

FAQ

Summary

- Is MERGING+NADAC compatible with DLNA and UPnP devices ?
- Is MERGING+NADAC compatible with any network switch or router ?
- Which network cable can I use with MERGING+NADAC ?
- What is the maximum length of the network cable ?
- How is the MERGING+NADAC volume control performed, in Analog or Digital ?
- MERGING+NADAC DA outputs volume control, is it Digital or Analog?
- Can the MERGING+NADAC DA outputs be calibrated independently, per channel?
- In terms of feeding power amps directly from the MERGING+NADAC. What would be the lower limit of impedance it can drive?
- What is the MERGING+NADAC's Output impedance?
- Which class (A, B, A/B) are the output stages of the NADAC ?
- Which kind of layout is used in the MERGING+NADAC final stage? (both balanced and unbalanced)
- Can I use both the balanced and unbalanced outputs at the same time ?
- What is the difference between MERGING+NADAC and HAPI, and why should I buy a MERGING+NADAC instead of HAPI ?
- Is there any DAC performance difference between MERGING+NADAC and MERGING+PLAYER ?
- Does MERGING+NADAC sound better than HORUS or HAPI ?
- Can MERGING+NADAC Main outputs and Headphone play files at different sampling rates ?
- I already have a preamp/amp with volume control, what shall I do with MERGING+NADAC / MERGING+PLAYER volume ?
- Can I use NADAC along with Hapi/Horus over the same network?
- Which NAS is recommended to use along NADAC+PLAYER ?

Is MERGING+NADAC compatible with DLNA and UPnP devices ?

MERGING+NADAC is not a uPnP or DLNA enabled device, it requires drivers to be installed on connected computers to communicate with it. Both ASIO driver for Windows and CoreAudio driver for MacOS are available [here](#)
Once installed MERGING+NADAC will behave like any USB DAC, with all the advantages of Ethernet Networking in addition.

Is MERGING+NADAC compatible with any network switch or router ?

MERGING+NADAC uses the RAVENNA protocol, which is an open standard for real-time media over IP. As such it can be deployed on any Ethernet Network, be it 10 Mbits, 100 Mbits or 1 Gigabit based.
However in order to provide adequate bandwidth for High channel count upto and including the ultra high sampling rates offered by MERGING+NADAC, Merging requires switches capable of handling 1GbE connections.
Furthermore the performance of a RAVENNA system improves with the quality of the network infrastructure, so it is highly recommended to use Managed switches with the capacity to be configured adequately for QoS (Quality of Service).

Which network cable can I use with MERGING+NADAC ?

CAT5E, CAT6 or higher copper cable, unshielded.

What is the maximum length of the network cable ?

100 meters - 328 ft for CAT5E or CAT6 cables.

Users with a need to extend their connections beyond 100 meters may take advantage of copper to fiber converters, which further extend the reach to 650 meters with multi-mode fibers and even several kilometers with single-mode fibers.

How is the MERGING+NADAC volume control performed, in Analog or Digital ?

The volume control of NADAC is performed in Digital in the ESS Sabre chip, but in such a way that it is as good as Analog, if not better. Precise explanation can be found in the [ESS presentation that Merging fully endorses and supports](#).
However, the analog output stage of NADAC allows for two different output levels, please see next question answer below for details.

MERGING+NADAC DA outputs volume control, is it Digital or Analog?

It is both. There is coarse adjustment (in one step of 6dB) which is carried out in the analog domain, post DA converter and which uses a precision resistors switched under software controlled by ultra flat, ultra low distortion Solid State Switches, behaving almost like ideal turn on/off resistors.

Controllable from the NADAC Setup>System>**Main Max Level** option. Its primary purpose being to match the NADAC nominal level to the sensitivity of the following device (Power Amplifier, Powered Speakers, etc...)

High = +18 dBu (XLR balanced output), +8 dBu (RCA Unbalanced output)
Low = +12 dBu (XLR balanced output), +2 dBu (RCA Unbalanced output)

The fine adjustment (in steps of 0.5dB) is implemented by digital attenuators residing inside the DA converter chip at a very high resolution.

Please see previous question answer above for details.

Can the MERGING+NADAC DA outputs be calibrated independently, per channel?

Yes this is possible from the MERGING+NADAC Trim/Polarity option located under the Main menu. The Trim levels are individual and can be used for calibration (e.g. for a Surround setup) Note that the Trim Level settings are carried in Digital form.

In terms of feeding power amps directly from the MERGING+NADAC. What would be the lower limit of impedance it can drive?

Merging has tested it to work (at full specs) down to 300 Ohms (with Audio Precision) but it can even drive loads with a much lower impedance than that. We've had reports that it can even drive a zero Ohm load (equivalent to a short circuit) when set to +12 dBu (Low) and within about 1 dB of full scale output when set to 18 dBu (High).

What is the MERGING+NADAC's Output impedance?

The MERGING+NADAC-MC8's XLR Output impedance is of 90 Ohm (Differential), equivalent to 45 Ohm (Single-ended) in 8 channel mode and about 53 Ohm (Differential), equivalent to 26.5 Ohm (Single-ended) in Stereo mode. The MERGING+NADAC-ST2's XLR Output impedance is always of 90 Ohm (Differential), equivalent to 45 Ohm (Single-ended).

On the RCA outputs the impedance is always 20 Ohm independently of the 8 channels or stereo mode, on both MC8 and ST2 MERGING+NADAC.

Which class (A, B, A/B) are the output stages of the NADAC ?

The output stage of the NADAC is neither Class A, Class B or Class A/B but, after considerable time evaluating different topologies and designs during numerous listening tests with some of the best ears we know amongst our long standing professional customers, we selected what was universally considered to be delivering the most pure sound based and that is:

High-Performance, Fully-Differential AUDIO OPERATIONAL AMPLIFIERS

The OPA1632's excellent gain bandwidth of 180MHz and very fast slew rate of 50V/ms produce exceptionally low distortion. Very low input noise of 1.3nV/Hz further ensures maximum signal-to-noise ratio and dynamic range. Finally this device boasts an **ULTRA LOW DISTORTION of 0.000022%** It provides the highest audio quality, with very low noise and output drive characteristics optimized for this application (with a typical short-circuit current as high as 85 mA, so able to drive even the most demanding loads). Since we took that decision (now about already some 5 years ago), there hasn't been any feedback from any of our numerous professional customers (including those with the highest demands) that would have made us question this original decision, nor heard of any new devices that could offer better specs.

Which kind of layout is used in the MERGING+NADAC final stage? (both balanced and unbalanced)

Layout of both Analog and Digital circuitry is probably the most critical aspect of any well designed Audio equipment.

At Merging, we consider PCB layout as even more important (and time consuming) than the actual electronic design, since ultimately, in a product that will contain both High Speed Digital signals (some of these being in the range from 100 MHz to 1 GHz) and Analog signals whose levels may be as low as a few micro-volts (in Pianissimo situations) it is the quality of the PCB Layout that will ultimately drive the quality of the signals. Providing short signal traces, using essentially SMD (Surface Mount Components), taking care of Transmission line impedance continuity (for Digital signals), and extreme care in using as much as possible Balanced signal paths (both for Digital and Analog traces) is a minimal condition to guarantee as little interference (crosstalk) between all those signals. Spending weeks, if not months, in refining PCB layout for our electronic boards is where the final specs can be attained, of which the ultra-low inter-channel crosstalk figures that the NADAC exhibits (typically - 150 dB at 1 kHz, -145 dB from 20 Hz to 20 kHz) is just one of many examples.

Can I use both the balanced and unbalanced outputs at the same time ?

The NADAC unbalanced outputs are designed to be essentially unaffected by the load you would connect to the related balanced outputs, unless you would short them to Ground.

In typical scenarios where your balanced load is 10 kOhms (or higher) the influence of that load to the unbalanced output's level would be less than 0.017 dB.

So feel comfortable at using in parallel your balanced and unbalanced outputs!

The balanced and unbalanced are fed with the same source, it is not possible to route different audio on those outputs.

What is the difference between MERGING+NADAC and HAPI, and why should I buy a MERGING+NADAC instead of HAPI ?

While MERGING+NADAC is based on the HAPI/HORUS technology and shares a few common components, MERGING+NADAC enjoys the following additional features and capabilities:

- Volume control on the front panel button and through remote control
- Polarity invert
- Per channel gain and polarity trimming
- Four channels use of the ESS9008 chip per channel when running in stereo mode
- A dedicated ESS9008 chip for the headphone (always running in four channels per channel merging)
- Balanced and unbalanced connectors
- Easy connection to Ethernet sources from the front panel and through remote control
- A dedicated Apple IOS and Android App

HAPI and HORUS enjoy a very similar analog and DA conversion circuitry and therefore almost similar level of exceptional sound quality. However their structural differences position them for different usage.

Typically if the channels merging, ergonomic, apps, volume control, superior headphone quality and consumer connectivity is not necessary and/or the flexibility to add AD conversion or an additional 8 channels of DA conversion is required, then a HAPI will be preferred. If more than 16 channels are required then a HORUS will be preferred.

There is no better quality or better value for money to be considered here, only the question of which model better fits your needs and expectations.

Is there any DAC performance difference between MERGING+NADAC and MERGING+PLAYER ?

No, both are using the exact same DAC.

Does MERGING+NADAC sound better than HORUS or HAPI ?

HORUS & HAPI being professional products they have been designed to have a maximum output level adjustable between +18dBu and +24dBu whereas the MERGING+NADAC can select between +12dBu and +18dBu, so depending on your setup you may have a greater dynamic range if you set the MERGING+NADAC to +12dBu rather than have a HORUS or HAPI set at +18dBu with an additional digital attenuation of -6dB.

The MERGING+NADAC possesses a unique feature over the HORUS & HAPI and that is its ability to switch to stereo mode which combines 8 outputs to 2, to increase the dynamic range and improve the distortion, which makes it definitely have even better specs on paper in this case.

Another advantage of the MERGING+NADAC over the HORUS/HAPI is that it provides directly unbalanced outputs at adequate consumer levels and that should provide a better sound quality compared to using some adapters if going from HORUS/HAPI's differential output to an asymmetric input device.

The headphone output of the MERGING+NADAC is in a different class than that of the HORUS/HAPI as it uses 4 DACs output merged together per channel to have improved dynamic range, on the MERGING+NADAC it is also capable of controlling the output level of DSD64 up to DSD256 sample rates (which is not possible on the HORUS or HAPI).

However, the question "Does it sound better?" is very subjective. Merging can only publish what is actually measurable, and the real answer to this question is down to the listener.

Can MERGING+NADAC Main outputs and Headphone play files at different sampling rates ?

No, MERGING+NADAC can only handle one sampling rate at a time. All outputs have to run at the same sampling rate.

I already have a preamp/amp with volume control, what shall I do with MERGING+NADAC / MERGING+PLAYER volume ?

If you prefer to use your preamp/amp volume control, simply set the NADAC volume to 0 dB.

Can I use NADAC along with Hapi/Horus over the same network?

Despite the fact that the NADAC comes with its own driver and that it is targeting an audiophile market, nothing prevents you from using a NADAC over a RAVENNA network built around Merging's Pro Audio products (Horus, Hapi,...). This has been more and more popular for Mastering suites or for extending the Multichannel output count of your current NADAC.

In such case we'd recommend that you rather use our latest RAVENNA Pro ASIO Driver (Windows) or Virtual Audio Device (MacOS) instead of the NADAC ASIO or CoreAudio Driver. Merging's ANEMAN (available as a stand alone installer from ANEMAN.NET) will enable you to discover your RAVENNA devices and make the desired IO connections.

Note: Your driver and other RAVENNA devices (Horus/Hapi) should be set to a frame mode of 64 samples, it is recommended that you avoid using the NADAC ASIO Driver (that is unicast driver). We also recommend to use a managed (and properly configured) network switch.

Which NAS is recommended to use along NADAC+PLAYER ?

If you have a NADAC PLAYER, you may skip the NAS completely and just buy a large USB drive. Cheaper, great storage options, upgradable, and less complex.

Roon Labs recommends High-end QNAP : "*The QNAP TVS-x71 are awesome in the i3 or i5 (i7 is too hot and the non-coreiX are not really good)*"
<https://community.roonlabs.com/t/how-would-roon-endpoint-help/10747/8>