $\Omega$ Balanced
<b>Signal-to-Noise Ratio</b>	-109 dB at peak output into 8 $\Omega$ (AES17)
<b>Standby power consumption</b>	.5W @ 230 V
<b>Rated power consumption</b>	130W @ 1/8th power into 4 $\Omega$
<b>Mains voltage</b>	90V - 264V, 50/60Hz
<b>Overall Dimensions</b>	Width: 17.00" (433mm) Depth (excluding connectors): 14.57" (370mm) Height: 3.75" (95mm)
<b>Net weight</b>	22 lb (10.00 kg)
<b>Shipping weight</b>	29 lb (13.18 kg)

All tests un-weighted and 20Hz – 20kHz measurement bandwidth used.



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