

Preamplifier + power amplifier

Norma Audio Electronics
REVO SC-2 + PA-150

Manufacturer: **OPAL ELECTRONICS**

Price (when reviewed):

SC-2LN – 23 990 PLN | PA150 – 22 990 PLN

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REVIEW

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AUDIO ELECTRONICS

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Within 18 months after my review of integrated amplifier **IPA-70B** by Italian manufacturer Norma, nothing really changed for them – they still make extremely solid and good looking products that give me something more when I look at them – some sort of a comfort. I mean that after unpacking these two devices I didn't spend any time thinking about what was the designer's idea behind this products, why he made them the way he did. I just took them out of boxes, installed them in my system and focused on music.



On the outside SC-2 preamplifier and PA-150 stereo power amplifier from Revo line look a lot like other Norma products. Their enclosures

Choices

The sound of Italian setup is most of all remarkable resolving. And resolving sound means also natural. The above mentioned Sinatra is not pushed towards listener but rather clearly rendered few meters from listening position. And he sounds amazing with his peculiar voice timbre even if one listens to old recordings from 1930ties and 1940ties.

On the other hand a jazz trio or quartet are rendered bit closer to listener, proving that they were recorded using microphones placed close to instruments. And yet one can hear instruments breathing, surrounded by air, placed in a large space. The ambiance is also nicely differentiated – it might me meditative like on Miles' *Bitches Brew*, or very intimate like in Bill Evans Trio's *Moon Beams*.

What I'm trying to tell you is very simple: Norma presents things the way they are. Some accents in presentation must be shifted, like a not so distinctly articulated midrange, or a shorter, more focused bass, but after all – that's just an electronic device, not music itself, it is its mechanical reproduction and not direct live experience. Such a remarkable transparency, sensitivity to slightest changes of dynamics, timbre, instruments placement on stage – also in mono recordings! – allows user to be creative when building a system around these devices. But trust me – the high quality will accompanying components be the better Norma will perform.

First of all, in my opinion, having a system with internal DAC one doesn't need another, external one. Think about a high quality CD transport or music server. Norma's DAC module offers already high

are made of thick aluminum plates. Top and bottom panels are not square – their back edge is not as wide as the front one and side edges are nicely rounded, which reminds me of cabinets of Sonus faber loudspeakers. The enclosure itself, apart from top and bottom panels is square with black side walls being partially occupied by large radiators. The rest of the enclosure is silver with brushed aluminum finish. Black version is also available upon order.

REVO SC-2

RC-2 is a stereo linestage. Optional modules might be ordered with it (or later) and installed inside. These are D/A Converter and phono stage modules. Manufacturer when describing this device pointed out its few particular features. You might remember some other manufacturers who spent a lot of time, effort and money to develop an element, that some might consider insignificant? – AAVA used by Accuphase, special, Japanese, custom made potentiometers used by Octave for their Jubilee preamplifier, a hybrid, analogue-digital attenuator used by German company Linnenberg (test in the same issue of HF), digital volume control used by dCS and many others – all of them developed with a single goal in mind - attenuators, elements adjusting volume should be as transparent (meaning adding nothing of their own to the sound) as only possible.

Norma decided to develop their own version of a solution known for years – a digitally controlled, analogue resistors ladder. It's called P.D.A.A. (Programmable Digital Analogue Attenuation). In general it's nothing new – we know it from many product, but usually it takes form of a chip that integrates digital control, resistor ladder and active output buffer. It's an inexpensive solution that works pretty well in many applications. But if you expect more than of-the-shelf solution has to offer you need to go a different way. Norma decided to create its own discrete version featuring precise resistors switchable by relays controlled by a microprocessor. This attenuation allows to adjust volume in a wide range of 127,5 dB in 0,5 dB steps.

This is not the only special feature of SC-2. It offers a unique possibility of choosing between active and passive mode. There are fans of both solutions – with this preamplifier they don't have to choose – each user might decide which mode to use. To make it even easier remote sports a single button allowing switching between these modes, plus to make comparison credible one can use a proper setting that compensated gain difference. Nominal difference is of 17,5 dB (gain of active mode) but I found out that 20 dB setting was closer to a true difference. Another feature, not that common although offered by, for example, Accuphase, are optional modules that might be installed inside the device.

One of them is DAC1-REVO (8690 PLN), a D/A Converter. It features 5 digital inputs including: USB 2.0, 2 x RCA (S/PDIF), AES/EBU and an optical TOSLINK. All of them accept PCM signal up to 24 bits and 192 kHz. This DAC is not compatible with DSD as its designers decided to use a high quality, though older generation DAC chips that can't process DSD signal. Any signal is upsampled in DAC first and then converted to analogue. Upsampling frequency is user-selectable. It can be also completely turned off. Optional phono stage module, PH3-REVO (1690 PLN), is quite elaborate. These are two small, separate PCBs, one for each channel. It features impedance and gain adjustments. It works with low and high level MC cartridges, but also with MM ones.

A particularly rare option offered by Norma is a module for a multi-channel analogue system. It allows SC-2 user to connect even 3 power amplifiers and create a high-end multi-channel system either for multi-channel (SACD) music playback or for home cinema. Last but not least – there is also an optional, metal, very nice looking REVO RC-43ALU (1690 PLN) remote. With device manufacturer delivers a standard, plastic one. All information are displayed on a large display. It features two lines for displaying information and while adjusting volume or selecting an input a relevant information is shown using both lines. In this way everyone will see the information even from across the room. Finally! Somebody thought of that!

REVO PA-150

The power amplifier is, as always, much 'simpler', much easier to operate. Front panel features only the on/off switch, and the rear one offers no surprises. Norma delivers up to 150 W per channel into 8Ω loading, and 280 W at 4 Ω. It uses 3 separate power supplies – for a gain, driver and output sections. One of the parameters that Norma treats very seriously is a frequency range – in PA-150's case it is extremely wide reaching 2 MHz. This allows to improve rise time factor significantly. Such manufacturers as Soulution and Yon Audio follow

quality and another benefit of using it is lack of interconnects between source and preamplifier. I'd suggest: Reimyo CDT-777 and something like Encore ENC-5, or if you need more decibels on of JBL's speakers from Monitor line. And there are also Harbeth speakers – they love high power and highly resolving amps like Norma's. Each of these choices will constitute a fantastic system offering amazing performance.

Go to DAC settings, turn upsampling off, use transport's master clock, „slow” filter, and that should result in its best performance. Try also using Direct Down sampling, even if without upsampler it delivers higher level of aliasing distortion – just do something against common sense. And – if you do use internal DAC – choose preamplifier's active mode. Although I'm not perfectly sure about the latter. For the first time passive preamplifier offer a competitive performance to an active one. Dynamics might suffer just a bit, which is to be expected, but at the same time phantom images gain more body and the accent is now placed bit lower still in upper midrange, which is a good thing too. Using this option I enjoyed jazz most. Passive mode results in a bit denser and more liquid presentation while active one improves dynamics and make music more 'present' in the room which suits rock and electronic music most. When comparing these two modes remember that there is around 20 dB gains difference between them that needs to be adjusted.

Summary

The often recalled by audiophiles axiom about amplifier being just a piece of wire with some gain is not realistic, it's confusing at best. There is no such thing and there never will be; the best designers try to keep the lowest possible distortion level, but only when it doesn't hurt presentation. What is always worth pursuing is the highest possible resolution. Norma's system is a living proof that when designer succeeds in this respect result are astounding. There is no coloration of any sort in the sound which allows recordings to sound as they are intended to. It's a particularly rich, multi-layer presentation providing us insight into a complex musical structure. Impressive dynamics, transparency and clarity further improve this already astonishing picture.



Don't expect nice, warm vocals, or mid-bass that you can feel in your gut, or the subsonic bass. What you get is highly focused, top level performance. I've got a feeling that some music fans will have to grow up to fully appreciate it.

DESIGN

The main features of both devices were already discussed so I won't repeat myself.

REVO SC-2

Front

I haven't mentioned preamplifier's operation yet. It's operated with a combination of push buttons and a blue, two-line display. The latter delivers information on selected input and volume level, and when in 'menu' mode it presents more options. Because the display is controlled by a microprocessor featuring a well designed software, user has access to many functions of the device. User can rename inputs, set a timer that shuts display off after some time, choose a volume control mode („quiet” and „loud” – relays are switched in a different way depending on the choice one makes), set start volume level the device is

similar path. The device is controlled by a microprocessor that monitors its operation and manages safety circuits. During regular operation this circuit goes into standby mode to limit its influence on sound.

Both products look great, are user-friendly and offer better functionality than many competitors.

NORMA AUDIO IN „High Fidelity”

SOUND

2014

Recordings used for the test (a selection)

- Bill Evans Trio, *Moon Beams*, Riverside/Victor Entertainment VICJ-61325, K2HD CD (1962/2005)
- Chris Connor, *Chris Connor sings the George Gershwin Almanac of Song*, Atlantic/Warner Music Japan, WPCR-25164/5, „Atlantic 60th”, 2 x CD (1961/2007)
- Fleetwood Mac, *Tusk*, Warner Bros. Records/Warner Music Japan WPCR-17017/9, 3 x SHM-CD (1973/2015)
- Focus, *At the Rainbow*, Imperial/Red Bullet/Victor VICP-63666, K2HD CD (1973/2006)
- Frank Sinatra, *Lost & Found | The Radio Years*, Sony Music 8875147142, CD (2015);
- Frank Sinatra, *Sinatra Sings Gershwin*, Columbia/Legacy/Sony Music Entertainment 507878 2, CD (2003).
- Jeff Lynne's ELO, *Alone in the Universe*, Columbia/Sony Music Labels (Japan) SICP-30890, Blu-spec CD2 (2015)
- Kraftwerk, *Live on Radio Bremen*, Philips (?) 2561971, Bootleg, CD (2006)
- Miles Davis, *Bitches Brew*, Columbia/Mobile Fidelity Sound Lab UDSACD 2-2149, „Special Limited Edition No. 1229”, 2 x SACD/CD (1970/2014)
- Talk Talk, *Laughing Stock*, Polydor 847 717-2, CD (1991)
- Tame Impala, *Currents*, Universal Music Australia/Hostess 4730676J, CD (2015)

Japanese issues available at



Before I start with description of Norma's performance let me tell you shortly about my impressions of their operation. Why? Because it's a PRODUCT, and not only an amplifier, how we feel about its operation is almost as important as its performance – that how I perceive audio products. These Italian products belong to the same league as those coming from dCS, Accuphase, Soulution, Devialet – just to name a few very different brands but sharing a similar, exemplary I might add, ethics about what they do. These manufacturers treat their customers seriously and they treat relations with them as a long term “investment”.

Make and finish of Norma products are fantastic. They offer unique functionality – I don't know if it was planned or not, but together with other above mentioned brands, they set standard for the whole industry, a standard others should be judged by. These are also trustworthy products – you look at them and see a reliable product. It is not just about its build, although it is an important factor, but about something else that one notices while listening to the music, when connecting cables, when configuring the system. Results of such changes are reliable and the same each time. I was sure each time what changed in particular configuration. Switching from active to passive mode, using internal or external DAC, and when using internal then with upsampling on or off, with particular master clock setting – each such change introduced some concrete results worth considering. I never felt like I was faced with “the only one” outcome, I was always given a choice.

OK, no lets get back to the sound. Finding out sonic signature of product with so many functional variables is not easy as it requires much more comparisons than usually, also cross-comparisons. And yet it did not

switched on with, input sensitivity, AV mode and some others. Most of them are really useful, other might come handy one day so are a valuable addition. Volume control is performed using two push buttons – there is no large knob featured in Norma's integrated amplifiers.

Rear

Rear panel reveals an ambitious approach of Norma's designer. Inputs and outputs are grouped separately for left and right channel. A separate group includes digital inputs – that's optional DAC module. There are six analogue inputs with two of them being balanced (XLR) ones, and the rest unbalanced (RCA). Input no. 1 might be replaced with phono input. If this module is installed but not used I would recommend inserting RCA plugs into this input as it decreases noise level significantly.

There are two outputs – 1 x RCA and 1 x XLR. At the side there is also a RS232 port reserved for future use. DAC module features 5 inputs with one of them – RCA – that could be configured as an output. Menu allows user to adjust many parameters such as: upsampling setting, digital filter setting, or master clock setting. Manufacturer used only high quality connectors – also RCA ones. That happens extremely rarely regardless of price level.

Interior

It's a dual-mono, modular design. There are separate sections for right and left channel, power supply, and the digital section sits at the side. Power supply is heavily shielded with aluminum screen. It is based on a large toroidal transformer. PCB above it hold three large rectifier bridges. Obviously left and right channel and most likely also digital section have separate power supplies. There are many smoothing capacitors here.

The preamplifier section is quite elaborate, although volume control section is closed inside solid, aluminum box/shield. Two separate modules are, I presume, gain stages. I couldn't see what elements were used here. But I did see that XLR output are buffered with Burr Brown INA134PA chips. Phono modules, one for each channel, need to be plugged into proper sockets on the main board. Phonostage is based on Burr Brown OPA604 chips, but these are replaceable.

The whole digital section looks like it was taken out of an advanced D/A Converter. Which reminded me some other devices I saw before, namely made by YBA (see [HERE](#)). It consists of an advanced, dual-mono power supply, DAC and output stage.

From receiver signal goes to SRC 4392 upsampler, that might be turned off, or upsampling frequency can be changed by user. Then comes digital filter DIF1706, again with user selectable settings. DAC feature two pieces of high end NOS chip: Burr Brown PCM1704 or to be exact its selected version: 'K'. Next two it there are two high quality master clocks for 44,1 and 48 kHz frequencies.

Then there are two black cubes most likely hiding I/U converter and gain stage.

This is incredibly well build device, period.

REVO PA-150

Power amplifier's external design is, understandably, much simpler, it also features much less functions. Front panel hold only an on/off switch, rear – XLR and RCA inputs with a tiny selector between them, and two pairs of speakers binding posts. All connectors reek of high quality. The way they are arranged suggest already that this is a dual-mono amplifier.

take me too long to find out optimal settings. I will present them at the end of this text, as these worked best for me which doesn't mean they will work in every situation as they are not the only "right" ones. They depend on situation, system, room, personal preferences and so on.

This Italian pre+power combo delivers remarkably resolving sound. It does not happen to often but in this case I dare to say that because it was as clear to me as when I reviewed dCS Rossini. Music sound fresh, open with abundance of information about instruments, space and dynamics. The first impression, especially if one moves from some warm, probably tube system, to this one might be confusing. At first Norma might seem to offer bit too "light" sound, without proper foundation, maybe even too bright. But that will be a shock coming from huge difference between this system and previous one and not the real sonic character of Italian devices.

One of key features here is transparency. Norma takes the signal and without making it brighter or harsher it reduces it to very basic elements and then puts them back together in the space between speakers with "accompanying comments". Differences between pressings, recording techniques and so on are shown in a particularly clear way. But it is a different way than the one used by other devices of equally high performance. Italian amplifier differentiates sound by presenting tiny changes in sound pitch and dynamics, and not that distinctly those those in tonality. These two elements are simply remarkable and it's hard to find any decent competition in this area. Sound is really focused, especially in lower part of the range which allows user to pump up the volume without facing any usual problems, or play at very low level – that's up to the listener.



Italian system achieves that by delivering lower midrange that is a little bit more dry than bass and range above 800Hz which creates this impression of remarkable transparency. This also a reason why Sinatra's silky vocal won't be rendered within our hand's grasp. This presentation reminded me of live concert where one always sees and hears the performing band from some distance, some perspective. And while each musician/instrument have distinct contours and body, the key element of the presentation is how they all work together to create 'bigger picture'. Particular sounds are very clear, and their localization very precise not just in front of us but, if needed, also around us, like on Tame Impala album (listen to the track called *Nangs*). But since information about space relations is also delivered one perceives this presentation as precise and tonally neutral (meaning – with no coloration).



Same as in preamplifier also here driver and gain stage are encapsulated inside aluminum boxes. These are transistors and high quality passive elements. Two large toroidal transformers are also heavily shielded. These transformers were designed to work in audio device. Each of them delivers 400 W.

Input, driver and current sections feature separate power supplies with the former two being highly regulated. Gain stage circuit sits on one PCB. Below there is another PCB with power supply featuring no less than 12 large capacitors per channel, with total capacity of over 70 000 μ F. Output stage features four complementary pairs of MOSFET transistors per channel working in push-pull configuration.

Specifications (according to manufacturer)

REVO SC-2

Input: 4 RCA, 2 XLR Balanced, Optional Phono at INPUT 1
Input Impedance: 47Kohm (not selected input) / 10 Kohm (Selected Input)
Input Configuration: Phono MM/MC, Line, Balanced, Multichannel & DAC option
Output: 1 RCA, 1 XLR Balanced
Output Impedance: 220 ohm
Output Voltage: 7.5 V r.m.s.
Frequency Response: 0 Hz – 2.0 MHz (-3dB, non filtered)
Gain: 17.5 dB Active mode, 0 dB Passive mode
Circuitation: Solid state, Dual Mono, hi speed, low noise
Supply: 230 V AC / 50 Hz (100V AC or 115 VAC / 50-60Hz in some countries)
Dimensions (HxWxD): 110 x 430 x 365 mm
Weight: 15 Kg

REVO PA-150

Connections: 1 RCA, 1 XLR Balanced
Input Impedance: 47Kohm (non sel. input) / 33Kohm (sel. input)
Outputs Voltage: 1 Binding Post couple, 4mm Banana and forks
Frequency Response: 0 Hz – 2.0 MHz (-3dB, non filtered)
Output Power: 150W RMS / 8Ohm – 280W RMS / 4 Ohm (per channel)
Gain, Sensitivity: 28.5 dB, 1.30 V r.m.s. / 150 W – 8 Ohm
Configuration: Dual Mono
Configuration: Solid state
Power devices: MosFet, 4 couple each channel
Available output current: 48 A continuous, 200 A peak (each channel)
Capacity of filter: 72.000 Uf, 12 capacity for each channel
Electric Transformers: 2 toroidal special audio use, 400 VA each channel
Supply: 230 V AC / 50 Hz (100V AC or 115 VAC / 50-60Hz in some country)
Dimensions (HxWxD): 110x430x365mm (excluding footers and rear connections)
Weight: 25 Kg