

NAGRA CDC & PSA

By Vangelis Markoulis

Two of a kind

*Nagra's pair justifies, once again,
the reputation of the Swiss for precision and high manufacturing quality.*

Nagra is a company that, in the sound professionals' field, is highly esteemed – not unjustifiably. Besides its reputation, however, it has earned my respect as well, those two or three times I was fortunate enough, as a technician, to get my hands on some of its creations. With its technical background as the starting point, for a few years now Nagra has created a series of high-end equipment for domestic use that is very interesting, with the monophonic pyramids and the PL-L preamplifier comprising one of the hitherto inaccessible objects of my curiosity.

Therefore, the advent of Nagra's first CD was the occasion for a CDC to be brought to the offices of the magazine (the model with a variable output that can be connected directly to a power amplifier) and a stereo power amplifier that brought me into contact with a designing mentality, which, in the technician's world, regardless of personal tastes, commands respect.

Is, however, the rational spirit and common-sense approach of the technicians at Nagra enough to create devices that stand out in the sound field?

That is the answer that we are asked to give though this current trial.

The old one

PSA is based on technology developed by Nagra for the manufacture of PMA monoblocks, which, for a few years now, have followed their own orbit in the high-end firmament. The chassis design makes it (as is the case with the monoblocks) aesthetically unique. Given its pyramid shape, there is no way it can go unnoticed. This shape, however, was not chosen just for effect but serves practical purposes as well, maintaining Nagra's tradition of designing equipment where practical needs define their form and not the other way around, succeeding, at the same time, to have an interestingly stylish aspect.

So, PSA has a chassis in pyramid shape with a 37 cm base and a height of 26.5 cm.

One of its three sides is the heat sink for the power transistors (it is cast aluminum alloy, the sound circuit boards are mounted on top, and inside it is divided in two levels).

On its front panel you will find only two indicators (one that brightens according to the input signal level and one that turns on when the power amplifier reaches its power performance limits), and the company's logo. At the back of PSA there is a pair of WBT banana plugs (per channel) for connection to speakers and an XLR input (balanced) per channel. Those who object to the absence of unbalanced inputs will find two XLR to RCA adaptors included in the packaging. Finally, next to the power terminal there are three indicators (power, overheating and overall protection).

Opening the cover of the amplifier (that comprises the upper part of the pyramid and internally is covered with sheets of dampening material), we find ourselves in front of the condensers (with a capacity of $22000\mu\text{F}$ per polarity) of the power supply, which is the second thing that makes PSA stand out from the crowd. What differentiates the specific power supply from others that I have come across in amplifier implementation is the existence of an active Power Factor Corrector (PFC) in its input. The specific circuit is essential in high-voltage switching power supplies (usually from 1KVA and up), but optional in medium- and low-voltage conventional power supplies like those used in high-end amplifiers. This circuit comes, in fact, before the power supply, and its mission is to keep the power factor close to 1 (it can also be described as a cosine correction circuit). In this way, problems that might occur in the electric power network due to the operation of the power supply are avoided; the supply voltage is pre-filtered as well, while the power supply demonstrates a more stable behavior.

The circular transformer is isolated at the base of the pyramid, placed in an inverted position at the roof of the "floor" beneath the cast chassis, while there are three more transformers (mounted on a printed circuit board along with the rectification and leveling circuits) that supply the amplifier control-protection circuits and the buffers at its input through stabilized power supplies.

The amplifier power stage is a classical symmetrical design, which uses an Analogue Devices OP 176 in the input stage per channel and MOSFETs from Exicon in output,

ensuring perfect complementarity. (The specific power transistors have been selected from among tens of respective pairs for their sound performance). The power transistors are mounted directly on the heat sink, as is the one of the PFC circuit that forms the base of the pyramid as well).

The implementation of the circuits, the absence of wiring, the attention to detail and the quality of the components simply do not leave room for complaints, since everything operates on an exemplary level.

The new one

Those who have fallen in love with the style of the old Nagra and the PL-P preamplifier as well, will also fall in love with CDC at first glance. Small in size and with the positioning of Nagra dials, CDC is a CD with a built-in preamp circuit (output-level and channel balance control) that can lead directly to the power amplifier.

At its front panel, on the left side, there are the CD drawer and the monitor screen, while further to the right the round VuMeter (modulometer, as Nagra prefers to call it) draws our attention with two needles, one per channel. Further to the right you will find the output-level control and the operation selector switch, which is another point that makes this particular CD stand out.

Through a two-mode switch above the selector, you can proceed to quick search.

In a second line you will find a switch that regulates the brightness of the screen and of the VUmeter, a balance control between the two channels, one more switch that opens the CD drawer (for the insertion of the CD) and a switch for selecting the output (Line 1 or headphones).

At the back there is a pair of simple and balanced terminals (of excellent quality) for the output signal, as well as the terminal to which the external power supply is connected.

Finally, regarding digital output, there will be no complaints, since, thanks to an AES/EBU, you will find a coaxial and an optical TosLink output.

Before moving in for a closer look at the inside of CDC, we have to mention a couple of things regarding its operation that will impress anyone who comes in contact with a Nagra device for the first time. First of all, the CD drawer moves together with the monitor screen (in fact all of the reading mechanism moves along with the drawer) and a magnetic clamp holds the disc in place.

For the CD to operate the selector has to be set to reproduction mode and the drawer must be already closed by the respective switch.

Opening the thick aluminium cover, you find yourselves in front of an absolute – strength-wise – implementation that goes completely by the book. What catches our eye first is the drawer mechanism, which integrates all the reading control circuits as well. Made of CNC machined aluminum plates, it creates a distinct sense of solidity and, of course, ensures disk reading with the least possible interference. In the conversion stage, Nagra has chosen to use a converter without oversampling (Nagra claims that oversampling circuits cause interferences that “infect” the sound signal), while the converter and the analog stages are armored in a gold-plated metal casing. As we were informed, all of the digital signal converter circuits come from Anagram, which was bought out by Nagra, while the Jitter level is next to none.

Even in the CDC implementation there is no room for complaint, since everything was done by the book. Even though it wasn't possible to open the gold-plated metal casing, what we saw (circuit panels to the highest specifications, separate analog and digital ground, transformers with galvanized insulation for all of the digital outputs, operational amplifiers of high quality in the analog output buffer circuit, a wealth of power supply filters and reverse current circuit breakers) attest to the final quality.

Finally, audio fans will notice that each piece of Nagra equipment is accompanied by its own “personal” Audio Precision tests and measurements that testify to both their exceptional laboratory behavior and the strict quality control that takes place.

Starting as a pair

Originally, the Nagra were connected with Sigma's Nova Diamond, while in many parts B&W's Nautilus 802 were used as well. From the first minutes of listening to Nagras, it is clear that they were not made to impress and draw attention. As a combination it features a neutral presentation of musical events, without adding but

also without taking away anything. At the same time, they prove to be open windows to any change we make to the interconnect and the loudspeaker cables.

This neutrality that characterizes Nagra in no way can be misinterpreted as detachment. It simply gives back whatever exists on the recording, laying bare those places where excesses have been committed or where certain intrinsic problems exist.

Thanks to Sigma, both the system's analytical capabilities and the sense of timing unfold with ease. The result, beyond the expected fullness of range, also possesses an immediacy rarely found that becomes detectable both in vocal and atmospheric works, where it reveals the ability of the pair to feel the tiny details and project them, without isolating them from the whole.

The ability of the amplifier to fully control its load becomes obvious at any single moment, right up to its power performance limits, while the speed with which it monitors and displays the dynamic contrasts becomes obvious both in great symphonic works and in modern sounds as well, where – for example – the driving pulse of Yellow yields a dynamic sense of rhythm and control.

Delving deeper into its character, with small ensembles, we discover the complete sense of calm which characterizes it and the flow from one end to the other as well, while the position of the musicians is displayed with precision, presenting at the same time the feeling of the space in which they are situated.

The transparent character of the combination requires more experimenting with the cables. In any case, the pair showed that it prefers the classic multi-branched conductors (by the way, with the JPS cables that accompanied it, it produced one of the fullest results), while with strip-type cables the sound became so analytical that it verged on unemotional.

Continuing alone

Taking its power for granted, PSA is one of the strongest amplifiers that we have seen and heard. Beyond its range, at the lower end, its rich body in the medium-low range and the faithful reproduction of the proportion of the musical signal, it is characterized by an effortless feeling of speed. Even when it is close to its limits, it keeps everything under control. When it is forced excessively, its protection circuits

prevent unpleasant surprises before intense audible signs of strain make their appearance.

Even though it doesn't have a problem driving demanding speakers to sensible levels, it "breathes" better with a relatively sensible load, while it is capable of transforming any loudspeaker that, up to now, you felt was weak in the low range, since control in the lower part of the spectrum usually corresponds to higher prices.

Regarding the presentation of musical events, PSA neither flatters nor forgives a problematic recording. The excesses in a vocal presentation, imperfections that escaped the production studio, and various processes step forward and are not forgiven. On the contrary, in a meticulous recording the atmosphere which emerges is pure, with an intense feeling that the listener co-exists with the musicians in the room.

If you would like to approximate the result, at the expense of truth, then you can use unbalanced connection (using adaptors), while if you are an analysis fan, the use of a pure balanced connection from the preamp or the CD output will reward you.

CDC is definitely a different CD, whose personality asserts itself through sound as well. No matter how indifferent you may be to its technical characteristics, when you see its drawer open to insert a disk, you can't help but be impressed, whereas when you hear its sound you will realize that you are in the presence of a different reality.

At first, if you are used to excessive air and transparency – which many digital devices with oversampling create – CDC may seem dark. After a while, however, you will begin to realize that your original impression was wrong. Simply, instead of excessive air and impressive transparency, it demonstrates a sublimely homogeneous spectrum, where no single element pops out to provoke. From one end to the other there is a feeling of unity and flow. Its low range is full of energy, calling to mind in many points a top turntable; in the middle-low range it sounds spirited and full-bodied, while the middle range is the epitome of neutrality, without the CDC becoming phlegmatic. Finally, in the high frequencies there is breadth and energy up to the higher harmonics, without giving the least impression of extravagance.

The passage of time will make you realize CDC's true value. While other digital systems start impressively, stimulate your interest for a while but after some time leave you feeling distracted, CDC keeps you rested and binds you to the center of the music.

Except for its spectral homogeneity and neutrality relative to its cost, CDC sets up a real stereophonic image as well. Singers have human dimensions; the musical instruments are focused and are not distorted, whatever their position or subjective size, while the description of the soundstage is exemplary. Finally, CDC's driving capabilities are remarkable, since to whichever amplifier it was connected, it made you not want to interpose any preamplifier ever again.

And some overall conclusions

Both as a pair and individually, PSA and CDC have chosen the difficult path. They tell the truth and do not seek to become likeable through flattery. They are capable of highlighting every detail in the recording, but do not forgive imperfections, either in their accompanying equipment or in the recording itself. Their design approach – beyond being aesthetically unique – is particularly effective, while the quality of their manufacture justifies, once more, the reputation of the Swiss as perfectionists. If you are one of those who continuously change equipment – regardless of the sound effect - they may seem expensive (and in this case they are). If, however, you prefer truth (or a very persuasive approximation thereof) to flattery, and, once you find it, you hold on it for the rest of your life, then the Nagra may prove quite cost-effective in the long run. In a nutshell, they are an experience for those who are not after mere embellishment and ornamentation, but who are in search of a system they will keep for a lifetime.

PRO

Design. Superb quality of manufacture. Neutrality.

CON

Selective as to whom they hang out with (for many, this is a drawback).

Aphrodite's Vision

Tel.: (0030) 210 – 6813773

Price

CDC is also available without the preamp stage (CDP 11,700 euros), while it is also available as transport (CDT 10,300 euros).

PSA IDENTITY

Power:

100Wrms into 8 ohm/channel

Bandwidth

10Hz – 100KHz

Signal-to-noise ratio

>100dB

Channel separation

>85dB