

## MUSICAL SURROUNDINGS MYDAC II DAC Analog-Like?

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Finding an excellent digital-to-analog converter (DAC) for under \$1200 used to be an audiophile fantasy. But with advancements in DAC design and reductions in the price of the high-quality parts needed to make these designs a reality, the cost of entry into high-end digital sound has come down substantially. In Issue 228 I looked at three excellent under-\$1200 DACs: the Channel Islands Transient Mark II (\$699), the Lindemann USB-DAC 24/192 (\$1100), and the NuForce DAC-100 (\$1095). Now Musical Surroundings has an entry in the under-\$1200 DAC competition, its new MYDAC II (\$1199). The MYDAC II may be forgiven its less than totally original name because of the interesting technology under its hood. Does the MYDAC II's unique and soon-to-be-patented digital technology make it a game-changer? Let's find out.

### MYDAC II Features

From the outside the Musical Surroundings MYDAC II doesn't look that special. Available in silver or black, the MYDAC weighs only 3.4 pounds and measures 9 7/8" square and 2" high. The front panel is clean but certainly not deluxe, with a single pushbutton that selects one of three inputs—SPDIF, USB, or TosLink. The center of the front panel has three additional LEDs that indicate whether the sample rate is 44, 96, or 192kHz.

The MYDAC II's rear panel has one pair of single-ended RCA analog outputs, TosLink, USB and SPDIF inputs, and a barrel connector for an outboard wall-wart power supply. The RCA outputs are fixed-level so you will need to use the MYDAC II with a preamp or an integrated amplifier with level controls.



*Musical Surroundings MYDAC II*

The MYDAC II supports sample and bit-rates as high as 192/24 through its SPDIF digital input. The TosLink input can support up to 96/24, but its USB input can only handle up to 48/16 files. To play higher sample and bit-rate files from USB sources via the MYDAC II will require an external USB-to-SPDIF converter such as the M2Tech hiFace, Human Audio Tabla, or Empirical Audio Off-Ramp. The MYDAC also has no provisions to support DSD or DXD, but that capability can be added to the MYDAC (or any other DAC) through the acquisition of a Schitt LOKI (\$149) DSD-dedicated DAC.

## MYDAC II Patentable Technology

So far, the MYDAC II seems like a fairly ordinary mid-priced DAC. Inside is where the MYDAC II differentiates itself from the competition. Designed by Michael Yee, who is best known for his analog and phono preamp products, the MYDAC II takes an idea from the analog world and adapts it to digital circuits.

Michael Yee's explanation of his new methodology makes it seem simple. "In a system with 16-bit ADCs and 16-bit DACs (CD audio), both ADCs and DACs have roughly the same contribution to quantization error. It is the high frequencies that need more resolution in a sixteen-bit system. If one were to emphasize the high frequencies in the digital domain (making the high frequencies represented by much bigger numbers), pass them through the DAC at a much higher resolution, then EQ them back down in the analog domain to make the system flat, the contribution to quantization error due to the DAC would be essentially zero." Yes, you got that right; the MYDAC II uses equalization to improve the system's overall resolution, especially in the mid and higher frequencies.



According to Yee, "Our digital EQ is something akin to RIAA on LPs, though it starts at 40Hz and ends at 4kHz, rising at 6dB/octave. The boost at 4kHz is 40dB, where the curve ends. The analog de-emphasis looks very much like a phono preamp doing the exact complement to the digital EQ. The digital EQ is implemented in FPGA (Field Programmable Gate Arrays) in order to be an exact complement to the analog de-emphasis. This means that the higher frequency range is represented by numbers 100 times bigger when going through the DAC and the DAC appears to be 100 times more accurate."

The MYDAC II employs a 24-bit DAC so that Yee's design can support his EQ scheme. "For 24-bit audio, the MYDAC II 'throws away' eight bits of resolution in the bass and gives them to the high frequencies via noise shaping. For 16-bit audio, there is no reduction in resolution in the bass." The patent on Yee's new digital methodology, called MODR (Musically Optimized Digital Reconstruction), is currently pending.

Besides being used in the MODR process, FPGAs are also used in the MYDAC II for all internal signal processing and timing. Musical Surroundings claims that FPGA remove "another jitter source." The heart of the MYDAC II is a Texas Instruments TI PCM1798 delta/sigma chip. Low distortion op-amps from TI are used in the MYDAC II's output filter. This is the first time that Yee has used integrated op-amps in one of his designs, but they were "a high-quality affordable implementation to introduce this new technology."

## MYDAC II Sound

With this new whizz-bang digital technology does the MYDAC II sound different from all other DACs? Yes and no. At first listen the MYDAC II seems like many other good DACs—clean, dynamic, and harmonically well balanced, but further listening reveals its special sonic characteristics. Unlike many otherwise excellent DACs the MYDAC II sounds less "hard" without sounding mushy or soft. Details are every bit as clean and clear as through more conventional designs yet they lack that sometimes overly aggressive leading edge.

The MYDAC II also excels at preserving inner detail and low-level information. On Andy Statman's brilliant, recently released album *Superstring Theory*, the MYDAC II preserves the gutty texture and the upper harmonics of Statman's Kimble mandolin as well as the trailing edges of Jim Whitney's stand-up acoustic bass. On one particular tune, "French Press," it's easy to hear that Statman's mandolin was being routed through a less than pristine preamp because of the MYDAC II's excellent retention of inner detail. Like the late Glenn Gould, Statman "vocalizes" while he plays. His humming, although at extremely low levels, is easy to follow through the MYDAC II.

Listening to my own live concert recordings through the MYDAC II, I was impressed by its ability to preserve and illuminate the sounds of the concert hall—not merely the sounds on stage, but also the peripheral sounds from offstage and in the audience. Instead of offering a "velvety black," monolithic, and artificial-sounding background, the MYDAC II preserved the room's myriad low-level sonic cues so that the entire space seemed to "breathe" in a more realistic manner.



Dynamic contrast and differentiation, especially during quiet passages, rank up there with the best I've heard, but only when using the MYDAC II's best input which is certainly SPDIF. TosLink and USB don't have the same dynamic acuity or jump factor as SPDIF. The USB input should be considered more of a "convenience input" than a primary source. If you plan to use the MYDAC primarily for USB, I strongly recommend acquiring an outboard USB-to-SPDIF converter. The difference in sound quality between the MYDAC II's built-in USB solution and the Human Audio Tabla or Empirical Audio Off-Ramp is not subtle. The MYDAC II's USB input sounds flat, gray, and dynamically constricted when compared to the same source routed through an outboard USB converter. After several days, during which I did quite a few A/B comparisons between the internal USB and external converters, I did all my subsequent listening using the MYDAC II's SPDIF input.

Since the frequency range, especially in the upper registers, is boosted and then returned to pre-boost levels by the MYDAC II, I was especially curious about any noticeable negative effects from this resolution-enhancement and noise-reduction scheme. I spent quite a bit of time during my listening sessions trying to hear any augmentation to the upper midrange and lower treble that could be attributed to the MODR circuitry. After many hours of listening to a wide variety of music at many different resolutions, I can state confidently that MODR had no noticeable additive sonic effects. Even on some of my ruder, upper-midrange-dominant mixes, such as the original release of the Clash's *London Calling*, the MYDAC II didn't add any steeliness or additional rasp to the sound. If anything the upper frequencies on more primitive recordings were slightly less harsh, but without any reduction in dynamic contrast.

I hesitate to call the sound emanating from the MYDAC II "sweet," since that implies a certain loss of upper-frequency incisiveness, a subtractive coloration that is not part of the MYDAC II sound. But the MYDAC II does have the ability to mitigate harshness and aggression in the upper midrange as no other DAC I've heard can. Some listeners would call this a "more analog-like" sound, but unlike some analog, which has a degree of built-in compression and limiting that mitigates excessively hard leading edges, the upper midrange transients aren't blunted or reduced through the MYDAC II. They seem to have less odd-order distortion and sound more relaxed and natural.

### Could a MYDAC II Be In Your Future?

Nowadays audiophiles have more high-quality digital-to-analog converters to choose from than ever before. Most, even those priced at the entry level, can deliver a level of sonic quality that was unavailable in any digital product, regardless of price, just a few short years ago. The Musical Surroundings MYDAC II offers a unique solution to the problem of accurate digital sound reproduction by augmenting its performance through mid- and upper-frequency equalization. The result is a DAC that sounds "less digital" and reproduces upper frequencies with less of a hard, amusical edge.

The principal shortcoming of the MYDAC II is that its USB input is limited to 48/16 and can't support any higher sample- or bit-rate. The USB input is also not nearly as good as the MYDAC II's SPDIF input in overall sound quality. To hear the MYDAC II's true sonic potential with computer-based music files you will need to add a high-quality USB-to-SPDIF converter.

If you're an analog-only audiophile who has listened to a lot of DACs but never heard one that sounds right to your ears, you may want to give the MYDAC II a try. It could be the DAC that makes it possible for you to enjoy digital for the first time.

## SPECS & PRICING

**Inputs:** Three digital (SPDIF up to 24-bit/192kHz, TosLink up to 24-bit/96kHz, USB up to 16-bit/48kHz)

**Frequency response:** 20Hz–20kHz

**Output voltage:** 4V

**Output impedance:** 100 ohms

**Distortion:** 0.02%

**Dimensions:** 9 7/8" x 2" x 9 7/8"

**Weight:** 3.4 lbs.

**Price:** \$1199

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