

Classé Audio Sigma

Sigma SSP surround sound preamp/processor Sigma MONO monaural amplifiers

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The shift from analog to digital playback over the past twenty years has been nothing short of a revolution in transforming the ways in which music and movies can be enjoyed in the home. Digitizing music and video media has vastly simplified storage, reduced the number of audio formats, ensured an excellent reproducibility, enhanced the ability to develop complex functionalities and, on the equipment side, improved heat dissipation and lowered production costs.

With their expertise well-established in high-end analog products, **Classé Audio** has also been seriously investing in digital processing and playback, developing a few years ago the CP-800, a device that combines the functions of a preamplifier, a processor and a digital-to-analog converter. We reviewed the CP-800, which is truly a reference in its category. More recently, in addition to introducing its first digital amplifier, the Delta CA-D200, the company launched the new Sigma series consisting of the AMP2 stereo amplifier, the AMP5 multichannel amplifier, the SSP surround sound preamplifier/processor and the Sigma monaural amplifiers. The latter two devices are the focus of this review.

CONTEXT

Long devoted to the class A/B amplifier topology, Classé expanded into Class D amplification with the CA-D200 from the Delta series. Classé's extensive experience with Class D amplification, also known as switching topology, is exemplified in the CA-D200, where the company's engineers also implemented a sophisticated switch-mode power supply. The Sigma series is designed using this same approach to power supply and to amplification.

For the most part, Classé uses linear topologies for its power supply and amplification stages. Linear amplifiers using either class A or A/B are the traditionally used topologies found in high-end components. Their attributes include an excellent linearity of frequency response, low levels of distortion and noise and extended bandwidth. Their main disadvantages, however, are their high cost, their size, weight and production of waste heat. According to Classé, the most efficient linear amplifiers are the class A/B types, with can reach, in the best cases, about 60% efficiency. This means that 40% of the energy they consume is lost as waste heat. In Class D amplification, efficiency is close to 90%. For example, to produce 100 watts with a class D amplifier requires only 110 watts while a class A/B topology will consume 200 watts of AC power. On the power supply side, linear supplies are relatively large, heavy and expensive. Moreover, many are sensitive to voltage variations to the point that, when put under load, they struggle to maintain a constant output voltage.

This context led Classé to implement switch-mode power supplies (SMPS) in the CA-D200 and the new **Sigma** monaural amps. Switch-mode power supplies exhibit high efficiency, low heat dissipation, reduced size and a much lower cost. The SMPS used in the Sigma monaural amplifier is crucial in helping the amp deliver no less than 700 watts into 4 ohms and 350 watts into 8 ohms with a 90% efficiency. By including a generous capacitor reservoir bank, the compact power supply ensures not only stability of DC voltage and high efficiency, but also a dynamic current reserve that previously could only be provided by the best linear supplies.



The sophisticated switching power supplies developed for the CA-D200 and the new Sigma mono-blocks go a long way in ensuring the low frequency extension and control, that these amps provide, enabling them to effortlessly power even the most difficult to drive speakers.

CLASS D

Class D amplifiers are often referred to as digital amplifiers due to the fact that they use pulse-width modulation (PWM) to represent the incoming audio signal. Incidentally, the “D” in Class D does not refer to digital, it is simply a coincidence due to the fact that this class of amplifier was developed after classes A, A/B, B and C. Class D amplifiers operate in a manner similar to an analog-to-digital recorder, except that the input signal is represented digitally by pulse-width modulation to describe a low-frequency audio signal as the “widths of a pulse” so many milliseconds wide. Once the analog audio signal is thus described, it is amplified and then converted back to analog form. During the conversion, a reconstruction filter removes the on-and-off pulses, leaving a smoothed curve that represents the original analog audio signal.

Many digital amplifiers have received bad press and are often thought of as inferior to the best linear amplifiers. Certainly, if a number of technical limitations are not overcome, notably the output transistors’ “dead time” inherent to this class of amplification, they will manifest themselves as sound artifacts, audible noise, transitory intermodulation distortion—partly responsible for truncated depth—lack of resolution, veiling of the treble

and upper mid-range, all of which are audible irritants to many audiophiles. With extensive experience in digital signal processing and in custom driver development, Classé’s engineers have reworked the circuitry of both the switching power supply and the digital amplification, from the ground up to eliminate these irritants. Let’s see how they’ve achieved this and how it sounds.

SIGMA MONO MONAURAL AMPLIFIERS

The new **Sigma** amplifiers stem from an intensive research and development programme into digital amplification and switching power supply technology that contributed, a few years ago, to the design and manufacture of the CA-D200, the first class D amplifier in Classé’s product line.

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Each monaural amplifier measures 43.3 cm (17 inches) wide, 37 cm (14.5 inches) long and 9.5 cm (3.75 inches) in height, and weighs 10 kg. In contrast to some equivalently powerful linear class A or A/B mono-blocks, the Classé amps take up less space and weighs less, just two of the



inherent advantages of the digital amplifier architecture, with no need for costly cooling fins, or large transformers.

Sober and simple in design, the amps are constructed from machined aluminum finished in anodized black and feature a generous, solid front plate. A single LED on the upper left corner of the front panel indicates the amplifier's status, changing from red in standby mode, to blue in operational mode. The incurved central panel, in gloss black, shows the Classé logo and the Sigma MONO logo in white letters. After 15 minutes of inactivity, the mono-blocks automatically enter standby mode, in compliance with stringent EU energy-saving standards.

The back panel features dual sets of balanced XLR inputs and unbalanced gold plated RCA inputs, two pairs of five-way speaker-connection terminals for bi-wiring, an RJ-45 interface (Classé Can-Bus control port), input and output jacks for DC triggering compatible with AV preamps thus equipped, an RS-232 port for network control (AMX, Crestron, Control4, Savant) and a USB input for eventual updates of the unit. An IEC socket for the AC power cable and the fuse complete the panel. The Sigma's chassis is adaptable to a professional "rack-mount" installation, similar to the SSP Sigma preamplifier-processor. Of note, the amplifier's operating temperature remains very low, a recognized guarantee of durability both for components and for the filter capacitors.

SIGMA SSP SURROUND SOUND PREAMPLIFIER AND PROCESSOR

The Sigma SSP is a stereo preamplifier, digital-to-analog converter and a multichannel processor that forms the true heart of a surround sound home-theatre installation. The SSP is actually a derivative of Classé's latest generation Delta CP-800 preamp/processor. Its digital signal processor (DSP) handles bass management and equalization according to the type of source, the type of speakers, the listening environment and acoustics of the room.

These multiple functions are associated with a very comprehensive connectivity, to say the least: asynchronous USB input, Ethernet for streaming, eight HDMI (v1.4) inputs including a front video input supporting 2D, 3D, 1080p (24/50/60 fps), 4K compliant, an HDMI output, three coaxial digital inputs (RCA) and an output, two optical Toslink inputs, balanced (XLR) and unbalanced (RCA)

inputs with an optional phono stage for moving magnet (MM) and moving coil (MC) cartridges. Built with identical dimensions to those of the mono-blocks, the **Sigma SSP** weighs in at 8.2 kg. Its front panel provides the following functions: power on/off and standby, USB port, HDMI input for a portable computer or a camera, a 6.35 mm (¼") headphone jack, and a central touch screen display that provides complete menu-driven control of the SSP's diverse settings, using a white on blue background motif. Screen brightness is graduated in three intensity levels. A button to the left of the screen provides access to the menu for selecting functions and settings, while a customizable mute function is activated by a second button to the right of the screen. The volume control that sits to the right of the panel allows adjustment from -93 dB to +14 dB and provides a good level of tactile feedback. By default, gain at switch-on is set at -30 dB, an average sound level for a typical room.

The back panel comprises the previously described functions arranged in a logical manner. Note, however, the absence of an AES-EBU 110 ohms balanced (XLR) digital input, which is understandable given that the SSP is designed to the most competitive price possible. The Classé SSP decodes high-resolution digital audio files including Dolby TrueHD and DTS-HD Master Audio when connected to a Blu-ray player. The small plastic remote control that comes with the SSP is basic and contributes to the relatively affordable price of the unit. In addition to the basic functions of mute, source selection and standby, the remote provides volume control and access to the navigation menus via the SSP's display screen.

LISTENING

Run-in, like most of the listening sessions, was in stereo mode, the video function of the **Sigma** processor-preamplifier having been assessed using an Oppo BDP 105D Blu-ray player connected to one of the HDMI inputs. In analog two-channel mode, the balanced (XLR) inputs were used to connect a network player, while the unbalanced (RCA) inputs were used for connecting a turntable. With the SSP's volume control ranging between -30 and -22.5 dB, the 180g double vinyl *Day Trip/Tokyo Day Trip Live* from the Pat Metheny Trio accompanied by Christian McBride on bass and Antonio Sanchez on percussion (Nonesuch



Records) has never sounded so good as with the Sigma devices. First observation: the benefits of having the left and right channels separated using two monaural amplifiers were clear from the first moments of listening. Dynamics, whether at the macro or micro level, were improved significantly. The headroom provided by the **Sigma Mono** removes any dynamic restraint and provides a noteworthy level of sonic and musical realism. The Sigmas easily and efficiently create an amazingly wide and high sound stage. The three-way Harmonie Audio speakers used in rotation with the new B&W 804 D3 couldn't be any better served than with the Classé Sigma ensemble.

Returning to the same album, this time on CD and using the C.E.C. TL51X transport connected coaxially via S/PDIF (RCA) to the Sigma SSP preamplifier-processor, shows the



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high quality of the SSP's digital-to-analog converter, which easily held its own compared to standalone converters on the market under the \$2,000 mark. Reproduction of bass is remarkably firm and solid, with an equally important speed of execution over the audible bandwidth. Treble frequencies are rendered in detail without stridency. While there may not be the extreme depth of field that the best linear analog high-end electronics can provide, to attain this will require spending far more than the Sigma monoblocks reasonable price. Listening to these Class D amplifiers, there is none of the cold and distant character that is often associated with digital amplification. Instead, the overall presentation is warm and engaging; the more one listens, the more the Classé Sigma ensemble reveals its charms.

There are several ways of enjoying the functionalities provided by the free Classé app, available for Android or Apple devices. The app provides a Wi-Fi control point for listening to music on a computer connected via the USB port on the SSP's rear panel (high-resolution files, 24 bit/192 kHz), or for streaming files located on a network-attached storage device (NAS). In the latter case, connection is through the SSP's Ethernet port using Cat 5 or Cat 6 cable to a router or a network switch. The app provides control of the Sigma SSP's functions including volume, balance, digital-domain tone controls, source selection and configuration, to name but a few. Note that the Sigma SSP is certified AirPlay capable, so will play back audio from Apple devices (iPhone, iPad, iPod touch) or from iTunes installed on either a Mac or a PC.

VERDICT

The Sigma SSP derives from the CP-800 Delta series and is, in many ways, an extension of the experience Classé has gained with the CP-800. The **Sigma SSP** is a true representative of Classé Audio's brand image, while being a more



accessible acquisition than the CP-800. As for the Sigma mono-block amplifiers, like any great amp that doesn't call attention to itself, it simply disappears, as they say, letting the music and the emotion speak to the listener. These **Sigma Mono** are excellent monaural amplifiers, capable of faithfully reproducing music with nuance, keeping rhythm and detail intact. They stand as proof that a well-designed Class D amplifier can reproduce both sound and music as competently as any other type or class of amp, whether using transistors, tubes or biased into class A or class A\B. With lower production costs, fewer assembly steps and a simpler aesthetic design, eschewing among other aspects the curved front panels of the Classé Delta line, Classé's new Sigma series stands apart from the pack, offering an alternative that merits serious consideration in the category of competitively priced high-fidelity audiovisual equipment.

Sigma SSP surround-sound preamp/processor.
Sigma MONO monaural amplifiers.
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