

Boulder

2020 Advance D/A Converter



Boulder's analog expertise and digital Upandoversampling™

The 2020 D/A Converter is an incredible combination of digital and analog engineering assembled together in a luxurious chassis. The multi-bit approach was chosen as it is the de facto standard for sonic clarity being free from the problems found in sigma delta schemes.

The main objective of oversampling and interpolating digital audio data is to take advantage of the reliability and sonic accuracy afforded by digital filtering techniques, thus reducing the audibly deleterious effects of false imaging which occur in the D/A conversion process.

A digital filter in combination with oversampling provides a high-resolution prediction of the digital audio data between recorded samples in time and simultaneously pushes the unwanted false image out to a higher frequency where inaudible analog filters may be used to effectively eliminate it.

The best designed digital filters are the Finite Impulse Response (FIR) type, of which the eigenfilter approach has been shown to create the least aliased images back into the audible range.

While ordinary cascaded digital filters use 24-bit interpolation, resulting in a passband rejection of only 106 dB, Boulder has designed a much higher performance filter using 32-bit interpolation thereby achieving 144 dB (a 24 bit level) rejection in the audio band. To achieve this interpolation and the necessary 16 times oversampling of CDs, an expensive one gigaflop DSP engine was required.

Upandoversampling™ combines both the "up" and "over" sampling steps into one process thus assuring sonic clarity under any conditions.

The Boulder 2020 is the *only* DAC capable of bringing such a high level of digital design expertise to music reproduction in your home.



The Boulder 2020 DAC receives the digital signal via one of six inputs. It is then completely de-jittered through the use of a phase lock loop circuit, essentially performing a relocking of data.

After processing in the 32 bit DSP, the 24 bit signal is transferred at data rates over 700kHz from the main chassis to the audio boxes. The five Burr Brown converters (per channel) yield the purest, quietest signal possible.

From here the Boulder analog expertise takes over. All gain stages are the Boulder 993, the first in a special current to voltage converter circuit. It is deliberately bandwidth limited as the first step in removing digital aliases.

Next a triple 993, six pole Bessel filter removes the remaining artifacts, but leaves the audio band untouched. A fifth 993 creates the balanced output.

During creation of the Boulder 2020, it was obvious that there was a lack of attention to the analog in other designs. By including the required quantity of 993 stages, sonic clarity was taken to a level beyond any other design.

A special feature is the ability to change the timing between channels. This "time advance" feature is useful in effectively moving the listening position to one side of the room, thus accommodating a favorite listening position. A remote control is provided to allow adjustment of this and other 2020 features.



The three section chassis design (left audio, right audio, and digital) removes any interference between the analog and digital sections. An elegant combination of stainless steel, aluminum and powder coating complements any decor.

Two digital outputs are provided. One follows the main source, while the second can be separately selected for simultaneously feeding a recorder.

A separate 2000 Power Supply features three individually magnetically shielded toroidal transformers. Three independent regulated supplies power each of the audio channels and the DSP/digital/display circuitry.

The attention to detail in both the digital and analog sections will bring new life to your entire music library.



SPECIFICATIONS

DIGITAL INPUTS	4 AES/EBU, Converts to SPDIF, 1 Toslink, 1 ST Glass
DIGITAL OUTPUTS	2 AES/EBU, Converts to SPDIF
ANALOG OUTPUTS	2 Balanced Main
NOMINAL OUTPUT	4.0 Vrms
ANALOG HEADROOM	10 dB
SIGNAL TO NOISE	118 dB A weighted, 115 dB flat
FREQ RESPONSE	+0, -0.05 dB, 20 Hz to 20 kHz
THD+N, 0dBFS	0.002%, 20 Hz to 20 kHz
CONVERTER	18.0 wide, 6.875 high, 16.25 deep (in.)
POWER SUPPLY	18.0 wide, 4.25 high, 16.25 deep
WEIGHT	90, Shipping: 115 Pounds
POWER	120 VAC, 50-60 Hz, 180 W

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