

Stereo Sound #236 – NADAC D & NADAC C review by Takahito Miura

Merging Fidelity's development team has completed the latest NADAC and its paired clock, relaunching under the name "Master Fidelity." With its dedicated sound, it earnestly conveys the essence of music.

— Takahito Miura

From Canadian rising star Master Fidelity, the NADAC D and NADAC C have emerged. The former is a stereo 1-bit DAC, while the latter is a dedicated master clock.

The NADAC was introduced to the market by Switzerland's Merging Technologies as a consumer DAC. Their flagship product, Pyramix DAW, has recording specifications specialized for PCM and DSD recording and editing. To bring that sound to the audio market, they collaborated with Merging Fidelity, a partner in Pyramix DAW sales, to complete the NADAC.

However, in 2022, when they came under the umbrella of German Sennheiser, a policy was set for them to focus exclusively on the professional market. The development team, which had already made significant progress towards the next-generation model, renamed their company from Merging Fidelity to Master Fidelity, and completed the new NADAC D and NADAC C.

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From the knowledge gained with the aforementioned Pyramix DAW, they came to be convinced that pure 1-bit processing is the ideal for analog conversion, even for PCM. The Bitstream TDA1547, developed by Philips in 1987 during the heyday of CDs, was said to be an advanced DAC element in that sense. However, it could not meet modern numerical requirements and its production has already ceased. The original NADAC used ESS's DAC element, the ES9008S.

The reason pure 1-bit processing is considered ideal is probably due to its excellent linearity, even down to minute signal levels. However, there are no readily available DAC elements for this, and 1-bit processing also presents the difficulty of being sensitive to clock timing. Incidentally, DSD and Bitstream are conceptually the same.

Therefore, Master Fidelity's engineering team developed a 1-bit discrete DAC using an

ASIC (Application-Specific Integrated Circuit). Unlike programmable FPGAs and CPLDs, an ASIC is an integrated circuit (IC) specialized for a particular purpose. It is not hard to imagine that this required an unforgiving design process and a considerable investment, but I hear they completed it after several specifications and a four-year development period.

The power supply for this is a measurement-grade power unit with a temperature-controlled oven, which dramatically enhances temperature stability. For 1bit processing, PCM signals must be converted to DSD signals. This unit converts up to 96kHz to DSD128, and from 176.4 kHz to 384kHz to DSD256. While it's unclear how the difference between the 44.1kHz series and the 48kHz series is handled, the conversion algorithm undoubtedly leverages the know-how from Pyramix DAW. DSD (including DoP) is fed into the 1bit DAC circuit without changing its sampling frequency. The block diagram of this unit can be viewed from the resources on their home country's website. It contains quite advanced technical content.

Although the NADAC D has inputs such as optical, coaxial, and AES, its main attraction is likely the USB-C terminal, which supports DSD up to 22.6MHz (DSD512) and PCM up to 384kHz/32bit. The line output allows for level adjustment in the analog domain.

The NADAC C is a master clock equipped with an OCXO (Oven-Controlled Crystal Oscillator) that features an SC-cut crystal, subjected to over 120 hours of aging and selection. It has five outputs for a 10MHz square wave, and also a special 625kHz clock output, which is for the previous NADAC and Pyramix DAW. Additionally, there are two word clock outputs (ranging from 44.1kHz-1536kHz).

I want to make it a daily habit to listen to this sound, which is the culmination of Master Fidelity's mastery of the technique originally invented by Philips.

The NADAC D and NADAC C are being listened to in the reference listening room of this magazine. The DELA N1, which acts as the source for the sound, and the LAN switch S1 are also supplied with 10 MHz from the NADAC C. Among the six types of filters available for the NADAC D, I chose "Hybrid." The USB cable is the Nordost Frey 2, which is bundled by the importer.

Listening to "Fanfare No. 2 ~ March" from Nelsons conducting the Boston Symphony

Orchestra's "Shostakovich: Incidental Music 'King Lear'", it presents a performance rich in dynamics and high in sound freshness, all within a well-balanced frequency range. The sense of dynamic range is extremely wide, with meticulous depiction of the ultra-low frequencies, which can be described as ambient noise, and the atmospheric decay of reverberations. For "Flight of the Bumblebee" from Naoko Kawamura's album 'Twenty', perhaps due to it being a DSD recording, the diverse piano timbres resonate beautifully, diffusing throughout the space. The skillful differentiation between direct and indirect sounds is attributed to each note being pin-focused. Yet, it does not fall into an analytical tendency, resulting in lively music with vivid contrasts in dynamics.

In jazz, a piece I've been listening to frequently recently, "Long as You Know You're Living Yours" from Branford Marsalis's new album 'Belonging', is outstanding. The excellent depiction of instrumental textures, starting from the snare drum's strike, effortlessly draws the listener into the world of the music. Overall, the sound has excellent transient response, and the performance woven by the quartet (four musicians) is visual and unfolds emotionally.

The above are impressions of the sound when listening to high-resolution digital files. With the CD rip of Mami Ishizuka's "Mizuiro no Ame," the emotional vocals, piano, and percussion arrangement shine. A highly neutral tonal quality was achieved, supported by excellent resolution. I felt absolutely no excess or deficiency in terms of energy balance, and was able to enjoy a sound that, while impactful, was not fatiguing.

In this listening test, I also listened to the NADAC D without the NADAC C master clock connected.

While a difference was certainly perceptible, the essential sound expression remained unchanged, with only a slight narrowing of the soundstage. However, once you've heard the sound with the master clock integrated...

The combination of the NADAC D and NADAC C delivered music with a dedicated and earnest sound.

It can be said that the method of converting digital to analog with pure 1-bit was invented by Philips, and Master Fidelity brought it to its ultimate refinement. Having come to truly desire to listen to this sound on a daily basis, I decided to begin preparations to acquire the NADAC D first.