

MERGING NADAC



REFERENCE GUIDE



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Important Safety and Installation Instructions

SAVE THESE INSTRUCTIONS

INSTRUCTIONS PERTAINING TO RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS

WARNING – when using electrical products, basic precautions should be followed, including the following:

1. Before using this product, read all of the safety and installation instructions and the explanation of graphic symbols.

2. This product must be grounded otherwise it could malfunction or breakdown. Grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a power supply cable having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet, which is properly installed and grounded in accordance with all local codes and ordinances.

DANGER – Improper connection of the equipment grounding can result in a risk of electric shock. Do not modify the plug provided with the product – if it will not fit the outlet have a proper outlet installed by a qualified electrician. Do not use an adapter that defeats the function of the equipment-grounding conductor. If you are in doubt as to whether the product is properly grounded, check with a qualified serviceman or electrician.

3. Do not use this product near water or in a damp environment, for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool, or the like.

4. This product, either alone or in combination with an amplifier and speakers or headphones, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.

5. The product should be located so that its location or position does not interfere with its proper ventilation.

6. The product should be located away from heat sources such as radiators or other products that produce heat.

7. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.

8. The product's power-supply cable should be unplugged from the outlet when it is to be left unused for a long period of time. When unplugging the power supply cable, grasp it by the plug. Do not pull on the cable itself.

9. Care should be taken so that objects do not fall on to the product and liquids are not spilled onto any part of the enclosure.

10. The product should be serviced by qualified service personnel when: a. The power supply cable or plug has been damaged. b. Objects have fallen onto the product, or liquid has spilled and may have leaked into the product. c. The product has been exposed to rain. d. The product does not appear to be operating normally or exhibits a marked change in performance. e. The product has been dropped, or the enclosure damaged.

11. Do not attempt to service the product beyond that described in the user maintenance instructions. All other servicing should be referred to qualified service personnel.



12. WARNING - Do not place any objects on the power supply cable, or place the product in a position where anyone could trip over, walk on, or roll anything over the cable. Do not allow the product to rest on or be installed over cables of any type. Improper installations of this type create the possibility of a fire hazard and/or personal injury.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

IMPORTANT NOTICE:

Please read the following information very carefully before attempting any installation. Failure to comply with the precise instructions may result in damage to your Merging hardware. Please read this entire section of the manual carefully before installation.

STATIC ELECTRICITY DANGER NOTICE:

Please note that the NADAC contains delicate electronic components that can be damaged or even destroyed when exposed to static electricity. Take all necessary precautions not to discharge static electricity into the equipment when touching any of the NADAC connectors.

Merging Technologies makes no warranties express or implied regarding the NADAC embedded software, its quality, performance, merchantability or fitness for a particular purpose. The software is supplied "as is" and you, the purchaser, are assuming the entire risk of the results of using this Merging Technologies software.

In no circumstances will Merging Technologies, its owners, directors, officers, employees or agents be liable to you for any consequential, incidental or indirect loss or damages including loss of time, loss of business, loss of profits, loss of data or similar resulting from the use of or inability to use the Merging Technologies hardware and or software or for any defect in the hardware software or documentation.

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Product Regulatory Compliance

Product Safety and EMC Compliance

The Merging Technologies NADAC Network Converter is designed, tested and verified to comply with the following Safety and EMC regulations:

FCC – Radiated and Conducted Emissions (USA).

CFR 47 Part 15 – Radiated and Conducted Emissions (Canada).

CISPR 22:2008 (class B) – Radiated and Conducted Emissions (International).

CISPR 32:2012 (class B) – Radiated and Conducted Emissions (International).

CISPR 24:2010 – Immunity (International).

EN 55022:2010 (class B) – Radiated and Conducted Emissions (European Union).

EN 55032:2012 (class B) – Radiated and Conducted Emissions (European Union).

EN 55024:2010 – Immunity (European Union).

EN61000-3-2 & -3 – (Power Harmonics and Fluctuation and Flicker).

Electromagnetic Compatibility Notices

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2), this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and the receiver.

Connect the equipment to an outlet on a circuit other than the one to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment. The customer is responsible for ensuring compliance of the modified product.

Only peripherals (computer input/output devices, Ethernet switches, terminals, printers, etc.) that comply with FCC Class B limits may be attached to this computer product. Operation with noncompliant peripherals is likely to result in interference to radio and TV reception.

All cables used to connect to peripherals must be shielded and grounded. Operation with cables, connected to peripherals that are not shielded and grounded, may result in interference to radio and TV reception.

**Environmental Limits**

System Office Environment Parameter Limits

Operating Temperature +5 degrees C to +45 degrees C with the maximum rate of change not to exceed 10 degrees C per hour.

Non-Operating Temperature -40 degrees C to +70 degrees C

Non-Operating Humidity 95%, non-condensing @ 30 degrees C

Operating Shock No errors with a half sine wave shock of 2G (with 11-millisecond duration).

Package Shock Operational after a free fall, 60 cm depending on the weight.

ESD 8kV per Merging Technologies Environmental Test Specification



Declaration of Conformity

According to

EMC Directive 2004/108/EC

Product	MERGING+NADAC
Manufacturer	Merging Technologies SA Le Verney 4 CH-1070 Puidoux Switzerland
Electrical Rating	90-260 VAC, 50/60 Hz, 0.2 A (at 230V)
Standards	EN 55022:2010, EN 55032:2010, EN 55024:2010, EN61000-3-2 & -3, CISPR 22:2008, CISPR 32:2012, CISPR 24:2010

Detailed specifications of the tested and certified product are shown in the following Test Report:

Test report Ref No: 15-MO-0081.E01/E02

Issued Date: June 2015 by Electro Suisse | Montena EMC SA

The CE label is affixed on the bottom of the MERGING+NADAC unit as per below:



Date 19 June 2015

Claude Cellier

President

Merging Technologies S.A.



NADAC Warranty Information

This product is warranted to be free of defects in materials and workmanship for a period of three years from the date of purchase. Merging Technologies, Inc. extends this Limited Warranty to the original purchaser.

In the event of a defect or failure to conform to this Limited warranty, Merging Technologies, Inc. will repair or replace the product without charge within sixty (60) days. In order to make a claim under this limited warranty, the purchaser must notify Merging Technologies, Inc. or their representative in writing, of the product failure. In this limited warranty the customer must upon Merging Technologies, Inc. request, return the product to the place of purchase, or other local designation, for the necessary repairs to be performed. If the consumer is not satisfied with the repair, Merging Technologies, Inc. will have the option to either attempt a further repair, or refund the purchase price.

This warranty does not cover: (1) Products which have been subject to misuse, abuse, accident, physical damage, neglect, exposure to fire, water or excessive changes in the climate or temperature, or operation outside maximum rating. (2) Products on which warranty stickers or product serial numbers have been removed, altered or rendered illegible. (3) The cost of installations, removal or reinstallation. (4) Damages caused to any other products. (5) Do not attempt to service the equipment. There are no user serviceable parts inside*. Please refer all servicing to an authorized Merging Technologies sales partner. Any attempt to service the equipment will expose you to a risk of electric shock, and will void the manufacturer's warranty.

** Replacing or adding hardware components is permitted under the supervision of a Merging Technologies sales partner. Any other modification will void the NADAC warranty.*

Contacting Merging Technologies

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www.merging.com

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Product features and specifications are subject to change without notice.

Merging Technologies SA shall not be liable for technical or editorial errors contained herein, nor for incidental or consequential damages resulting from the furnishing, performance or use of this manual.



Before you do anything else please read this page

MERGING+NADAC Network Attached D/A Converter

Thank you for choosing Merging Technologies for your audio system. The MERGING+NADAC range has a wide range of advanced features and has been designed to be as easy to use as possible. Before attempting to use your new MERGING+NADAC product, we strongly recommend that you read this manual, as it will enable you obtain the best performance from it.

About this manual

Text that refers to the MERGING+NADAC or NADAC is describing features that are common to both the MERGING+NADAC D/A converter and MERGING+NADAC Player.

What's in the Box

If the shipping carton shows any signs of damage, please inform your Merging Technologies dealer, as the product may also have sustained damage. Please retain all the packing, as this must be used should you need to ship the unit in the future. The use of any other packing may result in the unit sustaining damage in transit, which will not be covered by the warranty.

In addition to the user manual, the carton should contain the items shown in Figure 1. If any of these is missing please contact your Merging Technologies dealer.



MERGING+NADAC



Quick Start Guide



RAVENNA Ethernet cable



Power cable

Figure 1. Items inside the box.



Please check that the power cable is fitted with the correct plug for the power outlet it will be connected to. If the wrong cable has been supplied, do not attempt to modify it. Contact your Merging Technologies dealer for a replacement.



Introduction to the MERGING+NADAC

The MERGING+NADAC Network Attached D/A Converter

The MERGING+NADAC D/A converter and NADAC PLAYER are audiophile products that have been developed from our professional high-resolution D/A converter and share the same technology. They were designed in Switzerland, where they are assembled and tested to the same exacting standards as our professional products and are intended to deliver the same high level of performance and reliability.

The MERGING+NADAC D/A converter can accept PCM data at sample rates up to 384kHz and 24-bit resolution and also DSD data, in DSD64, DSD128 and DSD256 formats. It can function as a stand-alone D/A converter, but can also be connected to a network using Ethernet, where it can provide considerable additional functionality and be remotely controlled via the network. The Ethernet interface is exceptionally resistant to disturbances caused by RFI and EMI and has the additional advantage that cable runs of up to 100m may be employed. It uses a professional protocol called RAVENNA to manage the data transfer and this ensures a very high level of data integrity and a timing accuracy of 1 nanosecond.

The NADAC PLAYER uses the same basic hardware the MERGING+NADAC D/A and offers the same functionality. In addition, it allows playback of music stored on memory attached to its rear panel USB connectors, or stored on storage devices attached to the network that the NADAC PLAYER is connected to. This is facilitated by an application called Roon that runs on a CPU built into the NADAC PLAYER. Described very simply, Roon can be made to scan the attached storage devices for music and compile a library, allowing the user to search for music by a number of classes, including title, artist, album and genre. The user can select which track to play and control the volume using a Roon remote application that can be run on iPads, iPhones and Android devices.

Environmentally Friendly by Design

The MERGING+NADAC products have been carefully designed in order to keep power consumption to a strict minimum. Merging Technologies believes in a sustainable future and takes appropriate measures at all phases of a product's design and manufacture to avoid wasting energy. This said, we will never compromise on sound quality and electronic components are carefully selected based on their audio performance first and foremost. The side benefit is that if equipment runs cool it is usually also guarantee of longevity and long-term reliability.

Key Features

MERGING+NADAC D/A converter and NADAC PLAYER

- Accepts 44.1kHz – 384kHz PCM at 24-bit resolution, DXD, DSD64, DSD128 and DSD256.
- SPDIF (RCA and Toslink) and AES/EBU inputs for conventional digital sources.
- Ethernet with RAVENNA interface allows asynchronous data transfer with computer audio systems and allows cable runs up to 100m with Cat6 cable.
- Connects from the computer using standard ASIO on Windows and Core Audio on Mac.
- Multiple MERGING+NADACs can be connected to the network.
- Web based remote control accessible via smartphone, tablet or computer.
- The remote allows control of volume level and source selection of any MERGING+NADAC on the network.
- Front panel multifunction Rotary Control allows easy adjustment of volume level.
- The Rotary Control also provides access to a comprehensive and intuitive menu.
- Two front panel mounted headphone sockets enable connection without the use of adapters.

NADAC PLAYER

- Built in CPU running Roon media player software allowing playback of music files held on storage devices attached to Player's rear panel USB ports, or on storage devices attached to the network that the Player is connected to
- Playback and music file management controllable using Roon Remote application running on iPads, iPhones or Android devices



Product variants

The MERGING+NADAC D/A Converter

STEREO (ST2)

This employs an ESS Sabre ES9008S Reference D/A converter IC, which contains 8 individual D/A converters. In the stereo unit 4 of these converters are merged to drive each output channel, providing improved linearity, greater dynamic range and a lower noise floor.



MULTICHANNEL-8 (MC8)

In this version, each of the ESS Sabre ES9008S IC's D/A converters drives an individual output channel. A simple menu setting allows this unit to be configured to work as a stereo unit in exactly the same way as the ST2 version, with the same advantages in performance.



The NADAC PLAYER

STEREO (PL2)

Uses the same hardware and configuration as the ST2 version of the MERGING+NADAC D/A converter, but with the addition of a built in CPU and the ability to play music files held on storage devices attached to Player's rear panel USB ports, or on storage devices attached to the network that the Player is connected to.



MULTICHANNEL-8 (PL8)

Uses the same hardware and configuration as the MC8 version of the MERGING+NADAC D/A converter, but with the addition of a built in CPU and the ability to play music files held on storage devices attached to Player's rear panel USB ports, or on storage devices attached to the network that the Player is connected to.





About RAVENNA

RAVENNA is the name of the protocol that manages the data transfer between the MERGING+NADAC and a computer or other hardware when the Ethernet interface is used. This open and published IP network technology had been created to meet the demands of national broadcasters and focused on the essential requirements of extremely accurate clocking, high resistance to packet loss and very low latency i.e. getting the data to where it needs to be, intact and at the right time.

Initially it did not encompass high PCM sampling rates and certainly not DSD. However, it was not difficult to make changes to allow that, so Merging Technologies worked closely with the developers to make sure that sufficient channels for the requirements of our professional equipment, with the very high data rate required by DSD256, could be handled with an accuracy that exceeded anything previously available. It remains the only logical choice for the professional and the audiophile and is now available in the MERGING+NADAC. The added bonus to using an advanced networking solution is being able to send and receive control information as well as audio data. This opened up exciting possibilities in the studio and now you can enjoy these same benefits in your own home, as in a networked system using multiple MERGING+NADACs, the remote control command data, as well as the audio data are passed to the units via the network.

COMPATIBILITY

The RAVENNA protocol comes with absolutely standard drivers for any computer operating system. ASIO for Windows, Core Audio with DoP support for MacOS and ALSA for Linux. As easily installed and configured as any other driver for USB or Firewire, the MERGING+NADAC RAVENNA driver allows use of any application of your choice to playback your music files, Emotion, Roon, JRiver, Audirvana, iTunes, etc., as well as any music server or streamer able to communicate through those standard ASIO or Core Audio drivers.

Using RAVENNA IP audio, the MERGING+NADAC can connect to a standard network, using off the shelf Gigabit switches and other IT technology to become a node on a LAN. From that point, any other RAVENNA node can receive information from and deliver information to, any combination of RAVENNA devices on the network.

MERGING+NADAC D/A Converter Hardware

Front Panel



Figure 2. MERGING+NADAC front panel.

Back Panel – 2-Channel version (ST2)



Figure 3. 2-Channel version (ST2) back panel.

Back Panel – 8 Channel version (MC8)



Figure 4. 8-Channel version (MC8) back panel.

NADAC PLAYER Hardware

Front Panel



Figure 2b. NADAC PLAYER front panel.

Back Panel – 2-Channel version (PL2)



Figure 3b. 2-Channel version (PL2) back panel.

Back Panel – 8 Channel version (PL8)



Figure 4b. 8-Channel version (PL8) back panel.

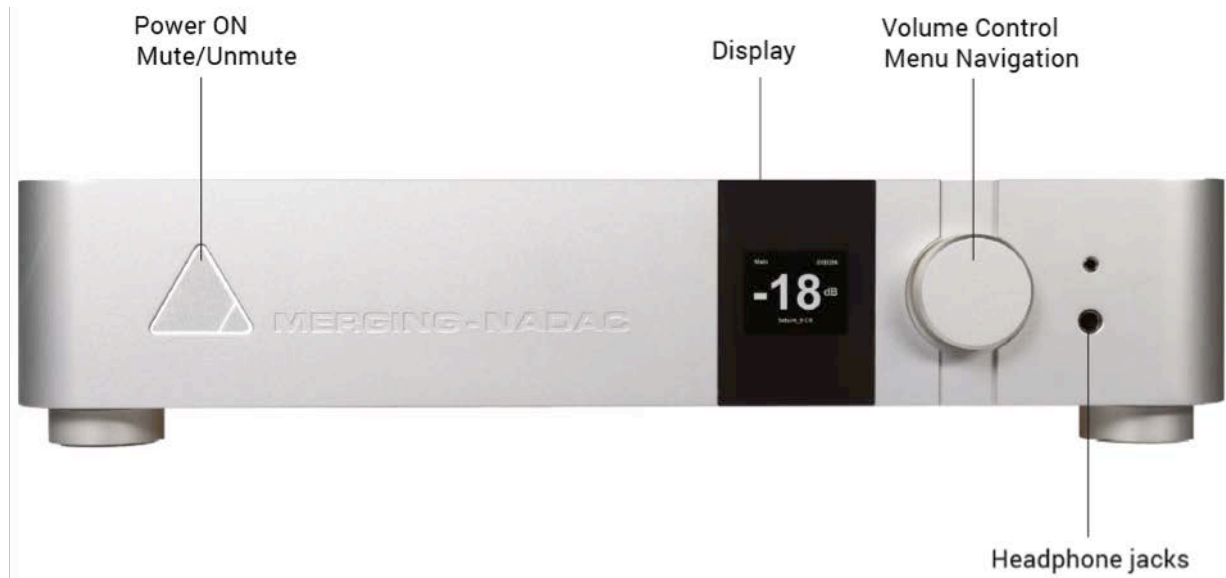


Figure 5. MERGING+NADAC front panel detail.

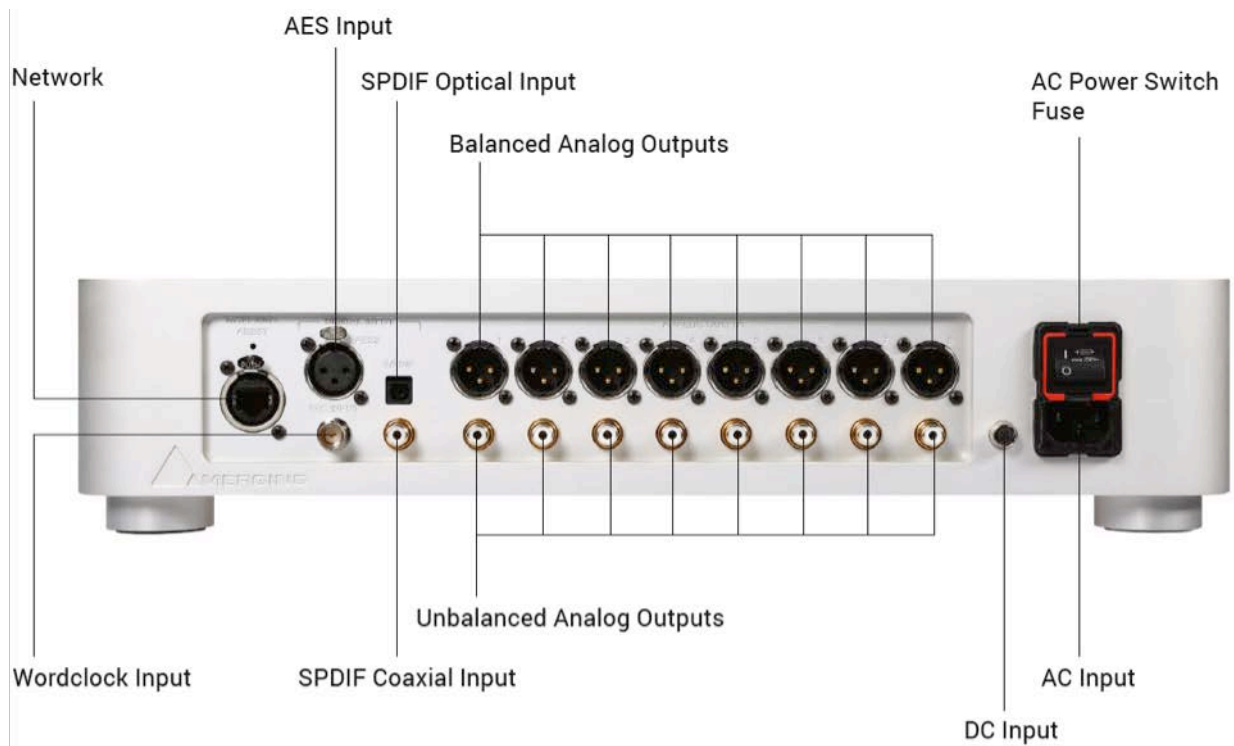


Figure 6. MERGING+NADAC (MC8) back panel detail.

Note: The back panel of the stereo version (ST2) is identical to the MC8 with the exception that it only has 2 sets of balanced and unbalanced analogue outputs instead of 8.



Specifications

Enclosure Specifications

Case Material	Premium machined and anodized aluminium
Weight	11 kg / 33 lbs
Dimensions	435 x 435 x 95 mm
Power Supply Voltage (AC)	100V–240V, 47–63 Hz
Power Supply Voltage (DC)	10-14V (via Hirose HR10A-7R-4S connector)
Power Consumption (Max)	< 30 Watts
Front Panel Display	OLED (160 x128 pixels)

Balanced Analog Outputs

Connector type	Gold plated male XLR
Max output Level	+18.0 dBu (6.1 Vrms)
Output Impedance	40 Ω
Dynamic Range - ST 2	130 dB (A-weighted, typ.)
Dynamic Range - MC 8	124 dB (A-weighted, typ.)
THD+N @1 kHz - ST 2	-116 dB (0.00016 %)
THD+N @1 kHz - MC 8	-113 dB (0.00022 %)
Gain Range (software controlled)	- ∞ dB to 0 dB
Gain Step/Precision	1dB / ±0.05 dB

Unbalanced Analog Outputs

Connector type	Gold plated RCA jack
Max output Level	+8.8 dBu (2.1 Vrms)
Output Impedance	20 Ω
Dynamic Range - ST 2	123dB (A-weighted, typ.)
Dynamic Range - MC 8	120 dB (A-weighted, typ.)
THD+N @1 kHz - ST 2	-114 dB (0.0002 %)
THD+N @1 kHz - MC 8	-113 dB (0.00022 %)
Gain Range (software controlled)	- ∞ dB to 0 dB
Gain Step/Precision	1dB / ±0.05 dB



Headphone Monitor Outputs

Headphone Jacks	6.3 mm(1/4") x 1 and 3.5mm x 1
Max output Level (Unbalanced)	Load = 300 Ohms: +14.4 dBu
Output Impedance	40 Ω
Dynamic Range (A-weighted, typ.)	123 dB
THD+N (1 kHz) @ -2 dBFS	< -111 dB (0.00028 %)
Gain Range (software controlled)	- ∞ dB to 0 dB
Gain Step/Precision	1dB / ±0.05 dB

RAVENNA module

RAVENNA (GbE)	RJ45
Sample Rates	44.1 kHz – 384 kHz, DSD64, DSD128 and DSD256

AES-EBU input

Connector	Gold plated female XLR
AES Input	Grounded and transformer coupled
Input Impedance	110 Ω
Sample Rates	44.1 kHz – 192 kHz

SPDIF inputs

Optical Connector	Toslink
Coaxial Connector	Gold plated RCA
Coaxial Input Impedance	75 Ω
Sample Rates	44.1 kHz – 96 kHz

Wordclock Input

Connector	BNC
Input Impedance	75 Ω

USB Interface - MERGING+NADAC Player only

Connector	USB Type A x 2
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**Software Specifications**

Windows Driver/OS

ASIO 2.2

Win7-64bit / Win8.1-64bit / Win10-64bit

Mac Driver/OS

NADAC Core Audio.

MacOS 10.8.5 or higher (Intel)

Linux Driver/OS

ALSA

Please contact Merging Technologies for detail on supported specific Linux versions and build

How to Connect the MERGING+NADAC

Connecting the RAVENNA Ethernet cable to the Network input

The Network input uses an RJ45 female receptacle with an EtherCon locking connector - Figure 7. A standard Cat5e or Cat6 cable can be used, however we recommend that the EtherCon cable provided with the MERGING+NADAC be used. If a longer cable is required this can be ordered from your Merging Technologies dealer. To connect the cable to the unit, align the cable with the Network input so that the small slot in the EtherCon connector body is facing upwards, then push the connector home until the lock clicks. To remove the cable, grasp the EtherCon cable connector body and push the tab above the Network input connector down to release the lock, then withdraw the connector. Do not pull on the cable. If the lock release tab is not pushed down sufficiently, the cable cannot be removed.



Figure 7. Ravenna Ethernet cable.

Connecting the NADAC using AES/EBU and SPDIF digital interfaces

The NADAC also has one AES/EBU and two SPDIF digital interfaces to allow it to be connected to sources such as CD players and CD transports. These inputs are on the rear panel adjacent to the Network input - Figure 6. The AES/EBU input uses an XLR type connector. One SPDIF input uses an RCA type connector and the other a TOSLINK type optical connector.

When using the electrical inputs, for the best results only cables that have been specifically designed to comply with the AES/EBU or SPDIF standards should be used. Other cables will probably work, but may not give the best performance.

Connecting the word clock input

All of the MERGING+NADAC's digital processes have to work in synchronization to ensure their proper function. In the normal mode of operation this is achieved using a synchronizing signal generated by the unit's own internal clock circuit. The MERGING+NADAC may also be used with an external synchronization source, which is called a Word Clock generator. This is connected to the Word Clock input connector located on the rear panel just below the AES/EBU digital input - Figure 6.

To connect the MERGING+NADAC to a word clock generator you will require a cable fitted with male BNC to BNC connectors. The cable should also have a characteristic impedance of 75 Ω .

To connect the cable, offer it up so that the two diametrically opposed pins on the outside of the rear panel connector, fit into the corresponding grooves in the inside of the cable connector's locking ring. Push the cable in and turn the locking ring clockwise so that it locks firmly. To remove the BNC cable, push the cable connector forward slightly and turn it anti-clockwise as far as it will go. The cable may now be removed from the unit.

Before attempting to use the unit with an external clock source please see the section *Synchronizing the MERGING+NADAC to an External Source* on page 42. Please also be aware the word clock input has a 75 Ω terminating resistor that can be switched in and out of the circuit via the WCK Termination page in the System menu – see page 35. Failing to set this appropriately may compromise the unit's performance.

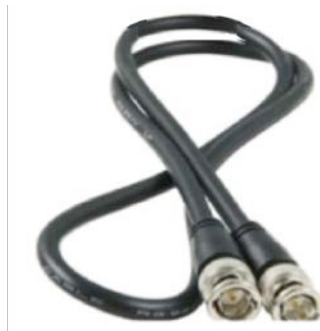


Figure 8. BNC to BNC cable.

How to connect the balanced line output to an unbalanced input

We strongly recommend that you use the RCA output connectors when connecting the MERGING+NADAC to an unbalanced input.

If you must connect the MERGING+NADAC to an unbalanced input using the balanced outputs, you must do so as shown in Figure 9 below.



Never attempt to short pin 3 (or pin 2) to Ground on the MERGING+NADAC’s balanced output, as the balanced output circuit is symmetrical, but not floating. Failure to observe this instruction may result in damage to the MERGING+NADAC, which will not be covered by the warranty.



Figure 9. Correct balanced output to unbalanced input connection method.

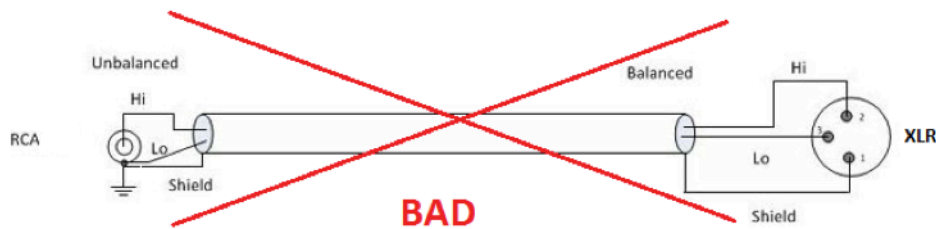


Figure 10. Incorrect balanced output to unbalanced input connection method.

Note: As unbalanced inputs are usually more sensitive than balanced inputs, the 6dB drop in signal level that results when using only one half of the balanced output will reduce the likelihood of overdriving the unbalanced input of the device that the MERGING+NADAC is connected to. This could otherwise cause distortion.




Power Supply

Power supply options

Your MERGING+NADAC can be powered from a standard domestic AC supply, or an external DC power source such as a battery.

Using an AC power source

The MERGING+NADAC can be run from any AC power source that supplies 100-240V at 50-60 Hz. Ensure that the maximum power supply voltage is not exceeded, as excessive voltages can seriously damage the unit. We recommend that you use the power supply cable supplied with the unit and this must be plugged into a grounded outlet.

 For safety and EMC reasons, and to prevent audio hum, the system must be properly grounded. If your power source does not have a standard three-prong socket, the system must be grounded in another appropriate manner. Please consult an appropriately qualified electrician if you are unsure about the suitability of the power outlet you propose to use.

Using a DC power source

The MERGING+NADAC may also be run from a DC power source. This should be connected to the DC Input connector on the rear panel, immediately to the left of the AC power inlet – Figure 11. The mating part for this connector is a Hirose HR10-7P-4P, which can be ordered separately from your Merging Technologies reseller.

The pinout of this connector is:

- Pin 1: Ground
- Pin 4: 12V
- Pins 2 and 3: Not connected

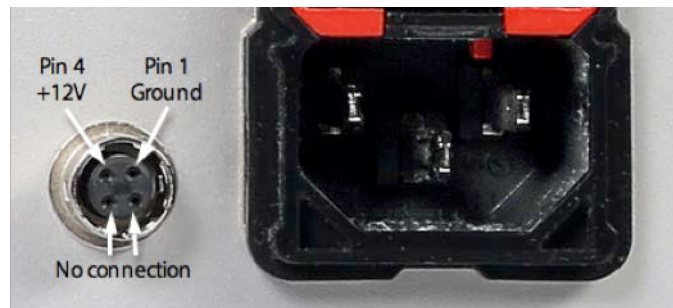



Figure 11. DC power input connector.

 The DC power input accepts voltages from 10V to 14V, with a maximum power consumption of 30W. Do not exceed the maximum DC input voltage or the unit may be damaged.

The DC power supply input can be used in two ways

1. DC power as the main source using a battery or other suitable DC source.
2. Backup power supply: The unit is operated with both AC and DC supplies connected. Should either fail or be disconnected, the unit will carry on working without any disturbance to its operation.



Switching on your MERGING+NADAC

1. Make sure that the switch on the unit's rear panel power inlet is set to the On position, as shown in Figure 12.



Figure 12. Setting the power inlet switch to the On position.

2. Briefly press the front panel power button – Figure 13.



Figure 13. Front panel power button.

3. The periphery of the power button will light up in white and the unit will commence the boot-up sequence, which will take approximately 60 seconds. During this time the unit will perform a series of self-test and initialization routines. At this stage if the unit is a D/A converter the display will show **MERGING NADAC** and if it is a NADAC Player it will show **NADAC PLAYER**.

Note: If the front panel power button light isn't steady, but appears to flicker, this may indicate a fault condition and the unit should be switched off. If you cannot switch the unit off using the Shutdown command in the Exit menu (page 40), press and hold down the power button until the unit switches off.

4. When the display shows the Main output home screen, the unit is ready for use. Figure 14 shows an example of the Main output home screen. The sample rate, volume level and input source indicated will depend on the settings when the unit was last shut down.



Figure 14. Main output home screen example.



MERGING+NADAC Front Panel Display Interface

MERGING+NADAC Menu Tree

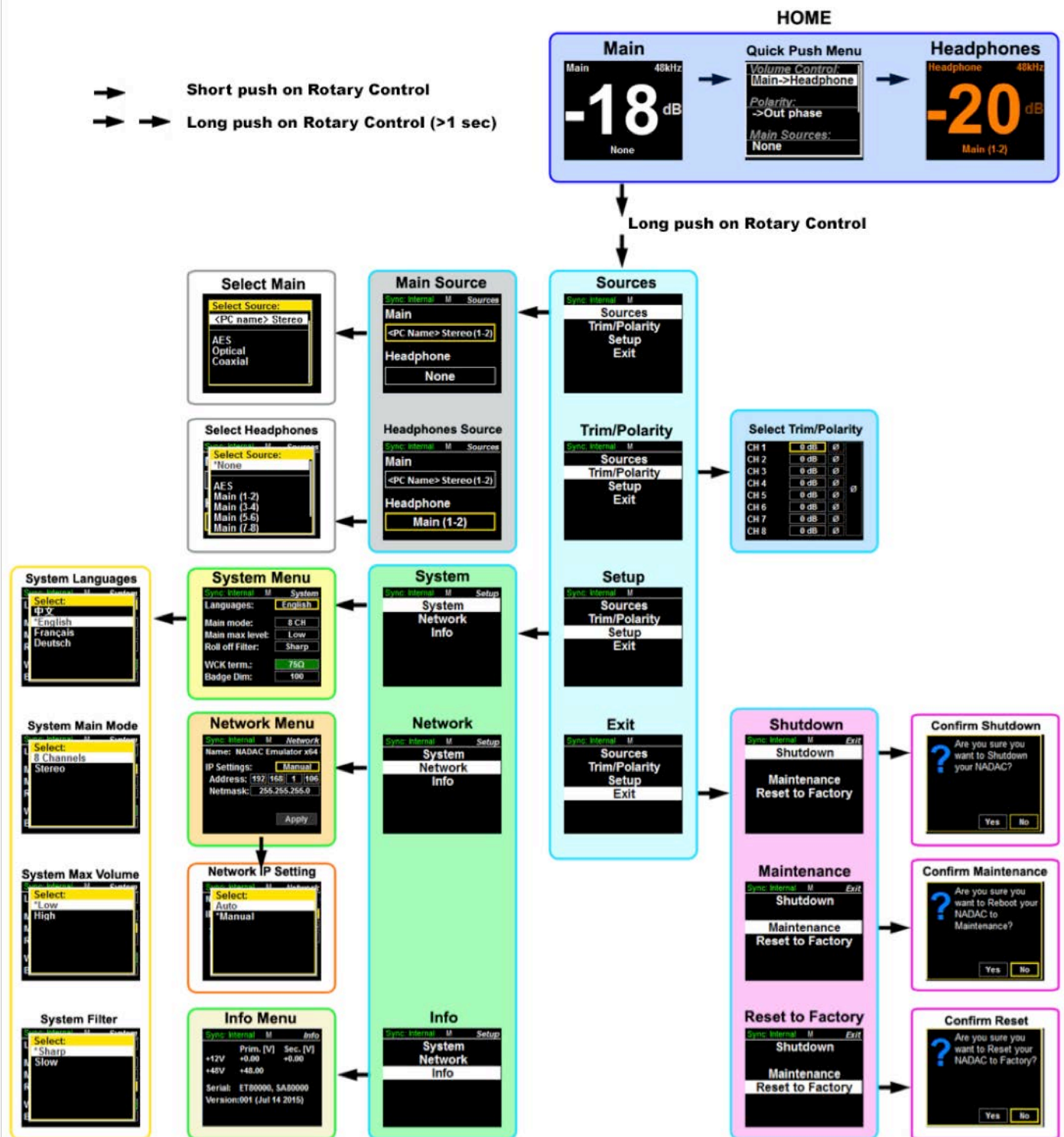


Figure 15. MERGING+NADAC menu tree.

Navigating the Menu

The front panel Rotary Control - Figure 16 - has two functions. The first is to adjust the Main and Headphone output levels.

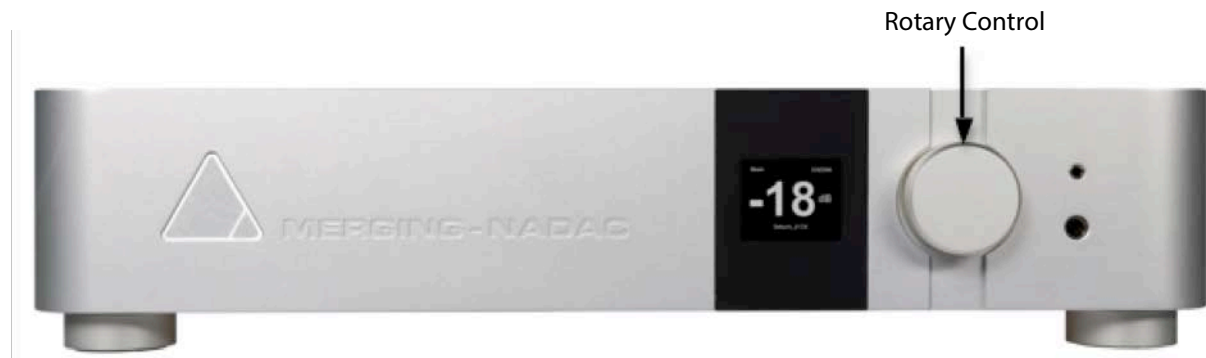


Figure 16. Front panel Rotary control.

It is also used to navigate the menu. The menu provides access to a wide range of settings, but in most cases the user will only need to use a very small number of these. The most frequently used will be:

1. Selecting whether the Rotary Control adjusts the Main output or the Headphone output level.
2. Selecting the audio source(s) to be fed to the Main output and Headphone output.

On the 2-channel version (ST2 and PL2), by default, the Headphone output is set to be the same as the Main output. On the 8-channel version (MC8 and PL8), by default, the Headphone output is set to be the same as Main output channels 1-2. In each case the volume levels may be set independently.

The menu has been arranged in an intuitive manner to make it easy to find the item that you require. It is navigated by pressing the control knob, either briefly, or for more than 1 second and by rotating the control.

Rotary Control Function Overview

Rotary movement: When a home screen is displayed, see Figure 14 for an example, turning the Rotary Control to the left or right will decrease or increase the volume level of the output it has been selected to control. Continuously turning the control to the left will eventually mute the output. The power switch light will then change to red and the word **muted** will appear in the display.

If the display is showing a menu or sub-menu, rotating the control allows you to step through the items available on that page.

The Rotary Control is also used to step through the possible choices where a menu item has several setting options, adjust a setting value or enter numeric characters. Examples of each of these cases are:

Setting the Roll Off Filter: stepping through the possible options
e.g. Sharp or Slow.

Adjusting the channel level trim: varying a channel output level.

Entering the network IP settings: stepping through numeric characters.

**Quick Push:**

When a home screen is displayed, pushing the Rotary Control briefly will open the Quick Menu (page 27). This allows the user to select which output's level the Rotary Control will adjust (Main or Headphone); change the output polarity – also referred to as the absolute phase (Main output only) and choose which source will be sent to selected output.

When a sub-menu is open, briefly pressing the Rotary Control will open the next menu level down. If this is the final level in the menu hierarchy, a brief push will:

a. Toggle a setting e.g. from In Phase to Out of Phase, or select an input. The display will then return to the home screen.

b. Open the menu item so that the Rotary Control can be used to: step through the possible setting options; adjust the setting value or cycle through numeric characters. A brief press of the Rotary Control will confirm the change and close the item. Other items on that page can then be selected.

Long Push:

When a home screen is displayed, holding the Rotary Control pushed for more than 1 second will open the Main Menu – page 30. Further quick pushes will open successive levels in the Main Menu.

If a menu is already open, holding the Rotary Control pushed will progressively bring the display back through the previous menu levels until the display shows the home screen for the currently selected output.

If a menu item is open when the control is pushed and held, the current setting will be confirmed, the item will be closed automatically and the display will go back through the previous menu levels until it shows the home screen for the currently selected output.

Once the home screen has been reached, the Rotary Control can be released and it will function as a volume control again.



Home Screen Explanation

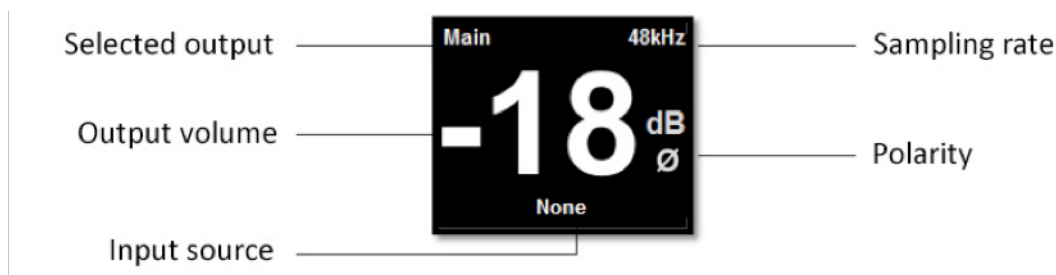


Figure 17. Home screen detail.

The Main Home screen – Figure 17 - is the screen you will see after the MERGING+NADAC completes the boot sequence and it shows the current principle settings for the Main output. From here you can either control the Main output volume level, or navigate through the option menus.

To return to the Home Screen, press and hold the Rotary Control until the Home Screen is displayed.

Screen item descriptions

- Selected output** Show's which output is selected: either Main or Headphone. The Rotary Control will adjust this output's volume level. Pressing the Rotary Control briefly will allow you to open the Quick Menu where you can select the input to be used to drive this output, or select the other output.
- Output volume** Show's the volume level of the selected output.
- Input source** Shows the source feeding the selected output. If a network source has been selected and the source name is too wide to fit on the display, it will be continuously scrolled across the bottom of the display. If there is no valid data on the selected input, the source or input name will be displayed in red rather than the screen main colour (white for the Main output or amber for the Headphone output). In the example shown in Figure 17 no input has been selected.
- Polarity** Audiophiles also refer to this as the absolute phase. If no ∅ symbol is shown here the polarity is normal. A white ∅ symbol indicates that the polarity is reversed. This item should be set to normal polarity – i.e. no symbol. This setting is only available for the Main output and may be found in both the Quick and Main menus.
- Sampling Rate** Shows the sample rate of the selected source.

Note: The MERGING+NADAC Power button will show different color depending of its Sampling Rate format mode..
 PCM = White
 DXD = Pink
 DSD64 = Blue
 DSD128 = Light Blue
 DSD256 = Turquoise

Dual Zone Capability

When the MERGING+NADAC has two or more sources connected to it, it can if required, send different sources to the Main and Headphone outputs at the same time. This is referred to as dual zone capability.



The Quick Menu

This allows you to quickly access the most frequently used settings: select which output's level the Rotary Control will adjust; set global polarity; select the source for each output and access the unit's shutdown command.

To enter the Quick Menu, from the home screen press the Rotary Control briefly once and the screen in Figure 18 will appear.

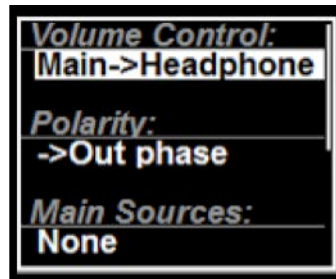


Figure 18 The Quick Menu.

Volume Control:

This allows you to select which output's volume level the Rotary control will adjust. As shown in Figure 18, the volume control is set to adjust the Main output. The text -> **Headphone** in the display indicates which output's volume level the Rotary control will adjust if this setting is toggled.

To change the control to adjust the Headphone output, use the Rotary control to highlight the volume control options (already shown highlighted), then briefly press the Rotary control once. The display will change to the Headphone home screen, which will be shown in amber – Figure 19. Repeating the process will set the Rotary control back to adjusting the Main output volume level.



Figure 19. Headphone home screen.

Polarity:

This is also known as the Absolute Phase. It has two settings: in phase and out of phase. As shown in Figure 18, the polarity has been set to in phase (i.e. normal) and the text -> **Out phase** in the display indicates what the polarity will be if this setting is toggled.

To change the polarity setting, use the Rotary Control to highlight the new polarity setting, then briefly press the Rotary control. The polarity setting will be changed and the display will revert to the Home screen.

Sources:

This allows you to select an input from the network, or one of the three standard digital inputs as the source for the selected output. This menu item will be shown as **Main Sources** or **Headphone Sources** in the Quick Menu screen, depending on which output the volume control is currently selected to control.



Use the Rotary control to highlight the desired source, you may have to scroll down to see them all, then briefly press the Rotary control. The display will revert to the Home screen and the name of the new source will be shown in the Input source area at the bottom of the screen. If the source is not valid i.e. there is a problem with the selected network source, or one of the three standard digital inputs has been selected, but no valid data is being received, the source name will appear in red.

If the network source name is too long to fit on the display, it will be continuously scrolled across the Input Source area of the Home screen.

In the case of a NADAC PLAYER, the source corresponding to the internal player will always be available in the list and will be named as NADACPLAYER-XYZ where XYZ is the last three digits of the unit's serial number.

Shutdown

This is the recommended method of shutting the unit down and ensures that any changes made to the unit's settings will be stored in the system's memory and recalled when it is next turned on. Use the Rotary control to highlight the shutdown option, then briefly press the Rotary control. A new menu page will open. Use the Rotary control to select the Yes option and briefly press the Rotary control again. The shutdown process will start. When the display and power switch are no longer illuminated, the NADAC may be safely disconnected from the mains supply.

You can also switch the unit off by pressing and holding down the power switch, but in this case there is a remote possibility that any changes you made to the unit's settings may not be recalled the next time it is switched on.



The Main Menu

This is a more detailed series of menus where all of the NADAC's settings and adjustments may be accessed, in addition to those accessed via the Quick Menu.

To enter the Main Menu, from the Home screen press and hold down the Rotary control until the screen shown in Figure 20 is displayed.

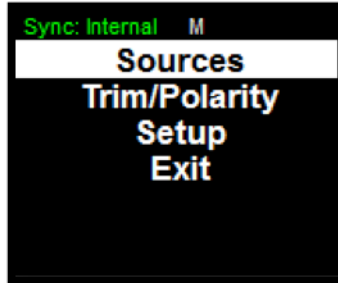


Figure 20. Main menu top screen.

Sources menu

The Sources menu allows you to select which source will be fed to the Main output and which source will be fed to the Headphone output.

To enter the Sources menu: From the home screen press and hold the Rotary control until the screen shown in Figure 20 appears. The **Sources** item should be highlighted as shown. Briefly press the Rotary control. A screen like the one shown in Figure 21 will appear. This shows the sources currently selected for both outputs. In this particular example the Main output is connected to a source on the network. We have called this <PC Name>, but a network source name can be whatever has been set up on the computer or device concerned. In this example the headphone output has been set to follow whatever the Main output is providing.

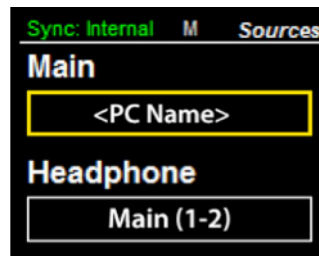


Figure 21. Sources Menu

Main source

Use the Rotary control to outline the Main source option box as shown in Figure 21, then briefly press the control. A screen like that shown in Figure 22 will appear, where the network sources are shown in the format <PC name> and the standard digital inputs are named by their connector types.

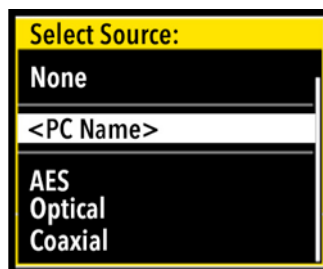


Figure 22. Source options menu.



Use the Rotary control to highlight the required source, then briefly press the control. The display will revert to that shown in Figure 21, showing the output with the newly selected source.

In the case of a NADAC PLAYER, the source corresponding to the internal player will always be available in the list and will be named as NADACPLAYER-XYZ where XYZ is the last three digits of the unit's serial number.

Note: *The name of your network source may appear twice in the menu. Once in the form <PC Name> and also as <PC Name>_Headphone. In this case the first version is the one to choose.*

Headphone source

Use the Rotary Control to outline the Headphone source option box in Figure 21, then follow the same procedure as for the Main source selection above.

Note: *The name of your network source may appear twice in the menu. Once in the form <PC Name> and also as <PC Name>_Headphone. In this case the second version is the one to choose.*

On the 8-channel version of the NADAC (MC8 and PL8), the headphone output can also be set to monitor each pair of the Main output channels i.e. (1-2), (3-4), (5-6) and (7-8) and these options will appear in the Select Source screen in addition to those shown in Figure 22.

Note: *With some media player software, the computer it is installed on will only appear as a source in the source options menu once playback has started.*



Trim/Polarity menu

This allows adjustment of the individual channel trim and polarity settings together with the setting for the global polarity (absolute phase).

To enter the Trim/Polarity menu: From the home screen press and hold the Rotary Control until the screen shown in Figure 20 appears. Use the Rotary Control to highlight **Trim/Polarity**, then briefly press the Control again and the Trim/Polarity menu will appear – Figure 23. This shows the current trim and polarity settings.

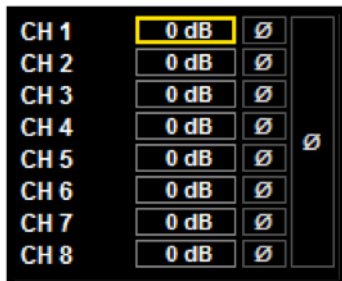


Figure 23. Trim/Polarity menu.





The image of the Trim/Polarity menu shown in Figure 23 is for the 8-channel unit (MC8 and PL8). For the stereo unit (ST2 and PL2), only channels 1 and 2 will be displayed.

Trim


Use the Rotary Control to outline the trim display of the channel to be adjusted, press the Rotary Control briefly so that the display is highlighted, then rotate the control to adjust the setting. To confirm the setting briefly, press the Rotary Control again.

The trim settings should normally set to 0dB. For the stereo units this setting can be used as a balance control. To make the left channel sound louder reduce the channel 2 trim level. To make the right channel sound louder reduce the channel 1 trim level.


Channel Polarity (Channel Phase)

Use the Rotary Control to outline the  symbol for the channel polarity to be changed, then briefly press the control to change the polarity by 180°. If the  symbol is shown against a black background the current setting is normal polarity and if it shown against a green background the current setting is inverted polarity.

Global Polarity

Use the Rotary Control to outline the single  symbol on the far right of the screen,

(Absolute Phase)

then briefly press the control to change the polarity by 180°. If the  symbol is shown against a black background this indicates that the current setting is normal polarity and if it shown against a green background this indicates inverted polarity.



System Menu

The System menu allows access to the system secondary settings: display language, main mode (2 or 8-channel operation – only applicable to the 8-channel unit (MC8)), maximum output level, roll-off filter, word clock termination and power switch illumination settings.

To enter the System menu: From the home screen press and hold the Rotary Control until the Main menu top screen appears – Figure 20. Use the Rotary Control to highlight **Setup**, then briefly press the control. This will open the Setup menu – Figure 24. With **System** highlighted, briefly press the control again and the System menu will appear – Figure 25.

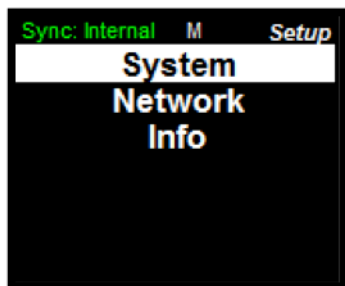


Figure 24. Setup menu.

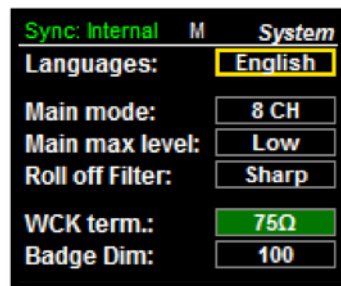


Figure 25. System menu.

Languages

Allows you to select the language used on the unit's screen. Languages available are: Chinese, English, French, German, Norwegian, Japanese, Korean.

To change the system language, use the Rotary Control to outline the **Languages** options box in Figure 25, then briefly press the Rotary Control and a list of the languages available will be displayed – Figure 26. Use the Rotary Control to highlight the required language then briefly press the control. The display will revert to the System menu, Figure 25, with the new system language shown in the

Languages option box.

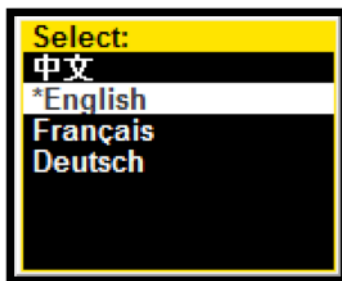


Figure 26. System language

Main Mode

The 8-channel units (MC8 and PL8) can be switched to work in difference mode

8-Channel mode: 8 channels outputs (1-2-3-4-5-6-7-8)

Stereo mode: Combines the outputs of 4 D/A converters to drive each output channel. This provides improved linearity, greater dynamic range and a lower noise floor.

Stereo x4: Under this mode the NADAC the main 1-2 can be duplicated to 4 output pairs (1-2/1-2/1-2/1-2)

To change the Main Mode setting, use the Rotary Control to outline the current Main Mode setting, then briefly press the Rotary Control to open the Main Mode options menu – Figure 27. Use the Rotary Control to highlight the required **Main**



mode, then briefly press it again to confirm the selection. The display will revert to the System menu, Figure 25, with the new mode shown in the Main Mode option box.

On the stereo units (ST2 and PL2), the **Main mode** option box will show Stereo, this line in the menu will be greyed out and the cursor will skip this line, preventing any changes.

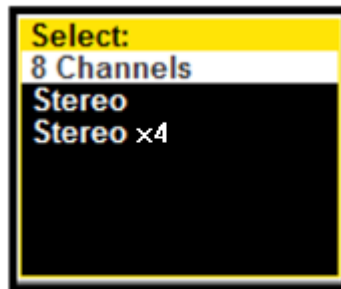


Figure 27. Main mode options.

Main Max Level

Sets the Main output maximum output level:

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

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

To change the Main output maximum output level, use the Rotary Control to outline the **Main max level** options box in the System menu - Figure 25, the briefly press the Rotary Control and the output levels available will be displayed – Figure 28. The asterisk shows which level is currently selected.

Use the Rotary Control to highlight the required output level, then briefly press it again to confirm the selection. The display will revert to the System menu, Figure 25, with the new level shown in the **Main max level** option box.

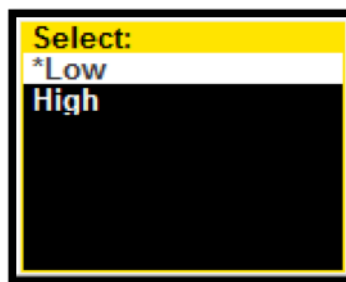


Figure 28. Main max level options.

Roll Off Filter

The MERGING+NADAC offers the user a choice of two different roll-off filters.

Sharp roll-off filter: Offers a flat frequency response up to 22kHz, within 0.2dB. This is the default filter.



Slow roll-off filter: Offers a gentle frequency response attenuation starting around 16kHz and reaching -2.5dB at 22kHz.

These filters may sound different in your system, so we advise the user to listen to both and select the one that gives the most pleasing result. These filters are global, so for example, if you select the sharp roll-off filter, this will be applied for all PCM sample rates and all DSD data rates.

To change the Roll off Filter selection, use the Rotary Control to outline the **Roll off Filter** options box in the System menu - Figure 25, then briefly press the Rotary Control and the filter options available will be displayed – Figure 29. The asterisk shows which filter is currently selected.

Use the Rotary Control to highlight the required filter, then briefly press it again to confirm the selection. The display will revert to the System menu, Figure 25, with the new filter setting shown in the **Roll off Filter** options box.

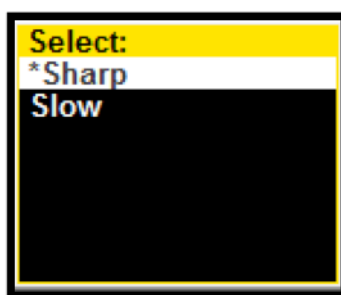


Figure 29. Roll-Off Filter options.

WCK Termination

In the normal mode of operation the MERGING+NADAC's audio processes are synchronized to own internal clock. The unit may also be used with an external source for the clock, which is called a Word Clock generator. The internal clock is of a very high quality; it is the same one that our professional converters use, so we cannot say whether there would be any significant improvement in performance if an external World Clock generator were to be used. We recommend that you try any such device before you commit to buying it.

Instructions on how to connect a Word Clock may be found on page 20. Also please see the notes on synchronization on page 42.

When a professional grade Word Clock generator is used, it is standard practice to connect a 75Ω resistor across the word clock input. This is to ensure that the NADAC receives a clean clock signal. As there is no agreed standard for the key performance parameters of the word clock signal, using this termination resistor may not always give the best result, so we have provided the facility for this resistor to be switched in or out of the circuit.

The unit is shipped with the 75Ω resistor switched in, as this will in most cases give the best result. In this case the **WCK term** options box in the System menu, Figure 25, will show 75Ω against a black background.

To switch the 75Ω resistor out of the circuit, use the Rotary Control to outline the **WCK term** options box in the System menu - Figure 25, then briefly press the Rotary Control. The background of the **WCK term** options box will change to green indicating that the 75Ω resistor is now out of the circuit.

To reconnect the 75Ω resistor, outline the **WCK term** options box and the briefly press the Rotary Control again. The background color of the **WCK term** options box



will change to black indicating that the 75Ω resistor is connected.

Badge Dim

This allows the brightness of the power button illumination to be varied. This option does not affect the brightness of the front panel display.

To adjust the power button illumination brightness, use the Rotary Control to outline the **Badge Dim** options box in the System menu - Figure 25, then briefly press the Rotary Control. The number in the box will be highlighted. Turning the Rotary Control counter clockwise will reduce the number in the box and also reduce the power button illumination brightness. Turning the Rotary Control clockwise will increase the number in the box and also increase the power button illumination brightness. When the required illumination level has been set, briefly press the Rotary Control to confirm the selection. The display will revert to the System menu, Figure 25, with the new power button illumination setting shown in the **Badge Dim** options box.



Screensaver: If 10 minutes elapse without any changes being made to the unit's control settings, the front panel display will go blank. This is to preserve the life of the display. To turn the display back on, turn or briefly press the Rotary Control, or briefly press the front panel power button.



Network Menu

The Network menu allows the user to manually set the IP address and Netmask, or opt for these to be automatically set. The recommended option is Auto for automatic selection.

To enter the Network menu: From the home screen press and hold the Rotary Control until the Main menu top screen appears – Figure 20. Use the Rotary Control to highlight **Setup**, then briefly press the control. This will open the Setup menu – Figure 30. Use the Rotary Control to highlight **Network**, briefly press the control again and the Network menu will appear – Figure 31.

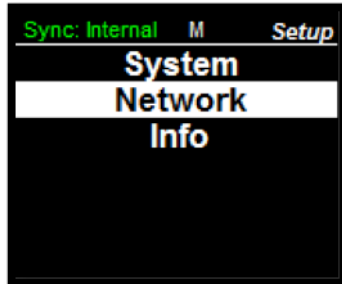


Figure 30. Setup menu.

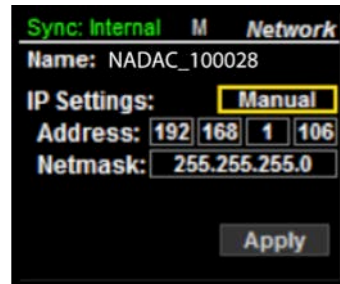


Figure 31. Network menu.

Name: This shows the name of the MERGING+NADAC unit and its serial number. This name will be broadcast across the network and will be seen in applications such as the NADAC App remote control (page 61) and MT Discovery tool (page 68).

IP Settings: Allows the IP settings to be set either manually or automatically.
 If Auto is selected: The IP address will be automatically attributed using ZeroConf/Auto-IP mechanism (address range 169.254.xx.xx if no DHCP server is present). The Address and Netmask lines in the menu will be greyed out and the cursor will always skip these lines in the menu.

If Manual selected: The user can enter a fixed IP address as shown below.

To toggle between automatic and manual IP setting, use the Rotary Control to highlight the **IP Settings** option box in the Network menu (figure 31), then briefly press the Rotary Control. This will open the IP Settings menu – Figure 32.

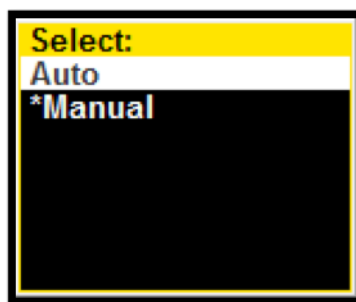


Figure 32. IP settings menu.

Use the Rotary Control to highlight the required setting, then briefly press the control to confirm the selection. The display will revert to the Network menu, Figure 31, with the new setting shown in the **IP Settings** option box.

If Manual selection has been chosen, the IP Address and Netmask may now be set as shown below.



When in Auto mode, any changes to the network configuration, such as connecting the NADAC to another switch or computer, changing the main router DHCP settings requires that the unit be rebooted, as well as any computer having been subjected to these changes.

Address:

To change the IP address, with the **IP Settings** options box set to Manual, use the Rotary Control to outline the first field in the address line, then briefly press the control. The number in this field will appear highlighted to indicate that it may now be changed. Rotate the control clockwise to increase the number and counter clockwise to decrease the number. When the required number has been set, briefly press the control and the highlighting will disappear indicating that the change has been accepted.

Repeat the process to make changes to the three other fields in the IP address line.

Netmask: To change the Netmask, with the IP Settings options box set to Manual, use the Rotary Control to outline the **Netmask** options box, then briefly press the control. This will open a menu showing the Netmask options available. The asterisk shows the currently selected Netmask.

Use the control to highlight the required Netmask setting and briefly press the control again. The display will revert to the Network menu, Figure 31, with the new setting shown in the Netmask option box.



If you have changed the IP address or Netmask setting you must complete the next step.

Apply:

If you have made any changes to the network settings you must save the new settings and reboot the unit. Do this by using the Rotary Control to outline the **Apply** button, then briefly press the control. When the unit has rebooted and the home screen is displayed, it will be ready to use with the new network settings.



The MERGING+NADAC has no DHCP-server capability.

By default the MERGING+NADAC IP setting is set to "Auto" configuration mode, which gives an address in the range 169.254.xxx.xxx if no DHCP server is present on the network. Users are free to put a DHCP server in their RAVENNA network with a customized address range and the MERGING+NADAC will get an IP address from this server. We recommend that user always restart the NADAC if any changes have been made to the network configuration.

Merging Technologies recommend that the MERGING+NADAC be configured in "Auto" mode. Please be aware that when the MERGING+NADAC is started in Maintenance mode, the IP configuration mode defaults to Auto and cannot be changed.



Info Menu

The Info menu shows key internal voltages, which may be helpful when diagnosing problems, the unit's serial number and the software version.

To enter the Info menu: From the home screen press and hold the Rotary Control until the Main menu top screen appears – Figure 20. Use the Rotary Control to highlight **Setup**, then briefly press the control. This will open the Setup menu – Figure 33. Use the Rotary Control to highlight **Info**, briefly press the control again and the Info menu will appear – Figure 34.

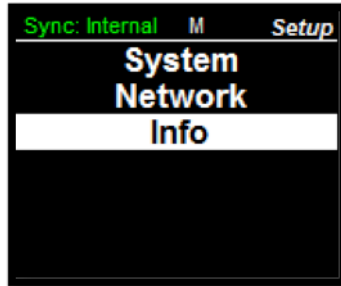


Figure 33. Setup menu.

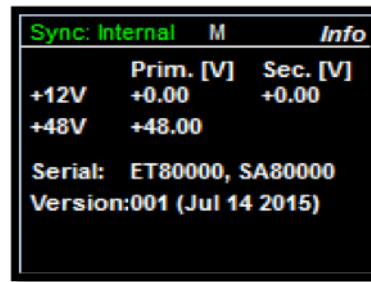


Figure 34. Info menu.



Exit Menu

The Exit menu allows the unit to be shutdown properly so that all settings are stored and can be correctly recalled when the unit is restarted; enables the unit to be started in Maintenance Mode which is used when updating firmware and lastly it allows the unit to be reset to the factory settings.

To enter the Exit menu: From the home screen press and hold the Rotary Control until the Main menu top screen appears - Figure 20, then use the Rotary Control to highlight **Exit** - Figure 35. Briefly press the Rotary Control and the Exit menu will be opened - Figure 36

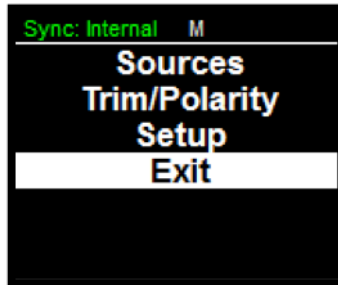


Figure 35. Main menu.

Shutdown:

This initiates an orderly shutdown of the unit, so that all settings are stored and correctly recalled when the unit is restarted

To shut the unit down: use the Rotary Control to highlight **Shutdown** in the Exit menu, Figure 36, then briefly press the Rotary Control. This will open the Shutdown select page, Figure 37. Use the Rotary Control to outline the **Yes** box, then briefly press the Rotary Control. The unit will then start to shut down. This will take about 10 seconds.

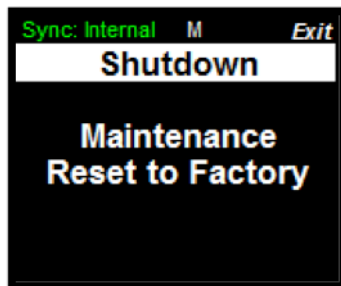


Figure 36. Exit menu.

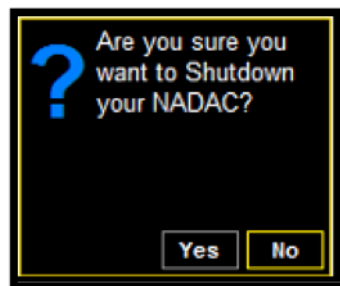


Figure 37. Shutdown select

Do not attempt to switch the unit off using the front panel power button or the switch on the rear panel power inlet, as we cannot guarantee that the unit's settings will be correctly saved and recalled the next time it is switched on

Maintenance:

This shuts the unit down and reboots it in Maintenance Mode. This mode is used when performing a firmware upgrade.

To enter Maintenance Mode: use the Rotary Control to highlight **Maintenance** in the Exit menu, Figure 38, then briefly press the Rotary Control. This will open the Maintenance select page, Figure 39. Use the Rotary Control to outline the **Yes** box then briefly press the control. The unit will then shut down and restart in Maintenance Mode.

The full procedure for updating the firmware may be found on page 100.

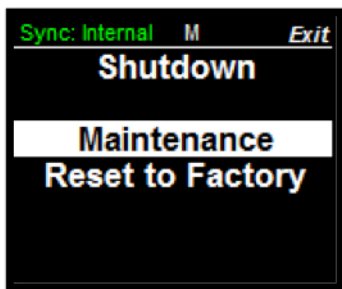


Figure 38. Exit menu.

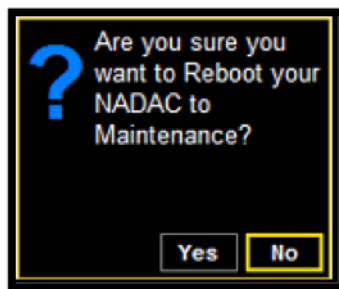


Figure 39. Maintenance select

Reboot to Factory:

This will shut the unit down and restart it with the factory default settings.

To reset to the factory default settings: use the Rotary Control to highlight **Reset to Factory** in the Exit menu, figure 40, then briefly press the Rotary Control. This will open the Reset to Factory select page, figure 41. Use the Rotary Control to outline the **Yes** box then briefly press the control. The unit will then shut down and restart with the factory default settings.

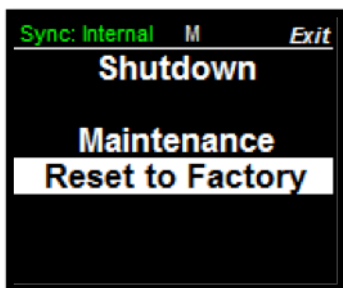


Figure 40. Exit menu.

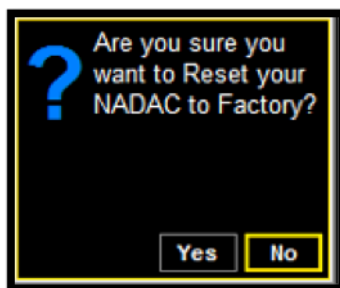


Figure 41. Factory reset select



Synchronizing the MERGING+NADAC to an External Source

All the PCM sample rates currently used for high-end audio and professional audio are multiples of either 44.1kHz or 48kHz, so these are referred to as the base sample rates for this range of rates. All DSD data rates are multiples of 44.1kHz, so this is the base sample rate for DSD.

The unit will automatically synchronize to an external word clock generator when the following conditions are met:

- a. An audio source connected via the Ethernet/RAVENNA input has been selected.
- b. The base sample rate of the generator clock matches the base sample rate of the input audio data stream.

If the base sample rate does not match, the unit will use its internal clock.

For audio sources connected via the AES/EBU or SPDIF inputs, the unit will always synchronize to the data stream on the input selected.



Connecting the MERGING+NADAC to a Network

Basic Network Configuration

To configure the MERGING+NADAC on your home network (PC or MAC) to play back audio files from the computer's hard drive or network attached drive(s).

Software and hardware requirements

Install the Merging Technologies NADAC Core Audio Driver (MAC, page 55) or the Merging Technologies NADAC ASIO Driver (Windows, page 51) on the computer that will be used as the network audio source.



For the best quality results when streaming, we strongly advise that a wired network is used and this must be Gigabit capable. We advise against the use Powerline Networks as they cannot be guaranteed to provide the level of performance required.

Setting up a peer to peer connection

1. Find the Ethernet cable that was supplied with your MERGING+NADAC.

Note: *Merging Technologies guarantees that the NADAC will meet its published specifications if Ethernet cables meeting at least CAT5E or CAT6 standards are used. Please bear this in mind if you wish to use your own cable. Using a lower quality cable may compromise the system's performance.*

2. Connect the Ethernet cable to the Network input socket on the rear of the unit – Figure 6. If you are unfamiliar with connecting and removing network connectors, please refer to the section on *Connecting the RAVENNA Ethernet cable* on page 19 of this manual, as this may save you a broken connector later.
3. Connect the other end of the Ethernet cable directly to your PC/MAC Ethernet interface.
4. Boot up the computer and start the music server application you plan to use.
5. Start the MERGING+NADAC.
6. Decide whether you wish to listen via the Main output or the Headphone output, then select the computer as the audio source to feed this output. You can select the Main output source using the web interface (see page 68) or via the front panel menu. The Headphone output source can only be selected via the front panel.



Selecting the source via the front panel

For the purpose of this illustration we will assume that the user wishes to listen to the Main output, that no source has been selected for the Main output and that the headphone output is in its default setting of following whatever is connected to the main output.

1. With the home screen displayed - an example is shown in Figure 42 - press and hold down the Rotary Control until the main menu top screen appears – Figure 43.



Figure 42. Main home screen example.

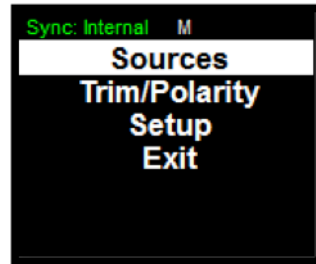


Figure 43. Main menu top screen.

2. With the **Sources** item highlighted, briefly press the Rotary Control to open the Sources menu – Figure 44. Use the Rotary Control to outline the Main source option box as shown.

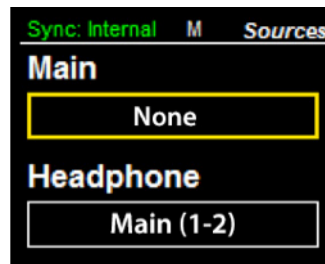


Figure 44. Sources Menu

3. Briefly press the Rotary Control. The source options menu will appear – Figure 45. The example shown here is with the Zone menu in the MERGING+NADAC Settings panel set to Main + Headphone.

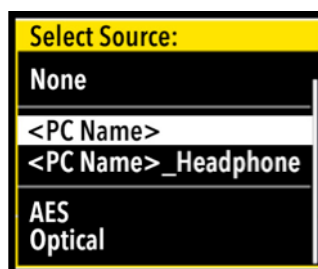


Figure 45. Source options menu.

Note: The name of your network source may appear twice in the Source options menu. Once in the form <PC Name> and also as <PC Name>_Headphone. In this case choose the first version.

Use the Rotary Control to highlight the network source, then briefly press the Rotary Control to select it. If you start your music server playing you should have music from the main output and also from the Headphone output.

If you wanted to listen to the network source on the Headphone output and a different source on the Main output, select the main output source first, then select the network source for the headphone output.



If the network source name in the source options menu appears in red, this indicates that the source is not valid. Please verify the network connections and configuration. Please also refer to the trouble shooting section of this manual on page 67.

Configuration example:



Figure 46. Peer to peer configuration example.



Advanced Network Configuration

To configure the MERGING+NADAC on your home network (PC or MAC) to play back audio files from the computer's hard drive or network attached drive(s) and to control the system via a WiFi link using an iPad or iPhone.

Software and hardware requirements

Install the Merging Technologies NADAC Core Audio Driver (MAC, page 55) or the Merging Technologies NADAC ASIO Driver (Windows, page 51) on the computer that will be used as the network audio source.

Install the NADAC App on the iPad or iPhone that you will use as your remote control. You can download this free of charge from the Apple Store. See page 61 for the link.

You will also need a Gigabit capable router and two CAT5E or CAT6 Ethernet cables. One cable should be supplied with MERGING+NADAC.



Merging Technologies guarantees that the unit will meet its published specifications if Ethernet cables meeting at least CAT5E or CAT6 standards are used. Using a lower quality cable may compromise the system's performance.



For the best quality results when streaming, we strongly advise that a wired network is used and this must be Gigabit capable. We advise against the use Powerline Networks as they cannot be guaranteed to provide the level of performance required.

1. Find the Ethernet cable that was supplied with your MERGING+NADAC.
2. Connect the Ethernet cable to the network input socket on the rear of the unit – Figure 6. If you are unfamiliar with connecting and removing network connectors, please refer to the section on *Connecting the RAVENNA Ethernet cable* on page 19 of this manual, as this may save you a broken connector later.
3. Connect the other end of the Ethernet cable directly to your Network Gigabit router or Network Gigabit switch.
4. Connect one end of the second Ethernet cable to the Ethernet socket on your computer and the other end to your Network Gigabit router or Network Gigabit switch, switch it on and allow it time to settle down.
5. Boot up the computer and start the music server software that you are using
5. Start the MERGING+NADAC and wait until it has fully booted up and the Main home screen is displayed. An example of this is shown below in Figure 47.



Figure 47. Main home screen example.

6. Confirm that the iPhone or iPad you are using is connected to the router wi-fi signal.
7. Start the NADAC App by tapping the App icon on your device screen. After a few seconds during which you may see a spinning gearwheel, the NADAC App Devices page will open – Figure 48. Detailed instructions for operating the NADAC App may be found on page 64.



You should see two icons in this page. One represents the MERGING+NADAC and the other the music server software. In this illustration we are using the Merging Technologies Emotion software. <PC Name> is the arbitrary name given to the network source in this illustration.



Figure 48. NADAC Ap Devices page.

8. Tap the NADAC icon on the Devices page and the NADAC App Home page will open – Figure 49. The word **None** in the centre of the bottom edge of the screen in this illustration indicates that no source is currently selected.



Figure 49. NADAC App Home page.



- Tap the word **None** in the centre of the bottom edge of the screen and the NADAC App Select Source page will open – Figure 50.

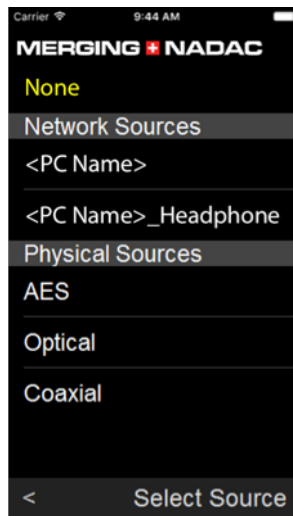


Figure 50. NADAC App Select Source page.

- Select the network source by tapping the source name on the NADAC App Select Source page – in this case <PC name>. The new source will be selected and the display will change to the NADAC App Home page, with the source name shown in the centre of the bottom edge of the page. – Figure 51.

Note: The name of your network source may appear twice in the Select Source page. Once in the form <PC Name> and also as <PC Name>_Headphone. In this case choose the first version.

Note: The NADAC App only allows you to select sources to feed the Main output. To select a source to feed the Headphone output you must either use the front panel menu (page 30) or the web control interface (page 68).



Figure 51. NADAC App Home page.



If you change any of the network configurations or connections **you must restart** the NADAC and close and re-launch the NADAC App.

Configuration Examples



Figure 52. NADAC connected to a home Gigabit router.

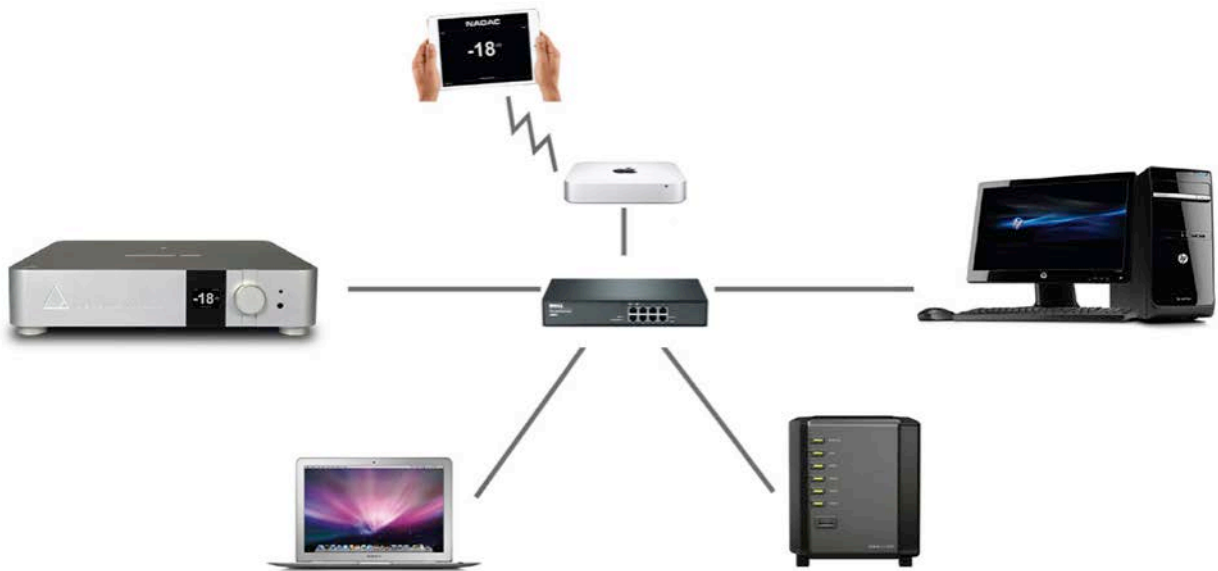


Figure 53. NADAC connected to a home network.



Home networks and Gigabit switches

Figure 48 shows the network devices connected to a Gigabit switch, which in turn is connected to a WiFi access point. Based on extensive experience with our professional systems, we found that not all Gigabit switches worked reliably in our application. We now find that the vast majority of Gigabit switches currently available will work without problems.

Details of Gigabit switches that Merging has tested and found to work properly:

<https://confluence.merging.com/display/PUBLICDOC/Network+switches+validated>

For more information on network configuration options, please visit this page on the Merging Technologies web site: <http://nadac.merging.com/networking>



NADAC Driver Installation and Configuration

MERGING+NADAC ASIO Driver for Windows

System Requirements

Certified Windows Operating Systems (OS)

The ASIO Driver has been tested and qualified on Windows 7, Windows 8.1 and Windows 10 Professional 64 bit.

Which Windows operating system am I running?

If you are not sure which version of Windows you are using, click [this link](#) to the Microsoft web site.

Ethernet Port Requirements

RAVENNA requires that the MERGING+NADAC is connected to a Gigabit Ethernet port.

Driver Specifications

- The MERGING+NADAC RAVENNA ASIO driver supports sample rates from 44.1kHz up to 8FS, 384 kHz, DXD, DSD64, and DSD128 & DSD256.
- MERGING+NADAC will follow the sample rate changes provided by the ASIO host.
- The ASIO Driver is not multi-client i.e. it cannot be used with several applications at the same time. Only one application at a time can use the ASIO Driver on the same system.
- A separate sound card for other Windows applications is recommended.

Installation Procedure

1. If you are updating the ASIO driver rather than installing it for the first time, we recommend that you uninstall the old driver first and restart the computer before proceeding. If you are unsure how to uninstall the old ASIO driver, please consult your Merging Technologies reseller.
2. Download the MERGING+NADAC RAVENNA ASIO driver installer for Windows from [here](#). The file you want will be in the section titled LATEST DOWNLOADS and the file name will start with NADAC driver and have an .exe extension.
3. Launch the MERGING+NADAC RAVENNA ASIO driver installer file. The installer may notify you that other items also need to be installed (Bonjour & Microsoft Redistributable C++). Accept these and proceed with the installation.
4. When installation is complete, accept the software license agreement.
5. Restart the computer.
6. When the computer has rebooted open the NADAC RAVENNA ASIO Panel. For Windows 10 you will find this by opening the following links: **Windows Start Menu - All Apps > Merging Technologies > NADAC Panel**. It will be slightly different for earlier versions of Windows. This will open the NADAC Ravenna ASIO panel - Figure 54.

This panel gives information about the status of the connection between the unit and your computer. There are only two settings on this panel and in most cases the user will not need to make any changes. These settings and the meanings of all the displays within the panel are explained below.



Note: The Emotion icon, shown in the bottom of the panel next to the NADAC icon, will only appear if the Emotion music server software is running. You should start this or whatever music server software you use now.

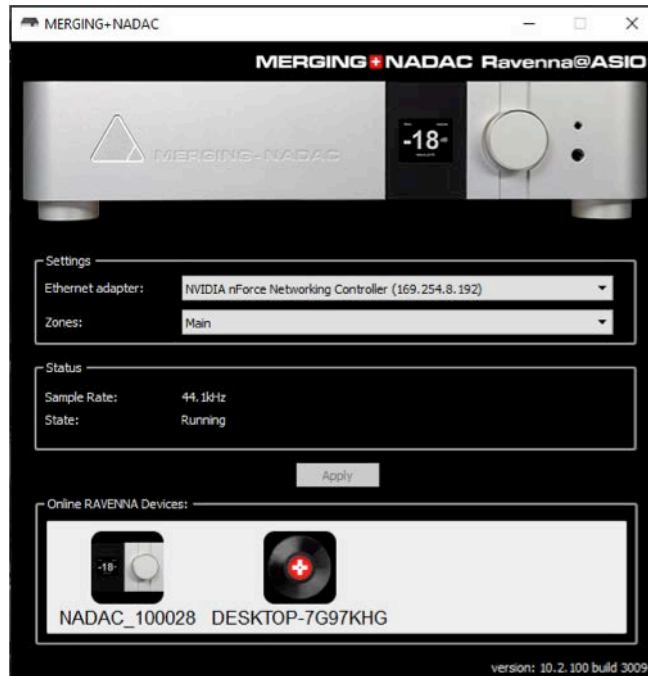


Figure 54. NADAC Ravenna ASIO panel.

7. Configure the Merging Technologies RAVENNA ASIO Settings:

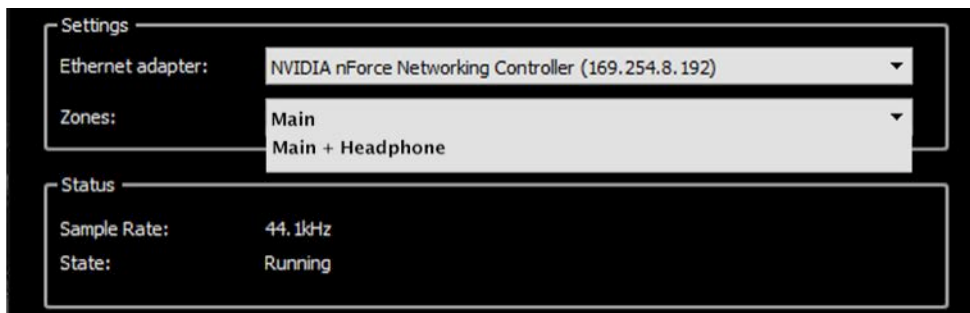


Figure 55. NADAC Ravenna ASIO settings panel – enlarged view.

Ethernet adapter: This lists all the network ports available on your computer. In most cases there will only be one, so you will not need to make any changes. If there is more than one, select the network port that the MERGING+NADAC is connected to.

Zones: Two zones will be available. These are:

- **Main:** Delivers a stereo stream to the Main output.
- **Main + Headphone:** Delivers two different stereo outputs – one to the Main output and the other to the Headphone output.

Select the zone setting that is appropriate for your application. For most users this will be Main.

Also in the enlarged view of the NADAC Ravenna ASIO panel shown in Figure 55 is a window labelled **Status**. This shows two parameters:



- **Sample Rate:** Shows the current driver sample rate. This will be a value from 44.1kHz to 384kHz or DSD64, DSD128 or DSD256.
- **State:** Shows the connected ASIO Host state, i.e. the status of the music server software you are using. When this is operating normally the **State** should show **Running**. If the indication is **No ASIO Host connected**, the music server software is not running.

If **State** shows **ASIO clock missing: is the NADAC properly configured on the network**, check that the NADAC is switched on, it is properly configured and the connection between the NADAC and the computer is made.


 If the NADAC icon in the Ravenna ASIO panel has a red circle with a diagonal line superimposed over it, as shown in Figure 56, it means that the unit cannot be reached on the network.



Figure 56. MERGING+NADAC network communication error

Clicking on the NADAC icon will give the cause of the error.

Example 1: **Not Reachable** (Figure 57). Check your set up connections and reboot the unit.

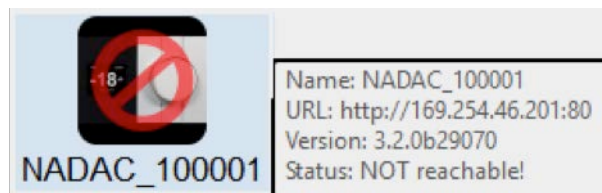


Figure 57. MERGING+NADAC network communication error

Example 2: **Wrong firmware version.** Please see page 100 for details on how to update the firmware. If you require assistance, please contact your Merging Technologies reseller.

8. Select the NADAC RAVENNA ASIO driver within the Media Player application you will use. Please refer to our [specific applications guides](#) if you need further information on how to do this.
9. Once the ASIO driver is configured, refer to the unit's front panel display. This should be showing the Main home screen. Figure 58 shows an example of what this may look like, though the sample rate, volume setting and input indication may be different.



Figure 58. Main home screen example.



10. If the network source you wish to use is shown at the bottom of the home screen, then you should now be able to play music, otherwise press and hold down the Rotary Control until the main menu top screen appears – Figure 59.

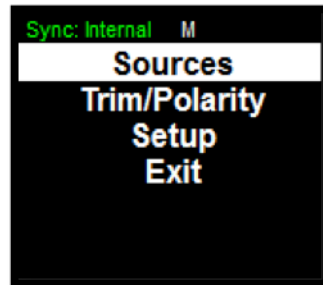


Figure 59. Main menu top screen.

11. With the **Sources** item highlighted, briefly press the Rotary Control to open the Sources menu – Figure 60. Use the Rotary Control to outline the Main source option box as shown, then briefly press the Rotary Control.

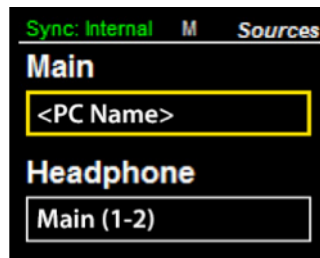


Figure 60. Sources Menu

12. The source option menu will appear – Figure 61. Use the Rotary Control to highlight the network source.

Note: The name of your network source may appear twice in the Main menu. One in the form <PC Name> and also as <PC Name>_Headphone. In this case the first version is the one to choose.

If you start your music server playing, you should now have music from the Main output.

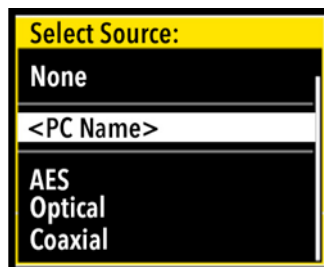


Figure 61. Source options menu.



If the network source name in the source options menu appears in red, this indicates that the source is not valid. Please verify the network connections and configuration. Please also refer to the trouble shooting section of this manual on page 67.



MERGING+NADAC Core Audio Driver for MAC OS X

System Requirements

Certified MAC Operating Systems (OS)

The Core Audio driver is qualified under Mac OS X Mavericks 10.9.5 and above; Yosemite 10.10.2 and above and El Capitan 10.11.1 and above.

Driver Specifications

- The RAVENNA Core Audio driver supports sample rates from 44.1kHz up to 8FS, 384 kHz, DXD, DSD64, and DSD128 & DSD256.
- The driver can be used as default device and System (alert) device.

Installation Procedure

1. Connect the NADAC to the computer using the network cable, switch on the NADAC and wait for it to complete the boot-up process.
2. Download the MERGING+NADAC RAVENNA Core Audio Installer for MacOS [here](#).
3. Open the MERGING+NADAC RAVENNA Core Audio Installer .dmg file then click on box in the top left corner of the installer screen – Figure 62.



Figure 62. MERGING+NADAC Ravena CoreAudio installer screen.



- The installation guide screen will open – Figure 63. Click on the Continue button to proceed.

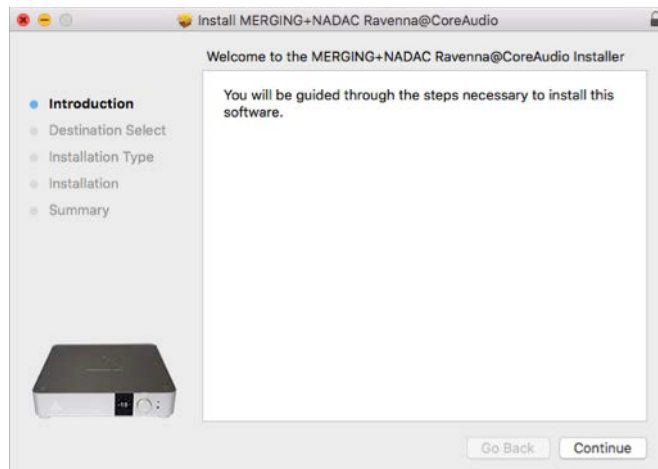


Figure 63. MERGING+NADAC Ravenna Core Audio installation guide.

- Follow the installer instructions and enter the Administrator password when prompted.
- When the installation is complete the screen shown in Figure 64 will be displayed. Click the **Restart** button in the bottom right hand corner and allow the computer to shut down and restart.

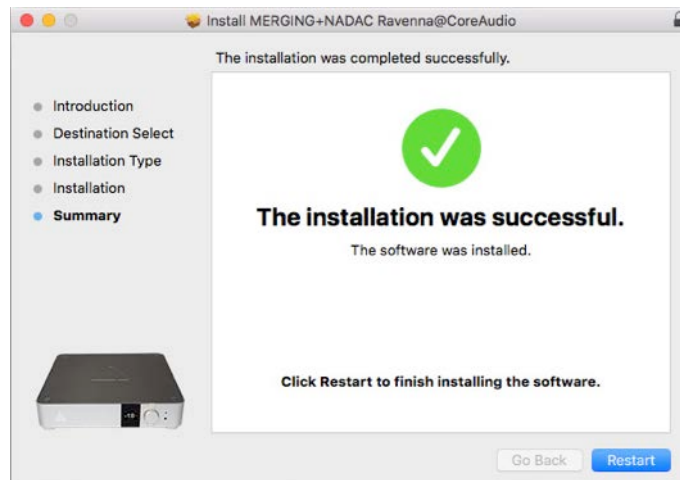



Figure 64. MERGING+NADAC Ravenna Core Audio installation successful.

- Once the computer has restarted and completed the boot-up process, open the System Preferences by clicking on the Apple icon  on the top left corner of the screen, and click on **System Preferences**. This will open the System Preferences panel – Figure 65. Click on the NADAC icon, which has been outlined in red in the illustration. This will open the MERGING+NADAC RAVENNA Core Audio Settings panel – Figure 66.

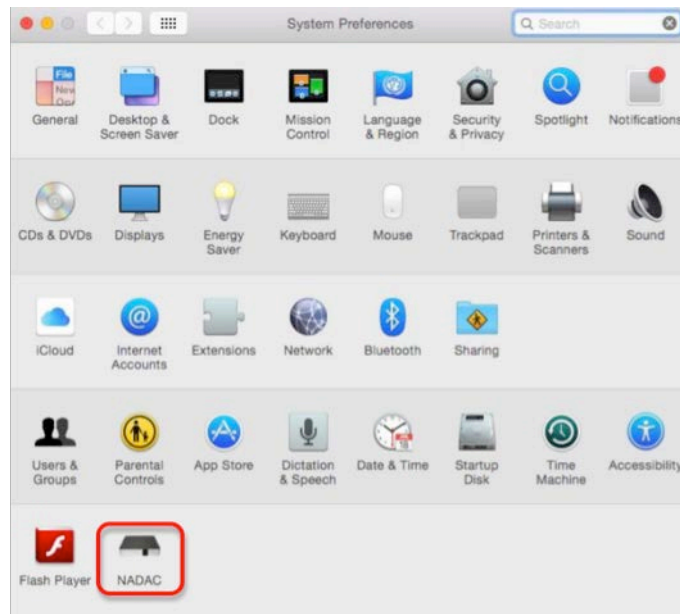


Figure 65. System Preferences panel.

8. Configure the MERGING+NADAC RAVENNA Core Audio Settings:

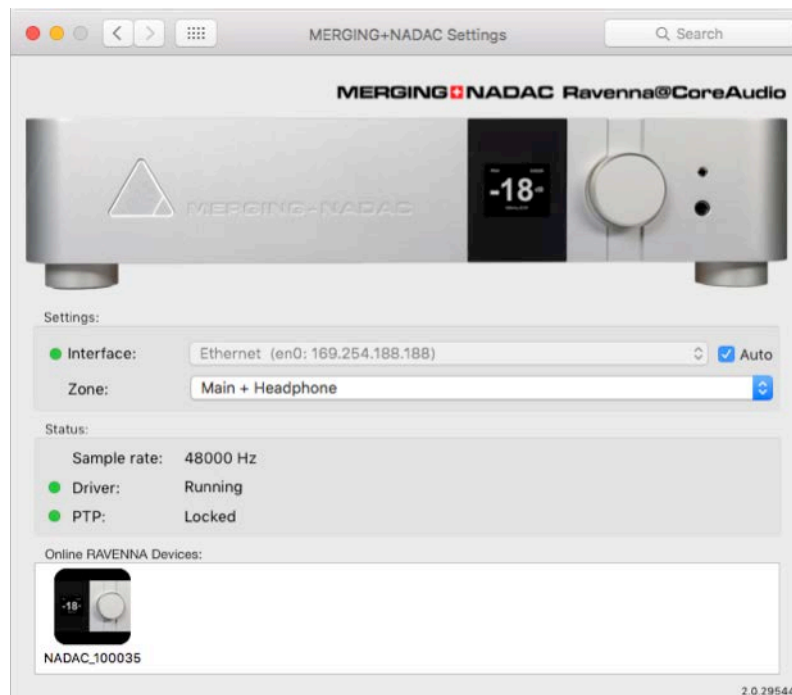


Figure 66. MERGING+NADAC RAVENNA Core Audio panel.

The MERGING+NADAC RAVENNA Core Audio panel gives information about the status of the connection between the unit and your computer. There are only two settings on this panel and in most cases the user will not need to make any changes. These settings and the meanings of all the displays within the panel are explained below.



Interface: Lists all available network ports.

Auto: Automatically detects the network adapter the unit is connected to (default setting). You may manually select the network port to which the unit is connected by unticking the Auto checkbox. Where there is only one network port, which is most computers, this is best left ticked.

Interface LED Status:

- **Grey:** No interface or interface not properly configured.
- **Green:** Interface running at 1Gb.
- **Yellow:** Interface running at 100Mb.

Zones: Two zones will be available.

These are:

- **Main:** Delivers a stereo stream to the Main output.
- **Main + Headphone:** Delivers two different stereo outputs – one to the Main output and the other to the Headphone output.

Status

Sample rate: Shows the current driver sample rate. This will be a value from 44.1kHz to 384kHz or DSD64, DSD128 or DSD256.

Driver: Indicates the current status of the driver.

- **Red:** No MERGING+NADAC available on the network (verify your Ethernet port connection).
- **Green:** Running properly or streaming.

PTP: The Precision Time Protocol (PTP2 or IEEE 1588-2008) is at the heart of the RAVENNA protocol, ensuring an ultimate clock precision of one nanosecond.

- **Green:** PTP locked.
- **Yellow:** PTP locking.
- **Red:** PTP unlocked.

Online RAVENNA Devices

- Any online RAVENNA Devices will be discovered if properly connected. In the illustration shown in Figure 66 a NADAC with serial number 100035 is connected to the computer.
- Holding your mouse over the NADAC icon will give you the unit key details (serial number, URL, firmware version and status). Figure 67 shows a typical example.



Figure 67. Unit key details.



If the NADAC icon in the MERGING +NADAC Settings panel has a red circle with a diagonal line superimposed over it, as shown in Figure 68 below, it means that the unit cannot be reached on the network.

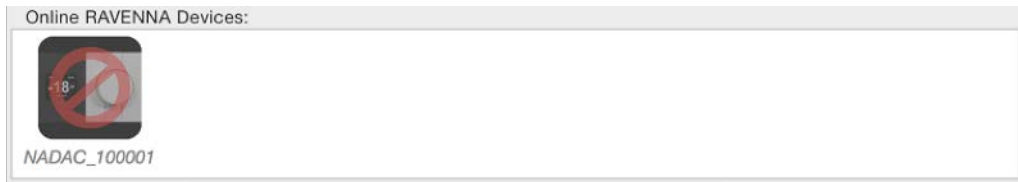


Figure 68. MERGING+NADAC network communication error

Clicking on the NADAC icon will give the cause of the error.

Example 1: Status: Not Reachable (Figure 69). Check your set up connections and reboot the unit.

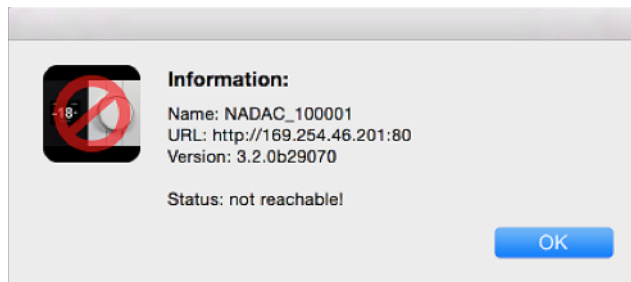


Figure 69. MERGING+NADAC network communication error

Example 2: Status: Wrong firmware version. (Figure 70). Please see page 100 for details on how to update the firmware. If you require assistance, please contact your Merging Technologies reseller.



Figure 70. MERGING+NADAC wrong firmware version installed

4. Select the NADAC CoreAudio driver within the Media Player application you will use. Please refer to our [specific applications guides](#) if you need further information on how to do this.
5. Once the Core Audio driver is configured, refer to the unit's front panel display. This should be showing the Main home screen. Figure 71 shows an example of what this may look like, though the sample rate and volume setting may be different.



Figure 71. Main home screen example.



6. Press and hold down the Rotary Control until the main menu top screen appears – Figure 72.

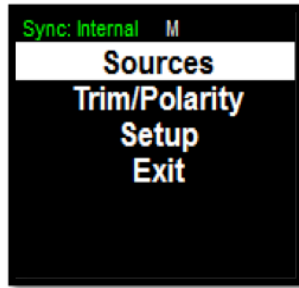


Figure 72. Main menu top screen.

7. With the **Sources** item highlighted, briefly press the Rotary Control to open the Sources menu – Figure 73. Use the Rotary Control to outline the Main source option box as shown, then briefly press the control.

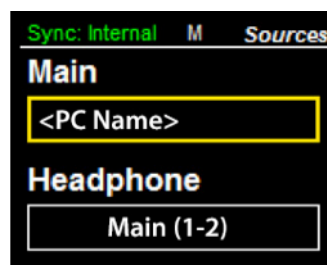


Figure 73. Sources Menu

Note: The name of your network source may appear twice in the Main menu. One in the form <PC Name> and also as <PC Name>_Headphone. In this case the first version is the one to choose.

8. The source option menu will appear – Figure 74. Use the Rotary Control to highlight the network source, then briefly press the control. If you start your music server playing you should have music from the main output.

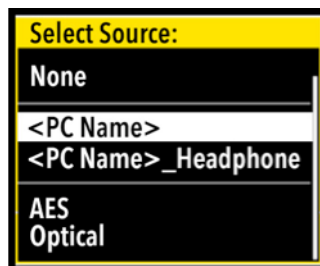


Figure 74. Source options menu.



If the network source name in the source options menu appears in red, this indicates that the source is not valid. Please verify the network connections and configuration. Please also refer to the trouble shooting section of this manual on page 67.

The NADAC App: MERGING+NADAC Remote Control



Figure 75. The MERGING+NADAC remote control.

The NADAC remote control App is available for the following platforms:

- **Windows:** The App is bundled in the MERGING+NADAC ASIO driver and is automatically installed when the ASIO driver is installed. It is supported under Windows 7, Windows 8.1 and Windows 10 – 64Bit OS.
- **Mac OS X:** The App is bundled in the MERGING+NADAC Core Audio driver and is automatically installed when the Core Audio driver is installed.
- **Apple iOS:** Requires iOS 7.0 or later. Compatible with iPhone, iPad, and iPod touch. This software is available on the Apple Store free of charge.
Download from here: <https://itunes.apple.com/us/app/nadac/id1035247326?mt=8>



To launch the MERGING+NADAC App from Windows

1. Connect the NADAC to a computer in a basic network configuration as shown on page 43.
2. Open the NADAC RAVENNA ASIO Panel. For Windows 10 you will find this by opening the following links: **Windows Start Menu - All Apps > Merging Technologies > NADAC Panel**. It will be slightly different for earlier versions of Windows. This will open the NADAC Ravenna ASIO panel - Figure 76.


There will be a NADAC icon shown in the Online RAVENNA Devices area at the bottom of the window for every unit on the network. Click on the icon corresponding to the unit that you wish to control and the NADAC App Home page should open in a new window – Figure 80. Now proceed from step 4.



Figure 76. NADAC Ravenna ASIO panel.



To launch the MERGING+NADAC App from Mac OS X

1. Connect the NADAC to a computer in a basic network configuration as shown on page 43.
2. Open the System Preferences by clicking on the Apple icon  on the top left corner of the screen, and click on **System Preferences**. This will open the System Preferences panel – Figure 77. Click on the NADAC icon, which has been outlined in red in the illustration. This will open the MERGING+NADAC RAVENNA Core Audio panel – Figure 78.

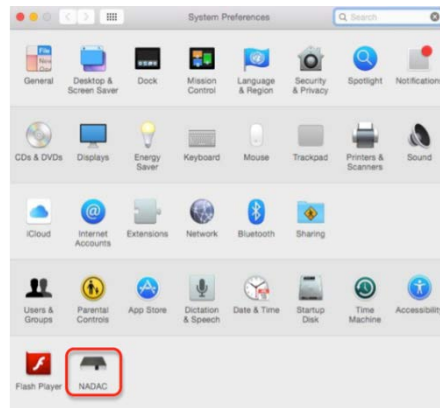


Figure 77. System Preferences panel.

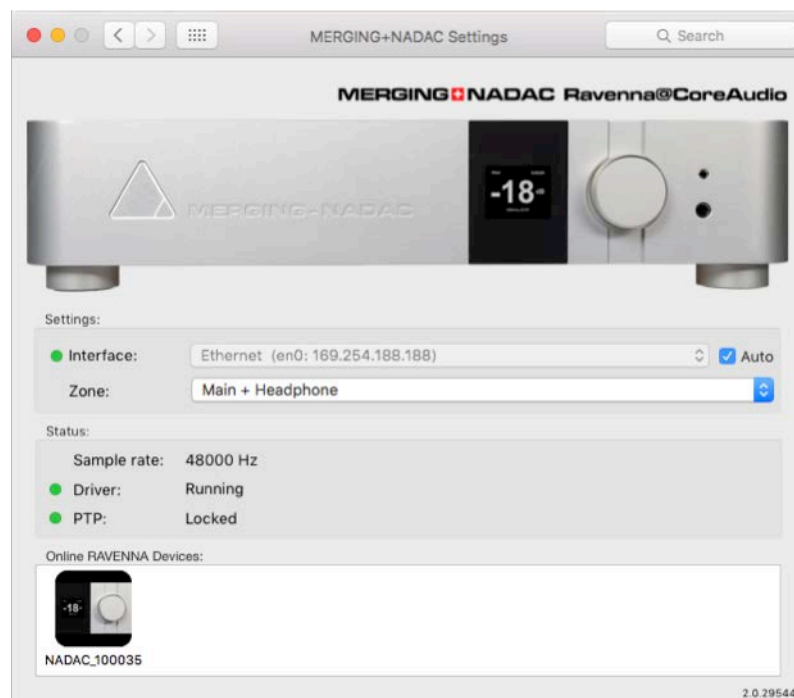


Figure 78. MERGING+NADAC RAVENNA Core Audio Panel.

3. There will be a NADAC icon shown in the Online RAVENNA Devices area at the bottom of the window for every unit on the network. Click on the icon corresponding to the unit that you wish to control and the NADAC App Home page should open in a new window – Figure 80. Now proceed from step 4.



To launch the MERGING+NADAC App from Apple iOS for iPad and iPhone

1. Connect the NADAC to a computer in an advanced network configuration basic network configuration as shown on page 46, steps 1 to 7.
2. Launch the NADAC App on your iPad or iPhone. The remote control window will open and the App will search for any NADAC devices on the network. While it is searching a spinning gear wheel will be displayed. If the spinning wheel is not replaced by another window after about 15 seconds, there is a problem in how the system has been set up. Check that the Ethernet cables are correctly connected (correct socket and plug fully home); that the wireless router is switched on and the wireless section is enabled and that your iPad or iPhone is locked to the wireless signal from this router. If all else fails, close down file server software and the NADAC and then restart each in turn.
3. In most cases the next window displayed will be the App Home page, Figure 80. In this case go to step 4. Sometimes you will see the App's Devices page, Figure 79. For each unit discovered on the network a NADAC icon showing the unit's serial number will be displayed as shown. An icon for the music server may also be displayed if the software is running. You should start this software now. In the example we are using Merging Technologies' Emotion music server software.



Figure 79. NADAC App Devices page.

4. To select the NADAC you wish to control, tap on its icon. The App will then connect to this unit and display its Home page, which shows the unit's key settings - Figure 80. Tapping on the music server software icon, Emotion in this case, will cause this software to open in a browser window.






5. From the NADAC App Home page, the user can perform the following operations:



Figure 80. NADAC App Home page.

- Change the volume by:
 - a. Holding down the primary mouse button and sliding the mouse – mouse controlled devices.
 - b. Swiping a finger horizontally – touch devices

Left to right to increase the volume or from right to left to decrease the volume.

- Mute or unmute the music by clicking or tapping the loudspeaker icon .
- Change the absolute phase of the main outputs by clicking or tapping on the  icon. When the icon is greyed out the absolute phase is normal and when it is shown in white it is inverted.
- Change the source that the unit is connected to by clicking or tapping on the source name displayed just above page's bottom bar. In Figure 80 this is shown as a source with the name EmotionPlayer_Stereo. This will open the Select Source page – Figure 81.
- Change the trim and polarity for each individual channel by clicking or tapping **Trim** icon on the left side of the bottom bar. This will open the Trim/Polarity page – Figure 82.
- Go back to the previous page by clicking or tapping the  icon on lower left hand side of the page. For example from the Select Source or Trim pages to the Home page, Home page to the Devices page.



- The Select Source page lists all the available network sources and physical sources.

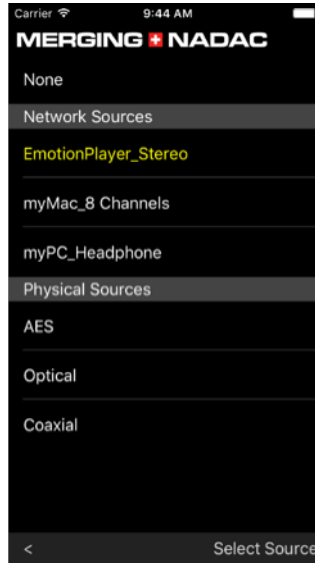



Figure 81. NADAC App Select Source page.

The currently selected source will be shown in yellow. To select a different source, simply click or tap on its name in the list. The new source will be selected and the display will revert to the Home page.

To go back to the Home page without changing the selected source, click or tap the  icon on lower left hand side of the page.

- The Trim/Polarity page allows trim and polarity for each individual channel to be changed. Figure 82 shows the page that will be displayed for an 8-channel unit. For the stereo unit, only 2 channels will be shown.

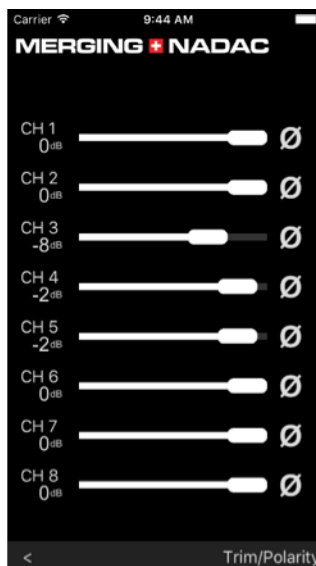



Figure 82. NADAC App Trim/Polarity page.

To change a channel trim, move the slider horizontally.

To change a channel phase (polarity) click or tap the appropriate  icon. A grayed out icon indicates normal phase and a white one indicates inverted phase (polarity).

To go back to the Home page, click or tap the  icon on lower left hand side of the page.



Troubleshooting Guide

Media player configuration recommendations

For recommendations on configuring media players with MERGING+NADAC such as; Audirvana, iTunes, jRiver, ROON, HQ Player and Emotion, please visit the following Merging Technologies Support Knowledge Base page: <https://confluence.merging.com/display/PUBLICDOC/Media+Players+configuration>

MERGING+NADAC Discovery or RAVENNA I/O connection problems

We have encountered problems where antivirus and firewall applications, including Windows Defender, have blocked the MERGING+NADAC Discovery and RAVENNA I/O Connections. If you suspect this may be the cause of the problem you are experiencing, first disconnect the computer from the internet, then temporarily disable, one by one, any antivirus and firewall applications you are using. This should enable you to determine whether the problem is related to either of these types of applications. Once you have finished these tests, the antivirus software and firewall applications can be re-enabled and the computer reconnected to the Internet.

If you find that the problem is related to either the antivirus or firewall application you are using, or if you are unable to resolve the problem, we recommend that you contact your local Merging Technologies sales representative or Merging Technologies support for further advice.



You should always have a firewall between your computer and the Internet as well as up to date antivirus software.

Other trouble shooting information

We have created an area on the Merging Technologies web site with additional trouble shooting information called the NADAC space. To view this, please follow the link below:

<https://confluence.merging.com/display/PUBLICDOC/NADAC+space>



Using Roon with the NADAC PLAYER

Overview

The NADAC PLAYER offers the functionality of the MERGING+NADAC D/A converter and in addition provides the ability to play back music files held on storage devices directly attached to the USB ports on its rear panel ¹, as well as music files held on memory devices connected to the network ².

It does this using an application called Roon, which has been pre-installed on a CPU built in to the Player. Roon manages your music collection by continuously monitoring folders on the storage devices that you nominate when you initially set up the application and building a library where you can search for music by a number of classes, including artist, track name, album name and genre. This means that you do not have to search each memory device to find your music. Whether you only have one memory device, or 100 memory devices, you look in one place: the library that Roon has created. Additional memory devices may be added to the system at any time.

The Roon application continuously monitors your memory devices and if you add any music files to the nominated folders on these devices, they will be automatically added to the Roon library.

You can control Roon, and thus the music you wish to play, from the comfort of your listening chair, using an application called the Roon Remote, which will run on iOS devices, Android devices and Windows tablets. Details of suitable devices are given below:

Tablets

Android tablets running Android 4.4+ (5.0 recommended)

Apple iPads running iOS 8.0+

Windows Tablets such as the Surface 3 and Surface 4

Smart phones

Android phones running Android 4.4+ (5.0 recommended)

Apple iPhone 5s or later running iOS 8.0+

More information on devices that support the Roon Remote application is available here:

<https://kb.roonlabs.com/FAQ: What are the minimum requirements%3F>

The Roon Remote also allows you to control the NADAC PLAYER's Main output volume level.

You can play individual tracks, whole albums and compile and play playlists using the Roon Remote.

Roon will also provide you with a wide range of information about your music, including album cover art, details about the artists, the recording and song lyrics. To do this Roon must be connected to the Internet.

More details about how Roon works is available here: <https://roonlabs.com/howroonworks.html>.



Setting up Roon for the first time

In addition to the NADAC PLAYER you will need:

1. **A device to act as your remote control**

Install the Roon Remote application on the device you will use as your remote control.

For iOS devices, iPhones and iPads, you can download the Roon Remote from the App Store, or from the Roon web site at <https://roonlabs.com/downloads.html>.

For Android devices, phones and tablets, you can download the Roon Remote from Google Play, or from the Roon web site at <https://roonlabs.com/downloads.html>.

For Windows tablet devices, download the Roon application appropriate for your device (32 bit or 64 bit) from the Roon web site at <https://roonlabs.com/downloads.html>. This also functions as a Remote control.

2. **A memory device with some music files on it**

How to source and load music on to a memory device is beyond the scope of this manual and depends on the system you are using. Please consult your MERGING+NADAC dealer for guidance.

3. **A connection to a wireless router**

You will need an Ethernet cable long enough to go between the Player and your wireless router. This should be at least a CAT5E or CAT6 type cable.

Requirements

If you normally operate your NADAC PLAYER on a network that that does not have an Internet connection, you need to be able to connect to the internet once every 30 days so that the Roon application running on the Player's CPU can verify that it is covered by a valid subscription.

¹ Memory devices directly attached to the Player include flash drives, external hard drives and external solid-state drives.

² Memory devices attached to a network may be any of the above that are attached to another computer that is also attached to the network, or a type of memory device referred to as a NAS drive that is connected to the network directly using either an Ethernet or a wireless connection. Ethernet is preferred due to its reliability.



Configuring a basic Roon system

We will describe how to set up a basic Roon system using memory devices directly connected to the NADAC PLAYER and be able to search for and play music from the Roon library will create. You will then be in a position to explore Roon’s other features on your own.

You will find a comprehensive Roon user guide on the Roon web site at https://kb.roonlabs.com/Roon_User_Guide.

Clarification of terminology

When NADACPLAYER has been selected in the Player’s menu as the source for an output (Main or Headphone), that output is effectively controlled by the Roon application, so in this text, to avoid confusion between the term NADAC PLAYER, which is the name of this equipment and the term NADACPLAYER which is the source option in the menu selected when Roon is used, we refer to the output as being driven by Roon or Roon being the source..

Setting up the NADAC PLAYER

Note: For the purpose of this illustration we will assume that you want Roon to drive the Player’s Main output and that you will only use memory devices connected directly to the Player’s USB ports.



If later you plan to arrange a more complicated system and play music from memory devices connected to the network, or to use music streaming services such as Tidal, we strongly advise that a wired network is used and this must be Gigabit capable. We advise against the use Powerline Networks as they cannot be guaranteed to provide the level of performance required.

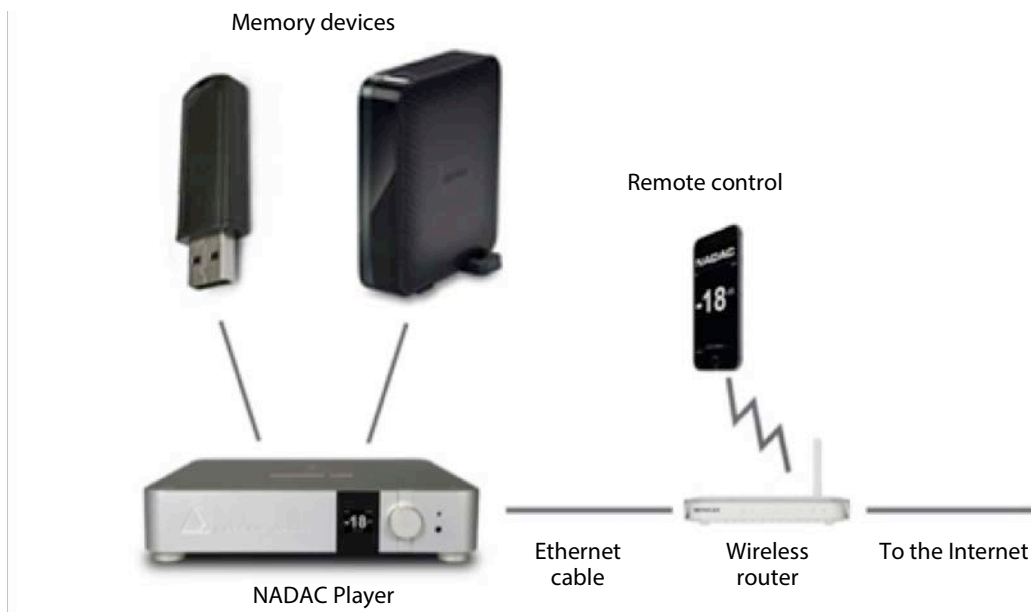


Figure R0. A basic Roon system.

Note: Merging Technologies guarantees that the NADAC PLAYER will meet its published specifications if Ethernet cables meeting at least CAT5E or CAT6 standards are used. Using a lower quality cable may compromise the system’s performance.

1. Connect one end of an Ethernet cable to the Network connector on the rear panel of the NADAC PLAYER - Figure R00. Provided an Ethernet cable of the appropriate quality is used, you can have a cable length up to 100m.



Figure R00. NADAC Player rear panel – 2 channel version.

2. Connect the other end of the Ethernet cable to a spare Ethernet socket on your Network Gigabit router. If the router is already switched on you do not need to switch it off before making this connection.

Before proceeding, confirm that the router is on and that there is a good Internet connection and that the wireless feature is active. This can be confirmed by status lights on the front of the router. Please refer to the user manual for your router for further details.

Note: You can use Roon to play music from memory devices directly connected to the NADAC PLAYER so long as you can connect to the remote control device you are using, but without an Internet connection you will not be able to use Roon's advanced features.

Note: To allow continued use of the Roon application, the Player must be connected to the Internet at least once every 30 days so that the Roon application can confirm that a subscription exists.

3. Connect a memory device containing your music files to one of the USB ports on the NADAC PLAYER's rear panel - Figure R00. The USB ports are located in the same position on both the 2-channel and 8-channel versions of the NADAC PLAYER.
4. Start the NADAC PLAYER by briefly pressing the front panel power button and wait until it has fully booted up and the Home screen is displayed on the front panel.

If a screen like the one shown in Figure R1 appears, with the three items listed below displayed, then Roon is already set to drive the NADAC PLAYER's Main output. In this case, proceed to the section Setting up Roon, otherwise proceed to step 5.

- a. **NADACPLAYER-XXX** shown at the bottom of the screen, where XXX is the last 3 digits of the NADAC PLAYER's serial number.
- b. **Main** is shown in the top left hand corner of the screen.




- c. The Roon status icon  in the top right hand corner of the screen is a steady white. Please see Appendix 1 for the meaning of other displays.



Figure R1. NADAC Player Main home screen.

- 5. If after switching on the NADAC PLAYER a Home screen appears with a source other than **NADACPLAYER-XXX** shown at the bottom of the display, you will need to enter the Quick Menu to select NADACPLAYER and make Roon the source.

Press the Rotary Control once briefly and the screen in Figure R3 will appear.

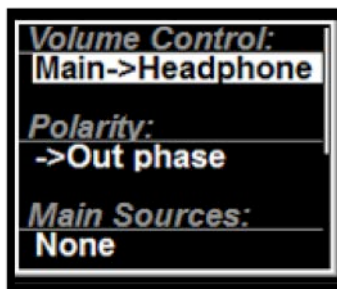


Figure R3 The Quick Menu.

- 6. Turn the Rotary Control clockwise to scroll the screen down and highlight the NADACPLAYER source option as shown in Figure R4, then press the Rotary Control once briefly to select **NADACPLAYER-XXX** and make Roon the source driving the Main output. The screen shown in Figure R5 will appear.

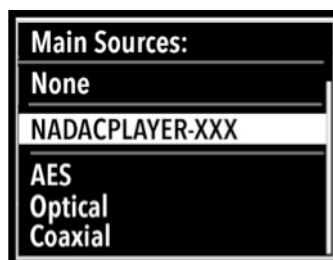


Figure R4. The Quick Menu – select NADAC PLAYER



If you do not see the **NADACPLAYER-XXX** source option in the Quick Menu check the Roon status indicator in the display as described in Appendix 1.



Figure R5. NADAC Player Main home screen.

The sample rate shown in the top right hand corner of the display will be that of the last track played on the Player. The volume control setting will be what it was previously set to.

To make Roon drive the Headphone output only

1. At step 6 above, ensure that a source option other than NADACPLAYER is selected for the Main output, then press and hold the rotary control in until the display shows the Home screen.
2. Press the rotary control once briefly to open the Quick menu and use the control to highlight **Main>Headphone**, then press the rotary control once briefly. The rotary control now controls the Headphone output.
3. Press the rotary control once briefly to open the Quick menu again and use the rotary control to highlight **NADACPLAYER-XXX** in the **Headphone Sources** options, then press the rotary control once briefly. Roon is now driving the Headphone output.

To make Roon drive both the Main and Headphone outputs.

1. Set the Player to drive the Main output as shown in step 5 and 6 above.
2. Press the rotary control once briefly to open the Quick menu and use the control to highlight **Main>Headphone**, then press the rotary control once briefly. The rotary control now controls the Headphone output.
3. Press the rotary control once briefly to open the Quick menu again and use the rotary control to highlight **Main (1-2)** in the **Headphone Sources** options, then press the rotary control once briefly. Roon is now driving both outputs.

Setting up Roon

1. Switch on the device you will use for your remote control, confirm that it is connected to your router's wi-fi signal, then tap on the Roon icon (Figure R6) to start the application.



Figure R6. Roon application icon.

2. If you are using Roon on the NADAC PLAYER for the first time, the Login or Sign Up screen will appear – Figure R7.

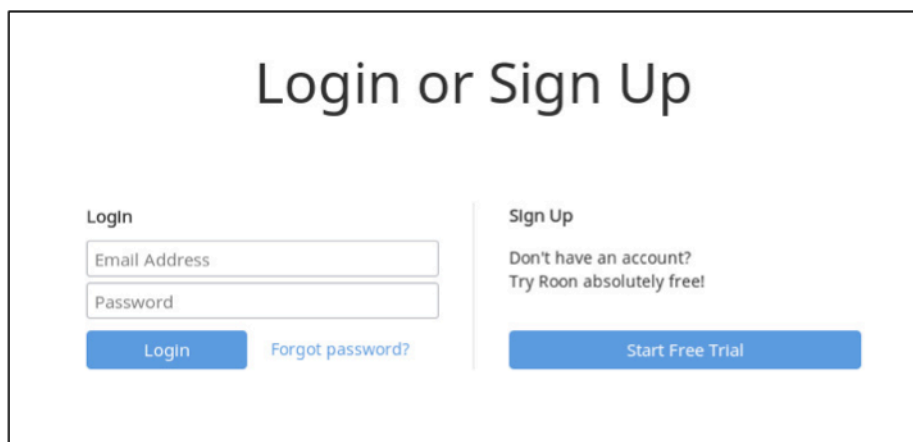


Figure R7. Roon Login or Sign Up screen.

If you do not have a Roon account you will need to make one by tapping on the Start Free Trial button. You can opt to use Roon free of charge for 14 days, or take out a 1-year or a lifetime subscription.

If you already have a Roon account, enter the email address you used when you made the account and your Roon password in the boxes provided and tap the Login button.

When you come to use the NADAC PLAYER again you should not have to log in.

3. Next you may see the Choose your Core screen with details of the NADAC PLAYER – Figure R8. If this screen persists for more than 10 seconds tap the **Connect** button. Your remote control device will now connect to the Roon application running on the CPU inside the NADAC PLAYER.

When you come to use the NADAC PLAYER again, the Choose your Core screen may appear only briefly, or not at all and then the Roon Overview screen will appear - Figure R9.

Note: *The Core is the part of the Roon application that manages all of the application's functions and resources and that actually runs on the internal NADAC PLAYER CPU. The Choose your Core screen is only relevant in complex networked systems where you have two or more Roon systems, each with its own library of music. This screen gives the user the option of which Roon system and therefore which Roon library to connect to.*

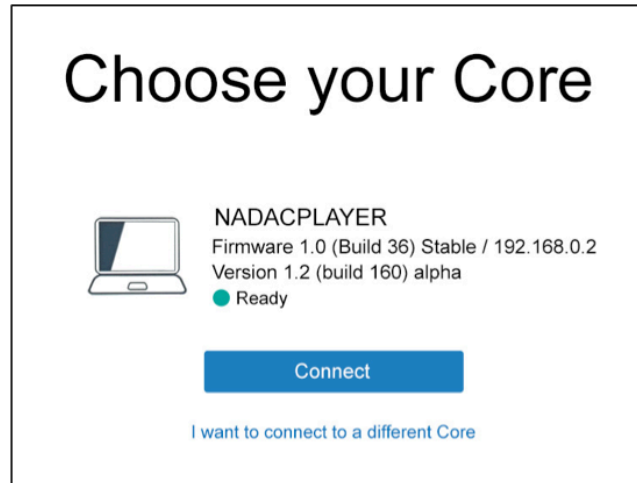


Figure R8. Choose your Core screen.

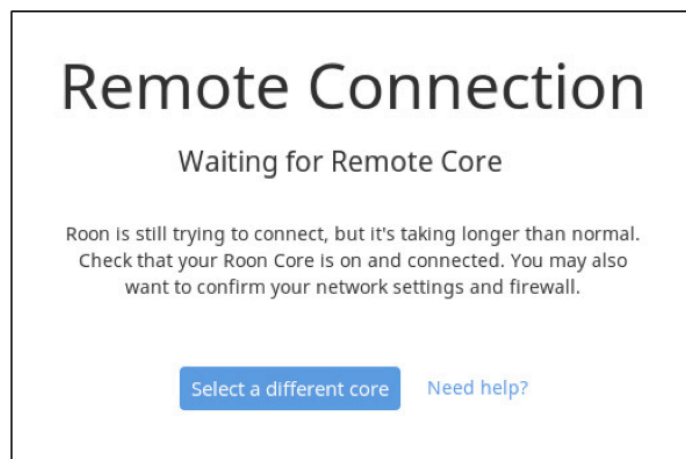


Figure R8A. Remote Connection failure.

If the screen shown in Figure R8A appears and persists, check the following:

- a. Check that the router is on and that the wireless feature is enabled.
- b. Check that the WiFi on the remote control device you are using is locked to the router's WiFi.
- c. Check that the Ethernet cable is fully home in the Network connector on the NADAC Player's rear panel and that the other end is fully home in a spare Ethernet socket on the router.
- d. Check the Roon status indicator in the NADAC PLAYER's front panel display. See Appendix 1 for details.

Note: If the above checks do not provide a solution, shut the NADAC PLAYER down, wait one minute and restart it. Repeat the above checks. If the display in Figure R8A still persists, please contact your MERGING+NADAC dealer.

4. The next screen you should see is the Roon Overview screen – Figure R9.

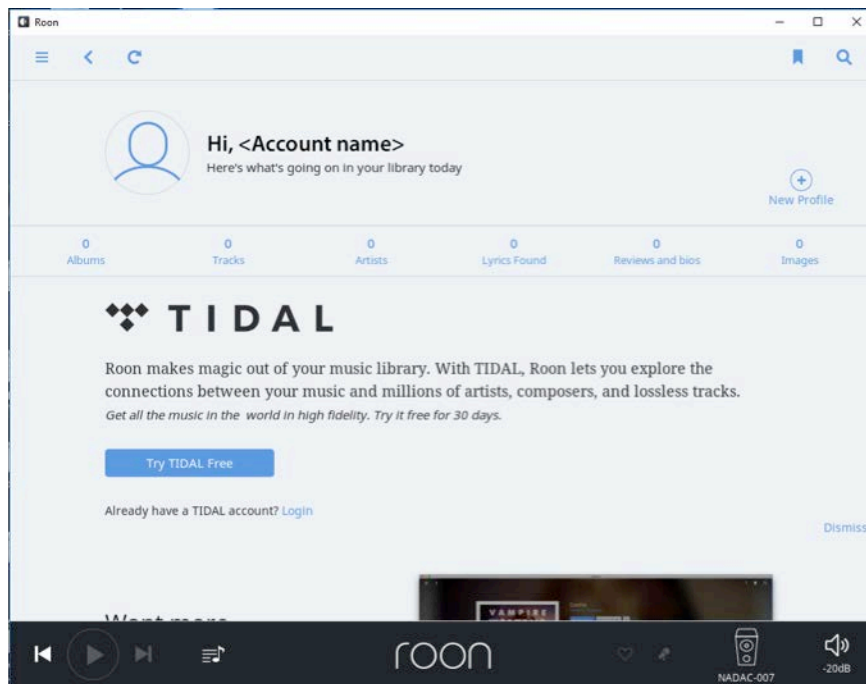



Figure R9. Roon Overview screen.

If you don't see this screen, simply tap on the hamburger icon  in the top left hand corner of the screen you are on and it will open the Features side bar menu – Figure R10. Tap on Overview, which should be the item at the top of the list on the left side of the screen and the Overview screen – Figure R9 - should appear.

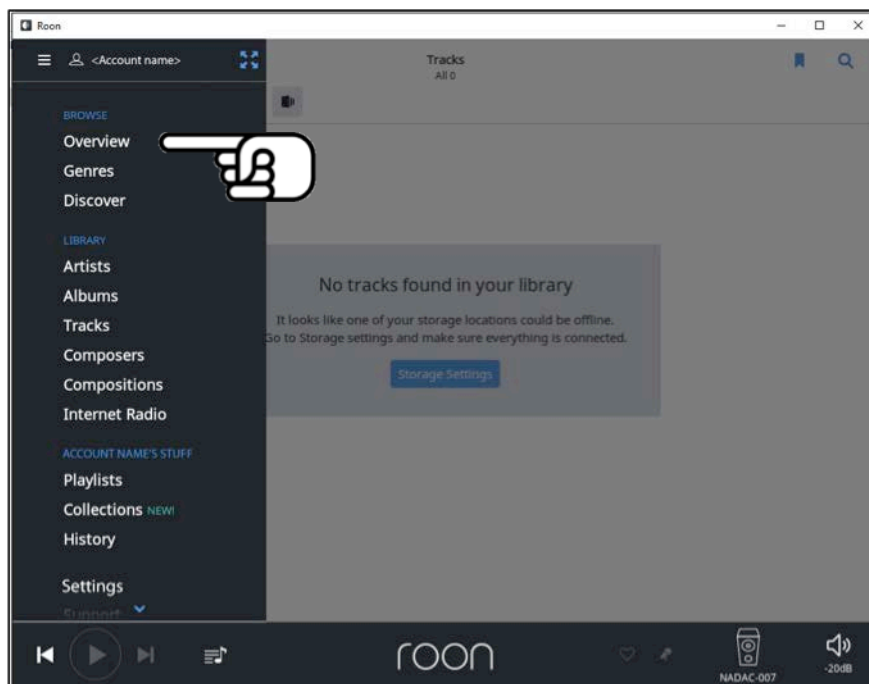


Figure R10. Features side bar menu.

5. Scroll down to the bottom of the Overview screen and tap on the **Add Music** button in the bottom left hand corner – Figure R 11. This will open the Add Storage Location screen – Figure R12.

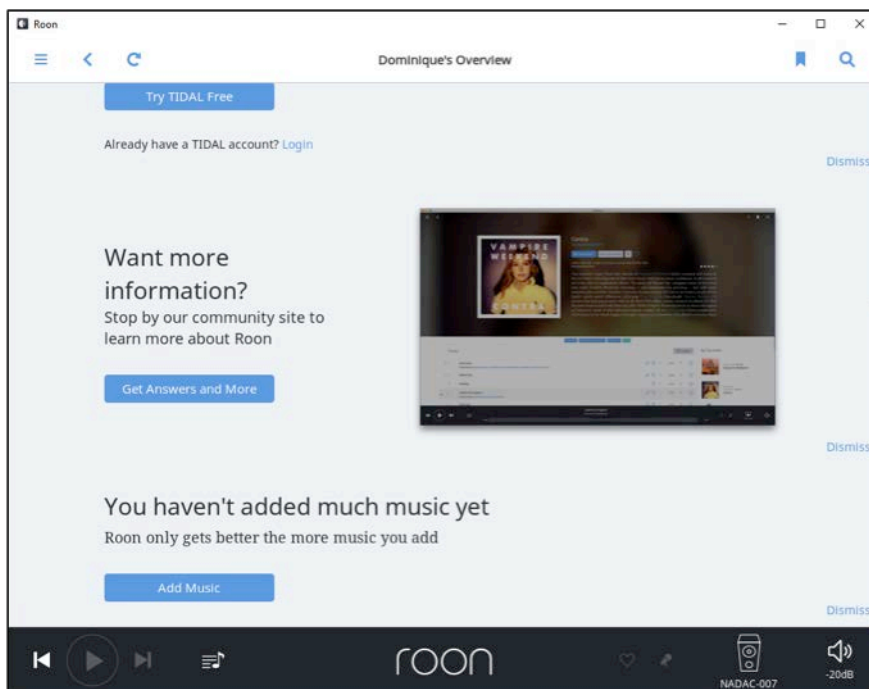


Figure R11. Roon Overview screen

6. Tap on the **Browse** button in Figure R12. This will open the screen shown in Figure R13.

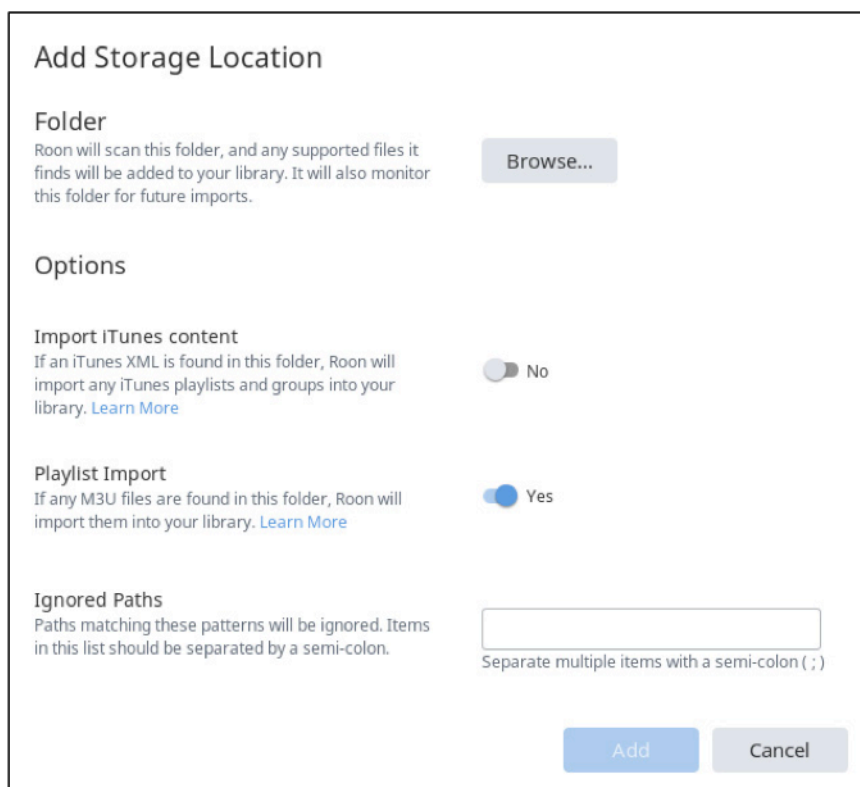


Figure R12. Add Storage Location screen.

7. In the screen shown in Figure R13, the memory devices directly attached to the NADAC PLAYER are shown on the left hand side. In this example there is only one device: a USB flash drive labelled



Buffalo 8G. The top-level folders in this device are shown in the *Folder Listing* column. We need to tell Roon which of these folders contains music so that it can import the track information into the library it will create. In this example we have put all our music in the appropriately named *Music* folder. The name(s) you choose for the folder(s) you put your music in is not important. You just have to know which they are so that you can identify them to Roon.

To identify a folder to Roon as containing music, select that folder where it appears in the *Folder Listing* column in Figure R13 by tapping on it. In this case the folder to be selected is the one we have called *Music*. The screen shown in Figure R14 will then be displayed.

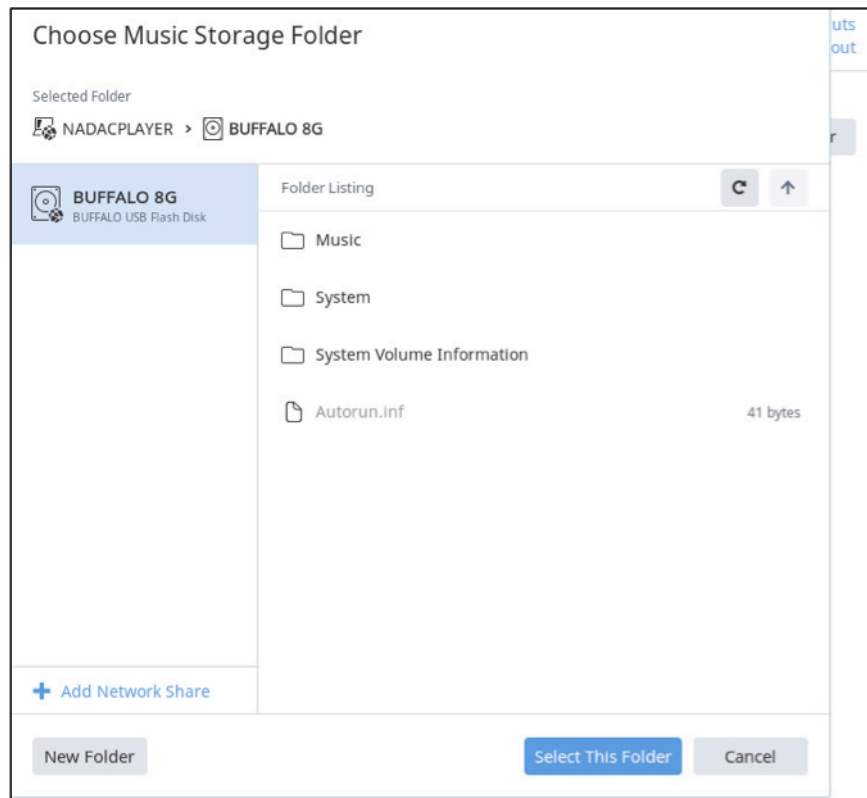


Figure R13. Identifying a folder containing music.

8. The top line of the screen shown in Figure R14 shows that the Selected Folder is the one on our Buffalo 8G memory device called *Music* and the sub-folders in this are shown in the *Folder Listing* column. Tap the **Select This Folder** button at the bottom right hand corner of the screen.

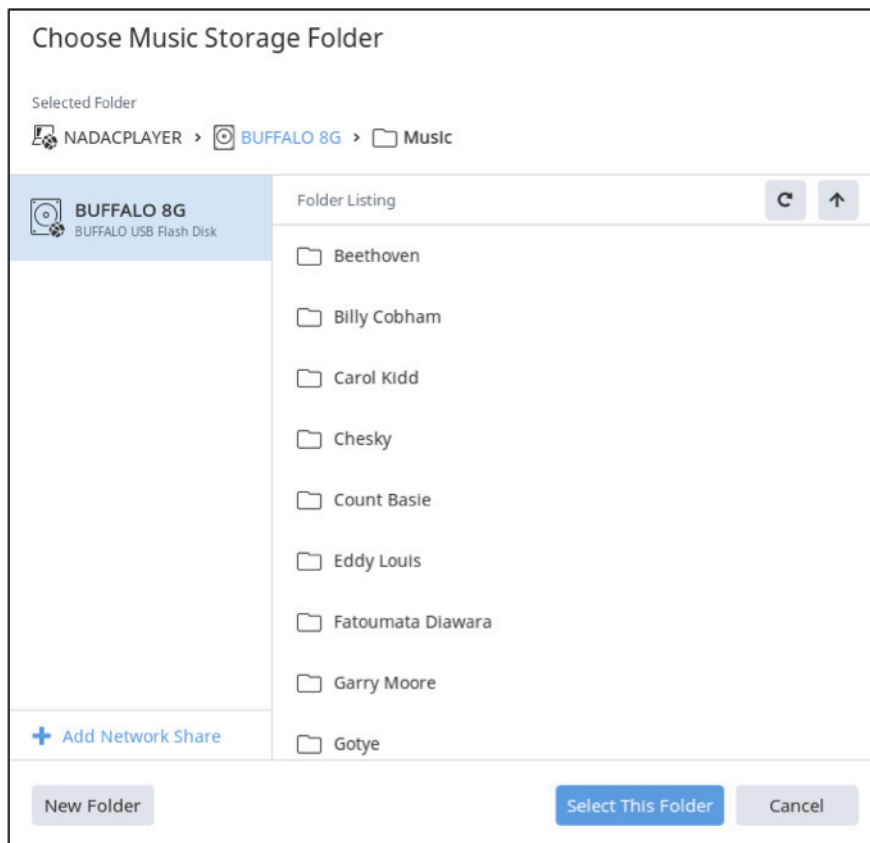


Figure R14. Music folder contents.

- The screen shown in Figure R15 will be displayed while Room scans the contents of the selected folder and uses the data found to build the music library. It does not move or change the data in the folder in any way.

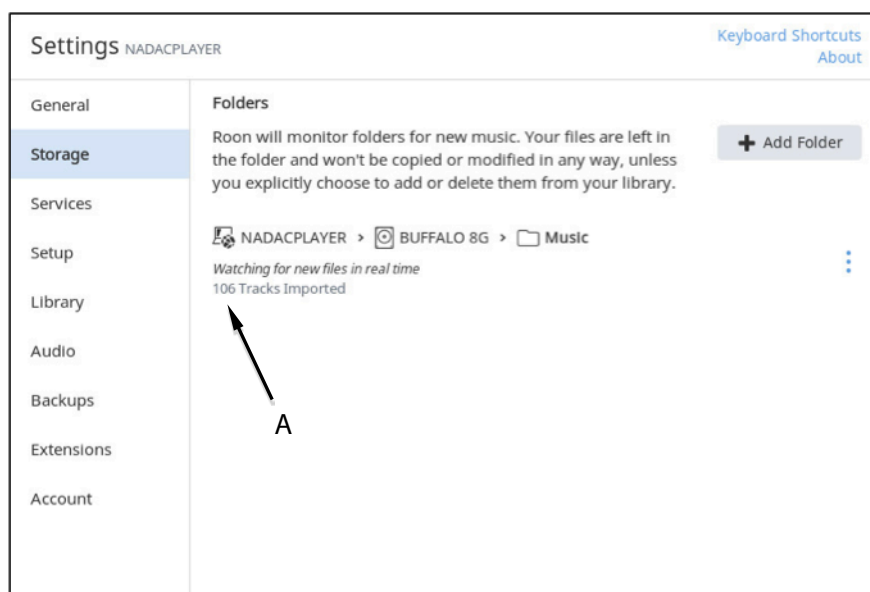


Figure R15. Importing tracks.

While this is happening the *Tracks Imported* count – A – will be counting up. It will stop when all the track data has been imported. For the comparatively small number of tracks used in this example, it

only took a few seconds to import all the data. If you have a very large number of tracks, this process may take several minutes.

Should you have another folder containing music on the same storage device that you want to add to the Roon library, tap the **+ Add Folder** button in the screen shown in Figure R15. This will take you back to the Add Storage Location screen shown in Figure R12. Tap the **Browse** button and screen shown in Figure R13 will be displayed. You may need to tap the memory device name in the top line of the screen so that you can see all the top-level folders in this device. The Folder you wish to select should now be visible in the *Folder Listing* column of this screen. Tap the folder you wish to select, then follow the instructions from step 8 above to add the contents on this new folder to the Roon library.

Note: If you wish to select a folder from another memory device that is directly connected to the NADAC PLAYER, tap the **+ Add Folder** button in the screen shown in Figure R15. This will take you back to the Add Storage Location screen shown in Figure R12. Tap the **Browse** button and screen shown in Figure R13 will be displayed. Select the new memory device by tapping on the device name where it appears in the left side of the screen. Then, tap on the folder shown in the *Folder Listing* column that contains music you wish to add to the Roon library and follow the instructions from step 8 above to add the contents on this new folder to the Roon library.

When you have finished adding folders and importing track data go to the next step.

10. All the settings screens we have been using appear superimposed over the top of the main Roon screen as shown in Figure R16. Now that you have imported some tracks into the Roon library, you are in a position to play music. To do this, go back to the main Roon screen by tapping anywhere on the area of the main Roon screen that is visible around the edges of the settings screen. This should take you to the Roon Overview screen – Figure R17 and follow the instructions in the section Playing music from Roon for the first time.

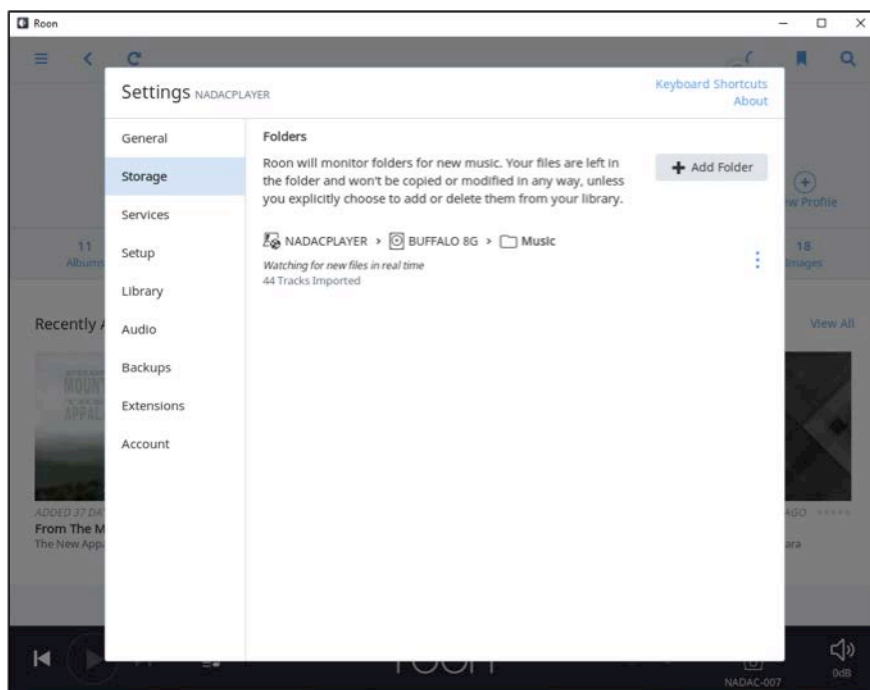


Figure R16.

Playing music from Roon for the first time.

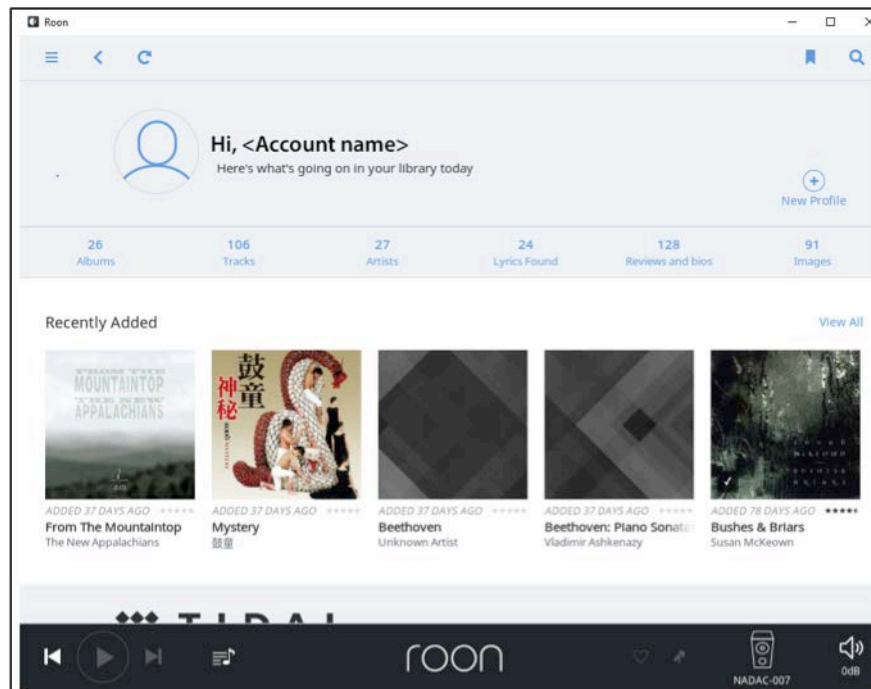





Figure R17. Roon Overview screen.



If you are still on a Settings screen from the last section, tap just outside the edge of this to reveal the main Roon user screen.

After you have finished importing track data into the Roon library, as described above, the first screen you are likely to see and the best one to start getting acquainted with the basic features of Roon, is the Overview screen – Figure R17. If you don't see this screen, tap on the hamburger icon  in the top left hand corner of the screen you are on and it will open the Features Side Bar menu – Figure R10. Tap on **Overview**, which should be the item at the top of the list on the left side of the screen and the Roon Overview screen shown above will appear.

Displayed across the upper half of the screen is a summary of the library's contents. At a glance you can see the number of albums, tracks and artists it contains. It also shows the number of song lyrics, album reviews and artist biographies that are available. Roon downloads these after analysing the contents of the library.

The Roon user interface uses text links, like those in a web page, to open new pages to provide the user with information. These are shown in light blue. It also uses tappable icons to provide access to functions such as play, pause, output level control and search.


At the top left of the page there is the hamburger icon , which when tapped opens a side bar menu that provides access to all of Roon's key features – Figure R10, as well as page back < and page forward > buttons and a screen refresh  button.

At the top right of the page there is a bookmark icon  and a search icon .

Note: The name of your account will appear where it says <Account name>.



Adjusting the volume level


 If the NADAC PLAYER is providing the master volume control function in the system, check that the output is set to a safe level before attempting to play music. The output level is indicated by the number shown below the loudspeaker icon in the bottom right hand corner of the screen. This only affects the NADAC PLAYER's Main output. It does not affect the Headphone output, which can only be adjusted via the front panel rotary control.

To adjust the output level, tap the loudspeaker icon in the bottom right hand corner of the screen and the sub-screen shown Figure R18 will appear over the main screen. Dragging the slider to the left decreases the output level and dragging it to the right increases the output level. A setting between around -20 and -30dB is a safe level to start. This can be adjusted once music is playing.



Figure R18. Output level screen.

Tapping the blue loudspeaker icon on the left hand side of the output level screen will mute the output. This is indicated by a cross next to the loudspeaker icon as shown in Figure R19. To unmute, tap the loudspeaker icon again, or tap the slider bar.

 Take care if you unmute the output by tapping the slider bar, as the volume will come back at a level dictated by where you tap the bar and you may set a much higher level than you want.

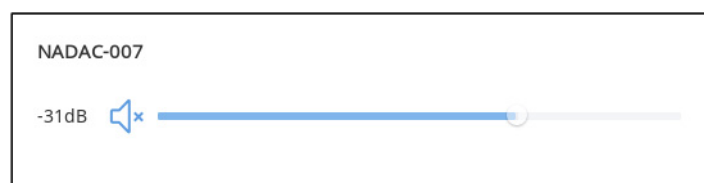


Figure R19. Output muted.

When you have finished adjusting the output level, tap on the Overview screen, avoiding any links, and the output level screen will disappear.

Playing a track

First, choose a track to play. The most common ways to search for music are to browse by the album name, by the name of the track, or by the name of the artist. In this example we will browse by album name.

1. In the Roon overview screen – Figure R17 - tap on the Albums link, which is the left most item in the library contents summary that runs across the width of the screen.

This will open the Albums list - Figure R20. This is a graphical display of all the albums in the library showing each album's cover art. If no artwork is available, the album is represented by a grey crosshatched square. The albums are listed in alphabetical order. You can scroll through the albums in the list by horizontally dragging any of the albums in the screen - starting right to left.

2. If we choose for our example the Billy Cobham album shown in the top left of the Albums list in Figure 20, by tapping this, the album contents screen is made to open - Figure R21. As well as showing a list of tracks on the album, it also shows a wide range of additional information including:
 - a. A biography of the artist – tap the blue arrow below the text to expand and read it in full.
 - b. The album file format, word length and sample rate – shown under the cover art picture.
 - c. Album original release date and release date of the version in the library.
 - d. Detailed credits for the track – composer, musicians etc

You can also perform a number of actions from this page including:

- a. Adding the whole album or just certain tracks to an existing playlist or creating a new playlist.
- b. Editing the information held in library about the album and individual tracks.
- c. Listing the album or specified tracks as favorites – facilitates easy recall later.
- d. Putting tags on the album or specified tracks – useful if you create specific classes to search for.

In addition there are a number of blue buttons arranged horizontally across the centre of the screen, which if tapped, will provide suggestions for music in similar genres.

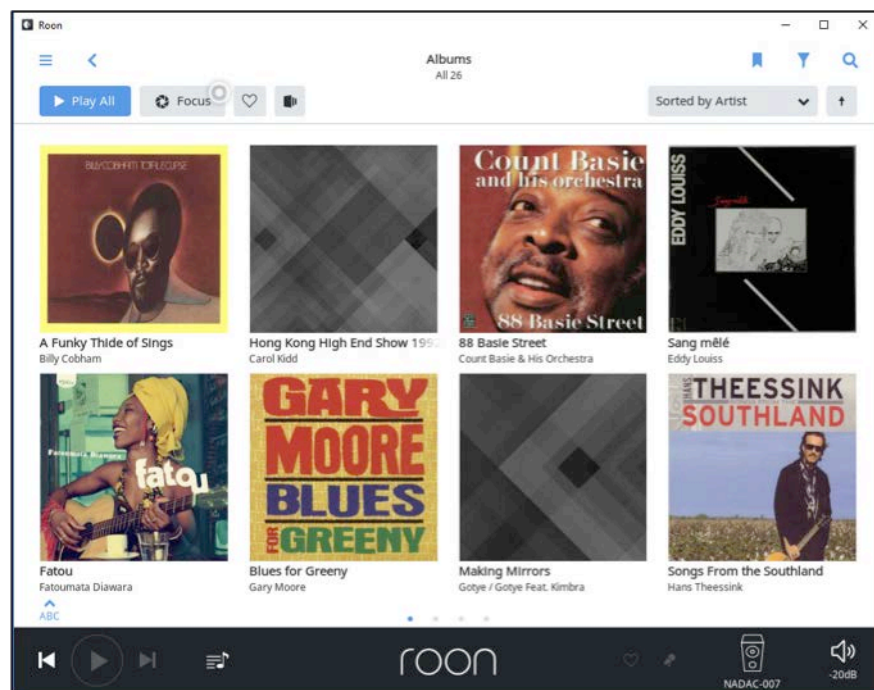


Figure R20. Albums list.

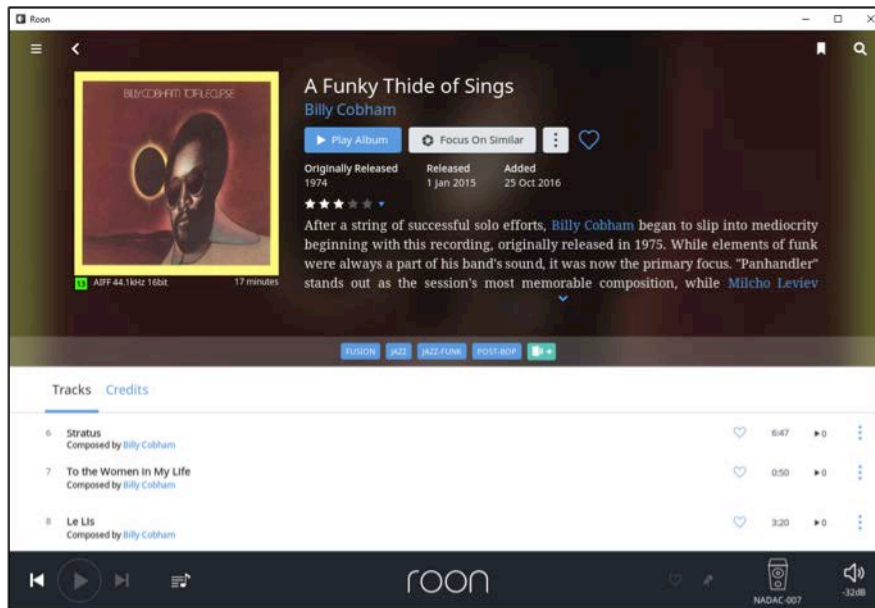


Figure R21. Album contents screen.

3. You can use a scroll bar on the right of the Album contents screen to view all the tracks in the album. Select a track to play and tap on it. (You could also tap the **Play Album** button by the cover art to play the whole album).
4. The action selection screen will appear – Figure R22. Tap on **Play Now**.

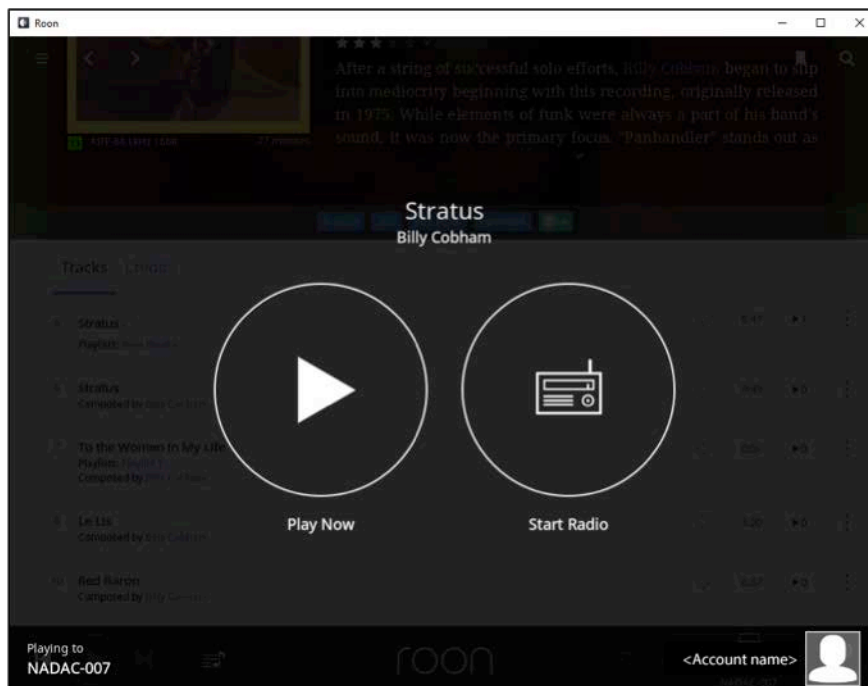


Figure R22. Action Selection screen.

5. The screen in Figure 23 will appear and after a few seconds the track should start to play. This is indicated by the cursor moving along the timeline located at the bottom of the screen and the elapsed time display on the left side of the timeline counting up.

6. If these indicators are moving but you cannot hear music:
 - a. Check that the output is not muted or set to a very low level – see the section *Adjusting the output level*.
 - b. Check that the source for the Main output is NADACPLAYER. In this case **NADACPLAYER-XXX** will be shown in the bottom of the front panel display as shown in Figure R1.

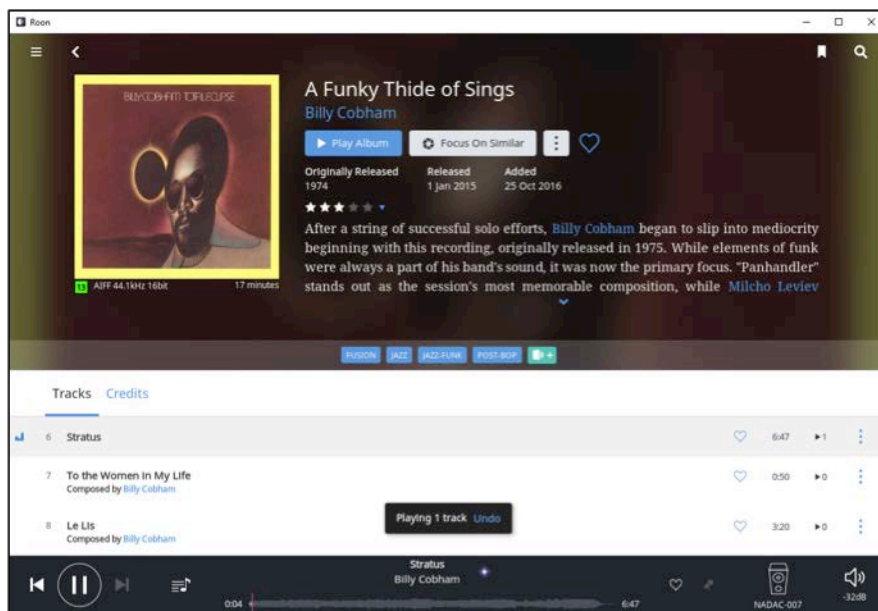


Figure R23.

Browsing for music by other classes

In addition to being able to browse for music by album name, you can also browse by artist, track, composer, and composition. Tap on the hamburger icon in the top left hand corner of the screen you are on and it will open the Features side bar menu – Figure R24 below. Under the Library heading, tap on the class that you wish to browse by and a new screen will open showing the library ordered by the class you have just selected.

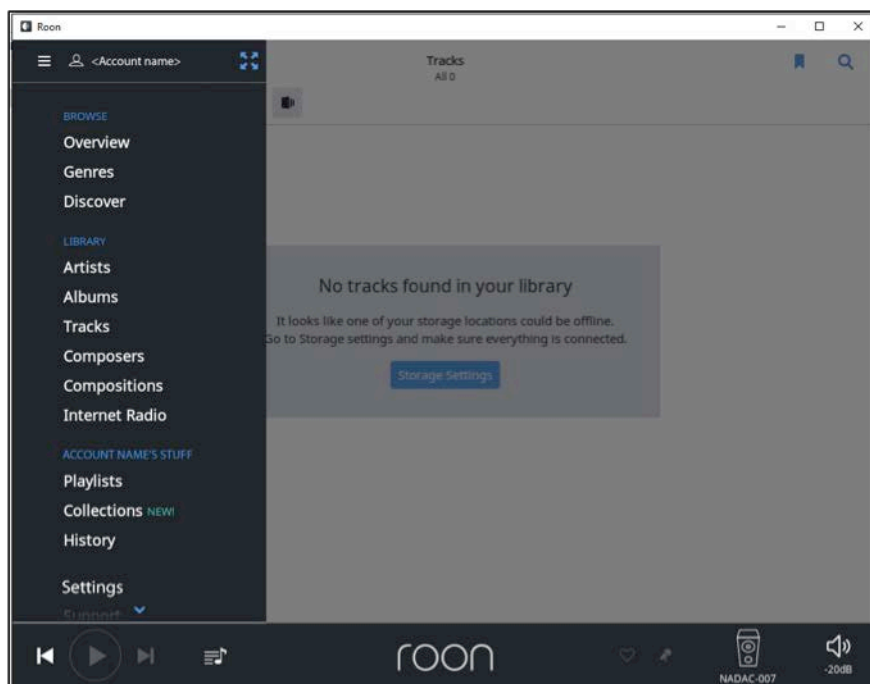


Figure R24. Features side bar menu.

A useful class to browse by is by track name. To do this, tap on Tracks in the Features side bar menu shown in Figure R24 and the screen shown in Figure R25 will open. Initially it will show the library contents arranged alphabetically by album artist. You can re-order the list by tapping on the class names at the top of each column of the list, to list alphabetically by album or track, or numerically by track length. To play a track, simply tap on a track name in the list, then tap **Play** when the Action Selection screen appears.. Tapping on a particular album artist or album will display a new screen with information on these subjects. If you do this, using the page back arrow, <, will take you back to the Tracks page.

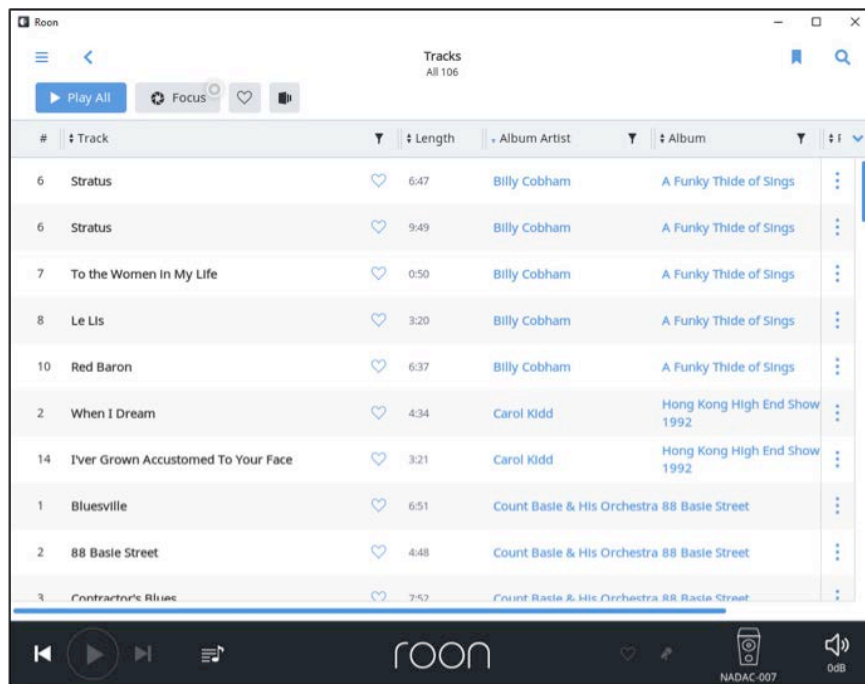



Figure R25. Browsing by track name.

Creating a Playlist

A playlist allows you to assemble a selection of tracks and then play this by simply recalling that playlist. It is useful if there are certain tracks that you like to listen to often. It is possible to have a large number of playlists.

To make a playlist:

1. Choose your first track. In this example we will use the Billy Cobham album we used before and we will select this via the Albums list. Repeat steps 1 and 2 from the section Playing a track above, so that the contents of this album are displayed. Tap on the three vertical dots, , at the end of the track information for the track you wish to choose. In this example we are using track 6, Stratus. A small box will open over the screen – Figure R26 – then tap on **Add To a Playlist**.

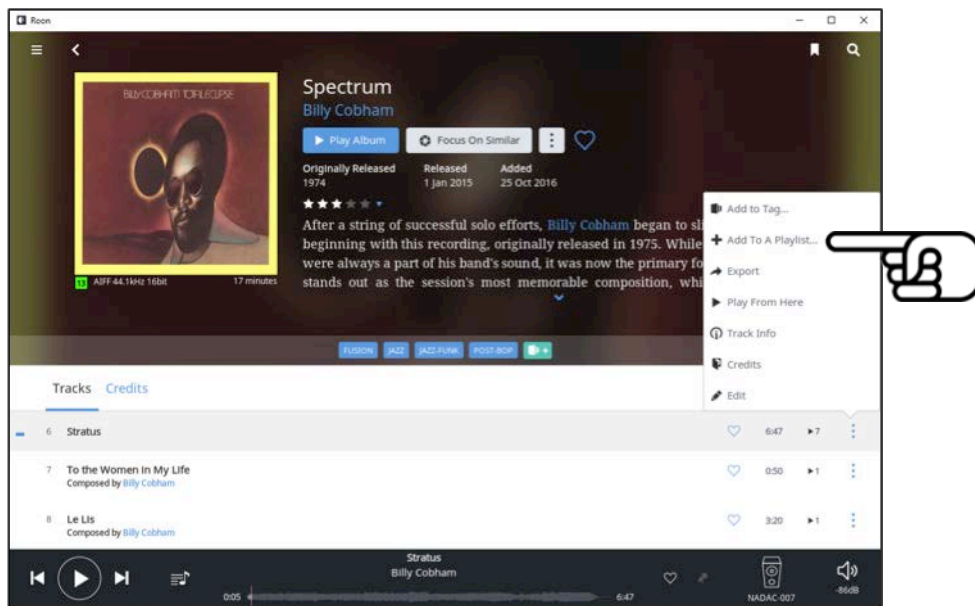


Figure R26. Adding tracks to a playlist.

2. The Choose Playlist box in Figure R27 will open. This shows that there is already a playlist called Windsor. You can either add the selected track to the existing Playlist by tapping on the playlist name, or create a new playlist by tapping on **Create Playlist** at the bottom of the Choose Playlist box.

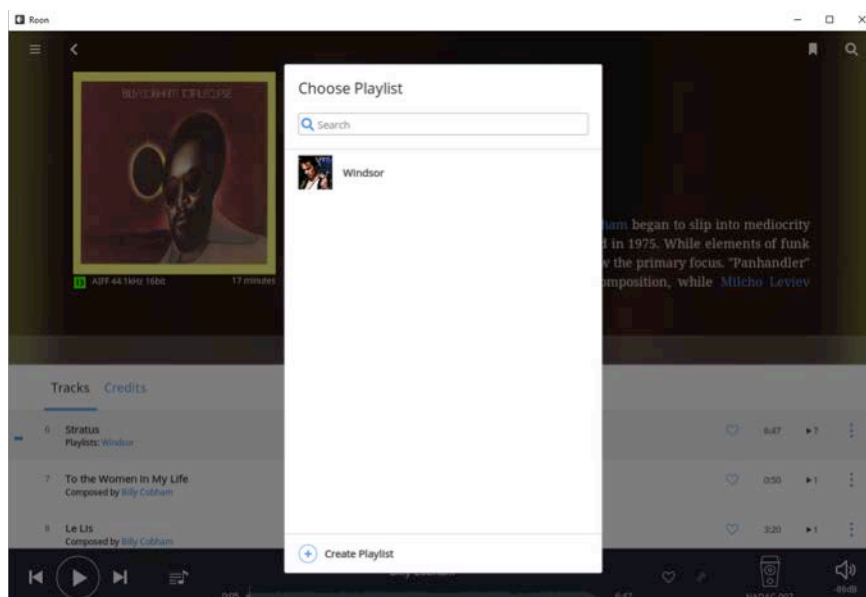


Figure R27. Choose Playlist box.



- If you opted to create a new playlist, the screen in Figure R28 opens. Type a name for the new playlist in the text box in the middle of the screen. In this example we have chosen Playlist 1 for the name. Now tap the **Create** button.

Repeat the above steps to add more tracks to the playlist.

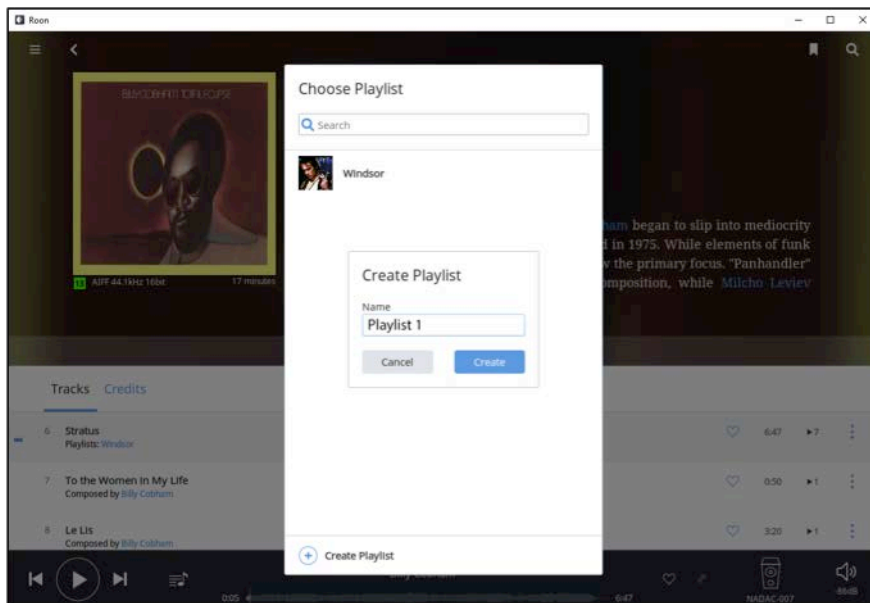



Figure R28. Creating a new Playlist

To play a Playlist

- Tap on the hamburger icon  in the top left hand corner of the screen you are on and it will open the Features side bar menu – Figure R29 below. Under the Library heading, tap on **Playlists** and the Playlist screen will open - Figure R30.

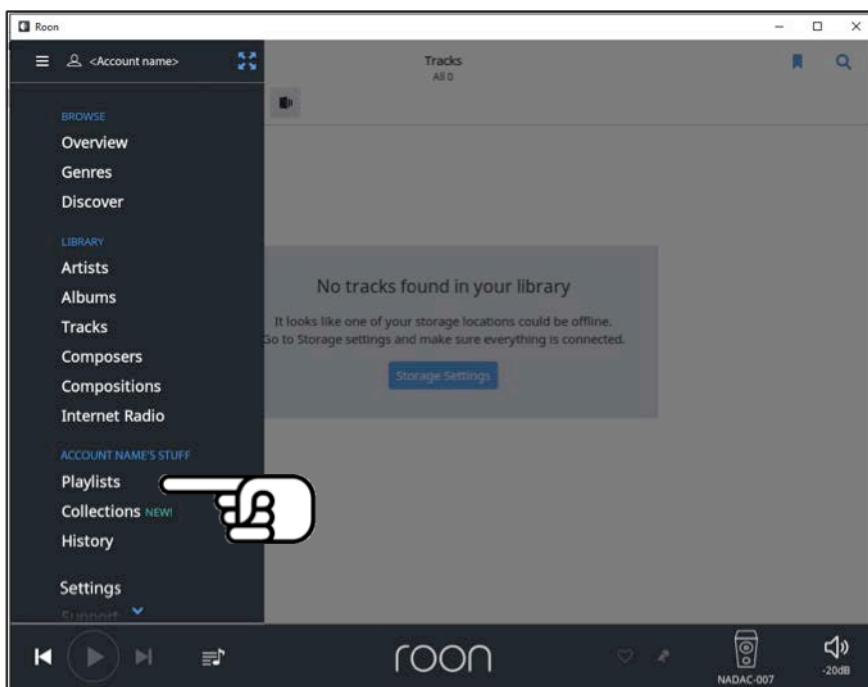


Figure R29. Features side bar menu.

- For illustration we have shown the Playlist screen opening with the tracks of a previously assembled playlist (Windsor) displayed. If you wish to play this, tap on the **Play Playlist** button in the top right hand corner of the screen.

Note: When the Playlist screen is first opened, the bottom of the screen may show the timeline from the last track displayed instead of the Roon logo. This is of no consequence.

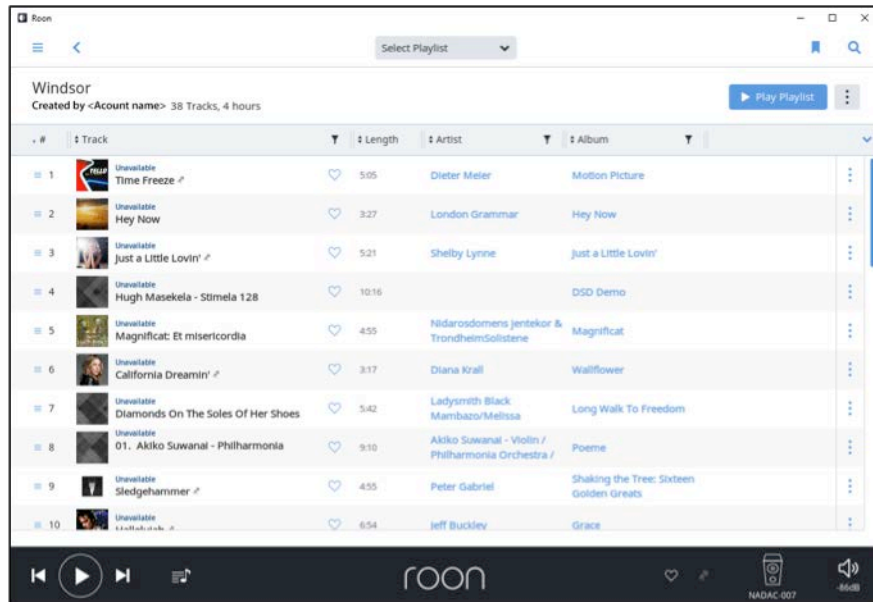


Figure R30. Playlist screen.

- To play the playlist you have just created, or any other playlist, select the **Select Playlist** drop down menu in the centre of Figure R30 and a list of all the available playlists will drop down as shown in Figure R31. Select the Playlist you require and tap the **Play Playlist** button on the right of the screen.

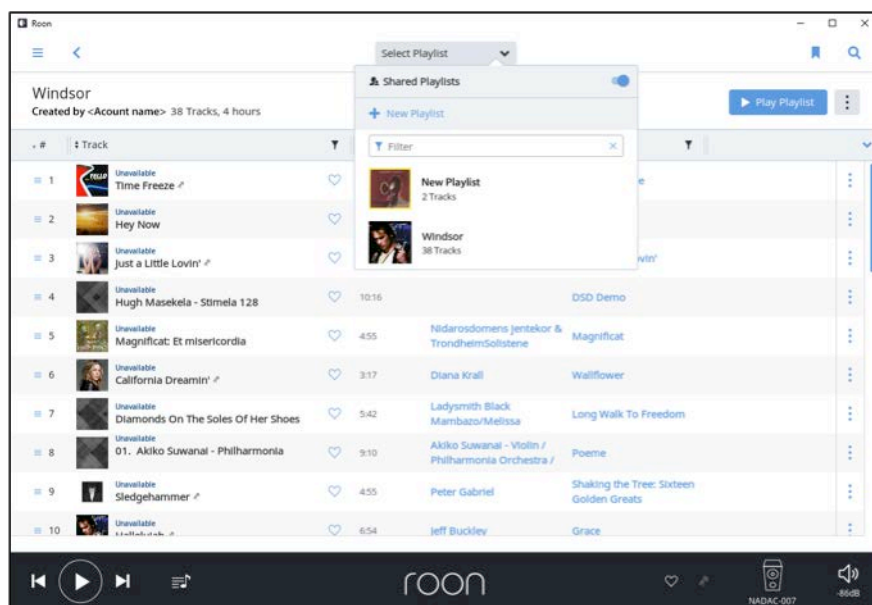


Figure R31. Selecting a Playlist.

- The Action Selection screen will appear – Figure R32. Tap on **Play Now**.

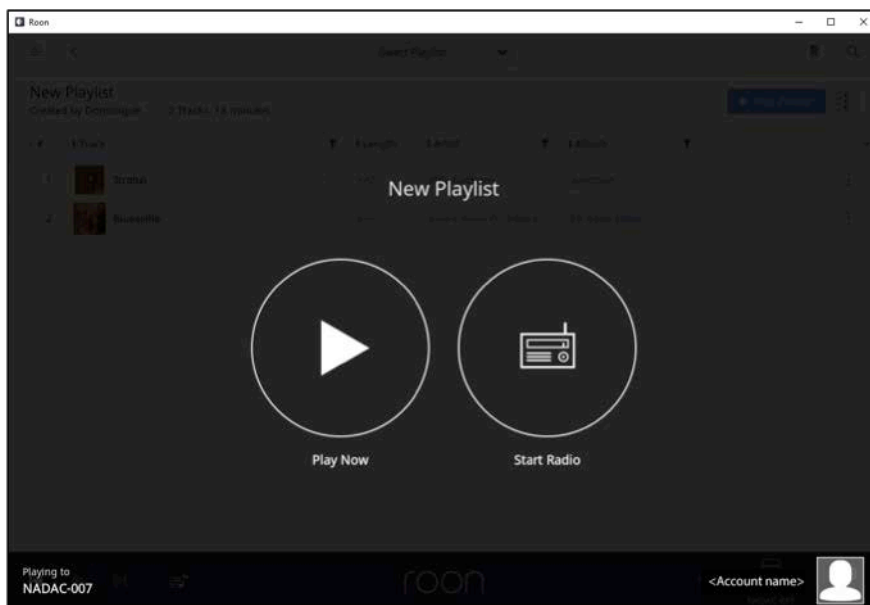


Figure R32. Action Selection screen.

- The screen in Figure R33 will appear and after a few seconds the track should start to play. This is indicated by the cursor moving along the timeline located at the bottom of the screen and the elapsed time display on the left side of the timeline counting up. When this track has finished, Roon will automatically play the next track in the playlist and continue until all the tracks in the playlist have been played.

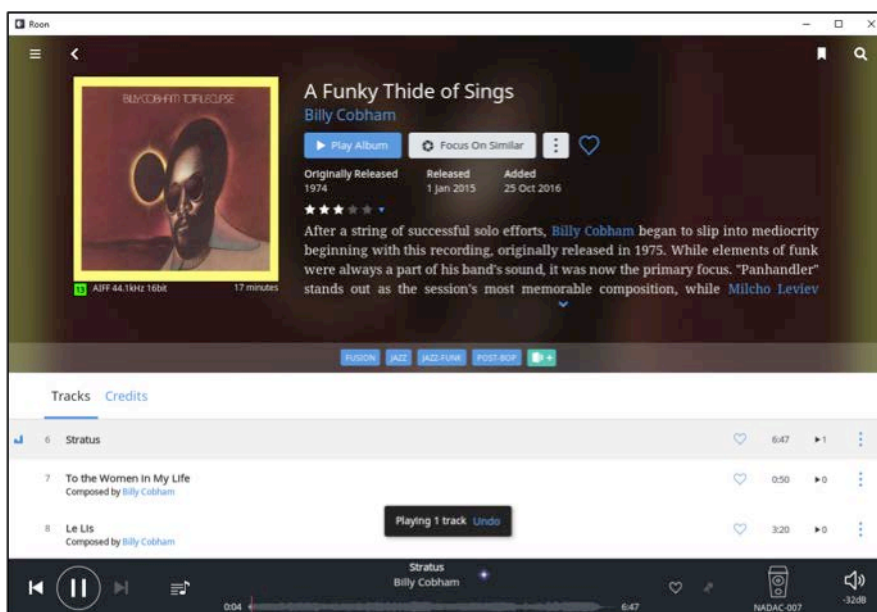


Figure R33.

How to assemble and play a queue

As well as listening to music from playlists, which can be recalled at will, you can also build up a queue of tracks to listen to on an ad hoc basis. When you select a track, you can choose whether it will be placed to play next in the queue, or placed at the end of the queue. Unlike with a playlist, Roon will not remember these tracks after they have all been played.

1. For this example we will select our music from the Track list, but you can browse for your music by any of the other classes in the Library menu if you prefer. You can also switch between different classes, depending on which is the most convenient way to find the track you are searching for. Tap on the hamburger icon ☰ in the top left hand corner of the screen you are on and it will open the Features side bar menu – Figure R33 below.

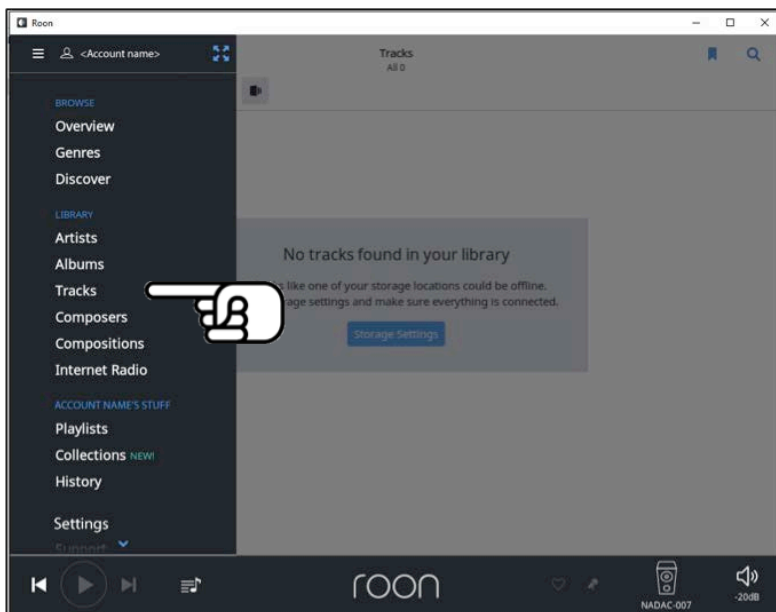


Figure R33. Features side bar menu.

Under the Library heading, tap on **Tracks** and the Tracks screen will open - Figure R34.

2. Choose the first track. For this example we will choose Stratus by Billy Cobham. When you select this track by tapping on it, the Action Selection screen appears – Figure R35.

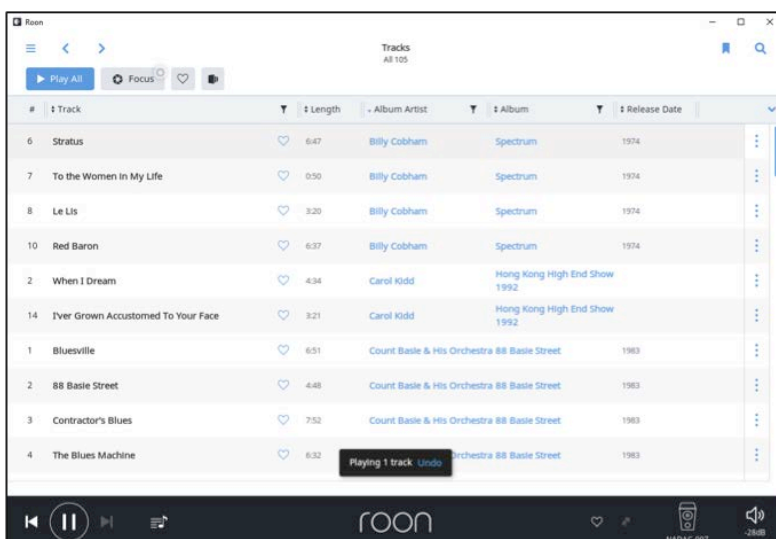


Figure R34. Tracks screen.

3. Tap on **Play Now**.

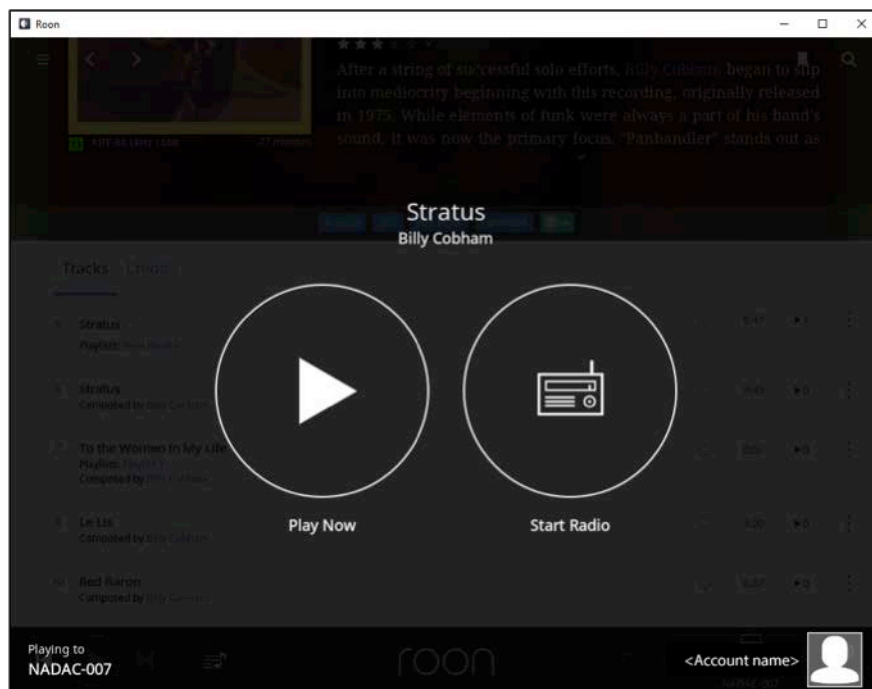


Figure R35. Action Selection screen.

4. The Tracks screen in Figure 37 will re-appear and after a few seconds the track should start to play. This will be indicated by the cursor moving along the timeline located at the bottom of the screen and by the elapsed time display on the left side of the timeline counting up.

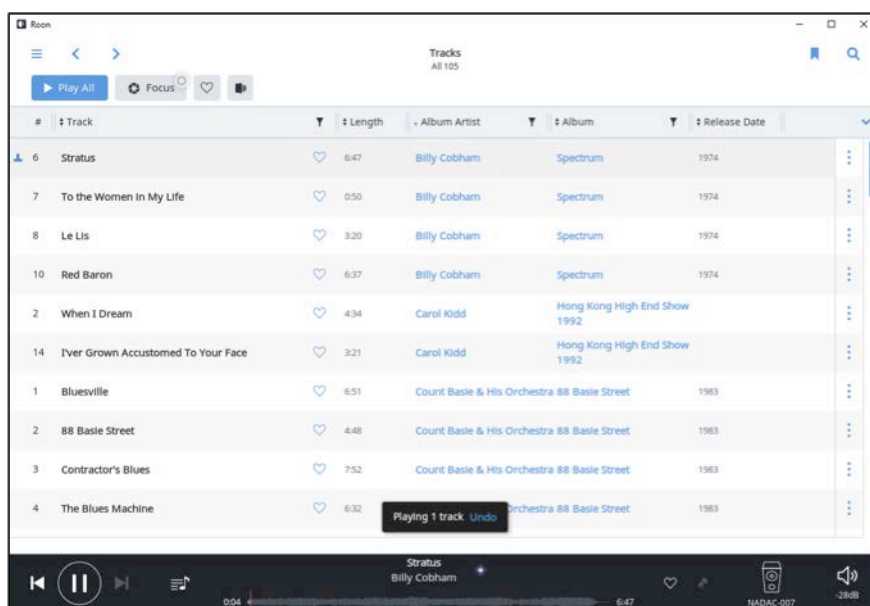


Figure R37. Tracks screen.



- Choose the next track, then tap on it in the Tracks screen to select it. In this example we have selected 88 Basie Street. The Action Selection screen in Figure R38 will open. Tap on **Add to Queue** to add this track to the queue and the Tracks screen will be displayed again.

From this screen you could also tap **Add Next** and this track would be played after the current track had finished.

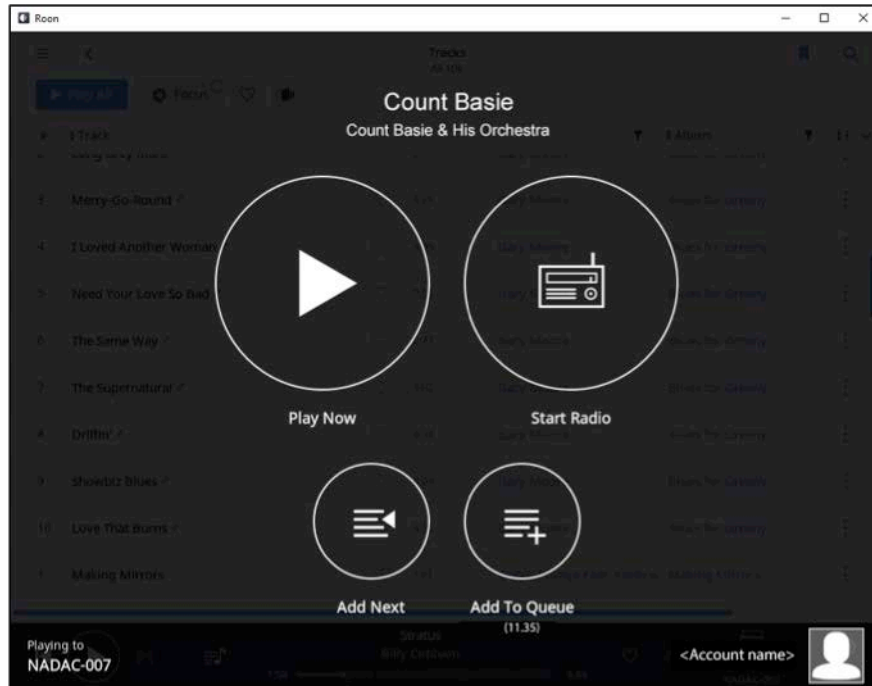


Figure R38. Add track to queue.

- If you want to see what tracks you have left in the queue, tap on the music stave in the bottom left of the Tracks screen - Figure 39 - and a list like the one in Figure 40 will appear.

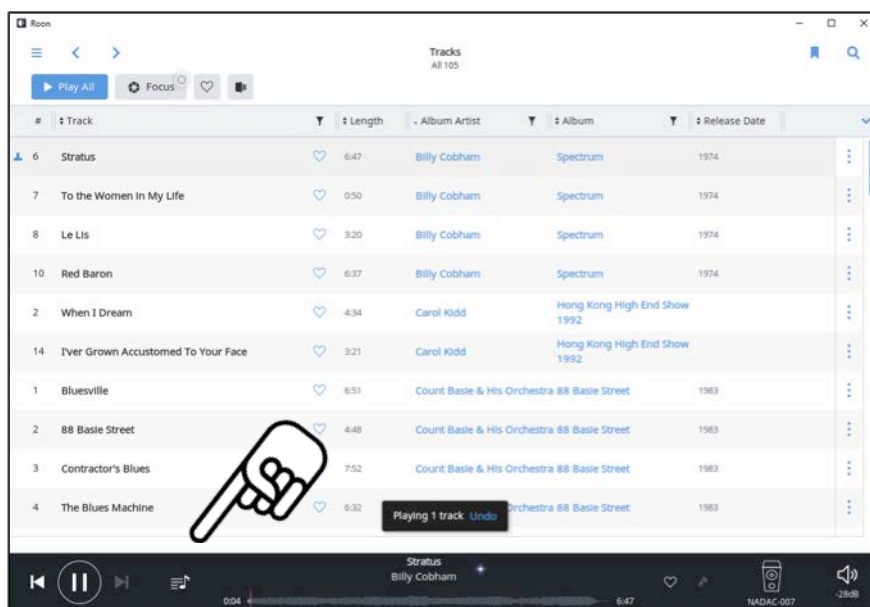


Figure R39. To reveal tracks queue.

7. The queue list – Figure R40 – shows the track currently being played at the top of the screen and a list of the remaining tracks in the queue is shown below.

This window also shows the total number of tracks remaining and their total playing time.

You can move backwards or forwards in the list, or pause and restart the music using the controls in the bottom left hand corner of the screen.

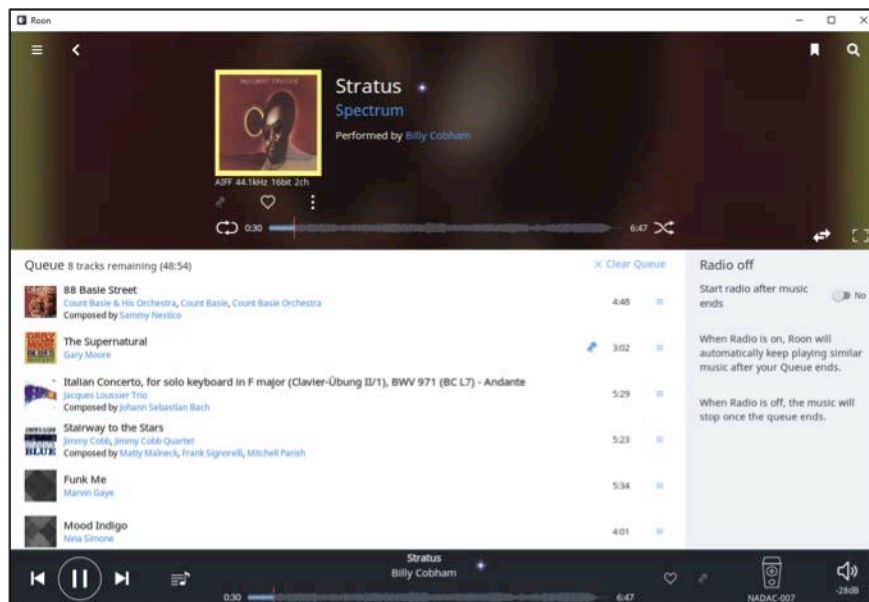


Figure R40. Queue list.

8. An alternative way to control the playback of the queue is to tap on the title of a track in the list and option box will appear that allows you to:
 - a. Play the selected track and then revert to the original sequence.
 - b. Start playing from the selected track.
 - c. Go to the album the track comes from.

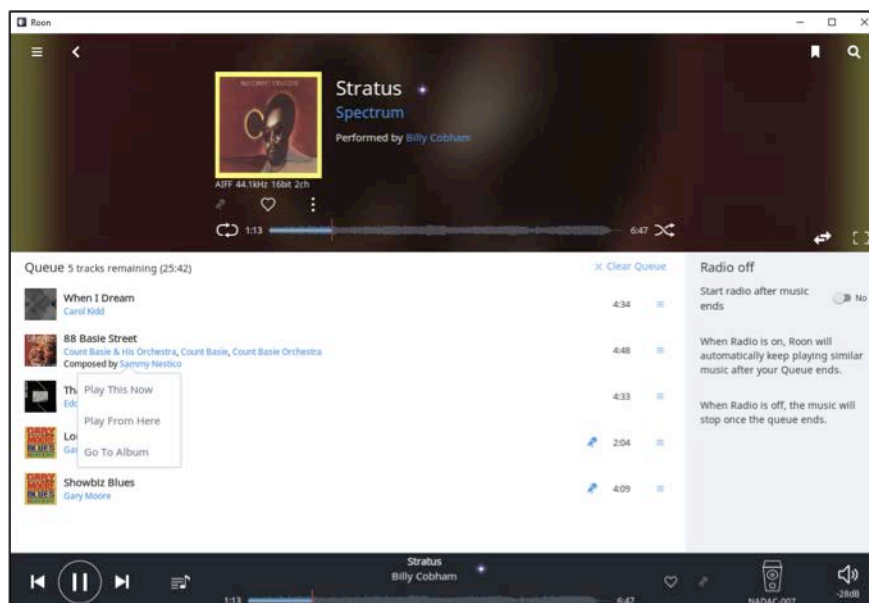


Figure R41. Queue list.



Backing up your music files

Because any memory device you store your music on can fail, we strongly recommend that you create back-up copies and make sure that these are kept up to date. We advise that you consult your MERGING+NADAC dealer for guidance on what is the best approach for your particular system.

You will have a considerable investment in time and money in the music in your memory devices, so the issue of making back-ups should not be put off until tomorrow, as tomorrow may be the day a memory device fails.



Appendix 1: NADAC PLAYER Status indications

The status of the NADAC PLAYER CPU and running applications is shown by the Play logo like status indicator which is located in the top right hand corner of the Home screen – Figure R31. The meanings of the status indications are shown in the table below.



Figure R31. NADAC PLAYER Main home screen.

Display

Status



Steady white

Normal. The NADAC PLAYER's CPU and the Roon Core are running normally.



Steady red

Fault 1. The NADAC PLAYER's CPU is running normally, but the Roon Core or Roon Server have either crashed, or are not running normally. You may typically see this display briefly when the Roon Core software is updating.

Action: If the status indicator remains red, shut down the NADAC PLAYER, wait 1 minute then restart. If the problem persists contact your MERGING+NADAC dealer.



Flashing red

Fault 2. The NADAC PLAYER's internal CPU is not has not started or stopped responding.

Action: This can be caused by an incompatibility with one or more of the memory devices attached to the NADAC PLAYER's USB ports.

Shut down the NADAC PLAYER, disconnect all memory devices from the rear panel USB ports, then restart the NADAC PLAYER.

If the status display does not show normal, shut the NADAC PLAYER down and contact your MERGING+NADAC dealer.

If the status display is Normal, the problem lies with one or more of the memory devices connected to the rear panel USB ports. Shut the NADAC PLAYER down, connect one memory device to the Player and restart it. If the status display is Fault 2, it probably means that the boot bit on that storage device is enabled, but there is no operating system on the device.

If you have more than one memory device, shut the NADAC PLAYER down, remove the currently connected memory device, connect another and restart the NADAC PLAYER. If the status display shows Fault 2, that device has the same problem. If the status display shows Normal that device is good.

The NADAC PLAYER should work if you only use the memory devices that produced a Normal status display when connected individually.

Contact your MERGING+NADAC dealer for guidance on how to deal with any memory devices that failed the above test.



Appendix 2: MERGING+NADAC Web Control Interface

Web access requirements

To control and view the status of your MERGING+NADAC remotely with a web browser, make sure that you are using one of the Internet browsers below:

- Google Chrome (Highly Recommended)
- Mozilla Firefox
- Opera
- Apple Safari

Note: Microsoft Internet Explorer is not recommended



You must connect the MERGING+NADAC to a Gigabit Ethernet Port or Switch for remote access. The format of the Web Access menu pages will differ from those of the front panel display.

Starting the remote control interface

1. Installing a NADAC Driver also installs the MT Discovery application. If you do not plan to use the network as an audio source, you do not need to install a Driver. In this case you can just use the AES, coaxial and optical digital inputs. You will need to install the MT Discovery application in order to use the web control interface. Please contact nadac@merging.com for more information on this if needed.
2. Make sure that your MERGING+NADAC is connected to the same network as the system you wish to send the control and music data via, and that it is configured with the correct IP settings. In most cases this simply means ensuring that the IP Settings box in the front panel display Network menu page is set to Auto – see page 36. This should be the default setting the unit is supplied in.
3. Launch the MT Discovery utility:
 - For Windows users: there will be a shortcut to the utility on your desktop.
 - For Mac OS: go to the Applications folder, open the Merging Technologies folder and click on the MT Discovery icon.

Any MERGING+NADAC devices on the network will be discovered by the MT Discovery tool and will appear in the folder tree under "RAVENNA Devices>NADAC".

In the illustration below, Figure 83, there is one MERGING+NADAC connected to the network and it is serial number 100024. Additional units would each be listed in the same way.

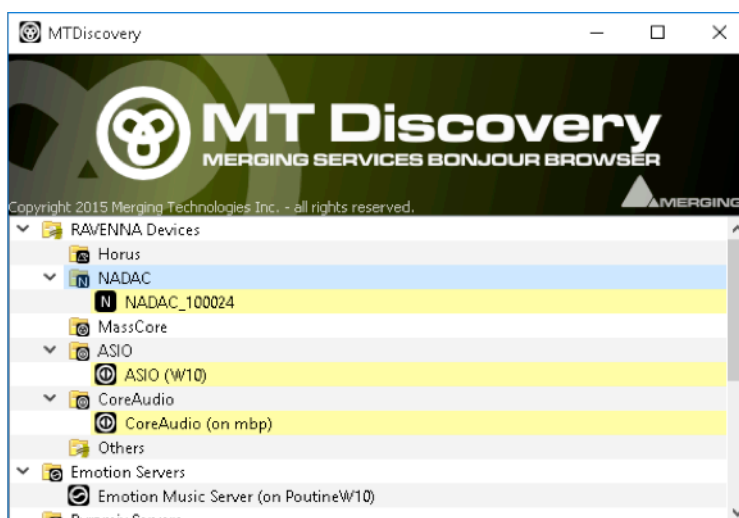


Figure 83. MT Discovery window.



Devices on the same network should be highlighted in the same colour in MT Discovery display. This is essential in order to have the I/O interconnection. The particular colour is not important, only that the network and associated devices be highlighted in the same colour.

4. A mouse double-click on the NADAC Device entry will open the MERGING+NADAC Web Interface in your default web browser. The first screen you will see is the interface main screen and a typical example is shown in Figure 84. This screen shows the output being controlled (top left corner), the source feeding this output (bottom centre), the sample rate of this source (top right corner) and the volume level setting (screen centre).

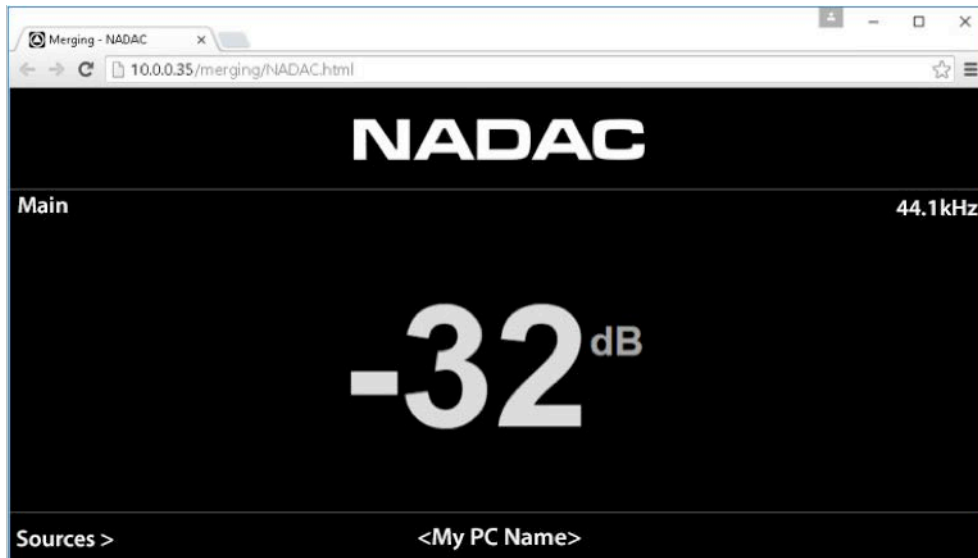


Figure 84. MERGING+NADAC Web Interface - main screen example.

Using the web interface

The Web Interface allows you to:

- Control the MERGING+NADAC Main output volume level. The Headphone output level can only be controlled via the front panel Rotary control.
- Select the sources fed to the Main and Headphone outputs.

Adjusting the Main output volume level

Ensure that the interface main screen is displayed - see Figure 84:

If using a touch screen device as your controller or a device with a touch-pad, swipe from left to right to increase the volume, and from right to left to decrease the volume

If using a mouse, perform the same actions while holding down the primary mouse button, which will usually be the left one.



Selecting sources

Main source

Click on the **Sources** link at the bottom left corner of the main screen. This will open the sources screen – Figure 85. Click on the currently selected Main source. In the example, this is shown as the network source <My PC Name>. This will cause the sources option screen to open – Figure 86. The currently selected source will be highlighted in yellow. Click on the required source from the list of available options. This will be selected and the screen will return to the sources screen – Figure 85. Use the Back button in the bottom left hand corner of the screen to return to the main screen. When a new source is selected, the volume level will automatically be set to -20dB to avoid suddenly playing at an unexpectedly high level.

Headphone source

Click on the **Sources** link at the bottom left corner of the main screen Figure 84. This will open the sources screen – Figure 85. Click on the currently selected Headphone source, then follow the procedure above for changing the Main source.

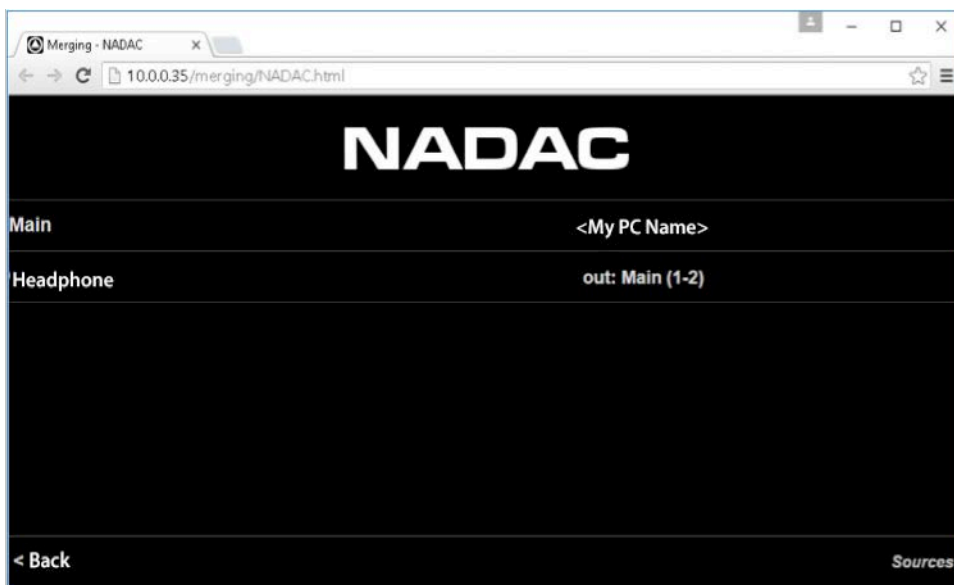


Figure 85. MERGING+NADAC web interface – sources screen example.

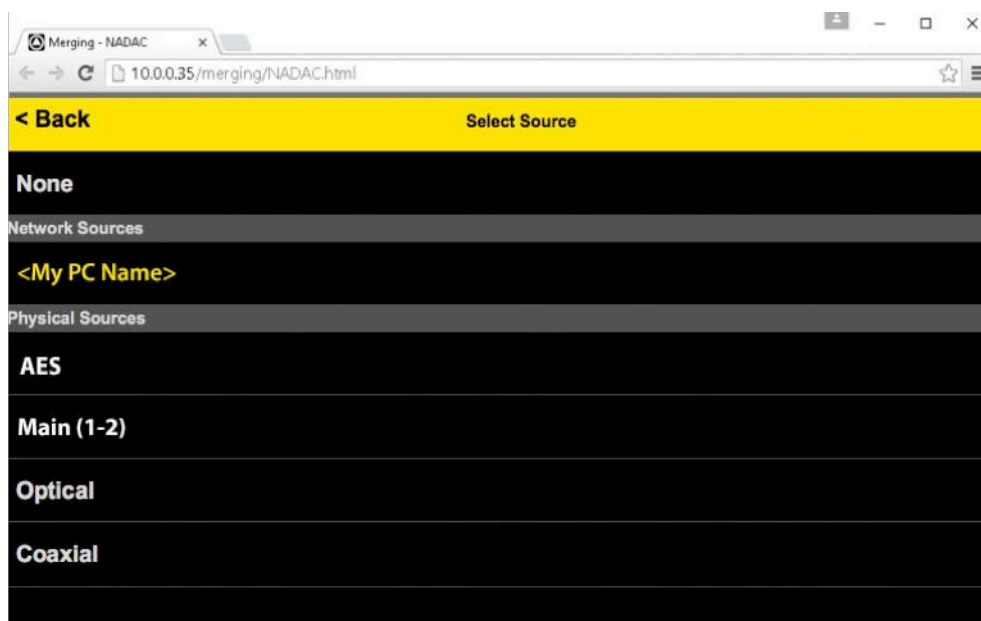


Figure 86. MERGING+NADAC web interface – sources option screen example.



Appendix 2: MERGING+NADAC Firmware Update Guide



Before attempting to update the firmware of your MERGING+NADAC, please carefully read the instructions below. If you are not confident that you can carry out this procedure, please ask your local Merging Technologies reseller for assistance.

1. Obtain the latest certified firmware, either from your MERGING+NADAC reseller or contact us at nadac@merging.com.
2. Make sure that the downloaded firmware file is on a computer that is on the same network as your MERGING+NADAC.
3. Restart your MERGING+NADAC in Maintenance mode by following the steps below:
 - From the home screen (Figure 87a) press and hold the Rotary control until the Main menu top screen appears – Figure 87b.
 - Use the Rotary Control to select **Exit**, then briefly press the Rotary Control to open the Exit menu – Figure 87c.
 - Use the Rotary Control to select **Maintenance**, then briefly press the Rotary Control to open the Maintenance menu – Figure 87d.
 - Use the Rotary Control to outline the **Yes** box, then briefly press the control to start the unit rebooting into Maintenance mode.

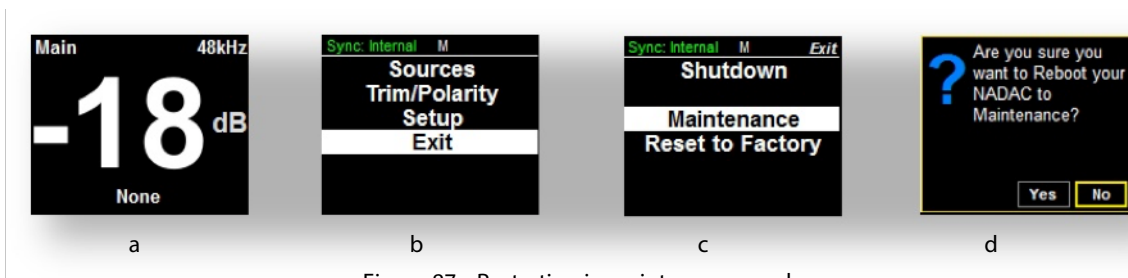


Figure 87. Restarting in maintenance mode.

If the unit is shut down, you can make it boot up into Maintenance mode by pressing and holding down the Rotary Control and then pushing the power button. Keep the Rotary Control pushed down until you see a display with a yellow and black border like that shown in Figure 88.

4. Wait until the unit has fully booted in Maintenance mode and the progress bar in the Maintenance mode screen says Ready – Figure 88.



Figure 88. Maintenance mode screen.



- Windows users: Open the **NADAC Ravenna ASIO** panel: (Windows Start Menu - All Apps > Merging Technologies > NADAC Panel). This will open a panel like that shown in Figure 89.

MacOS users : Open the **NADAC Ravenna Core Audio** panel: (Apple icon on the top left corner > System Preferences > Other > NADAC icon). This will open a panel like that shown in Figure 90.

- In the Online RAVENNA devices section of the window you have just opened, you will find a NADAC maintenance icon representing the unit that you are about to perform a firmware update on. Double click on this.

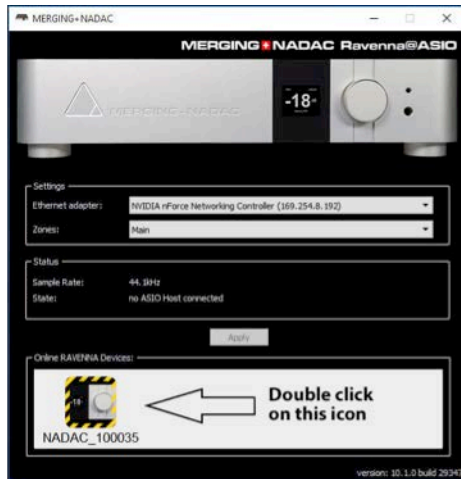


Figure 89. NADAC Ravenna ASIO panel

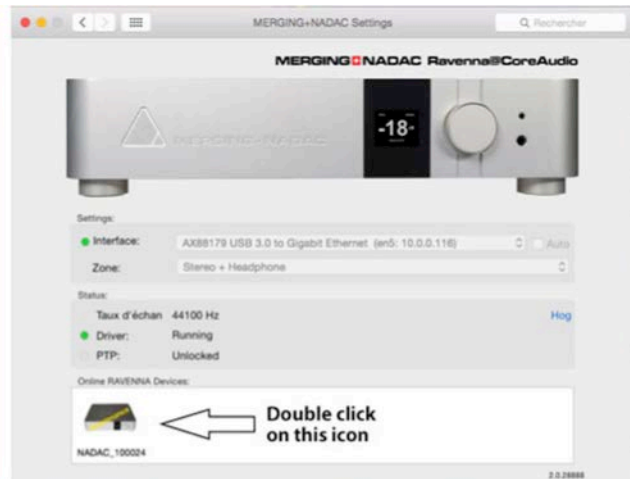





Figure 90. NADAC Ravenna CoreAudio panel.

 If you do not see a NADAC maintenance icon, reboot the unit in Maintenance mode and check the Ethernet Connection between the unit and the computer you are using. In this case you will have to shut the unit down by holding down the power button.

 To use the Maintenance mode the unit must be set for automatic IP address selection. See the Network menu on page 37 for details.

 If the NADAC icon displayed has a red circle with a line through it as shown in Figure 91 below, you must update the unit's firmware.

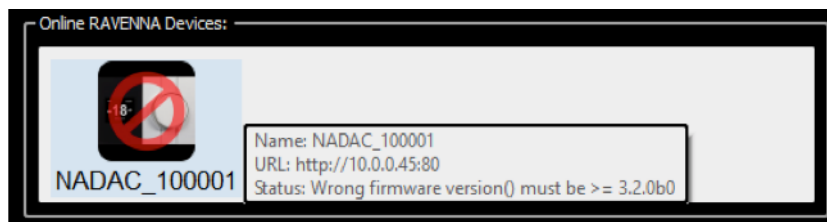


Figure 91. Firmware update required.



7. Your default web browser (we recommend Google Chrome or Apple Safari) should open up and display the firmware update window – Figure 92.

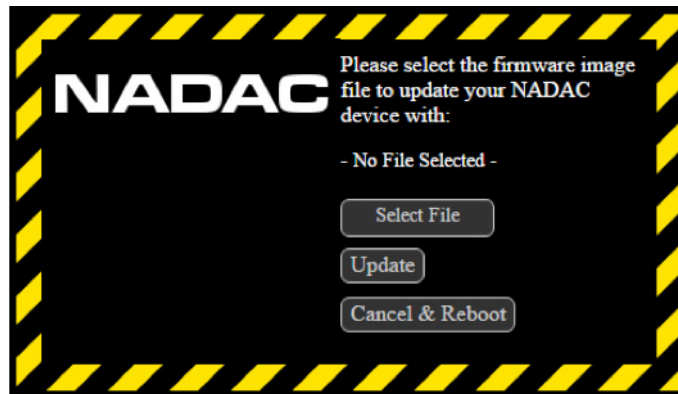


Figure 92. Firmware update window.

If your web browser does not open on the firmware upgrade page, clear your browser history and re-open the MERGING+NADAC page by double clicking on the NADAC Maintenance Mode icon in either the NADAC RAVENNA ASIO Panel, Figure 89 (Windows systems) or NADAC Core Audio Panel, Figure 90 (Mac systems).

8. Click on the **Select File** button and choose the firmware file (.NADAC) that you have previously downloaded and then click on the **Open** button.
9. Wait a few seconds for the filename of the new firmware to appear in the update window as shown in Figure 93.



Figure 93. Firmware update window.

- Click on the **Update** button. First the new firmware will be uploaded into the unit. The state of the upload will be indicated by a progress bar on the firmware update window (Figure 94) and also by a progress bar on the unit's front panel display.

The unit's power button light will be a steady amber during the upload process.



Figure 94. Firmware upload progress.

Once the new firmware has been uploaded to the unit the update process will start. The firmware update window on the computer will change to that shown in Figure 95 and the update progress will be shown by a progress bar on the unit's front panel display.

The unit's power button light will blink red during the update process.

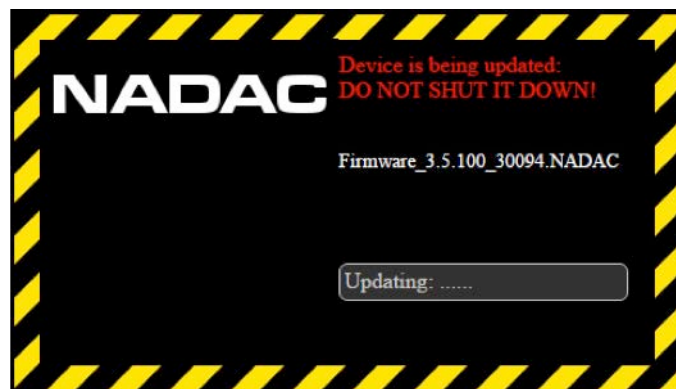





Figure 95. Firmware update progress.

-  During this procedure do not update or refresh your browser until the process is completed. Pressing F5 on a Windows computer will refresh the browser. The Firmware update should take from 3 to 5 minutes.
-  Do not perform any other installation during this procedure.
-  Do not shutdown the unit during this procedure.



11. Wait until the webpage says **"Update Successful!"** (Figure 96) and the unit's front panel display shows **Please reboot**. The power button light will also change to a steady green.





Figure 96. Firmware update successful.


Shutdown the unit by clicking on the **Reboot Device** button in the firmware update screen - Figure 96. The unit will restart automatically afterwards.


12. You can verify the firmware version installed by going into the unit's Setup menu and selecting Info – see page 39. The firmware version will be shown at the bottom of the display.

If you had to change your computer IP address in order to perform the firmware update, you may now reset it again to your preferred IP address using the units' Network menu – see page 37.

 If the Firmware update procedure fails, the screen shown in Figure 97 will usually be displayed. Press the **Try Again** button to repeat the update process and follow these instructions starting at step 7.

 Alternatively use your browser's go back button to return to the screen shown in Figure 92, the firmware again and re-update it. In this case re- start again at step 7.

 Avoid powering down the unit if the firmware update has failed.

 If you do not follow this procedure the unit may no longer start up and it may be necessary to return to a local service centre or the factory.

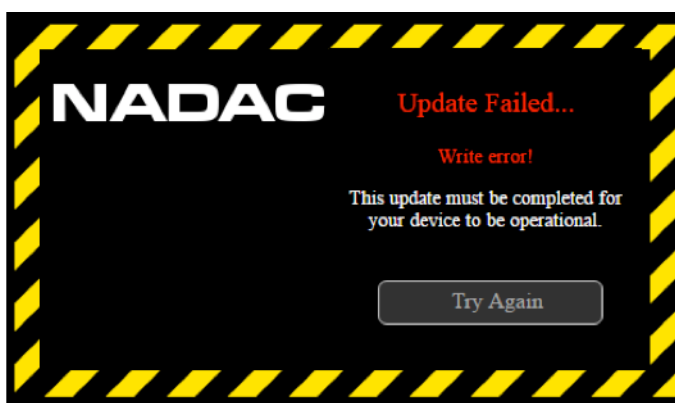


Figure 97. Firmware update **Try Again** button.

If you cannot update the firmware, please contact your local Merging Technologies reseller for assistance.

