

azur

851N

Network Player

Cambridge Audio

Your music, our passion

Contents

Important safety instructions	3
Wi-Fi information	4
Limited warranty.....	5
Rear panel connections.....	6
Front panel controls	7
Remote control.....	8
Overview	9
Getting connected.....	9
Operating instructions	10
Presets.....	10
Radio.....	10
Music Library.....	11
Inputs	12
USB audio	12
BT100 and Bluetooth audio streaming	12
Spotify	13
Settings menu	14
Network.....	14
Wired/Wireless connection.....	14
Display brightness.....	15
Device name.....	15
Audio	15
USB audio class	15
Network standby	15
Automatic power down.....	15
System remote control.....	15
Edit digital input names.....	16
Factory reset.....	16
Technical specifications.....	17
Troubleshooting.....	18

Important!

The 851N is largely a software based product and new features and updates will be made available from time to time. See the Upgrade Firmware section at the end of this manual for how to check for and then automatically update your unit via the internet. The process takes only a few minutes.

We would encourage you to check for any updates before using your 851N for the first time and then from time to time afterwards.

Also please do check the support page for the 851N at <https://techsupport.cambridgeaudio.com> for details of any new features, advice on compatibility with other products and audio formats and the most recent copy of this manual.

Make sure you register your purchase.

Visit: www.cambridgeaudio.com/register

By registering, you'll be the first to know about:

- Future product releases
- Software upgrades
- News, events and exclusive offers plus competitions!

This guide is designed to make installing and using this product as easy as possible. Information in this document has been carefully checked for accuracy at the time of printing; however, Cambridge Audio's policy is one of continuous improvement, therefore design and specifications are subject to change without prior notice.

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This product contains software licensed under version 2 of the GNU Public License and version 2.1 of the GNU Lesser Public License. The source code for this software is available from:

<http://gpl.stream-magic.com/>

This product includes technology owned by Microsoft Corporation and under a licence from Microsoft Licensing GP. Use or distribution of such technology outside of this product is prohibited without a license from Microsoft Corporation and/or Microsoft Licensing, GP as applicable.

The Spotify software is subject to third party licenses found here: www.spotify.com/connect/third-party-licenses.

Important safety instructions

For your own safety please read the following important safety instructions carefully before attempting to connect this unit to the mains power supply. They will also enable you to get the best performance from and prolong the life of the unit:

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as the power-supply cord or plug having been damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE AND OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHOULD NOT BE PLACED ON THIS APPARATUS.

Batteries (battery pack or batteries installed) shall not be exposed to excessive heat such as sunshine, fire or the like.

TO COMPLETELY DISCONNECT THIS APPARATUS FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE. POUR DECONNECTER COMPLETEMENT L'APPAREIL DU RESEAU D'ALIMENTATION, DECONNECTER LE CORDON D'ALIMENTATION DE LA PRISE MURALE.

THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY ACCESSIBLE. LA PRISE DU RESEAU D'ALIMENTATION DOIT DEMEURER AISEMENT ACCESSIBLE".



The lightning flash with the arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of un-insulated '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 instructions in the service literature relevant to this appliance.

WEEE symbol



The crossed-out wheeled bin is the European Union symbol for indicating separate collection for electrical and electronic equipment. This product contains electrical and electronic equipment which should be reused, recycled or recovered and should not be disposed of with unsorted regular waste. Please return the unit or contact the authorised dealer from whom you purchased this product for more information.

CE mark

This product complies with European Low Voltage (2014/35/EU), Electromagnetic Compatibility (2014/30/EU) and Environmentally-friendly design of Energy-related Products (2009/125/EC) Directives when used and installed according to this instruction manual. For continued compliance only Cambridge Audio accessories should be used with this product and servicing must be referred to qualified service personnel.



RCM (Regulatory Compliance Mark)

This product meets the Safety, EMC and Radio Communications requirements of the ERAC and ACMA.



CU-TR Mark

This product meets Russia, Byelorussia and Kazakhstan electronic safety approvals.

Ventilation

IMPORTANT – The unit will become hot when in use. Do not stack multiple units on top of each other. Do not place in an enclosed area such as a bookcase or in a cabinet without sufficient ventilation.

Ensure that small objects do not fall through any ventilation grille. If this happens, switch off immediately, disconnect from the mains supply and contact your dealer for advice.

Positioning

Choose the installation location carefully. Avoid placing it in direct sunlight or close to a source of heat. No naked flame sources, such as lighted candles, should be placed on the unit. Also avoid locations subject to vibration and excessive dust, cold or moisture. The unit can be used in a moderate climate.

This unit must be installed on a sturdy, level surface. Do not place in a sealed area such as a bookcase or in a cabinet. Do not place the unit on an unstable surface or shelf. The unit may fall, causing serious injury to a child or adult as well as serious damage to the product. Do not place other equipment on top of the unit.

Due to stray magnetic fields, turntables or CRT TVs should not be located nearby due to possible interference.

Electronic audio components have a running in period of around a week (if used several hours per day). This will allow the new components to settle down and the sonic properties will improve over this time.

Power sources

the marking label. If you are not sure of the type of power-supply to your home, consult your product dealer or local power company.

This unit can be left in Standby mode when not in use and will draw <0.5W in this state. To turn the unit off, unplug it from the mains socket.

Overloading

Do not overload wall outlets or extension cords as this can result in a risk of fire or electric shock. Overloaded AC outlets, extension cords, frayed power cords, damaged or cracked wire insulation and broken plugs are dangerous. They may result in a shock or fire hazard.

Be sure to insert each power cord securely. To prevent hum and noise, do not bundle the interconnect leads with the power cord or speaker leads.

Cleaning

To clean the unit, wipe its case with a dry, lint-free cloth. Do not use any cleaning fluids containing alcohol, ammonia or abrasives. Do not spray an aerosol at or near the unit.

Battery disposal

Batteries may contain substances harmful to the environment. Please dispose of any discharged batteries with due consideration and in accordance with local environmental/electronic recycling guidelines.

Loudspeakers

Before making any connections to loudspeakers, make sure all power is turned off and only use suitable interconnects.

Servicing

These units are not user serviceable. Never attempt to repair, disassemble or reconstruct the unit if there seems to be a problem. A serious electric shock could result if this precautionary measure is ignored. In the event of a problem or failure, please contact your dealer.

Wi-Fi information

This unit is intended to be used in conjunction with the WD752-BD-N Wi-Fi Dongle please observe the statements below when using WIFI.

FCC Statement

DECLARATION OF CONFORMITY WITH FCC RULES FOR ELECTROMAGNETIC COMPATIBILITY

We, Cambridge Audio, of Gallery Court, Hankey Place, London SE1 4BB, declare under our sole responsibility that this device,

851N with Wi-Fi module

to which this declaration relates, 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.

Caution: Exposure to Radio Frequency Radiation.

The device shall be used in such a manner that the potential for human contact during normal operation is minimized.

When connecting an external antenna to the device, the antenna shall be placed in such a manner to minimize the potential for human contact during normal operation. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Federal Communications Commission Notice

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 and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IMPORTANT Note:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

2.4GHz operation of this product in the USA is firmware-limited to channels 1 through 11.

Modifications

The FCC requires the user to be notified that any changes or modifications to this device that are not expressly approved by Cambridge Audio, may void the user's authority to operate the equipment.

Canada-Industry Canada (IC)

IC number: 9095A-MXI01

This radio transmitter model number WD752-BD-N has been approved by Industry Canada.

This Class B digital apparatus complies with Canadian standard ICES-003. This device complies with Industry Canada License exempt RSS standard(s). Operation is subject to the following two conditions.

(1) this device may not cause interference and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

IMPORTANT NOTE:

IC Radiation Exposure Statement

This equipment complies with RSS-102 limits set fourth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.

The transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Industrie Canada (IC)

Nombre IC: 9095A-MXI01

Cet émetteur radiophonique numéro de modèle WD752-BD-N a été approuvé par Industrie Canada.

Cet appareil numérique de Classe B est conforme à la norme canadienne ICES-003. Cet appareil est conforme aux normes RSS exemptes de licence d'Industrie Canada. Son fonctionnement est soumis aux deux conditions suivantes :

(1) cet appareil ne doit pas provoquer d'interférence nuisible et (2) cet appareil doit accepter toute interférence reçue, y compris les interférences pouvant provoquer un fonctionnement indésirable.

NOTE IMPORTANTE:

IC Déclaration sur la radioexposition

Cet équipement est conforme aux limites RSS-102 préconisées pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à une distance minimale de 20 cm entre le radiateur et votre corps.

L'émetteur ne doit pas être co-placé ni fonctionner en conjonction avec une autre antenne ou transmetteur.

Europe-European Union Notice

Radio products with the CE alert marking comply with the R&TTE Directive (1995/5/EC) issued by the Commission of the European Community.

Compliance with this directive implies conformity to the following European Norms.

- EN 60950-1 – Product Safety.
- EN 300 328 – Technical requirement for radio equipment.
- EN 301 489 – General EMC requirements for radio equipment.

Limited warranty

Cambridge Audio warrants this product to be free from defects in materials and workmanship (subject to the terms set forth below). Cambridge Audio will repair or replace (at Cambridge Audio's option) this product or any defective parts in this product. Warranty periods may vary from country to country. If in doubt consult your dealer and ensure that you retain proof of purchase.

To obtain warranty service, please contact the Cambridge Audio authorised dealer from which you purchased this product. If your dealer is not equipped to perform the repair of your Cambridge Audio product, it can be returned by your dealer to Cambridge Audio or an authorised Cambridge Audio service agent. You will need to ship this product in either its original packaging or packaging affording an equal degree of protection.

Proof of purchase in the form of a bill of sale or receipted invoice, which is evidence that this product is within the warranty period, must be presented to obtain warranty service.

This Warranty is invalid if (a) the factory-applied serial number has been altered or removed from this product or (b) this product was not purchased from a Cambridge Audio authorised dealer. You may call Cambridge Audio or your local country Cambridge Audio distributor to confirm that you have an unaltered serial number and/or you made a purchase from a Cambridge Audio authorised dealer.

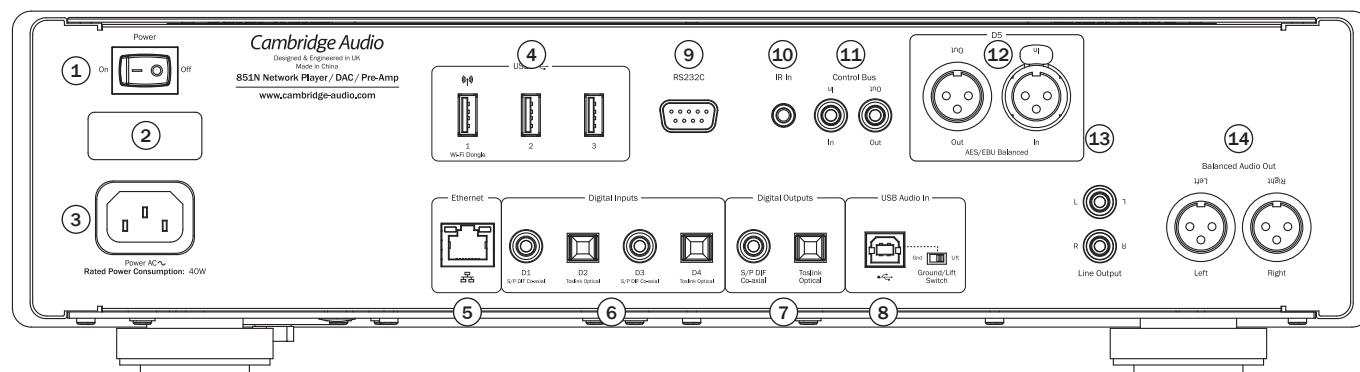
This Warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or modification of, or to any part of, the product. This Warranty does not cover damage due to improper operation, maintenance or installation, or attempted repair by anyone other than Cambridge Audio or a Cambridge Audio dealer, or authorised service agent which is authorised to do Cambridge Audio warranty work. Any unauthorised repairs will void this Warranty. This Warranty does not cover products sold AS IS or WITH ALL FAULTS.

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Some countries and US states do not allow the exclusion or limitation of incidental or consequential damages or implied warranties so the above exclusions may not apply to you. This Warranty gives you specific legal rights, and you may have other statutory rights, which vary from state to state or country to country.

For any service, in or out of warranty, please contact your dealer.

Rear panel connections



1. Power on/off

Switches the 851N on and off.

2. Mains voltage selector switch (CU version only)

Switches the mains voltage between 100V and 115V.

Note: For use by Cambridge Audio service personnel only!

3. Power socket

Once all other connections are made, connect the supplied power cable to the 851N power socket and to an appropriate mains socket. The 851N is now ready for use.

4. USB sockets

Wi-Fi Dongle – Allows connection to 802.11b/g or n networks (2.4 GHz will only be used for n networks).

Local Media – Use to connect a USB storage device or another portable device that is USB HD/flashdisk compatible containing music files. Alternatively an optional Cambridge Audio BT100 Bluetooth Adaptor can be plugged in here adding wireless streaming audio capability directly from most phones, tablets and laptops. See later section for details.

Note: The USB ports are not intended for connection to Apple mobile devices, no functionality, charging or otherwise is supported.

5. Ethernet

Ethernet port for connecting to a 10/100BASE-T local area network (LAN).

6. Digital inputs

The 851N has four digital inputs in total featuring both S/PDIF co-axial and TOSLINK optical sockets.

D2/D4 TOSLINK Optical – Use a high quality TOSLINK fibre optic interconnect cable designed specifically for audio use. This input is suitable for 16-24 bit content up to 192kHz (using high quality TOSLINK optical cable).

Note: Although TOSLINK connections on the 851N work up to 192kHz with high quality cables, TOSLINK is not usually recommended with sampling rates above 96kHz.

D1/D3 Coaxial – Use a high quality 75 ohm digital RCA Phono interconnect cable. This input is suitable for 16-24 bit content up to 192kHz.

7. Digital outputs

The 851N digital outputs enable a separate DAC (digital to analogue converter) or digital recording device to be connected. Refer to the 'Operating instructions' section for more information.

Two concurrent digital outputs are available. Note that these outputs pass through the currently selected audio source unprocessed, i.e. no volume control or up-sampling is performed on the digital outputs.

Coaxial – To obtain best results, use a high quality 75 ohm digital RCA interconnect cable (not one designed for normal audio use).

TOSLINK Optical – Use a high quality Toslink fibre optic interconnect cable designed specifically for audio use.

8. USB Audio In

A USB B type socket is fitted to the 851N to enable the playback of audio from a personal computer running either Microsoft Windows or Apple Mac OS X operating systems, most Linux distributions are also suitable.

Note: Always use a high quality USB connection cable certified as USB Hi-Speed. USB cable connections longer than 3m may result in inconsistent audio performance.



Always turn the Volume to minimum, switch to another input or turn the 851N off before plugging/unplugging cables to the USB input or whilst booting up/shutting down your PC/Mac.

Ground lift switch

The Ground Lift Switch enables the USB interface earth to be disconnected from the 851N chassis earth. Disconnecting (lifting) the earth can be useful if electronic hum is heard through the speakers. The switch should otherwise be left in the Ground position.

9. RS232C Interface

The RS232C interface enables external serial control of the 851N in custom installation applications. A command set is available on the Cambridge Audio website at <https://techsupport.cambridgeaudio.com>. The RS232 interface can also be used by Cambridge Audio service personnel for software updates.

10. IR (Infra Red) Emitter In

A 3.5mm mini-jack socket that enables modulated IR commands from multi-room or IR repeater systems to be received by the 851N.

Note: Commands received by the IR Emitter In socket are not looped out of the Control Bus. Refer to the 'Custom Installation' section for more information.

11. Control Bus

In – An RCA phono socket that enables un-modulated commands from multi-rooms systems or other components to be received by the 851N.

Out – An RCA phono socket that provides control bus output commands for further downstream units. This can be useful if using the iPhone/Android app to control the volume on an Azur amplifiers.

12. AES/EBU Balanced

In – For sources with a balanced (AES/EBU) digital output. This input is suitable for 16-24 bit content up to 192kHz.

Out – For external devices incorporating a balanced (AES/EBU) digital input.

13. Unbalanced Audio Output

A conventional RCA phono stereo output for connection to the line-level inputs of an amplifier. Use a high quality stereo RCA phono interconnect cable intended for analogue audio signals.

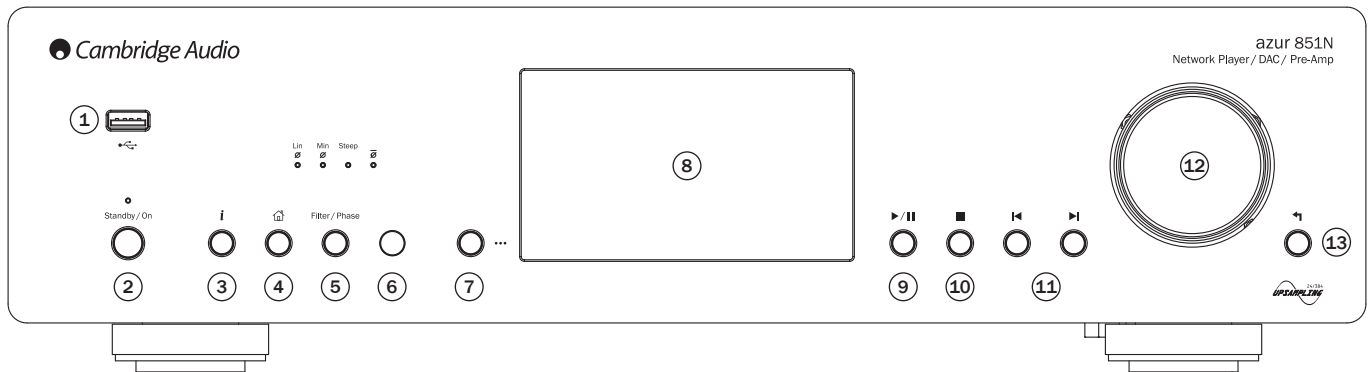
14. Balanced Audio Output

The 851N features balanced outputs on two XLR sockets. Balanced outputs provide slightly better audio performance and can reject cable-borne noise and interference when used with equipment with balanced inputs.

Note: XLR connectors should be wired as follows:

- Pin 1: Ground
- Pin 2: Hot (in-phase)
- Pin 3: Cold (phase-inverted)

Front panel controls



1. USB

Use to connect a USB storage device or another portable device containing music files. 1A maximum current consumption.

Note: This USB port is not intended for connection to Apple mobile devices, no functionality, charging or otherwise is supported.

2. Standby/On

Switches the unit between Standby mode (indicated by a dim power LED) and On (indicated by a bright power LED). Standby is a low power mode where the power consumption is <0.5W. The unit should be left in Standby mode when not in use.

Note that the full startup sequence can take approximately 30 seconds to complete.

ECO mode

If ECO mode is enabled, then the 851N is in its default 0.5W standby mode.

When ECO Mode 0.5W standby is enabled, the 851N can be switched on from:

- Front panel power button,
- IR remote control power button with IR received on either the front panel IR receiver.

Network Standby

This is a higher power standby mode which allows the StreamMagic module and wired or wireless network to remain powered. If this mode is enabled then the 851N can be switched on from the Cambridge Connect app.

3. (i) Info

Pressing this button toggles between 'Now Playing' screen and the different 'Now Playing' views.

4. Home

Press takes you to Home screen.

5. Filter

Press to toggle through three alternative digital filter characteristics: Linear Phase, Minimum Phase or Steep. Alternative digital filters can offer subtly different sound quality characteristics. The currently selected filter is displayed by the indicators just above the button.

Phase

Press and hold the Filter/Phase select button for approximately two seconds to select normal or inverted phase output. When the LED lights up, the phase is inverted by the 851N.

If you suspect that your source material or amplifier, etc., is inverting the phase of the musical signal, you can use this function to re-invert the audio and regain absolute positive phase.

6. Infrared sensor

Receive IR commands from the supplied remote control. A clear unobstructed line of sight between the remote control and the sensor is required.

7. (More)

When playing media over UPnP or USB drive, more will show the queue.

For Internet Radio and Streaming Services this will allow access to any interactive services or options.

8. Display

Displays the status of the unit.

9. Play/Pause

Plays and pauses playback.

10. Stop/Delete

Press during playback to stop or press in various menus to delete the present item.

11. Skip

Press once to skip forwards or backwards one track.

12. Navigation/Select (rotary dial)

Rotate to scroll and navigate around the menus. Pressing the rotary dial in performs the 'Select' function to accept the item/function shown on the display.

Fast Scroll feature

When scrolling through lists of tracks or stations, normally rotating the rotary encoder or press of the remote control navigator buttons steps to the next item in the list. For long lists this can become tiresome.

The Fast Scroll feature, which is always enabled, detects how fast the front panel rotary encoder is being rotated or how long the remote control navigator buttons have been pressed. The faster the encoder rotation or the longer the button press, the bigger the jump up or down the list with each step.

If navigating using the front panel rotary encoder, reducing the speed of rotation then decreases the step size again.

If navigating using the remote control, you need to release the button to stop the scroll and press-and-hold the button again to begin the scroll speed ramp-up, or single-press the button to step one item in the list at a time.

13. Return

Press to return to the previous menu.

Remote control

The default mode for the remote allows combined control of the 851N and other Cambridge Audio products.

1. Standby/On (851D/N)

Switches the 851N between On and low power eco-friendly Standby mode. If enabled, you can also switch the unit into Network mode.

Note: The 851N takes approximately 30 seconds to come out of Standby, during this time the front panel Standby/On LED will flash but nothing will be shown on the display.

2. Brightness

Alters the brightness of the 851N display backlight. There are three brightness levels; off, dim, bright and an option to switch-off the backlight.

When the display is set to OFF, nothing will be displayed onscreen until a selection is made via the front panel or remote control. The display will then re-activate allowing you to browse the menu and make your selection. The display will then automatically switch back off after a few seconds if no further selections are made.

3. Presets

Press to directly access stored presets.

4. Mute

5. Enter/Mode

Press to accept the item/function highlighted in the display menu. In tuner mode, press and hold to store the current station in the preset bank.

6. Volume

Increases or decreases the volume of the Amplifier/Receiver.

7. Home

Go directly to the top Home Menu.

8. Return

Press to return to the previous menu.

9. Skip

Press once to skip forwards or backwards one track.

10. Backlight

Press to turn the backlight on and illuminate the remote control buttons.

11. (Info)

Pressing this button toggles between Menu position and Now Playing screen.

12. Navigation

Press to navigate around the main menus.

13. Stop/Delete

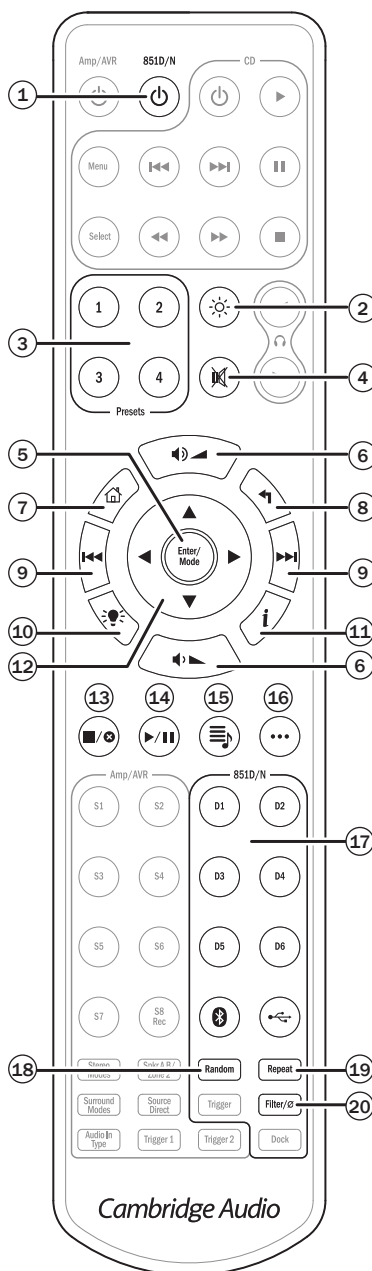
Press once to stop media playback. Also used to delete items where appropriate (press and hold).

14. Play/Pause

Press once to start media playback. Press and hold to pause media playback.

15. Queue

For USB audio media only.



16. (More)

When playing Internet Radio, the More button displays related options to the currently selected station such as alternative stream types, content types or similar stations.

When playing from UPnP sources, this button displays queued tracks and options.

17. Digital inputs

Press to select the digital input source.

18. Random

Press to turn the random/shuffle playback function on and off.

19. Repeat

Press to turn repeat playback function (media play back only) on and off.

20. Filter

Press to toggle through the three digital filter options.

Overview

The 851N is able to receive and play back media from several distinct types of source. Here we have attempted to give an overview of the various types of service available and the terminology you may encounter.

Internet Radio

These are 'radio' stations broadcast over the internet. Currently the StreamMagic range can access about 20,000 internet radio stations all sorted by us into Location, Language and Genre. The list of available stations is constantly maintained and automatically updated to your unit via the internet. You can set your own presets via the Cambridge Connect app or the front panel of the player.

You can also add stations to your units that are currently not in the Stream Magic's Radio database, suggest new stations to us and more. There are also links and help for setting up third-party Streaming Services from a wide variety of other suppliers. Other Stream Magic features will be launched in the future, check the website from time to time to see the latest developments.

Streaming Services

Streaming Services are similar to Internet Radio but come from other suppliers and often have an element of interaction with the user. Because Streaming Services generally allow the user some choice over the content they listen to, they are also licensed differently to Internet Radio by the music companies and often each service only has arrangements in certain countries and may also charge a subscription for membership.

Examples of such services are Spotify, Pandora, TIDAL and others. All allow some control of the content from the ability to select and play whole albums of your choice, playlists or an artists back catalogue. Some also offer the ability to download content for use off-line as well.

These services come from third parties and although we support connections to them via our Connect app or the units' webmin page; we do not create their content and are not responsible for their service in any way. Your streaming account is with the streaming service only. We are merely acting as an intermediary to make the connection simpler and more convenient. We will support the correct software on our unit to allow playback and browsing of their content.

Network Media

The 851N supports a wide range of compressed formats; MP3, AAC, WMA and Ogg Vorbis CODEC types are all supported, plus for true audiophile use it also supports either uncompressed PCM (in a WAV container) or losslessly compressed FLAC, both can contain from 16-bits/44.1kHz from CDs right up to 24-bit/192kHz for better than CD quality from suitable download sites.

Note: For this to work your server will also need to support the CODEC you wish to play as some have limitations and may not serve FLAC for instance. Always check that the server you wish to use also supports your favoured CODECs.

Also for lossless/uncompressed formats both the server and network connection will need to sustain the high bitrate necessary.

Note: It is not recommended to use Wi-Fi connections for content above 24bits, 96kHz if lossless/uncompressed.

USB Media

The 851N also supports USB Media from USB Flash-disks or USB hard-drives and has 4 USB 2.0 ports for this purpose. Here the 851N simply browses the folders present on the media attached and displays them. Only content that the 851N can play will be shown. This feature is provided for convenient access to temporary storage devices.

It is however highly recommended that UPnP is used for continued use of stored media as the UPnP system is able to support album art, sophisticated content browsing and filtering and other features not possible with simple folder browsing.

Note: Supports NTFS and FAT32 file system.

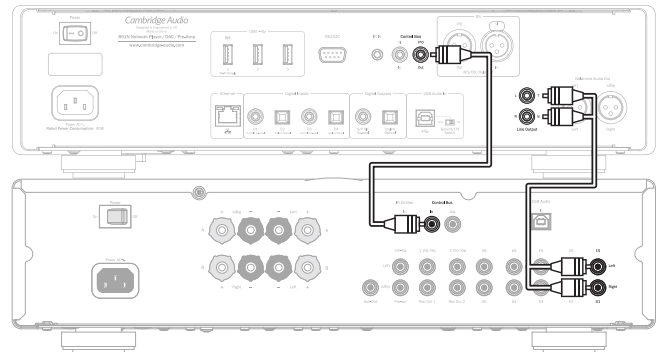
Podcasts

Podcasts are archived audio recordings downloadable over the internet. Often podcasts are recordings of previous live broadcasts or episodic content.

The 851N supports various third party podcast services, navigate to Podcasts on the unit for the list available in your area. In addition the 851N supports your own personal choice of podcasts where you know its URL (weblink) via the Webmin page.

Getting connected

Basic connections



851N/Amplifier

Network connections

Before you can use your 851N for Radio/Streaming you must have the following:

- A broadband internet connection (such as ADSL) to a suitable internet service provider (ISP).
- A network connection either wirelessly via 802.11b/g or n Wi-Fi or wired Ethernet connection (10 or 100 M bits/sec via an RJ45 connection).

Note: For playback of high sample rate files (24-bits/176.4kHz & 24-bits/192kHz) streamed from your home network, we recommend using an Ethernet connection to avoid unwanted disruption as the high data rate of these files is beyond most Wi-Fi networks capability.

In many cases the broadband modem, router and wireless access point will be a single combined unit supplied by your Internet Service Provider or bought from a computer store.

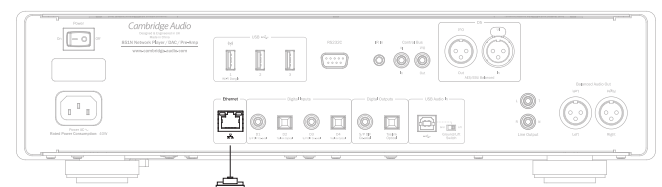
If your wireless network is configured to use Wired Equivalent Privacy (WEP) or Wi-Fi Protected Access (WPA) data encryption then you will need to know your WEP or WPA key so you can get the 851N to communicate with the network.

IMPORTANT:

Before you continue, make sure that your wireless access point or router is powered up and working with your broadband internet service (use your computer to verify this). To get this part of the system working you must read the instructions supplied with the wireless access point or router.

The 851N can be configured to connect to a Wired or Wireless network or has an (default) Auto setting. In Auto the 851N looks for a each connection type and selects whichever is present. You can also force the unit to one or the other connection type, see later Settings section.

Connecting to a wired network



Internet

Ethernet cable

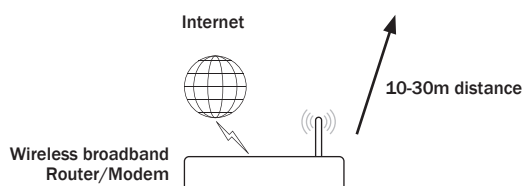
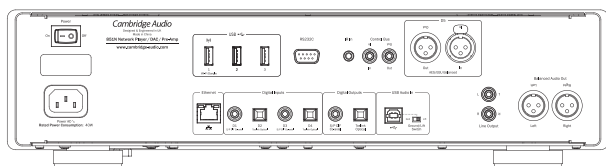
Broadband Router/Modem

Plug one end of a network cable (Category 5/5E straight through Ethernet cable) into the LAN port on the back of the unit.

Note: Only connect the LAN port of the player to an Ethernet port that supports 10BASE-T or 100BASE-TX. Connecting to any other ports or jacks, such as a phone jack, can damage the unit

The 851N should automatically connect to your network as below via DHCP; this means it will be given an IP address by your router automatically.

Connecting to a wireless network



Place the 851N in range of your wireless network (usually 10-30m of a suitable wireless transmitter, although this is affected by walls and the construction of your building) and turn it on, via the back panel switch and then on the front panel.

The 851N will automatically connect and obtain an IP address from your wireless network. For advanced users, if you would like to give your 851N a static IP address, then see the 'Network config' section of the manual.

Note: If you make a mistake at any point, you can always press the **⬅** button to go back to the previous screen.

The unit will now scan for all available wireless networks and will display "Scanning".

If it can't find one then the display will say: "No Wireless Networks Found". If this happens then you need to either move the 851N nearer your wireless access point or investigate any issues with your wireless network.

When the 851N finds your wireless network, it displays the broadcast name (ESSID) for the access point – this is a name allocated to the access point by whoever set up the network, it may either be a default name for your router/wireless or may be a more familiar name such as "Johns Wi-Fi" etc. If your 851N finds more than one wireless network you can simply choose which one you want to connect to. Turn the rotary dial to see the ESSID for each wireless network.

When the ESSID for the wireless network you want to connect to is displayed on the screen, press the SELECT button. If your network is not configured with an encryption code, the screen should say "Connecting to network" then "Network OK".

If the screen displays either "Enter WEP key" or "Enter WPA key", then the network is using one of the supported encryption systems: Wired Equivalent Privacy (WEP) or Wi-Fi Protected Access (WPA). You now need to enter your correct WEP or WPA code. The person who set up the wireless network in the first place will know what this code is (or be able to reset it to a new known code); if that person is not you, then you need to find out what it is.

After 3 seconds, the display goes into the code entry mode. To enter the code, use the rotary dial to select each character of the code in turn, pressing the SELECT button after entering each character.

Note: The WEP and WPA codes are case sensitive, so you must enter them exactly.

After entering the final character, use the rotary dial to select the **⬅** character and press the SELECT button. It's a little fiddly but you will only need to do this once. The 851N will remember this code and use it automatically from now on.

The unit should now be able to connect to the network.

Note: We recommend rebooting your 851N to search for any firmware updates, as new firmware may have been released since your unit was manufactured.

Operating instructions

The 851N home menu consists of 5 items:

- Presets
- Radio
- Music Library
- Inputs
- Settings

These allow access to the four basic types of media choice plus a Settings menu for the unit.

You can return to this menu at any time by pressing the **⬆** button.

Simply scroll through the items with the scroll wheel or **▲▼◀▶** navigator buttons on the remote control and press in the scroll wheel or use the Enter/Mode button on the remote to select the item you want.

Presets

The 851N supports presets. These can be Internet Radio stations or streams from most Streaming Services. UPnP/USB Media cannot be set as a preset. To add a station/stream to a preset, first select that stream for playback in the normal way. Now press the 'Home' button on the remote and navigate to the Presets menu.

Note: Empty presets are not displayed. To save a presets to an empty location, select 'Set Preset' and all slots will be displayed.

Select the preset location you require and press the Navigation/Select dial or the Enter/Mode button on the remote to save the current station/stream to that preset.

Recalling presets is done simply by selecting the Presets button on the remote or via the Home menu.

Note:

- The 851N loads the presets for display from our Stream Magic servers over the internet, thus they can take a few seconds to appear.
- All saved Presets will be deleted when a unit is registered/re-registered online.

Radio

The Stream Magic Internet Radio service brings thousands of internet radio stations to you. The sheer choice available on the internet allows you to find new music, listen to stations in your native language (or perhaps if you are learning another one), from your home town or by your Genre of choice.

It has to be said that the audio quality of internet radio varies greatly dependant on the bitrate and compression technology used by the broadcaster, but the choice more than makes up for this. Internet Radio allows you to explore and find new music from all over the world.

Note: As an 'aggregator' service we are simply organising the browsing and connection process for these stations so that you don't have to manually search for them or type in any URLs (web links) etc to access them. Whilst we regularly check the stations to make sure they are still transmitting reliably and in reasonable quality, we are not responsible for their content in any way.

If there is a station you would like added to the list that isn't currently available, please email us at support@cambridgeaudio.com and we will be more than happy to look into the availability of this.

How to use Radio

Press the **⬆** button to return to the top-level menu.

Select Radio from the list using the rotary dial then press the rotary dial to select it. The 851N displays the following submenus.

Radio

- » Location
- » Genre
- » Search Radio Stations
- » Streaming Services
- » Podcasts

You can now turn the rotary dial to choose from Location, Genre, Search Radio Stations, Streaming Services or Podcasts.

Location – Enables you to choose from the stations in any of the countries which you choose from a list.

Genre – Enables you to choose radio stations according to their declared content, for example Classic Rock, Sport, News, etc.

Search Radio Stations – Enables you to search for a station you know the name of. Enter the full name or first part of the name for your desired station. The 851N will bring up a list of all stations that contain a word that starts with your search term.

Note: Although we check the stations for continuity of service, some radio stations do not broadcast 24 hours per day, and some stations may not always be on-line.

Streaming Services – The services available vary depending on your geographical location. The services available vary depending on your geographical location. This is because Streaming Services generally allow the user some choice over the content they listen to and are licensed differently to Internet Radio.

Podcasts – The podcast services in your area will be shown. These typically display different types of podcast by Subject, Radio Station or DJ etc. It is important to understand that the menu structure and the availability of podcasts is dictated from that particular provider and is controlled by them. The availability may therefore change as the service updates its features etc.

Note: To use the Personal Podcasts feature, please navigate to the webmin page of your unit by entering the IP address of the 851N into an internet browser on the same network. Your IP address can be identified by briefly pressing and holding the 'i' icon on front panel of the unit. This feature allows you to access podcasts on the 851N that are not available from the other Podcast services we currently support.

Music Library

The 851N can access media from UPnP/DLNA Servers or USB Media connected via USB. The 851N displays the following submenus:

UPnP is by far the preferred method as it allows for browsing by artist, album and other methods, has support for control from Wi-Fi controller and the media can be shared amongst several devices.

UPnP servers

Your 851N can connect with Computers or Network Attached Storage devices that feature a Universal Plug and Play (UPnP) AV Server.

When using a UPnP server to share your media, the search and selection criteria are determined by the server and not the 851N, but typically include Album, Artist and additional options such as Genre.

As long as the 851N is correctly configured for your Network, it will automatically discover and connect to UPnP servers it finds. It will then allow navigation of the menu structure coming from that server.

There are many suitable UPnP server software packages available for PC and Mac. Stand-alone servers and Network Attached Storage (NAS) devices with built in UPnP server capabilities are also available. Please see the set-up guides on our website at <https://techsupport.cambridgeaudio.com>.

Once you have setup a suitable server, navigate to the My Library menu and press Select.

The 851N will perform a scan of your network and report any UPnP Servers it finds. If none are found it will display "No Servers Found" on the display. If a server or servers are found, UPnP server names will be displayed and you can select which one you'd like to get the contents from.

Select the server you want and the 851N will then load the appropriate menu structure from that server. These typically allows you to browse the content by Album, Artist, Genre etc. It is important to understand that the menu structure here is coming from the server and not the 851N.

You can now browse and select any music content in a format the 851N supports (currently AAC, MP3, WMA, AIFF, FLAC, WAV and Ogg Vorbis).

Note: Not all servers support serving of all these formats. Always make sure the server you choose also supports your formats of choice. For example, Windows Media Server does not currently serve FLAC format.

Alphanumeric Search

This is a search function menu inserted by the 851N into the browse tree of UPnP servers that support an external search function.

Where available you can select Alphanumeric search and then enter the name or partial name of an album or track you wish to find.

Simply select each character in order using the Navigation/Select dial or the ▲▼◀▶ buttons on the remote, using the dial, rotate to each character and then press in to select or press the Enter/Mode button on the remote. You can also use the ►/|| button to enter a character and the ■/⊗ button to delete a character.

Once finished either press the ↵ button or navigate to the ◀ symbol and press the Enter/Mode button on the remote or press the Navigation/Select dial.

The 851N then displays all Album names or Track names it can find that matches your chosen text.

You can then simply select your chosen item and press the Enter/Mode or ►/|| button on the remote to start it playing.

The 'Now Playing' screen

Selecting a new Station, Stream or Media item will start playback and display the 'Now Playing' screen.

The current Artist/Album and Track or Station name will be shown with the relevant CODEC details (i.e. audio file type and bitrate/sample rate.)

For Media files, the 851N also shows the incremental track playback time.

You can also display the now playing screen at any time by pressing the **i** button on the remote control or front panel.

Random

Accessed via the remote or Cambridge Connect app only. Press the Random button to toggle Random On or Off.

The 851N displays a 🎲 in the 'Now Playing' screen when Random is On.

If the currently selected media item/folder contains fewer than 1000 tracks the 851N generates a true random shuffle of those tracks and starts playback such that all are played once in a random order and then playback stops.

If more than 1000 tracks are contained the 851N will instead pick a track at random for playback then pick another one randomly (and without reference to what has gone before) once the current one has finished.

This continues until Random is turned Off. Thus for >1000 tracks the playback of any track may be repeated randomly.

Repeat

Accessed via the remote or Cambridge Connect app only. Press the Repeat button to toggle Repeat On or Off.

If the currently selected media item is a track the 851N will repeat that track, if it is an album or artist etc. the 851N will repeat all tracks in that item.

The 851N displays a 🔄 in the 'Now Playing' screen when Repeat is On.

USB Media

The 851N can also playback audio content from standard USB hard-drives and thumb drives. Simply copy your media files onto your USB drive and then connect it to the front or back USB sockets of the unit.

Press the Home button to get to the top menu. Select the 'Music Library' menu.

The 851N will now scan the thumb drive for media files. Once the scan is completed, you will then be able to browse the files by selecting 'By Album' or 'By Artist'.

Queue

Viewing the queue

To view the queue at any time press the '...' (more) button. You can jump playback to any point in the queue by navigating up/down the list and pressing the Enter button.

Editing the queue

Tracks can be removed from the queue by highlighting them with the navigator and pressing the Stop button.

To clear an entire queue, navigate to the bottom of the queue to highlight [Clear Queue] and press the Enter button.

Note: Switching the 851N into standby will delete the queue, unless Standby Mode is set to 'Network Standby'.

Playlist

The 851N also supports various playlist formats. For permanent storage of favourite media selections it is recommended to use suitable software to create playlist.

These can then be accessed by the 851N from USB Media or UPnP servers that support Playlist serving.

Inputs

- » **USB Audio**
- » **D1-D5 (S/PDIF Coax / Toslink Optical)**
- » **Bluetooth** (Only available when a BT100 is plugged into the rear USB)
- » **Spotify**

The 851N has 6 digital inputs, USB Audio, S/P DIF co-axial and Toslink optical. The digital inputs allow you to play audio sent from a separate digital audio source such as a PC or CD player with digital outputs. This can optimise sound quality, for example where the 851N USB Audio is used instead of the PC soundcard or the upsampled and re-clocked low jitter DACs of the 851N are used instead of a CD player DACs.

The USB Audio input directly connects to a PC or Mac computer. The 851N can be setup to stream via the simple setup USB1.1 or the high sample rate 24-bit/192kHz via USB2.0. Also note that the SP DIF co-axial and Toslink inputs are capable of high sample rates up to 24-bit/192kHz, but your source equipment and interconnect cables must be capable of this sample rate to achieve this.

Advanced USB audio

The 851N is both USB 2.0 (Hi-Speed) and USB 1.1 (Full-speed) USB port compatible. It should also work with the new USB 3.0 ports where the PC will simply treat the 851N as if it were a USB 2.0 or 1.1 device.

The 851N also supports two USB Audio protocols (not the same as the port types themselves) USB Audio 1.0 (which works over USB 1.1 ports and supports up to 24-bit/96kHz) or USB Audio 2.0 (which requires a USB 2.0 port and can support up to 24-bit/192kHz).

The default configuration is USB 1.1 and USB Audio 1.0 which works with nearly all common operating systems and computer types without drivers and supports up to 24-bit/96kHz audio, simply plug in and play.

In this configuration the 851N is able to work at up to 24-bit/96kHz by declaring to your computer that it can handle any sample rate from 32kHz to 96kHz.

However in some Windows/Mac operating system variants the operating system itself may restrict or fix the output sample rate or re-sample the audio.

For more details on USB Audio, see our online guide at <https://techsupport.cambridgeaudio.com>. The USB driver is also available from the website. With careful choice of playback software and settings many pitfalls can be avoided.

In particular our free Windows USB Audio 2.0 driver (available from our website) supports up to 24-bit/192kHz audio and WASAPI Exclusive or ASIO modes that can give enhanced performance.

A brief explanation of your choices are below:

Use with PCs

With the 851N switched to USB Audio 1.0 (this is the default setting) the 851N will work with the native Windows XP, Vista, Windows 7 or 8 Audio 1.0 driver (no need to load any new driver) and accept audio up to 24-bit/96kHz.

With the 851N switched to USB Audio 2.0 the 851N needs the Cambridge Audio USB Audio 2.0 Driver to be loaded and can then accept up to 24-bit/192kHz (and support ASIO and WASAPI Exclusive if required).

The driver is available from <https://techsupport.cambridgeaudio.com>.

Use with Macs

No extra drivers are required. With the 851N switched to USB Audio 1.0 the 851N will work with the native Mac OS-X 10.5 (Leopard) or above Audio 1.0 driver and accept audio up to 24-bit/96kHz.

With the 851N switched to USB Audio 2.0 the 851N works with the native Mac OS-X 10.5 (Leopard) or above Audio 2.0 driver and can accept audio up to 24-bit/192kHz.

Use with Linux

In USB Audio 1.0 mode the 851N will work with most Linux distributions, allowing the playback of audio up to 24-bit/96kHz.

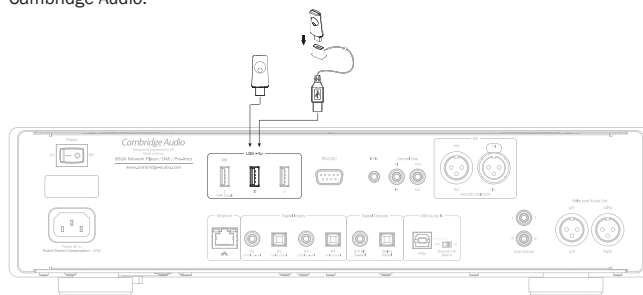
Newer Linux distributions (e.g. Ubuntu 10.04) support USB Audio 2.0 for which the 851N should be switched to USB Audio 2.0 to accept audio up to 24-bit/192kHz.

For both cases because Linux distributions vary according to their creators' choice of software components, including drivers, it is not possible to guarantee operation and Audio drivers may need to be loaded.

'Class drivers' for generic support of USB Audio Class 1.0 or USB Audio Class 2.0 devices may be available from the Linux community, we do not supply these.

BT100 and Bluetooth audio streaming

The 851N is compatible with the optional BT100 Bluetooth adaptor from Cambridge Audio.



When a BT100 is plugged into the rear USB socket an extra menu item called Bluetooth appears in the Digital Inputs menu.

Selecting this allows the 851N to receive wireless Bluetooth audio from most phones/tablets and laptops.

Both the standard SBC CODEC and newer high quality aptX CODEC are supported (if the sending device supports it). Contact your dealer for details.

Optional BT100 Bluetooth adaptor

When connected to your 851N this adaptor allows the 851N to receive Bluetooth Audio (known as Bluetooth Advanced Audio Distribution Profile or A2DP). Contact your dealer for details.

The BT100 supports Bluetooth A2DP using either the original SBC encoded form or the latest higher quality aptX encoded form.

SBC and aptX refer to the encoding used over the wireless Bluetooth interface only and not the format your music may be in, which can be any type that your phone/laptop or other playing device supports.

Your playing device plays your files then re-encodes the playback before streaming it to the BT100 in one of these two formats.

Many phones and laptops now feature Bluetooth with A2DP. SBC should be supported by all such devices (it is the mandatory format for A2DP).

aptX is optional, so check if your sending device supports it, if you wish to achieve the highest quality audio transfer.

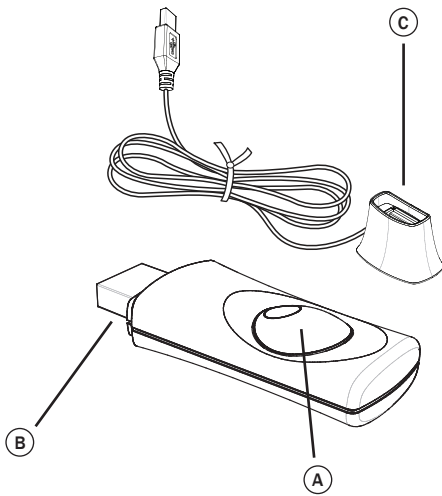
Note: The BT100 declares that it can handle both SBC and aptX to the sending device which will then use whichever version it supports.

What is aptX?

aptX is a high quality CODEC (CODer/DECoder) i.e. a way of compressing audio data so it can be sent over a link such as Bluetooth then decompressed on the other side (if both devices support it).

If your Bluetooth audio source does not support aptX, the BT100 will fall back to using the standard SBC CODEC that is supported by all Bluetooth audio devices.

BT100 controls and connections



A. Pairing button/Status LED

Button performs pairing and related functionality. Integrated LED indicates BT100 status.

B. USB plug

Streams high quality USB audio into your 851N USB socket.

C. Extension cable

Allows the BT100 to be positioned for accessibility or optimal wireless reception.

Pairing

To begin streaming high quality music from your chosen media source it will first need to be paired with the BT100.

- A. Insert BT100 into the USB port at the back of your 851N.
- B. Wait a moment for the BT100 to be detected. Then double click the button to enter pairing mode, the BT100 indicates it is in the pairing state by flashing rapidly.
- C. Put your Bluetooth compliant audio source into pairing mode. Please consult your manufacturer's user manual on how to do this.

Pairing your BT100 and source establishes an authorised audio link that can then be used again in the future without having to go through this stage again.

After pairing you can just select the BT100 and play at any time as long as your Bluetooth A2DP compatible source (phone/laptop etc.) is within approx. 10m of the BT100.

Normally on your source you will need to select Bluetooth Pairing and then the BT100 should appear as 'Cambridge Audio BT100' in a list of locally found Bluetooth devices.

Select that item in the list to finish pairing.


- D. On successful pairing, the BT100s LED goes off for a second or two, then triple flashes quickly. The LED then goes off and only lights up in the future when you are playing audio via Bluetooth.
- E. To play back via a paired Bluetooth device, simply select the BT100 on that device and start playing. The BT100 LED lights up constantly when streaming SBC or on and flicks off every 2 seconds when streaming aptX.

Notes:

- You can pair to more than one source up to a maximum of 8 sources at any time. Pairing to a 9th device will cause the first one to be forgotten and so on. However as you would expect the BT100 can only play back from one of these sources at a time.
- When you have finished playback many sources keep the Bluetooth link active for a time unless you actively tell them to stop by deselecting playback via the BT100 (do not unpair as this is not necessary).
This can prevent another source to be able to access the BT100.
To immediately use another source, simply deselect the BT100 for playback on your first source device before starting up on a second.
- Some devices stream empty data all the time even when paused or stopped. These devices will cause the BT100s LED to be on even if playback is currently stopped or paused.

Spotify

Spotify lets you listen to millions of songs – the artists you love, the latest hits and discoveries just for you. If you are a Spotify Premium user, you can control your 851N using the Spotify app.

1. Connect your 851N to the same Wi-Fi network as your phone or tablet running the Spotify app.
2. Open the Spotify app, and play any song.
3. Tap the song image in the bottom left of the screen.
4. Tap the Connect icon .
5. Pick your 851N from the list.

For information on how to set up and use Spotify Connect please visit www.spotify.com/connect.

The Spotify Software is subject to third party licenses found here: www.spotify.com/connect/third-party-licenses.

Settings menu

This menu contains various setup/configuration menus as shown below.

Settings

- » Network
- » Firmware
- » Audio
- » Standby mode
- » Automatic Power-down
- » Language
- » Display Brightness
- » Remote Control
- » Device Name
- » Edit Input Names
- » Factory Reset

Network

This menu enables you to set your 851N's network settings, scan again for a connection to another wireless network, or to manually configure the network parameters. This is useful if you move your 851N to a new location for instance.

By default the 851N will be set for Automatic wired/wireless detection and automatic IP addressing (DHCP) which will work without setup in most circumstances (for Wi-Fi you will need to enter your WEP/WPA key if you have one).

In Auto mode the 851N will look for a wired connection first and then scan for wireless connections if it doesn't find one. It will also try to obtain an IP address automatically from your router/DHCP server.

If you wish to make changes to your setup the 851N displays the following submenus.


- » Setup Wi-Fi
- » Enter network name
- » Current Config
- » Edit Config
- » Wi-Fi Strength (only available if connected wirelessly)
- » Signal Warning
- » Wi-Fi Region
- » Wired/Wireless

Note: All wireless related menu are only available if the wireless dongle is connected to the unit.

Setup Wi-Fi




This option scans all available Wi-Fi frequencies for wireless networks and allows you to connect to them.

The 851N can connect to 802.11b/g or n networks (2.4GHz frequency range only for n networks).

A list of available networks will be presented. If a particular network requires an encryption key, a  symbol will be seen at the end of the network name.

Select your local network using the Navigation/Select dial and press it in for enter.

The 851N will then connect to the network using a saved key (if you have previously set one) or present you with an alphanumeric entry menu. Here you can enter the network key you set up when setting up your wireless network.

Select each character in turn using the Navigation/Select dial and then press  or navigate to the  symbol and press Navigation/Select dial to enter that key. If you make a mistake, press  to go back one character.

The 851N can handle keys in WEP, WPA and WPA2 formats (the choice of format is made by appropriate settings on your router) and automatically generates the right format from your text according to the router request.

Enter the network name

This option allows the 851N to search for and connect to a particular network name only.

Type your network name in using the alphanumeric entry screen.

If no matching network is found 'Network not found' will be displayed.

Current config

This menu firstly displays the IP mode (static or dynamic). This will be Auto/DHCP (i.e. dynamic, this is the default) or alternatively Static IP.

For either mode by turning the Navigation/Select dial the 851N will scroll through the various current IP parameters, for instance the ESSID of the current wireless network, Wired and Wireless MAC addresses, current IP address, (Sub)Netmask, Gateway address etc.

Edit config

This menu allows the selection of IP mode between static or dynamic (Auto/DHCP). Auto/DHCP is recommended for most people in most circumstances. Static IP requires quite a bit of knowledge about IP networks, and is for advanced users only.

The default setting is thus Auto/DHCP, here the 851N obtains its IP address each time you switch in on by a process called DHCP which means it is different each time it is acquired. This process is completely automatic and much simpler than implementing Static IP.

However sometimes it is useful (especially in large networks) to know the exact IP address of each device, this can only be done by using static IP.

When using Static IP you will also need to enter the network mask you wish to use and the addresses of your gateway and DNS service, note there is no way for Cambridge Audio to know what these are in your network. Only select static IP if you know exactly what you are doing!

To set static IP, select the 'Settings > Network > Edit Config' menu.

The 851N will now display 'Auto (DHCP)? YES/NO'. Turn the 851N's rotary dial to select 'NO' and then press SELECT.

You will now be able to enter the fixed IP address you wish to give your 851N by using the rotary dial to select the desired numbers followed by pressing Navigation/Select dial to end inputting the address.

The 851N will now prompt you to enter the required network mask for the network. You will be able to enter this in the same way as before for entering the IP address.

You will now need to enter the default gateway's IP address used by the 851N on the network.

Finally, you will need to enter the DNS IP address for the 851N. On some networks, you may need to enter your ISP's DNS IP address, which should be available on your ISP's support page on their website.

After entering the above information, the 851N will now try to connect to your network. If you wish to use DHCP again simply select 'Settings > Network > Edit Config' and then set the 'Auto (DHCP)? YES/NO' to 'YES'.

Wi-Fi strength

Displays the strength of the received Wi-Fi Signal.

Note: If Wi-Fi has been turned off (Ethernet mode only) the signal strength will show as 0%.

Signal warning

The 851N can display a warning if the Wi-Fi signal strength is low enough to be causing reduced throughput. The options for the Signal Warning are simply Yes or No.

Wi-Fi region

Different parts of the world use slightly different frequencies for Wi-Fi. For best performance you should set the 851N to the region you live in, the current options are US, Spain, Europe (i.e. other than Spain), Japan.

Wired/Wireless connection

It is possible to connect your 851N to your network via an available Ethernet connection (RJ45) or via a Wi-Fi router. By default the unit is in AUTO mode, each time you turn the unit it looks for the presence of a wired connection, and tries to use this, if none is present or it cannot connect it then tries to use the wireless connection and so on. In Auto mode once the 851N has established a certain type of connection to the network, then this type of connection will remain in use while the 851N is on.

You can alternatively configure the 851N to permanently only use the wired or wireless connection from the 851N's 'Network' menu, select 'Wired/Wireless'. This menu will present you with three options: 'Auto', 'Wired Only' and 'Wireless Only'.

Selecting 'Wired Only' will cause the 851N to reboot and then only use its Ethernet connection to communicate with the network. Selecting the 'Wireless Only' will cause the 851N to reboot and only use its Wi-Fi connection. Selecting the 'Auto' option means the 851N will try both and settle on the one it can make work as described above.

Firmware

This menu item displays some hardware/software version numbers for your 851N. Turn the rotary dial to scroll through the various items.

The Service Pack is the currently loaded firmware software. It's a good idea to note this down if you need to contact our technical support people as they may request it.

The Serial Number and Product Code are not normally required by the technical support team.

Note: This Serial Number is not the same as the physical serial number on the back of the product itself.

- » Check for updates
- » Version

Check for updates

Use this option to download new firmware for the 851N from Cambridge Audio over the Internet.

If you select this item the 851N will contact our server and see if a newer version of software is available ('Checking for updates' will be shown in the display).

If new software is found the 851N will prompt you and ask if you want to download it or not. It is a good idea to update the firmware from time to time to take advantage of any bug fixes or new features. At this stage, you can press the 851N's **↵** button to cancel the firmware upgrade. A Firmware upgrade may take several minutes.

Note:

- It is very important that once the Firmware upgrade has started you do not switch off the power to the 851N until the operation is complete otherwise the 851N may become permanently damaged.
- Also do not interrupt the network or internet connection by removing the Ethernet lead or switching off your router etc.

Version

This menu item displays some hardware/software version numbers for your 851N. Turn the rotary dial to scroll through the various items.

The Service Pack is the currently loaded firmware software. It's a good idea to note this down if you need to contact our technical support people as they may request it.

Audio

This menu contains a setup configuration as shown below.

- » Digital Pre-amp Mode
- » Balance (only available when digital pre-amp mode is enabled)
- » USB Audio Class

Digital Pre-amp mode, when enabled, allows volume adjustment to be performed within the up-sampling Digital Signal Processor (DSP) before being converted to an analogue audio signal for connection to a power amp.

Normally, the output of 851N (and most other source components) is output at "full-scale" (i.e. maximum volume). This signal is then fed into a pre-amp which is used to control the volume of all audio sources connected to it.

To enable Digital Pre-Amp mode it must first be activated within the setup menus. Go to "Settings -> Audio -> Digital Pre-amp Mode" and set to "On". 851N will then respond to the vol+ and vol- buttons on the remote control at any time.

It is also possible to adjust the volume using the rotary controller knob on the front of the unit.

Whenever the 851N is showing its 'Now playing' screen turning the rotary controller knob will adjust the volume. Pressing back or home etc. to access the menu system allows the use of the rotary controller for menu browsing. If you are in a menu and need to adjust the volume immediately simply press the **'i'** button to go straight to 'Now playing' and then use the rotary controller.

The last used volume setting is memorised when the unit powered off.

USB audio class

USB Class options enable 851N compatibility with both USB Audio 1.0 and USB Audio 2.0 interface formats. The default setting is USB Audio 1.0 which will work driverlessly with most operating systems for 16-24 bit content at 32-96kHz. Note USB Audio 2.0 requires a driver to be loaded for Windows. Without this selecting USB Audio 2.0 will normally give no output. See earlier section on USB Audio for advanced users.

Standby mode

ECO mode

If ECO mode is enabled, then the 851N is in its default 0.5W standby mode.

When ECO Mode 0.5W standby is enabled the 851N can be switched on from:

- Front panel power button,
- IR remote control power button with IR received on either the front panel IR receiver or the IR input on the rear panel,
- RS232 power on command for custom installations.

Network standby

This is a higher power standby mode which allows the StreamMagic module and wired or wireless network to remain powered. If this mode is enabled then the 851N can be switched on from the Cambridge Connect app.

Automatic power down

The 851N will switch itself off after 15 minutes if it is not playing anything and there has been no user interaction with it during this time. As a default this is set to 15 minutes, but you can increase or decrease this time, or turn this feature off altogether if desired.

The Auto power down setting can be found in Settings > Automatic Power-down. There, using the rotary dial you can adjust APD from OFF to 2 hours, in 5 minute increments. Press the rotary dial to accept the new APD setting.

Language

Allows you to change the display language used.

A list of the currently supported languages will be shown. Select your preferred one and press enter.

Note: The 851N will then restart in order to start again in the new language, this will take approximately 30 seconds.

Display brightness

Alters the brightness of the 851N display backlight. There are three brightness levels; off, dim, bright and an option to switch-off the backlight.

When the display is set to OFF, nothing will be displayed onscreen until a selection is made via the front panel or remote control. The display will then re-activate allowing you to browse the menu and make your selection. The display will then automatically switch back off after a few seconds if no further selections are made.

System remote control

There are four options:

Standard 8-Series – is the default and works with the 851N remote control when the handset is in default mode.

Alternate 8-Series – gives a secondary code set in cases where the 851N remote codes are found to clash with another remote handset.

If Alternate 8-Series is selected on the 851N then the remote handset must also be set to Alternate remote codes as well as follows:

Press and hold down the DAC/SM power button whilst inserting the batteries to switch to Alternate 8-Series control codes.

By inserting the batteries without the DAC/SM power button held down will default to Standard 8-Series codes.

CX-Series – choose this option to enable the system remote control from the CX range to control the 851N.

No remote control – this will disable the ability of any of the above remote controls to operate the 851N.

Device name

This menu allows the setting of the declared UPnP Client name for your 851N.

This is the name other UPnP devices (such as control points and remote apps etc.) will display when they see the 851N.

The default name will be '851N' but can be changed to any name you can easily recall such as 'Dads 851N' or 'Kitchen' etc.

Cambridge Audio

Edit digital input names

This allows you to customise the names associated with each digital input so that they correspond to the actual device names connected to them.

There are six digital inputs:

- USB Audio
- D1 - D5

Each input is named as default by its input type. To rename an input, go to "Settings -> Edit Digital Input Names", highlight the desired input and select it to rename. The screen changes to a list of letters, with the current name displayed at the top. To delete existing letters press the "Stop/Delete" button at the bottom left of the display. Navigate through the letters and select each letter in turn to rename the input. When finished, select the "Return" symbol at the end of the letter list (you can press the "Home" button on the right hand side of the display to jump to it). The name is then saved and the display returns to the Edit Digital Input Names menu screen.

Factory reset

Puts all the settings back to their defaults as they were when they left the factory.

The 851N will ask you if you are sure you want to proceed before performing a reset.

Note: If you perform a factory reset, you will lose any saved WEP/WPA keys for your wireless network connection.

Cambridge Connect app

The Cambridge Connect app is a free Apple or Android application that allows wireless control of the 851N or other Stream Magic powered Cambridge Audio products.

The application allows full control of the 851N including Internet Radio, Streaming Services, UPnP Media, Presets, Queuing and more.

It also supports display of Album artwork and Station logos (where available).

To use the Cambridge Connect app you will need a Wi-Fi network or Access point for the application to connect to; the connection from your router to the 851N can then be either Wi-Fi or Ethernet.

Search for 'Cambridge Audio' on the App Store/Play Store to download the latest version.

The 851N allows the user to control playback volume via the Cambridge Connect app by either:

- Using the digital pre-amp inside the 851N, or
- Using a Cambridge Audio Azur amplifier or AV Receiver connected to the 851N via the Control Bus.

Digital pre-amp

When the digital pre-amp mode is enabled on the 851N, the mobile application allows direct manipulation of playback volume via a slider located on the Now Playing screen.

Connected Azur amplifier/AV receiver

Users can enable Azur Mode in the Settings screen on the application when using the 851N in conjunction with a Cambridge Audio Azur amplifier/AV Receiver. Users should then select whether they are using a Cambridge Audio Azur amplifier or an AV Receiver. If the 851N and the Amp/AV Receiver are connected using the supplied orange Control Bus cable as shown below.

Volume control is now possible via the 'Now Playing' screen volume-up and volume down buttons.

Technical specifications

D/A Converters	Twin Analog Devices AD1955. Operating at 384kHz sample rate, 24-bit, current output.
Up-sampling DSP	Analog Devices SHARC ADSP-21261 (150MHz MCU, 32bit, 900MFLOPS)
Up-sampling Algorithm / Digital Filter	ATF2; Up-samples to 384kHz/24-bit. Filters: Linear Phase, Minimum Phase, Steep
Analogue filter	2-pole differential Bessel with DC servo (for both Balanced and Line analogue outputs)
THD+n @ 1kHz, 0dBFS	< 0.0006%
THD+n @ 20kHz, 0dBFS	< 0.0013% (measured 22Hz – 80kHz bandwidth)
Frequency Response	+/- 0.1dB* (20Hz – 20kHz) -0.5dB* @ 47kHz typ
Output level	Line: 2.2Vrms Balanced: 4.4Vrms
Signal to Noise ratio	-110dB (un-weighted)
Total correlated jitter	< 80psec
Crosstalk @ 1kHz, 0dBFS	< -120dB
Crosstalk @ 20kHz, 0dBFS	< -110dB
Digital outputs	S/PDIF Co-axial, Toslink Optical, AES3/EBU: Linear PCM 32kHz-192kHz sample rate, 16-24 bits.
Digital Inputs	S/PDIF Co-axial, Toslink Optical, AES3/EBU: PCM 32kHz-192kHz sample rate, 16-24 bits. USB Audio (streaming): Linear PCM 32kHz-192kHz sample rate, 16-24 bits , or DSD (at 64x rate only)
Audio Formats (Audio files over Ethernet, Wi-Fi or attached USB storage device)	WAV containing uncompressed PCM 16-24 bit 32-192kHz FLAC containing losslessly compressed PCM 16-24 bit 32-192kHz Apple Lossless (ALAC) containing losslessly compressed PCM 16-24 bit 32-192kHz AIFF containing uncompressed PCM 16-24 bit 32-192kHz Microsoft® Windows Media™ Audio (WMA 9 Standard) 32-320kbps MP3 (CBR or VBR) 16-320kbps AAC, HE AAC and AAC+ (CBR or VBR) 16-320kbps OGG Vorbis 32-320kbps
Streaming Protocols	RTSP (Real Time Streaming Protocol) MMS (Microsoft Media Server Protocol) HTTP (Hyper Text Transfer Protocol)
Playlist	ASX (Microsoft® playlist format) M3U, PLS
Wi-Fi	IEEE 802.11 b/g or n (2.4GHz connection used only)
Wi-Fi Encryption	WEP, WPA, WPA2
Ethernet	IEEE 802.3, 10 Base-T or 100 Base-T
USB power	4 x USB 2.0 'A' type sockets Rear 1 (Wi-Fi): Current limit 1A Rear 2+3: Shared current limit 1A Front: Current limit 1A
File systems	FAT32, NTFS
Mains inlet voltage	Dependent on regional configuration: 230V AC (+/-10%), 50/60Hz or 100/115V AC switchable (+/-10%), 50/60Hz

Standby consumption	<0.5W
Max power consumption	30W
Dimensions	115 x 430 x 360mm (4.5 x 16.9 x 14.2")
Weight	8.1 Kg (17.8lbs)

* Steep filter disabled

* iRadio/Streaming Services are output as 16-bit data at the appropriate sample rate for the decompressed data. The sample rate will be 32kHz, 44.1kHz or 48kHz depending on the streams sample rate.

Incoming streams of less than 32kHz sample rate cannot be output over S/P DIF /Toslink.

For compressed streams the true resolution of the audio is of course limited by the encoding.

For Media content from local drives or UPnP this outputs in its native resolution of 16/24-bit, 32kHz 44.1kHz 48kHz or 96kHz with bit for bit transfer.

Troubleshooting

If you experience any trouble with your 851N, then you may find it useful to visit the help section on our webpage at: <http://support.cambridgeaudio.com/>.

General Help guidelines:

If you have trouble connecting the 851N to your network, these steps may help to resolve the problem:

- Confirm that a connected computer can access the Internet (i.e. can browse the web) using the same network.
- Check that a DHCP server is available, or that you have configured a static IP address on the 851N. You can configure a static IP address on the 851N using the menu item 'Settings -> Network Config -> Edit Config', and then select 'No' for 'Auto (DHCP)'. DHCP is however the recommended method.
- Check that your network's firewall is not blocking any outgoing ports. As a minimum, the radio needs access to UDP and TCP ports 80, 554, 1755, 5000, 6000 and 7070.
- Check your access point does not restrict connections to a particular MAC addresses. You can view the radio's MAC address using the menu item 'Settings -> Network Config -> View Config -> MAC address'.
- If you have an encrypted Wi-Fi network, check that you have entered the correct key or passphrase into the 851N. Remember that text-format keys are case sensitive. If, when attempting to connect to an encrypted network, your 851N displays: 'Wireless error' followed by a 5-digit number, then please ensure that you enter the correct passphrase for the network. If the problem persists, then you may need to consult your network configuration.

If your 851N can connect to the network successfully, but is unable to play particular Stream Magic stations, it may be due to one of the following causes:

- The station is not broadcasting at this time of the day (remember it may be located in a different time zone).
- The station has reached the maximum allowed number of simultaneous listeners.
- The station is not broadcasting anymore.
- The link in our database is simply out of date.
- The Internet connection between the server (often located in a different country) and you is slow.
- Try using a computer to play back the stream via the broadcaster's web site.

If you can play back the station with a computer, please email us at support@cambridgeaudio.com and we will be more than happy to look into the availability of this.

If you have problems with UPnP playback always check the following:

- Ensure your chosen UPnP server software is capable of serving the file type you are trying to access. Some servers do not serve FLAC for instance.
- The 851N can only play non DRM files. Files that have DRM controls cannot be played by the 851N. Some servers may be able to authorise and de-crypt Microsoft Playsforsure before then serving the content to the 851N but this operation is not guaranteed as it is purely a function of the server.
- If attempting to play 24-bit WAV or FLAC content note a wired Ethernet connection is normally required for reliable operation due to bandwidth considerations.
- Check the 851N is capable of playing back the file type you are trying to access. WMA, AAC, MP3, Vorbis, FLAC and WAV can currently be played. The 851N does not support ALAC, WMA Pro, WMA lossless, RAW, AU or other file types not mentioned.

If you have problems with USB Media playback always check the following:

- Check the 851N is capable of playing back the file type you are trying to access. WMA, AAC, MP3, Vorbis, FLAC and WAV can currently be played.
- The 851N does not support ALAC, WMA Pro, WMA lossless, RAW, AU or other file types not mentioned.
- For USB Media the 851N can only play non DRM files. Files that have DRM controls cannot be played.
- Check that your device does not require more than 1A if it is powered from the USB socket itself.
- Check your device is formatted in FAT32/NTFS format.
- The way you organise your USB media affects the size of internal database the 851N needs to build dynamically as you browse content. Good practice is to create folders for Artists within which you should have a sub folders for each Album which then containing the tracks for that Album. Libraries with thousands of tracks in one folder will progressively slow down the 851Ns media browsing.

For all servicing, in or out of warranty, please contact your dealer.

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