

## The D1 | Better By Design

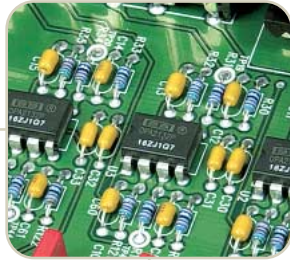
### Dual Motorola® DSP Engines

Our own precision Digital Signal Processing design uses *two* Motorola® DSP 56367 engines—among the most powerful in the industry. Each is rated at 150 million instructions per second, providing DTS® 96/24 with full bass management capabilities and enough processing power to handle even the most complex program material with matchless precision.



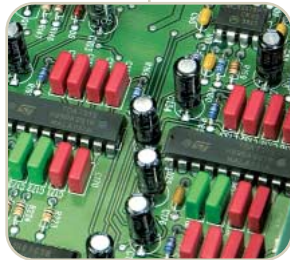
### Dual 3Mbit 8ns External Cache Memory

The D1's external cache memory is large enough to ensure that the powerful DSP engines never run out of resources, even while running the most complex algorithms.



### Four-Layer Hand-Designed Motherboard

The D1's hand-designed four-layer motherboard features extensive use of power- and groundplanes—all critical signal paths are surrounded by groundplanes. While a painstaking, dedicated design process, it ultimately provides a significant reduction in ground impedance, an absence of crosstalk and exceptionally low noise.



All operational amplifiers (including those used in Bass Management) are audiophile-grade Burr-Brown™ (OPA2132) FET-input type. These op-amps significantly reduce DC offsets for greater signal precision as well as providing immunity from “pops” during switching.

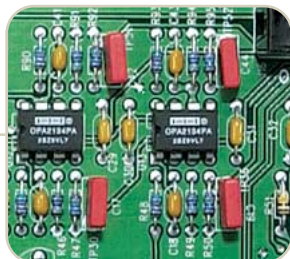
Renowned Wima film capacitors (MKS 2 metallized polyester and MKP 2 metallized polypropylene) provide excellent attenuation and minimal distortion.

The higher-frequency clock crystal provides smoother user operation and significantly faster response from the front-panel display, with precise attenuation.

Battery back-up for clock—avoids resetting the clock in the event of a power outage.

### Independent Digital Audio Board

Statement designers chose, once again, to use high-grade audiophile operational amplifiers (Burr-Brown™ OPA-2132's) and high-grade resistors to reduce DC offsets for greater signal precision. Wima film capacitors supply excellent attenuation and minimize distortion, particularly at higher frequencies. As part of the modular design approach, the independent audio board also facilitates easy future hardware upgrades.



### State-of-the-Art Video Switching Circuitry

State-of-the-art video switching circuitry is laid out on isolated, independent two-layer glass-epoxy circuit boards, eliminating the potential for signal interference. The hand-designed circuit board layout (not done by auto-routers) was optimized by maximizing the groundplane area and increasing the number of connections (vias) between the groundplanes on the top and bottom surfaces of the boards. The outcome is exceptionally low noise, an absence of crosstalk and increased protection against stray electromagnetic energy.

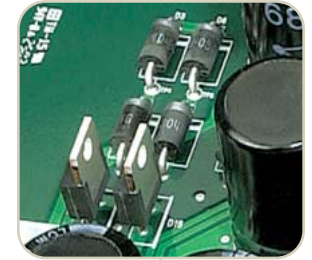


### Massive Toroidal Power Transformers

Two conservatively rated toroidal transformers provide separate Main power (rated at 99 VA) and Standby power (rated at 26 VA). These low-impedance transformers are shaped to minimize stray magnetic field radiation and tuned to minimize hum. Magnetic shielding further reduces residual transformer noise.



Ultra-fast soft-recovery high-efficiency rectifier diodes by General Semiconductor® (UG4D and UG8DT) contribute to an impressive Signal-to-Noise ratio: 107 dB on Analog-Direct inputs; 101 dB on Analog-DSP inputs; and 104 dB on Digital inputs.



Power supply filter capacitance of 46,000 µF maintains low-ripple voltages with higher loads, ensuring minimal noise and a smooth, continuous and instantaneous flow of high-current power.

### Designed and Built in North America

Elegant fine-grain brushed aluminum cover and extruded aluminum handles complement the heavy-gauge 10-awg steel chassis.

Blue vacuum-fluorescent front-panel display and LEDs lend an elegant finishing touch to the D1's unmistakable high-end demeanour.

The D1 can also be ordered with optional rack-mount handles. See your Anthem™ Statement Dealer for more information.



## Better By Design (continued)

### Nine High-End Components in One:

- Preamplifier
- 24-bit/192-kHz Precision Upsampler
- Analog-to-Digital Converter (ADC)
- Digital-to-Analog Converter (DAC)
- Surround-Sound Processor (SSP)
- HDTV Video Switcher
- Multiroom/Whole-House Entertainment Control Center
- Built-in FM/AM Tuner
- Headphone Preamplifier

### 1 | Preamplifier

What makes an edge-of-the-art high-end preamplifier? Some say the quality of its component parts. For them the D1 exhibits an impressive résumé—best-quality Crystal® analog attenuators, high-value ADC reference voltage decoupling capacitors, audio-grade Nichicon® MUSE® Series UK signal-coupling capacitors, low-ESR electrolytic OS-CON SVP capacitors, and the list goes on. For others, it's in the details—the number of design features compared with other high-end preamplifiers on the market. One simply has to glance at the D1's *Design Overview* (pages 5 and 6) to see why it is one of the most comprehensive, feature-laden high-end preamplifiers on the market. Finally, some use price to measure a preamplifier's worth—it stands to reason the more expensive the preamplifier, the better the performance. Or does it? The D1's sonic presentation rivals that of the most expensive preamplifiers. Highs are refined, open and silky smooth. Mids are rich, full and exceptionally revealing. Bass presentation is articulate, with extraordinary power, depth and pace while still capturing the delicate edge of each leading bass note.



### 2 | 24-Bit/192-kHz Precision Upsampler

All Digital-to-Analog Conversion (DAC) uses a reconstruction filter as the final step in the conversion process. Without this filter, recreating the original signal would not be possible. The side-effect of this filtering, however, is a harshness in the upper frequencies—a result of audible errors in phase- and frequency-response. The best high-end DAC designs go to great lengths to minimize this distortion, with very good results. The D1, however, does even more . . .

**UPSAMPLING:** Increases the sampling rate of the incoming digital signal. This allows the reconstruction filter to operate at a higher frequency, making it less intrusive in the audible bandwidth. While outboard Upsamplers can be purchased as an add-on component, their output is restricted to a maximum of 96 kHz due to the bandwidth limitation of S/PDIF (RCA/Toslink) and AES/EBU digital connections. When outboard Upsamplers are used with SSPs or separate DACs capable of 192 kHz they will, in reality, never operate at better

### 3 | Analog-to-Digital Converter (ADC)

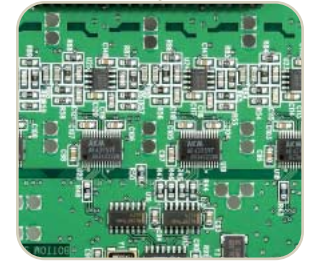
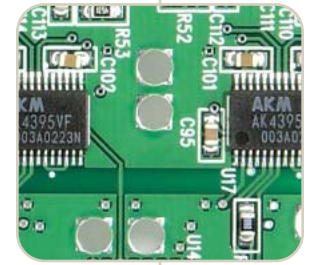
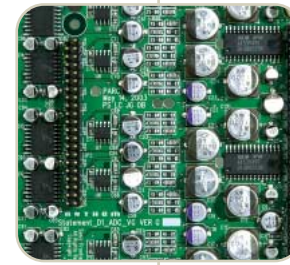
Our use of the highest-quality ADCs essentially eliminates ultrasonic noise and distortion in the 20 kHz to 80 kHz frequency band. Dual independent six-layer converter boards use separate analog and digital planes as well as separate power- and groundplanes for remarkably low noise. The AKM® AK5495A ADCs are capable of up to 24-bit x 192-kHz resolution.

Analog input level is controlled through a balanced configuration of six highest-quality stereo Crystal® CS3310 analog attenuators arranged in differential mode—one for each channel of the 6-channel input. This arrangement promotes greater dynamic range and contributes to an impressive reduction in distortion.

High-value (1,000 µF) ADC reference voltage decoupling capacitors provide the lowest possible THD+N below 1 kHz.

Low-ESR electrolytic OS-CON SVP capacitors are used to decouple the input stage bias reference voltage ensuring lower noise and distortion.

Audio-grade Nichicon MUSE Series UK signal-coupling capacitors with low-voltage coefficient ensure minimal distortion and low microphonics reducing the ADC's sensitivity to vibration.



than 96 kHz. In addition, they only operate on 2-channel PCM, not on decoded Dolby® Digital or DTS® program material.

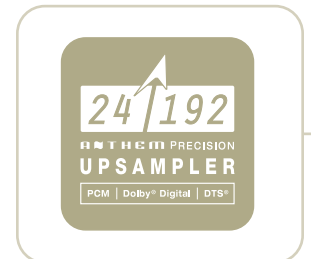
The D1 includes its own built-in state-of-the-art Upsampler incorporating Analog Devices' AD 1896 and converts the sample rate of *all* incoming digital signals to 192 kHz. Since this is done completely inside the D1 there are no digital connections to limit the upsampling frequency. Our D/A converters then operate at their full 192 kHz capability. And unique to the D1, our Upsampler also operates on all decoded Dolby® Digital and DTS® program material.

**OVERSAMPLING:** Along with upsampling, the D1's DACs also incorporate 128X oversampling to increase the sample rate to 24.576 MHz, thereby ensuring the best phase- and frequency-response possible.

This combination of upsampling and oversampling allows the D1 to use much gentler 3rd-order Bessel reconstruction filters. Measurable

results are profoundly superior, reflecting exceptionally flat frequency response and THD+N in the upper frequencies up to *twenty times lower* than some of the best high-end outboard DACs.

Sonic performance is astounding—smoother high-frequency response, superior detail, better image focus—in essence, a far more transparent window on the original performance. While this is enormously beneficial for music it is even more beneficial for home theater. Since the D1's Upsampler operates on *all formats and all channels*, the result is a much higher level of transparency for both multichannel music and movies.



#### 4 | Digital-to-Analog Converter (DAC)

Superior digital-to-analog conversion in the D1 is courtesy of our very high-quality DAC design. Here again, we have essentially eliminated ultrasonic noise and distortion in the 20 kHz to 80 kHz frequency band. Our six-layer converter boards use separate analog and digital planes as well as separate power- and groundplanes for the lowest noise possible. Since the D1 also includes our own built-in state-of-the-art Upsampler (see page 3) to convert the sample rate of any incoming digital signal to 192 kHz, the DACs are able to run at the highest speed (192 kHz), regardless of the incoming digital bitstream. The result is extremely low background noise up to almost 100 kHz.

AKM® AK4395 converters operate at their full 24-bit x 192-kHz resolution and switched-capacitor output filters significantly reduce the DAC's sensitivity to rapid fluctuations in the bit rate during the conversion process.

Audio-grade Nichicon® MUSE® Series UK signal-coupling capacitors with low-voltage coefficient ensure minimal distortion and low microphonics—dramatically reducing the DAC's sensitivity to vibration.

By eliminating the potential for errors in timing, our DAC's high-accuracy clock generator (49.152 MHz, ±0.001%) makes a substantial contribution to distortion-free performance.

#### 5 | Surround-Sound Processor (SSP)

No matter which surround-sound mode you want to use, it's available on the D1. The industry standards (with their full complement of processing options) are here—Dolby® and DTS® as well as some very successful surround formats of our own—AnthemLogic–Music™ and AnthemLogic–Cinema™ and of course all of the latest THX® modes (see *Design Overview*, pages 5 and 6). In the D1, surround sound is cleaner and clearer not only because of our use of highest-quality op-amps and capacitors, but also due to our precision upsampling on *all channels!* The result is a level of transparency and precision in the surround soundstage that, until now, was simply unavailable!

For any digital input, the D1 selects the correct format automatically; or take any 2-channel stereo source and tailor your own Dolby®, DTS® or THX® listening experience; or use one of our own proprietary modes for up to 7.1 output! Three automatic memory functions—Presets, Last Used and On-The-Fly settings—allow you, or anyone else in your family, to switch from source to source, or program to program and have the D1 automatically recall your settings. Our powerful memory capability makes it easy to enjoy all of the exceptional multichannel music and home theater sound that the D1 provides.

#### 6 | HDTV Video Switcher

The remarkable D1 boasts highest-quality video circuitry allowing you to switch all video sources without degradation right up to the very highest High-Definition TV (HDTV) progressive video output of 1080p (line doubled 1080i). With its buffered video design, when running longer cables, routing video through the D1 for switching can actually *improve* video quality.

Progressive scan DVD-players (480p) and HDTV (720p or 1080i) require Component Video connectors (Y/Pr/Pb). Running these video signals through an inferior quality switcher may cause loss of picture detail. To prevent picture degradation, the D1 provides Component Video switching with a bandwidth of 100 MHz for the “Y” connection (Pb and Pr require only half the bandwidth). And our specification covers the *entire* video signal path—from input to output.

Be wary of products claiming HDTV video capability. Some manufacturers reveal only the bandwidth of the switcher, they do not give specifications for the entire video circuit. The D1 is fully HDTV 1080p capable. In addition to its extremely well-designed video circuit and layout, the D1 uses the highest-quality video devices (not just ones that might “get by.”)

#### 7 | Multiroom/Whole-House Entertainment Control Center

In addition to its role as an edge-of-the-art music preamplifier/home-theater processor, the D1 plays another important role—that of high-end whole-home entertainment control center. The D1's whole-home focus is as much about distributed video as it is about distributed audio—making it possible (and simple) for you to direct and adjust audio and video program material throughout your home.

The Main Path provides video and multichannel audio for your main music and home theater room. Zone 2 and Zone 3 Paths are independent of the Main Path and of each other. Selectable by Source, they provide video and 2-channel analog-audio output with volume, bass, treble and balance controls to two completely separate zone outputs. The Record Path provides video, 2-channel analog-audio, and digital-audio record outputs, selectable by Source. With the addition of an external preamplifier you can even turn the D1's Record Path into a fourth independent audio/video zone.



#### 8 | Built-In FM/AM Tuner

The D1's FM/AM tuner provides superb high-end sound. 18 FM and 6 AM station presets with selectable Stereo, High-Blend and Mono modes capture even hard-to-reach stations. As with other sources, the tuner can be directed to all four Paths so that you can record or listen to your favorite radio station anywhere in your home. A Texas Instruments™ TLC072 MOSFET input-type operational amplifier is used to reduce DC offsets for even greater signal precision.



#### 9 | Headphone Preamplifier

The superb private listening provided by the D1's built-in headphone preamplifier is a result of our high-quality design and use of the finest quality discrete component parts. Power supply rails of ±15VDC in concert with the Motorola® MC33078 operational-amp used in the gain stage accommodate an extensive volume range, particularly useful with high-impedance headphones. Renowned Wima MKS 2 metallized polyester film capacitors ensure ultra-low distortion at higher frequencies.

With a dedicated fully discrete output stage our headphone preamplifier also features separate Volume, Bass, Treble and Balance controls, allowing you to make changes independently of your Main room settings. You can also choose to have your headphones operate along with Main speakers, or turn Main speakers off when the headphone plug is inserted.

