

## Review: Nagra HD DAC; or, Closing the gap between digital and analog

Posted on October 30, 2016 by Panagiotis Karavitis in Digital



There is not much to be said about **Nagra Audio** that has not been said already. The company goes back six decades, when Stefan Kudelski, a young talented engineer born in Poland but due to the second world war forced to move in Switzerland, after completing his studies in the Swiss Federal Institute of Technology in 1948 finally launched his first portable audio tape recorder.

The company remained an industry reference for portable audio recorders for decades, just consider that more than 10.000 Nagra III reel to reel tape recorders were sold. In 1997 Nagra finally released the first audiophile oriented product, the PL-P vacuum tube pre-amplifier followed in 1998 by the Vacuum Tube Power amplifier while their first audiophile DAC came out in 2003.

Very few companies can vaunt a pedigree of audio excellence like Nagra's.



Nagra founder Stefan Kudelski

And you might think, how does all this heritage translate today. Put in just one word, it translates into music. I won't tell you to go out and buy the Nagra HD DAC for one simple reason, it is pricey. But if you are in a hurry, the bottom line is this: *Nagra HD DAC equals music*.

## DOING A PROPER REVIEW

The sturdy box screams classic Nagra lines, with the power knob sitting on the right side of the front panel, the iconic "modulometer" on the left, a two-line matrix screen next to it and the controller knob next to the volume lever. A headphone jack along with three small leverages (for the screen's luminosity control, the option of switching the output to the headphones and for mute) complete the front panel. The round controller knob when pushed in enables the menu, so you can actually read and alter far more details than you might expect, including input selection, language, output level selection (there is selectable high and low gain output), phase, firmware version and how many hours are on the tubes (yes, tubes, will get back on that later on).



The headphone section makes only partially sense for this kind of product and I won't be going deep into my analysis. Reason is simple, someone who can afford this kind of equipment chances are will be buying a standalone headphone amplifier and probably a good one too. For the record I gave it a try, and while timbre was spot on and music was highly textured, there was a driving issue with stubborn planar magnetic headphones. If, on the other hand, you have easy to drive headphones you might find out you don't even need that standalone headphone amp after all.

The HD DAC is complete with both balanced and single ended outputs, a ground terminal, USB, I2S, optical, two AES/EBU inputs and two SPDIF, one with RCA connector, the other with standard BNC connector for true 75Ohm link. On the far right of the back panel there are two mini-LEMO connectors for the necessary power supplies, one for the analog circuit, the other for the digital section.



Back panel carries all the necessary connections

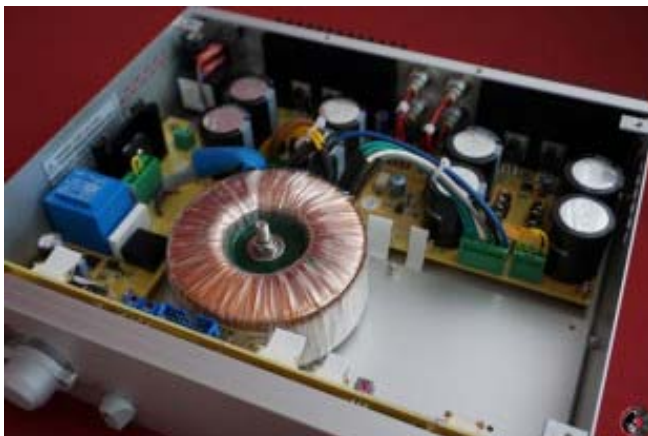
Built quality is superb, despite someone managed to bend the ground terminal before sending me the review sample. Nothing is left to chance, just consider that the footers (probably the best I have ever seen as standard on a piece of audio equipment) are made from non-magnetic copper-nickel-zinc non-ferrous alloy and sport a Delrin resin tip. For an additional



grand and a half one can buy the specially designed, sand blasted, aluminum made bases that Nagra calls VBS (for Vibration Free Systems ) and place them (as they come in pairs) underneath the HD DAC. The base has some jelly like feet which in conjunction with the DAC's footers made a perfect vibration isolation.

### Bells and whistles (expensive ones)

As I said, those vibration bases come in pairs and my delivery package had four. If you were paying



attention you must have noticed the two power supply inputs at the back of the chassis. Nagra provided the MPS external power supply for the HD DAC. An alternative could be a pair of ACPS II Nagra power supplies but if you want to do things properly (and trust me, you want) the Multiple Power Supply is the way to go. This external power supply is practically a necessity as the DAC it-self has no power supply at all, not even a small, auxiliary one. The MPS is slightly

smaller than the HD DAC, looks and built quality are in typical Nagra fashion. Now add another set of VFS base plates for the power supply. The sum of all this goes including Nagra's umbilical DC cables would go north of 30.000 euros, divided into 23K for the HD DAC, 6K for the MPS and another 4K for the two sets of isolation bases. Fortunately Nagra offers the whole when sold as package at \$29.995 and for that price you get the Nagra remote control and a pair of white gloves for handling the devices without leaving fingerprints behind for free!



Signal Projects Golden Sequence power cord, Das Klang USB cable and Nagra power umbilicals

Started my reviewing with standard (as in bloody cheap) cables, only to find out that the HD DAC In craves fancy bells and whistles. A friend dropped by with an Argento power cord which made a significant difference on the overall performance and triggered an all-out cable assault. Off they went some industrial black power cords and my trusted Belkin Gold USB cable, in with Signal Projects Golden Sequence power python cord and exotic, as in made from vintage copper, Das Klang USB cable. In conjunction with my reference for more than a year now Black Cat Triode interconnects (exceptional value for money in Sommovigo's designs) performance was elevated to sublime levels, though not before a small misadventure.

## The devil hides in the details

The first three days were a reviewer's nightmare. Reason was the HD DAC underperformed, at least for what I was expecting it to be. Yes, I was using a plain vanilla power cord and the Belkin USB cable but still, there was something not going very well as my Rockna Wavedream DAC was clearly better performing (and may I add at a fraction of the price). The Wavedream is a fantastic value for money, a ladder DAC with proprietary FPGA receiver and excellent master clock, not to mention it sounds detailed and natural at the same time. The HD DAC at first sounded rather constrained in dynamics and lacked inner resolution.



the conversion module was shielded under a gold metallic case, presumably for keeping it safe from EMI/RFI along with curious eyes. Inside the golden cage lays a 72bit FPGA (field programmable gate array) chip capable of 2xDSD and 24bit/384KHz PCM playback.



After giving a call to the local importer I was granted the opportunity to open the DAC's case and check the interiors. My thinking was that the bump that bend the grounding terminal had wreaked havoc on the delicate circuits.

Nagra's built quality is second to none, the sight of the internals was an audiophile's oasis crammed with boards, custom Nagra and Duelund capacitors, hand wound interstage transformers and a single JAN 5963 double triode in the output stage. The

Being there I decided to pop open the power supply as well, not much of a surprise there, Nagra quality was to be expected. The MPS outputs 4 separated 12V supplies meaning you can use it with other Nagra devices such as the CD player or the pre-amps. What appears to be an empty space next to the Nagra made toroidal transformer is the place where a Li-Ion battery fits. The provided sample was not equipped with the aforementioned battery, after all I was not planning on

any field trips with 30K worth of equipment.



## A MIRACLE FROM ABOVE

Actually a miracle from below. There was no obvious fault in the circuitry and I was getting nervous, could not understand why the HD DAC was not delivering. Sound was good rather than great and knowing Nagra, there is absolutely no chance they would have thrown a sub-par product on the market. The culprit was found accidentally, while swapping cables I moved the external power supply away from the DAC, down near my Raspberry streamer and all the sudden, fiat lux! Detailed and dynamic sound finally emerged from the DAC. Remember listening to Schubert's *Unfinished symphony* with Phillippe Jordan on the podium and thinking how dramatic his

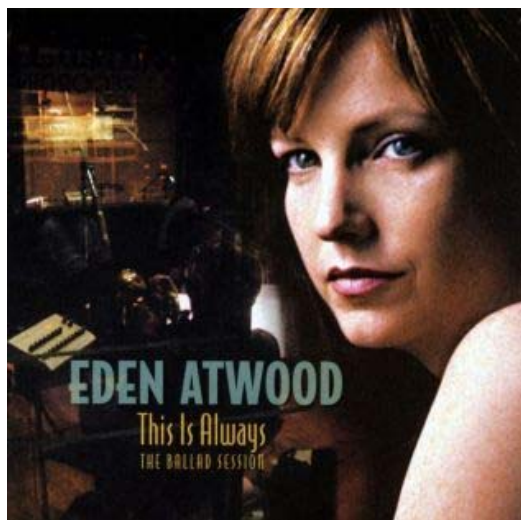
take is. I'm a sucker for modern, full of passion and drama recordings and the Wiener Symphoniker delivers in spades. Powerful crescendos and vibrant horns and bassoons make for a masterpiece of a composition and a judge of a system's macrodynamic capabilities, the Nagra was finally alive and kicking! Those big swings on the second, andante con moto, movement were making me spring from my seat.



## A month worth of music

Courtesy of the Nagra HD DAC, something like five or six weeks flew away. My Synology NAS is mostly packed with classic music but jazz is also covered with approximately 2000 quality titles which for some reason seemed highly appropriate for the Nagra HD DAC. Am I allowed to say that a component capable of transmitting jazz emotions can be for good reason called "musical"? Benedikt Jahnel, Antonio Miguel and Owen Howard made an exceptional work with their 2012 *Equilibrium* (ECM) full of rhythmic variations and contrasts between the piano, drums and double bass.

On the track *Sacred Silence* the HD DAC gave a perception of a big piano dominating the center stage while cymbals hovering above it. Imaging and soundstage were very good but most importantly the sound was yes, warm but not overly mellow. The Rockna DAC was a tad more neutral in comparison, providing only slightly more firm bass whereas the Nagra was more full-bodied. Tubes and interstage transformers are dangerous toys, in the hands of non-experienced engineers can end up creating syrupy results that make a fuzzy mess instead of music. Thankfully Nagra kept an exquisite balance between detail and warmth, with the end result being what we so often and for no good reason call "analog".



In this case "analog" it is. Andreas Koch, known for his work with Sony and the SACD/ DSD format designed the conversion unit for Nagra which transforms all PCM incoming signals into 5.6MHz DSD. This begs the question, how good a pure DSD DAC is when playing DSD? Answer is quite simple, the

Nagra HD DAC was the only DAC that made me search for more DSD titles up to now. Not that my Rockna did not handle them rather well, still there was no clear difference between titles in PCM and DSD, not one that would have me trying to expand my DSD library with passion. The HD DAC on the other hand offered a sense of ease, flow and lack of digital artifacts while playing Eden Atwood's This is Always: The Ballad Session record that attracted me like only my turntable ever managed to.

## GARRARD, THE FINAL FRONTIER

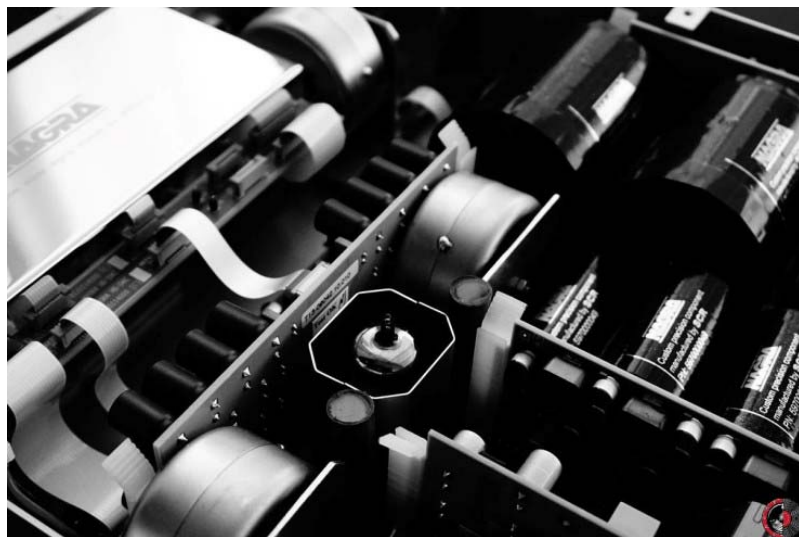
No, the HD DAC is not a turntable and again no, it won't take my Garrard's place in the system. For the fun of it I played a few tracks in tight A-B comparison between my 401 fitted with Kuzma 4point tonearm, ZYX 1000 airy 3 MC cartridge, Signal Projects Apollon tonearm cable going straight to the ASR basis exclusive phono stage and while the results were close, the analog-analog set up had the upper hand compared to the



digital-analog sounding DAC, at least with analog recordings and in terms of pace and timbre. With modern, digital recordings, the HD DAC was superior in terms of channel separation and detail retrieval thanks to the ultra-low noise floor. Reason why I rarely invest money on digital recordings pressed on vinyl, also reason why I wish the HD DAC was here to stay. Even if you are a hard core analog listener like yours truly, you still need a top notch DAC for what comes out nowadays.

## THE PRICE, HARD TO SWALLOW?

A complete NAGRA HD DAC with matching power supply and isolation bases comes dangerously close to the \$30,000 mark. This is a level that only a few years back was almost taboo for digital front ends; it remains so for many of us, which is worth a note, especially when so many capable DACs cost



ten to twenty times *less*. The HD DAC after all is rather compact in size and might seem to many audiophiles a poor value.

Truth could not be more distant.

The internals are literally packed with boards and components placed in vertically; if those same components were laid out in "audiophile" fashion the case should have been twice as big. Second point, the quality of the components is unbelievable and expensive like few other products out

there. The analog section of this DAC is tube based but very quiet, in fact Nagra says that it is even quieter than the digital one! Another reason for paying big money is the exclusivity of having a preeminent designer such as Andreas Koch working for you on what he knows best, DSD conversion on custom FPGA code. This is exclusivity for Nagra and not the same “code” you would buy if you were to pick his own Playback Designs DACs and players. Besides all this, one must add to the recipe a ten year guarantee and a brand name, Nagra, synonym of Swiss made precision.

All this would not be enough if the sound was not top notch, but the HD DAC from Nagra closes the gap between analog and digital.

## **Nagra HD DAC**

- Internal processing: 5,6 MHz, 72 bits
- Compatible digital formats: PCM 24 bits up to 384 kHz, DXD, DSD x 2
- Bandwidth: 5Hz to 40 kHz (+0 – 3dB)
- Noise level: -128 dBr (linear)
- Distortion: < 0.02% (at -20dBFS)
- Digital inputs: 2 x S/DIF, 2 AES/EBU, 1 Optical, 1 Audio USB (mode 2), 1 x I2S (Nagra format)
- Outputs: 1 stereo on RCA connectors, 1 stereo XLR (Symmetrical on transformers available as an option)
- Dimensions: 277 x 350 x 76mm (12.2 x 13,7 x 3 inches)

## **MSRP**

- Nagra HD DAC with MPS power supply and VFS-L package \$29.995
- Nagra VFS-L \$2.225
- Nagra MPS \$6.495
- Nagra DC power cable 1.25 \$495/ each
- Nagra spike kit \$350

## **Associated equipment**

- DACs and Headphone amplifiers: Rockna Wavedream, Chord Mojo, LH Labs Geek Out 1000
- Streamer: Raspberry Pi2 with linear PSU running Archphile OS
- Local Network: TP Link Archer router with linear power supply, Synology DS216 NAS, Seagate Archive HDD with 128MB cache, Belkin Gold USB cable, Das Klang USB cable, Supra CAT 8 ethernet cables, Baaske medical grade Ethernet filter
- Speakers: ATC Studio Control Monitors 100SL
- Amplifier: ASR Emitter I HD integrated amplifier with external power supply, external battery
- Akku and phono module
- Turntable: Garrard 401 in custom birch plywood plinth on top of a solid block of limestone for a total of 200+lbs equipped with NSC motor controller
- Tonearms: Kuzma 4Point , SAEC 308L, SME 3009 S2 modified, Rega RB300
- Cartridges: MCs: ZYX 1000 Airy3 X Low, Denon DL-102, Denon DL-103R, Fidelity Research
- PMC-1.
- Phono stage: ASR Basis Exclusive, double board phono stage with external battery Akku

