

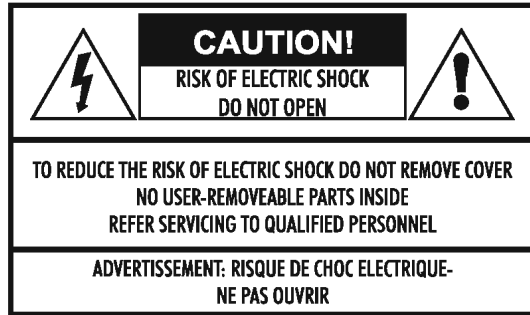


8200CD

User Instructions

audiolab

1: Statutory & Safety Information



This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.



This symbol indicates that dangerous voltage constituting a risk of electric shock is present within this unit.

IMPORTANT SAFETY INFORMATION

Read these instructions.

Keep these instructions. In the event that you pass the product to a third party this instruction manual should be provided along with the product.

Heed all warnings.

Follow all instructions.

Do not use this apparatus near water.

Clean only with dry cloth.

Do not block any ventilation openings.

Install in accordance with the manufacturer's instructions.

Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

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 wider blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

Use only attachments /accessories specified by the manufacturer.

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



Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

Unplug this apparatus during lightning storms or when unused for long periods of time.

Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is 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 electrical shock, do not expose this product to rain or moisture. The product must not be exposed to dripping and splashing and no object filled with liquids such as a vase of flowers should be placed on the product.

No naked flame sources - such as candles - should be placed on the product.

Caution: Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this device.

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 or television reception, which can be determined by tuning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orientate or re-locate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into 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.

This label tells you that the unit contains a Laser component. Opening the unit will expose the user to radiation from the laser beam.

CLASS 1
LASER PRODUCT

WARNING: The means of disconnecting this apparatus from the mains supply is the mains plug. At all times this must be unobstructed, freely accessible, and capable of being removed in an emergency.

Mains supply and safety

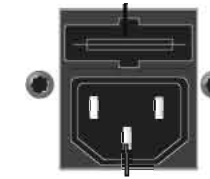
Class I construction. These products must be connected to earth.

Power Cord: An AC power cord is normally supplied with a mains plug suitable for your area. If you have any doubts, consult your dealer about obtaining a suitable power cord.

Mains Supply: The mains voltage of Audiolab units is shown on the rear panel. If this does not match the voltage in your area, consult your dealer. The mains supply fuse is on the rear panel. If it has broken, check for any obvious cause before replacing the fuse with one of the correct rating and type. The fuses for all areas are type T (time lag) AL 20mm.

The fuse values are: 220-240V: T1.0A : 100-120V: T2.0A

Fuse Carrier



IEC Mains Connector

The fuse is located in a slide-in carrier which also contains a spare fuse. The carrier can only be pulled out after the IEC power cord is unplugged. When the carrier is opened the first fuse is the spare. Remove and safely dispose of the blown fuse before replacing it.

Important notice to UK users

The appliance cord is terminated with a UK approved mains plug fitted with a 3A fuse. If the fuse needs to be replaced, an ASTA or BSI approved BS1362 fuse rated at 3A must be used. If you need to change the mains plug, remove the fuse and dispose of this plug safely immediately after cutting it from the cord.

Connecting a Mains Plug

Warning: The mains plug/appliance coupler/direct plug-in adapter is used as disconnect device, the disconnect device shall remain readily operable.

The wires in the mains lead are coloured in accordance with the code: Blue: NEUTRAL Brown: LIVE Green/Yellow: Earth

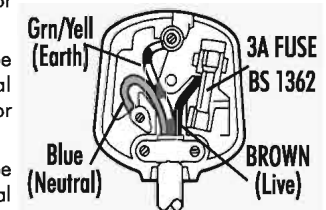
As these colours may not correspond to the coloured markings identifying the terminals in your plug, proceed as follows:

The Blue wire must be connected to the terminal marked with the letter N or coloured BLUE or BLACK.

The BROWN wire must be connected to the terminal marked with the letter L or coloured BROWN or RED.

The Green/Yellow wire must be connected to the terminal marked with the symbol E or coloured GREEN or GREEN/YELLOW or marked with the Earth Symbol.⊕

⊕ Protective earthing terminal. The apparatus should be connected to a mains socket outlet with a protective earthing connection.



2: Getting Started

Introduction: 8200CD

The Audiolab 8200CD is a fully-featured CD Player and DAC of advanced specification and impeccable performance. Please read this manual through carefully before installing and operating the player so that you can enjoy to the full the outstanding qualities of this unit.

Player Features:

Inputs:

- CD disc playback.
- Two external SPDIF stereo coaxial digital inputs
- Two external SPDIF stereo optical digital inputs
- USB 2.0 port for replaying stereo from a compatible host.

Outputs:

- Coaxial and optical SPDIF digital outputs to connect an external DAC or digital amplifier when replaying CDs.
- Balanced stereo analog output via XLR connectors for connecting an audio amplifier with balanced inputs.
- Unbalanced stereo analog output via RCA connectors for connecting an audio amplifier with standard inputs.

Operating Features:

- Automatic detection and decoding of digital input sources up to 24bit/176.4kHz.
- Selectable digital filter settings.
- The display can be switched on/off as required.
- Infra Red I/O to enable system control with one handset command when connected to suitably enabled units.

The USB Input

The USB input enables computers and other compatible devices with USB connectivity to be connected directly to the player. This topic is one of the most exciting topics in current audiophile circles and has ushered a new appreciation of the capabilities of computer audio.

Although most audio files stored on computers are compressed and of very average quality, the advent of affordable large capacity hard drives enables audiophiles to rip CDs at full resolution and play them via computers with results that are comparable to the same CDs played through the finest CD players.

The DAC and the USB featured in the 8200CD series is among the finest in the world irrespective of price.

Unpacking

Unpack the product fully. The carton should contain:

- The Audiolab 8200CD
- One IEC power cord suitable for your area
- One Remote Handset with two AAA batteries
- This instruction manual.

If any item is missing or damaged report this to your dealer as soon as possible.

Retain the packing for future safe transport of your amplifier. If you dispose of the packing, do so with regard to any recycling regulations in your area.

Placement

Place the unit on a sturdy shelf or table.

The unit is designed to run warm during normal operation.

Do not place anything on top of the unit. If you are using an equipment rack ensure the unit has sufficient space to allow adequate ventilation and is on its own shelf.

Before you connect the 8200CD to the mains, ensure your mains voltage corresponds to the rating plate on the rear of the product. If in doubt, consult your dealer. If you move to an area which has a different mains voltage seek advice from an Audiolab appointed dealer or a competent service technician.

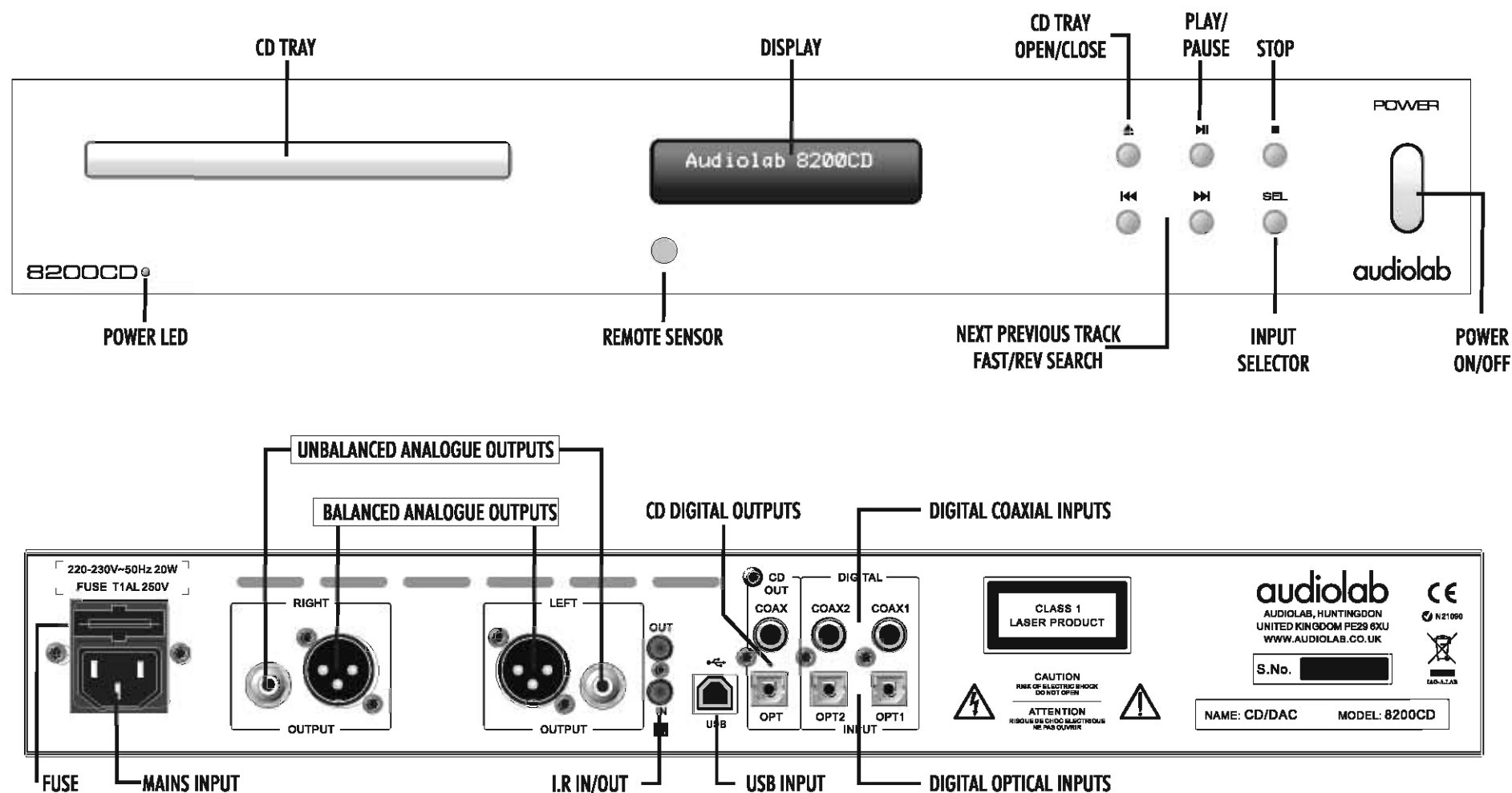
Make sure you locate the unit so that the front panel is in view as otherwise the infrared-remote handset will not work.

Before Starting

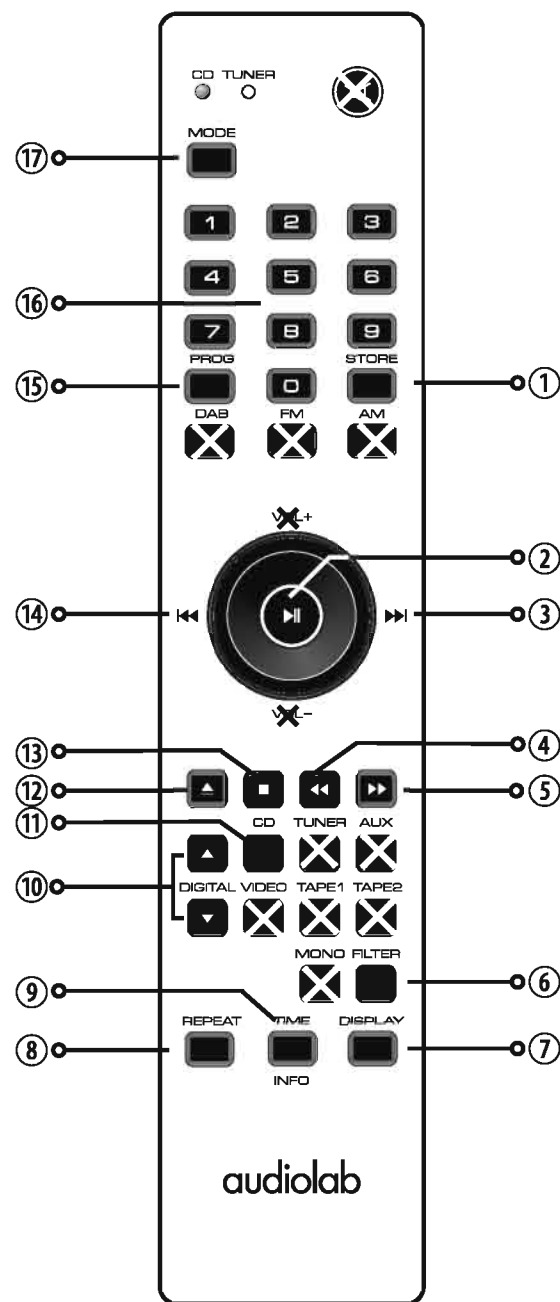
Your 8200CD's performance is determined by the care you take in setting your system up: this includes all connected sources, amplification and loudspeakers.

Please read all the notes regarding playback from computer sources and set up the associated computer audio source with care.

3: Controls and Connectors



4: Remote Handset



NOTE: The handset buttons shown crossed out are for use with other Audiolab units and are not operational when used with the 8200CD.

- | | | |
|----|--------------------|--|
| 1 | STORE | Store a Program in memory |
| 2 | ▶▶ | Press to start and pause CD/USB playback |
| 3 | ▶▶▶ | Move to the next track
Press and hold to Fast Forward |
| 4 | ▶▶▶ | Press and hold to Fast Forward |
| 5 | ◀◀◀ | Press and hold to Fast Reverse |
| 6 | FILTER | Select a digital filter |
| 7 | DISPLAY | Press to toggle the display off/on
Press and hold to select display brightness levels |
| 8 | REPEAT | Set a disc repeat mode. |
| 9 | TIME/INFO | Press to toggle Track/Disc Time Remaining and Elapsed
Press and hold to toggle CD text display. |
| 10 | DIGITAL | Press to cycle Digital Inputs |
| 11 | CD | Press to select CD playback |
| 12 | ▲ | Press to open/close the disc drawer |
| 13 | ■ | Stop CD/USB play |
| 14 | ◀◀ | Press once to replay the current track
Press again to move to the previous track
Press and hold to Fast Forward |
| 15 | PROG | Press to program tracks of your choice |
| 16 | NUMBER KEYS | Press to go directly to a track by number |
| 17 | MODE | Press to toggle the handset between Tuner and CD operation. The CD/Tuner lights flash to show the selected handset mode. |

Fitting Batteries

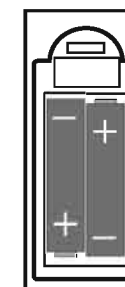
Open the cover. Unwrap the supplied AAA batteries and place them in the battery compartment with the polarity as shown. Replace the cover.

Always use AAA batteries and always replace them in sets. Never mix old and new batteries. Very weak batteries can leak and damage the handset. Replace them in good time!

Do NOT short circuit batteries or throw them into water, the general rubbish or a fire. Dispose of used batteries with regard to recycling regulations in your area.

1: Open the battery compartment cover

2: Insert 2 AAA batteries



3: Replace the cover

Handset Operation

The handset operates several Audiolab components.

Before using the handset always press the MODE button and check that the CD light illuminates. This puts the handset into CD operating mode.

Point the handset at the remote receiver and press the relevant key. The handset should be within 15 metres of the player and there must be a clear line of sight between the two units.

5: Connections

ANALOGUE OUTPUTS

Balanced Output: Balanced connections provide greater headroom and improved S/N ratio. If your amplifier has a balanced input always use the balanced connection. You need one XLR balanced cable per channel. The socket connects to the player and the plug normally connects to the amplifier.

Unbalanced Output: Connect a high quality stereo screened RCA phono lead from the unbalanced outputs of the 8200CD to a suitable input of the amplifier.

The balanced and unbalanced inputs should not be used together.

DIGITAL SPDIF CD OUTPUTS

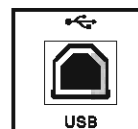
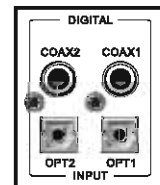
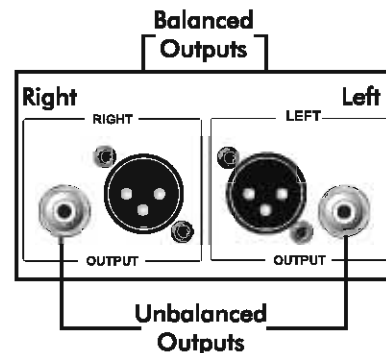
Coaxial and Optical outputs are provided for connecting the 8200CD to an external D/A convertor (DAC) or digital recorder. Connect an optical or a digital cable from the appropriate output to the input of your DAC, etc. These connections only operate when you are playing a CD. Both connections may be used together if required.

DIGITAL (SPDIF) INPUTS

Four digital inputs (two Co-axial and two Optical) are provided for connecting the 8200CD to an external SPDIF source. The inputs accept digital signal up to 24/176.4 so are connectable to a wide range of digital media including DAT players, Satellite and DVB-T receivers etc. Connect a video or a digital cable from the SPDIF output of the source component to the appropriate input of the 8200CD. If you are connecting a DVD player or other multichannel source, set the SPDIF output to PCM Stereo (not RAW) with the Subwoofer OFF.

USB PORT

You must use a certified USB2.0 cable. Connect the cable to the 8200CD and then to the computer or other USB digital source.

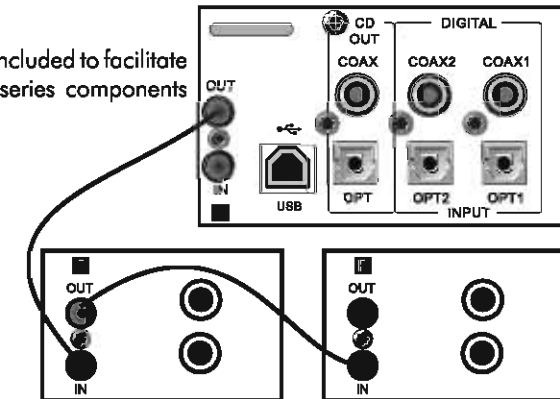


Make sure all system components are disconnected from the mains before making or changing system connections!

I/R CONNECTIONS

An external 3.5mm remote control bus is included to facilitate connection to suitably equipped 8200 series components and to multi-room controllers etc.

By connecting suitably equipped units in a 'daisy chain' you can establish control over an entire system with one handset.



MAINS INPUT

Before connecting the 8200CD to the mains supply make sure that all the other connections to your system have been properly and securely made.

Make sure the ON/OFF switch on the 8200CD is switched off. (released position).

Switch the mains supply off at the wall socket and then, using the cable supplied, connect the socket on the back of your 8200CD to an AC supply outlet.

The player is now ready for operation.

6a: Operation - 1

Switching On and Off

- Connect power to the amplifier/s the preamplifier and the 8200CD.
- Switch the mains power on.
- Switch on all source units including the 8200CD
- Now switch on the pre-amplifier.
- Finally, switch on the power amplifier/s.

When switching the system off: always switch off the power amplifiers **before** switching off the pre-amplifier and the 8200CD.

Whenever the 8200CD is switched on:

The Power LED illuminates, the display shows the Model no.
The player will always default to the last used input when it is switched on.

Playing a CD

If not already selected, press the CD button on the handset or cycle the Selector on the front panel to select the CD input.

Loading a Disc

Press Open/Close to open the drawer.
Load a disc into the drawer

Close the drawer.

The disc information will now display.
After reading the track information the disc will stop.

Playing a disc:

Press the Play/Pause key to play a disc.



When a disc is playing:

Press Play/Pause to pause the disc.

Press again to resume play.



Press STOP to stop the disc.



Next Track : Previous Track

Press ►► to move to the next track

Press ◀◀ once to replay the current track.

Press ►►/◀◀ repeatedly to move through the tracks forward or back one track at a time.



'Next Track': If you exceed the number of tracks on the disc, the player will 'wrap round' and play from Track 1.

'Previous Track': If you go past Track 1, the player will wrap round' and reverse search from the final track on the disc.

Direct selection of tracks from the handset

Select the wanted track directly from the keypad:
The disc will play forward from the chosen track.



If you choose a single digit track (e.g. 1) in a disc which contains more than 10 tracks, the player will pause briefly, waiting for you to enter a second digit. If none is entered, play will commence from the entered single-digit track. If the choice is invalid the display reverts to the previous state.

Note: you can preselect a track before you load a disc. When the disc is loaded the player will play from the selected track.

Time/Info Display

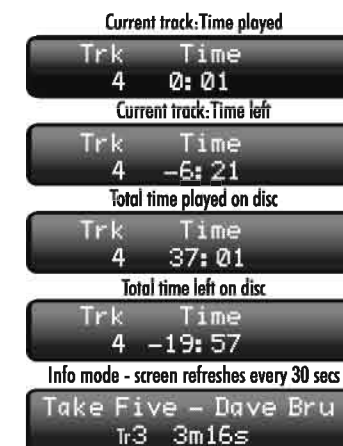
1: Repeatedly press the TIME/INFO key on the handset to cycle through the display as shown.



When playing a disc the player remembers the last TIME display mode set.

If you switch to another input and then back to CD mode the player recalls the last used state and plays from the point at which you changed inputs.

2: Press and hold the TIME/INFO key to toggle the display between **Time** and **Info** mode. In info mode the display shows Album Title and Artist when the disc is stopped and Track Title and Artist while playing. **This feature requires disc support.**

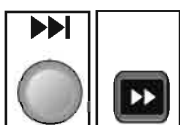
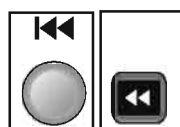


6b: Operation - 2

Search

Press and hold the Forward Search button to search forward through a track or tracks. If you keep the button pressed, the player will search the entire disc. When the end of the disc is reached the player will cycle around a point 1 second before the end of the disc. On releasing the button the player plays to the end of the disc.

Press and hold the Reverse Search button to search back through a track or tracks. If you keep the button pressed, the player will search back through the disc. When the start of the disc is reached, nothing further will happen. On releasing the button the player plays from track 1.



Repeat

Press the repeat key to cycle the repeat mode.



Program Play

You can create a custom program of up to 30 chosen tracks from a CD repeating the same track several times if you wish.

Program mode must be accessed when the disc is stopped.

Example: To enter a program of 4 tracks:

Press PROG.



Choose a track, press STORE.



Choose another track, press STORE.

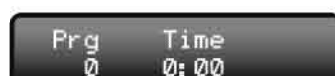


Choose a third track, press STORE.



To enter a track number between 10 and 99 - say 22

Press



To play the program: press PLAY

To stop Program play: press STOP. The program is stored in the player's memory until erased.

To erase a program from memory: Press STOP twice or open and close the disc drawer.

In program mode:

- Repeat program (but not repeat track) is available.
- Fast Fwd./Rev. search and Prev./Next Track are available.
- Time/Info displays track time/track elapsed only.

Other Player Functions

Switching the Display on and off

Press the DISPLAY key to toggle the display off and on.

Press and hold the DISPLAY key to bring up the Brightness menu. This enables you to alter the display brightness level.

When the display is OFF:

Pressing any key will bring the display on. After a few moments the display will again switch off. Switching the 8200CD off and on restores the display.

Digital Filter

Press the FILTER key to alter the Filter characteristics.

The **"Fast Rolloff"** filter typifies industrial standard characteristics (-6dB at 1/2 Fs with significant time-domain ringing) and is included here for comparison purposes.

The **"Slow Rolloff"** filter starts rolling off at a lower frequency than the fast Roll off filter but has a gentle rate of attenuation and significantly less "time-domain ringing".

The **"Optimal Spectrum"** filter is a digital filter which implements sampling theory and is designed for near perfect technical response in the frequency domain. This filter also has time-domain pre-ringing which can lead to listener fatigue.

The **"Optimal Transient"** filter exhibits no ringing - the transient nature of the music is preserved. Although this filter exhibits poor performance in technical measurements, sound from this type of filter has a purity and "naturalness" that more than compensates for the lack of technical specifications.

The Audiolab 8200CD is unique in that it offers you a choice of filters to meet your listening expectations.

DISPLAY



Display Brightness
High

Digital Filter
Fast Rolloff

Digital Filter
Slow Rolloff

Digital Filter
Optimal Spectrum

Digital Filter
Optimal Transient

7: Playing Digital Inputs

Selecting a Digital Input Source

Press the DIGITAL +/- buttons on the handset or the SEL button on the front panel to select a digital input.

When the input is locked, the front panel will display the input source frequency.

If the input display reads "No Lock" this is because the source is switched off, in standby, or the unit is paused.

There are no playback controls active when the 8200CD is processing a digital coaxial or digital optical input.

Notes: We recommend you pass a Digital signal to the 8200CD **without** any DSP processing or resampling at the source. This will allow the upsampling circuits in the 8200CD to work at their optimum.

If there is a digital volume control on the source unit, set it at maximum and use the analogue volume control in your preamplifier to alter the volume level. This may seem counter-intuitive but will preserve optimum performance.

Consult the user manual on your source unit for advice.



8a: Using the 8200CD with a PC - 1

Installation - Windows XP

The operating system must be Windows XP (SP2 or above).

It is essential that you use a fully certified USB 2.0 cable i.e a maximum length of 5 metres. Never use USB extension cables.

Switch the PC on and let it boot up.

Plug the USB cable into the 8200CD and the computer and then switch the CD player on. The player software will now interface with the computer and the drivers will automatically load. When the drivers have loaded you will see an information screen saying something like "Audiolab 8200 Series is now ready for use" - the actual words will depend on the installed version of Windows.

This process is automatic and normally needs no user intervention. The input does not have to be set to USB during this process. Please have your Windows Installation Disc available if prompted.

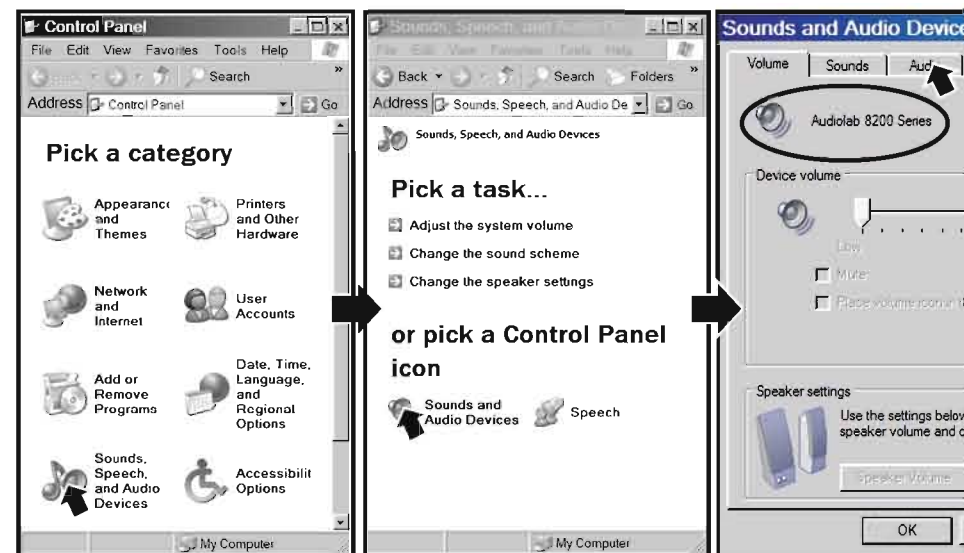
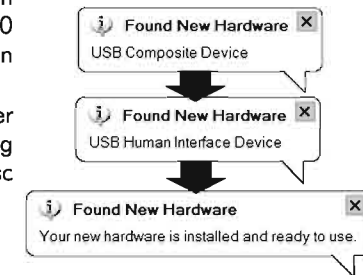
To check that the PC has recognised the player:

Navigate to "Control Panel"

Click on "Sounds, Speech and Audio Devices"

In the next screen click on "Sounds and Audio Devices"

Confirm that "Audiolab 8200 Series" is the default device.



8b: Using the 8200CD with a PC - 2

If the 8200CD is not selected as the default device:

Click on the "Audio" tab,
Select "Audiolab 8200 Series" from the list. Click OK.

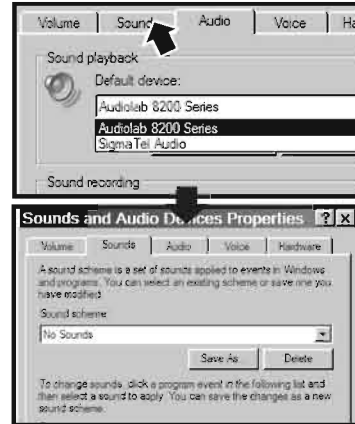
Disabling Windows sounds

If you are listening to the 8200CD while working at your PC you can suppress most of the Windows sound effects:

Click the "Sounds" tab.

In the next screen, select "No Sounds". Click "OK" to confirm.

- **The device is "Plug and Play":** When you disconnect or switch off the 8200CD the default sound device in your PC will automatically be re-selected.
- If you disconnect the 8200CD remember to deselect "No Sounds" in your Windows Sound scheme to restore the Windows sound effects.



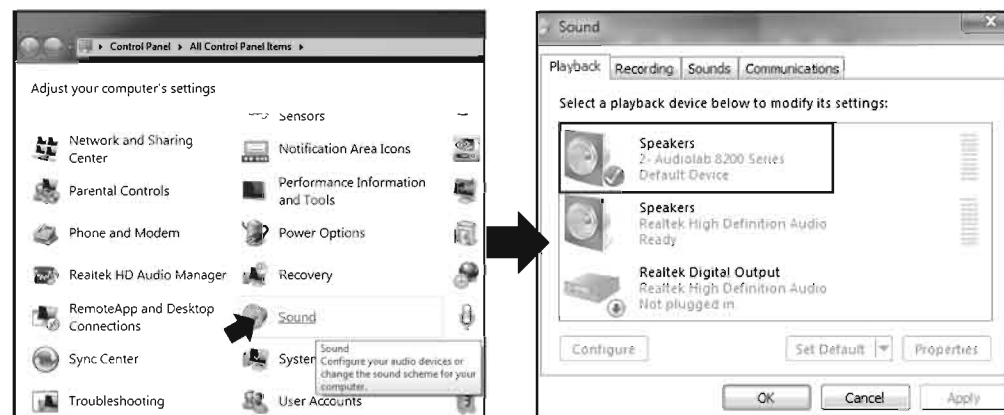
Installation - Windows Vista/Windows 7

Use a fully certified USB 2.0 cable i.e a maximum length of 5 metres. Never use USB extension cables.

Switch the PC on and let it boot up. Plug the USB cable into the 8200CD and the computer and then switch the CD player on. The player software will now interface with the computer and the drivers will load. The input does not have to be set to USB during this process. Please have your Windows Installation Disc available if prompted.

To check that the PC has recognised the player:

Go to **Start/control Panel/all Control Panel Items**

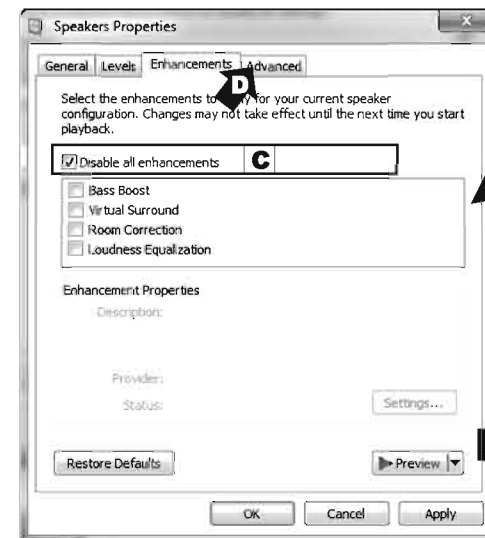


Click "Sound". "Audiolab 8200 Series" should appear as the default device.

If "Audiolab 8200 Series" does not appear as the default device, enable it. A green check mark appears by the default selection

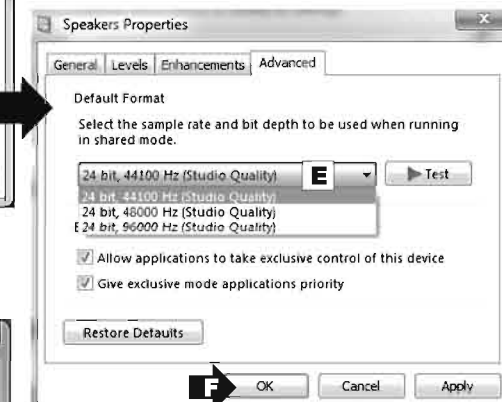
A: Select "Audiolab 8200 Series"

B: Click Properties



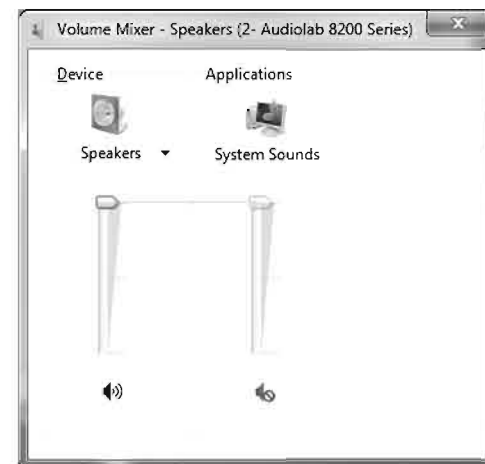
C: Ensure "Disable all enhancements" is ticked.

D: Click Advanced.



E: Select "24 bit, 44, 100 Hz (Studio Quality)"

F: Click OK



Launch the **Volume Mixer** utility from the taskbar.

Set the **"Speakers"** setting to Maximum. All levels should be controlled from your pre-amplifier.

Set **"System Sounds"** to minimum. This will suppress most of the Windows sound effects.

Setup is now complete.

8c: Using the 8200CD with a PC - 3

Basic Operation

Verify that the 8200CD is selected as the default player if necessary.

Use your preferred media player.

Turn the volume control on your pre-amplifier down very low. Make sure the Volume control is at full on the media player and in the PC control panel.

Press the DIGITAL +/- buttons on the handset or the SEL button on the front panel to select the USB input.

Select the music source in the PC and commence play.

Control the volume level via the preamplifier volume control.

Press ►► to play or

Choose a track with the ►►|◀◀ buttons: (press ►►| if necessary)

Press ►► or ◀◀ to choose the next/previous tracks.

Press ►► to pause and restart play.

Press and hold ►► or ►► to forward search.

Press and hold ◀◀ or ◀◀ to reverse search.

Press ■ to stop play.

**The 8200CD functions depend on support from the chosen media player.*



Input playing or player paused

Digital 24bit
USB 44.1k

Player in STOP mode

Digital
USB

No input

Digital
USB No Link

Advanced Playback in Windows

On the Windows platform the default Media Player is not capable of ultimate Audiophile performance.

A "Bit Perfect" audio stream has an output identical to the input with no changes and is the recommended solution. On the Windows platform it is impossible to produce Bit Perfect audio streams with standard software. To do this the user has to invoke either "Kernel Streaming", "WASAPI" or "ASIO".

It is possible to achieve bit perfect results within any Windows framework from Windows XP onwards through the use of third party utilities and this tutorial will help you get started. To do this to the best effect you need two utilities, an ASIO driver and a media player that can handle ASIO streams.

ASIO (Audio Stream Input/Output): The ASIO protocol originated in professional audio production. ASIO bypasses the audio processing in Windows allowing a direct path from input to output. To utilise ASIO the media player needs to support ASIO. Windows Media Player does not so we need to install a media player which does.

A free open-source ASIO driver is ASIO4ALL downloadable here: <http://www.asio4all.com/>. Version 2.10 and above supports Windows XP, Windows Vista and Windows 7 in both 32 and 64bit versions.

Media Players: At the time of writing, the preferred Audiophile Media Players are Foobar 2000 and JRiver Media Jukebox.

Foobar 2000: is an open source media player which is highly configurable with numerous addons. Performance is high with a basic but somewhat non-user-friendly interface.

JRiver Media Jukebox: is a free audio-only version of the full featured JRiver Media Center. You can download it here: <http://www.mediacjukebox.com>.

To start:

Download and install JRiver Media Jukebox

Do not install ASIO4ALL at this time!

9a: Advanced PC Operation - 1

To start: Download and install JRiver Media Jukebox.
Click the Shortcut to open the program.

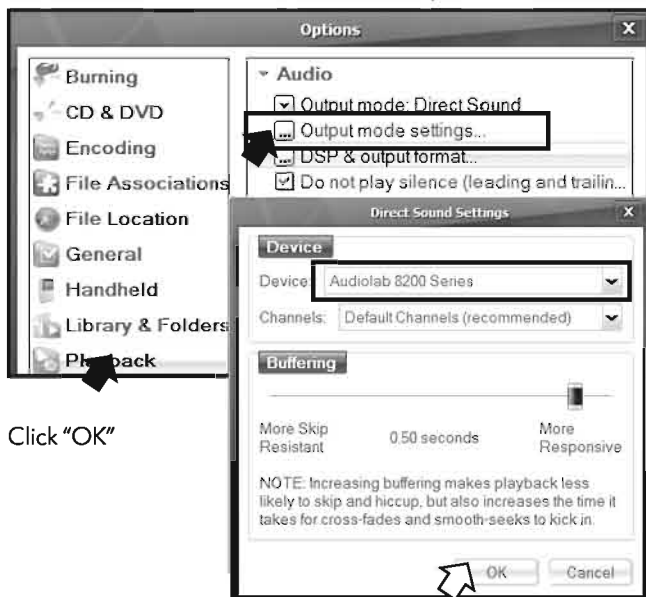
Now select "Tools" and then "Options"



When the "Options" Flyout opens: Click "Playback"

Click "Output Mode Settings"

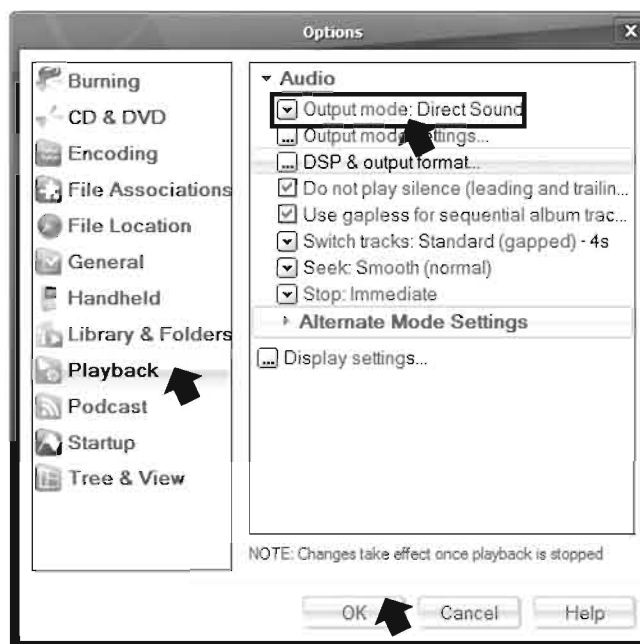
In the drop down box, check that the enabled device is the 8200CD. If not, select it from the menu list options.



Click "OK"

From the "Options" Flyout: Click "Playback"

Check that in the Output Mode box "Direct Sound" is enabled. If not, select it from the options.



Click OK on the Direct Sound menu

Click OK on the Options menu.

Media Jukebox is now set up.

You may now use Media Jukebox to play all your audio files or to fully optimise performance you can install ASIO4ALL

ASIO4ALL

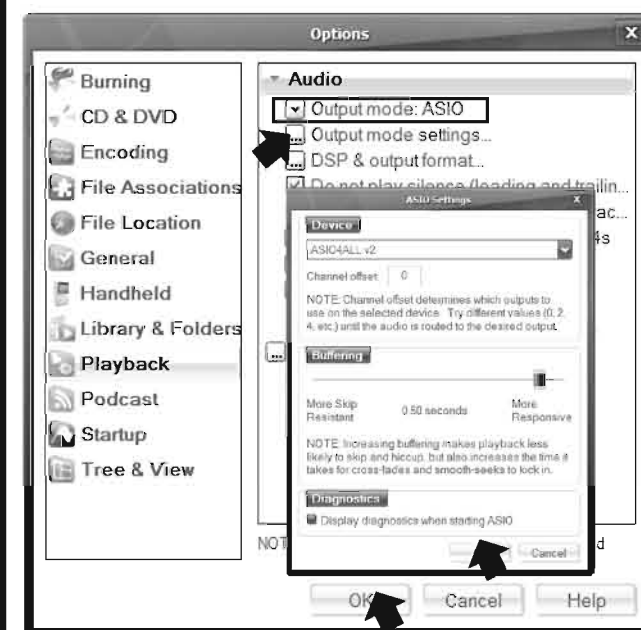
Install ASIO4ALL:

Open Media Jukebox:

Navigate to Tools/Options/Output Mode

Check that ASIO is selected. If not enable ASIO in the flyout

Now click "Output Mode Settings"



In the drop down box, check that the enabled device is ASIO4ALL. There should be no other alternative.

Click OK on the ASIO Settings Menu .

Click OK on the Options menu.

Media Jukebox is now setup to play via the ASIO driver into the 8200CD.

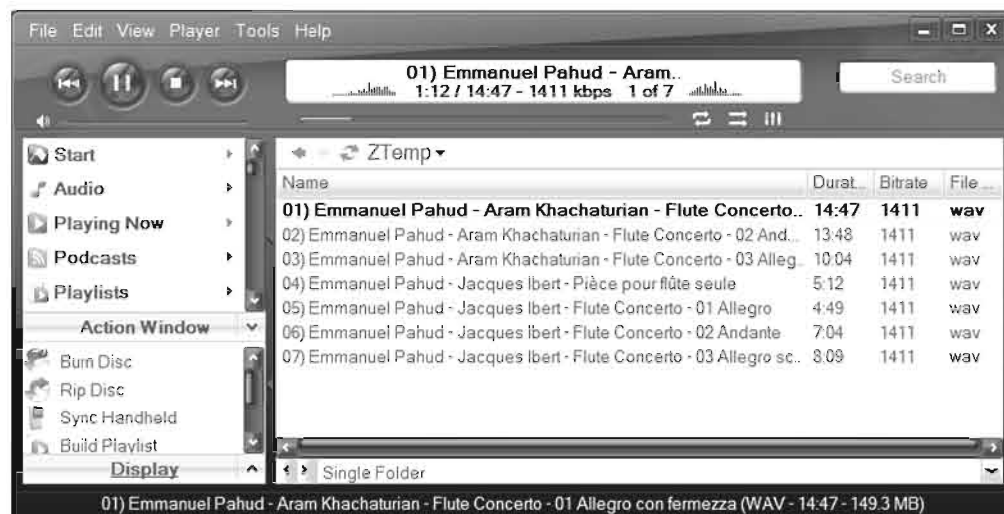
9b: Advanced PC Operation - 2

Using Media Jukebox and ASIO4ALL

Launch Media Jukebox

Select the location or library that holds your audio files

Select the file: Press PLAY



If all is well you will hear sound through the 8200CD.

You will also see the bitrate and sampling frequency on screen

Digital 16bit
USB 44.1k

Assigning the ASIO driver to the 8200CD

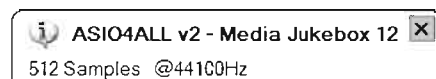
It may be the case that there is more than one sound card on your PC that is capable of operating on ASIO. If this is so the ASIO driver may detect another card and you will hear no sound from the 8200CD.

If this happens you will need to assign the ASIO driver to the 8200CD.

Let Media Jukebox continue playing. This is extremely important as the ASIO4ALL setup screen is *only* visible when an input is playing.

You will see this shortcut (green triangle) in the Quick Launch toolbar at the bottom right of your screen.

Click the shortcut to bring up the ASIO setup screen



This screen shows all the ASIO capable soundcards on the PC.

Move the highlight at the left to select "Audiolab 8200 Series"

Set the buffer size to 2048 samples. Close the Screen.



Stop Media Jukebox. Now restart the player

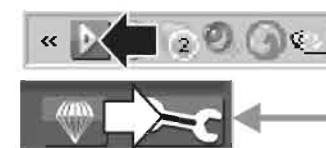


The player will now recognise the 8200CD.

Final Settings:

During play, click on the ASIO4ALL icon

In the next window click on the Spanner.

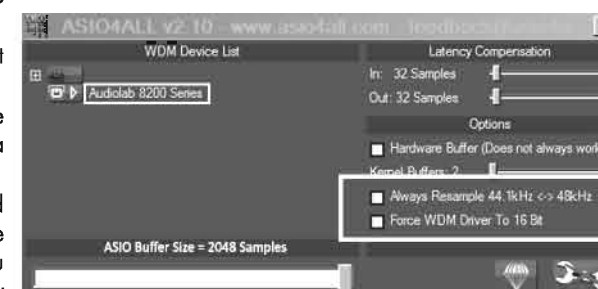


In the window which opens make sure the lowest two boxes are unchecked.

Your system is now setup for bit-perfect transfer.

Operationally, you will find that the 8200CD works seamlessly with Media Jukebox12.

All functions including forward and reverse search work perfectly from the handset. Please read the help menu and become familiar with all the many features of the player.



10a: Using the 8200CD with a Mac - 1

Introduction

Modern Macs come pre-loaded with Apple iTunes. Although it is possible to use alternative Media Players, iTunes has outstanding audio characteristics, and hosts a variety of advanced features. The Mac platform should ideally be OS 10.4.11 or above. The 8200 will also interface with certain other Apple devices - refer to your user manual for guidance.

It is essential that you use a fully certified USB2.0 cable. USB extension leads should be avoided.

Switch the Mac on and let it boot up. Plug the USB cable into the 8200CD and the Mac and then switch the 8200CD on. The device drivers will load in the background.

Initialising the 8200CD

Click on the "System Preferences" icon in the dock.



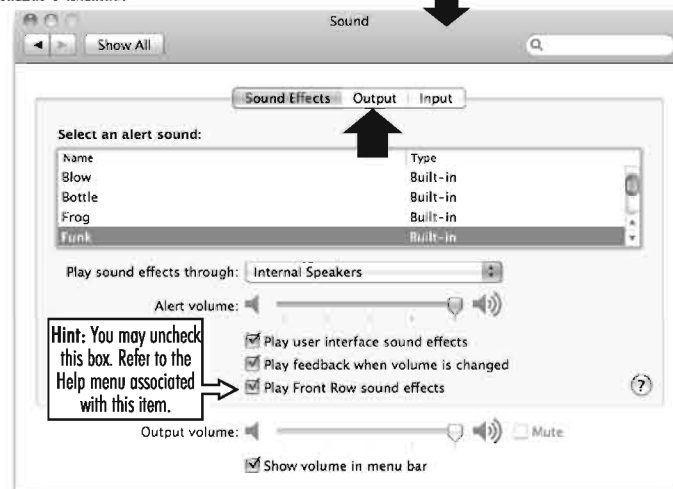
In "System Preferences"

Click on the "Sound" icon



In "Sound"

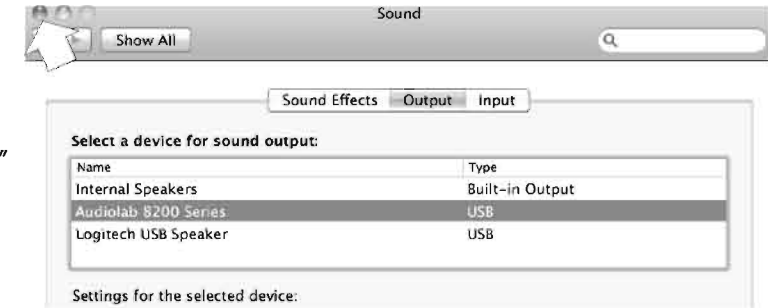
Click on the "Output" tab



In "Output"

Select the "Audiolab 8200 Series" icon as the device for sound output

Close the window.



Go to the Desktop

A: Click the "Finder" Icon

B: Click "Applications"

C: Click "Utilities"



10b: Using the 8200CD with a Mac - 2

From the Utilities Screen
Click "Audio MIDI Setup"

The "Audio Devices" Screen appears



Setting Up the 8200CD:

1: Highlight "Audiolab 8200 Series" in the list.

2: In the pop up menu: select "Use this device for sound output"

Music from iTunes will be directed to the 8200CD but the alert sounds will be sent to your secondary speakers.

3: Set the format to "44,100 Hz - 24bit".

4: Select the USB input on the 8200CD.

5: Start iTunes, and choose a track to play.

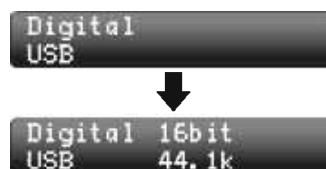
Press ►|| to play or

Choose a track with the ►►| ◀◀| buttons and then press ►||.

Press ►►| or ◀◀| to select next/previous tracks.

Press ►|| to pause and restart play.

Press and hold ►►◀◀ or ►►| ◀◀| to search forward/reverse.



Notes:

Altering Bit Depth and Sampling Rate.

The default sampling rate should be selected as 44,100 Hz 24 bit. If you are playing music at other sampling frequencies, you should set the sampling rate (see Note 4 above) to match that rate. The bit depth should at all times remain set to 24 bit.

* After changing the format, it is necessary to quit iTunes and then re-open it.

DSP Processing and Resampling:

Always pass a Digital signal to the 8200CD **without** any DSP processing or resampling at the source. This will allow the upsampling circuits in the 8200CD to work at their optimum.

11: Troubleshooting

Until you are familiar with the operation of your 8200CD you may experience occasional difficulties. This guide will help you overcome the most likely issues.

No response/poor response to handset commands

Check that:

- the 8200CD is switched on.
- there are fresh batteries in the remote control.
- the 8200CD's display window is visible and you are pointing the remote control towards it.
- CD mode is enabled on the handset. (CD led flashes when a key is pressed)

No sound

Check that:

- the correct source is selected.
- the volume on the preamplifier is turned up.
- your signal source/pre/power amplifier(s) are connected correctly and switched on.

Sound is poor quality / distorted

Check that:

- all cables are making good connections. If necessary, switch off the power, then withdraw the connector and plug it back in again, then switch on the power.

Digital Inputs display "No Lock".

Check that:

- the digital source is switched on and streaming.

USB input displays "No Link"

Check that:

- the USB port is correctly connected.
- the USB handshake has gone down or the computer has "gone to sleep".

I hear crackles/interference when playing a USB source

Check that:

- you are using a certified USB 2.0 interconnect, connected directly to your computer and not via a hub or extension lead.
- A device such as a bluetooth device, a webcam, wireless devices may cause interference. Avoid sharing a USB outlet between the 8200CD and other devices and where possible, disable non-essential devices.

Solving Compatibility Issues

A set-up mode is available to help you if compatibility issues arise. This mode should only be invoked by experienced users.

1: USB Compatibility with Legacy Products

The 8200CD is fully compatible with current versions of Windows, Mac and Linux platforms, and with current USB enabled Mac products. With certain legacy products the interface with the 8200CD may either be imperfect, or even non-functional.

As supplied the 8200CD is fully asynchronous, reflecting best practice. A "Compatibility Mode" may be invoked to assist with compatibility issues when using the 8200CD with legacy devices. **This mode should only be set when absolutely necessary as it impacts on the performance of the unit.**

2: High Jitter/Unstable Digital Streams

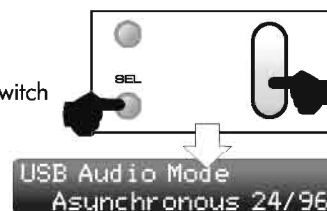
The digital inputs of the 8200 CD are tolerant of high-jitter digital streams. In extreme cases and especially when receiving input from certain DVB-T and satellite receivers, games consoles etc., the jitter from these sources may be so high that the interface suffers from clicking, drop-outs etc.

As supplied the 8200CD is set to Auto mode for maximum compatibility with digital sources. However, each of the four digital inputs may be altered to be more/less tolerant of jitter. Again, these parameters should only be changed if you are experiencing difficulties.

To enter the Set-up mode:

- Switch the 8200CD off.
- Hold the SEL. button and switch the unit on.

The USB Audio Mode appears



Navigating in Set-up Mode:

Adjustments may be carried out from the front panel or the handset.

- Press the ◀◀/▶▶ buttons to select a parameter.
- Press the ▶|| button to alter the setting.
- Press the ■ button to return to normal operation.

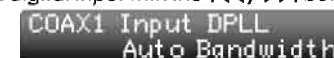
Setting the USB Audio Mode

- Select "USB Audio Mode" with the ◀◀/▶▶ buttons
- Press ▶|| to toggle Asynchronous /Compatibility mode.



Altering the Digital Input Settings

- Select a digital input with the ◀◀/▶▶ buttons



- Press ▶|| to alter the settings of the selected input.

There are four settings. All digital inputs can be individually set so you can customise each input to suit your requirements.

Auto Bandwidth: this is the default setting.

Low Bandwidth: this setting offers the best performance but with the lowest tolerance of source jitter errors.

Medium Bandwidth:

High Bandwidth: this setting offers the greatest tolerance to high jitter or less stable data streams but with reduced performance.

3: Changing the Audio Output Level

The default audio output level is 2 Volts (RCA Output) which is adequate in the vast majority of cases. This level can be boosted by 3dB if absolutely necessary. Such a case may arise if you are using a passive pre-amplifier feeding an insensitive (low-gain) power amplifier.

- Select "Output Level" with the ◀◀/▶▶ buttons
- Press ▶|| to toggle "0dB" or "+3dB"



After making the changes:

- Press the ■ button or switch the unit off and on to return to normal operation.

Notes:

- 1: If you are using the 8200CD with different USB sources, always enable Asynchronous mode where possible.
- 2: As there is no global setting to restore the unit to factory defaults, do not change any setting unless it is absolutely necessary and you know exactly what you are doing.

12: Service & Warranty

Care & Cleaning

While cleaning is in progress the AC power cord must be unplugged from the AC power supply socket.

Grease or dirt on the equipment may be removed with a soft, lint-free cloth slightly moistened with a mild solution of warm water and detergent or washing-up liquid. Do not use any other solutions or solvents.

If you have any queries regarding the use of Audiolab equipment, consult your dealer.

Servicing

Servicing of Audiolab products should only be carried out by authorised service agents. If service is required the equipment should be returned, securely packaged, preferably using original packaging, to your dealer.

In the UK equipment may be returned to the IAG Service Centre address shown on this page.

Always telephone before returning any equipment.

A note should be enclosed with your name, address, telephone number, and a brief description of the reason for return.

If you require Service outside the Warranty period, do not hesitate to contact your dealer.

Service Address

IAG Service Centre
Unit 4, St Margaret's Way
Stukeley Meadows Industrial Estate
Huntingdon Cambs
PE29 6EB
England
Tel: +44 (0)1480 45256 Fax: +44 (0)1480 413403

Audiolab limited warranty

Audiolab Ltd. warrants this product, subject to the terms and conditions below, to be free from defects in materials and workmanship. During the warranty period Audiolab will repair or replace (at Audiolab's option) this product, or any defective part in this product, if it is found to be defective due to faulty materials, workmanship or function. The warranty period may vary from country to country.

Terms and conditions:

The warranty starts on the date of purchase (or the date of delivery if this is later).

You must provide proof of purchase / delivery before work can be carried out. Without this proof, any work carried out will be chargeable to you.

All work will be carried out by Audiolab or its authorised agents or distributors. Any unauthorised repair or modification will void this warranty.

If any part is no longer available it will be replaced with a functional replacement part.

Any parts that are replaced will become the property of Audiolab.

Any repair or replacement under this warranty will not extend the period of warranty.

This warranty is valid only in the country of purchase, applies only to the first purchaser and is not transferable.

The following are not covered:

- Products on which the serial number has been removed, altered or otherwise made illegible.
- Normal wear and tear and cosmetic damage.
- Transportation or installation of the product.
- Accidental damage, faults caused by commercial use, acts of God, incorrect installation, connection or packaging, misuse, neglect or careless operation or handling of the product which is not in accordance with Audiolab's user instructions.
- Equipment that has been operated in conjunction with unsuitable, inappropriate or faulty apparatus.

- Repairs or alterations carried out by parties other than Audiolab or its authorised agents or distributors.
- Products not purchased from an Audiolab authorised dealer.
- Products that were not new at the time of original purchase.
- Products sold 'as is', 'as seen' or 'with all faults'.

Repairs or replacements as provided under this warranty are the exclusive remedy of the consumer. Audiolab shall not be liable for any incidental or consequential damages for breach of any express or implied warranty in this product. Except to the extent prohibited by law, this warranty is exclusive and in lieu of all other warranties whatsoever, both express and implied, including, but not limited to, the warranty of merchantability and fitness for a practical purpose.

This warranty provides benefits that are additional to and do not affect your statutory rights as a consumer.

Some countries and US states do not allow the exclusion or limitation of incidental or consequential damages or implied warranties so the exclusions in the paragraph above 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.

How to claim:

To obtain warranty service contact the Audiolab authorised dealer from which you purchased this product. Do not despatch goods without the prior agreement of the dealer, Audiolab or their authorised distributors.

If asked to return products for inspection and/or repair, pack carefully, preferably in the original cartons or packaging affording an equal degree of protection, and return prepaid. If unsuitable packaging is used, Audiolab may make a charge for the supply of new packaging.

Insurance is recommended as goods are returned at owner's risk. Audiolab or their authorised distributors cannot be held liable for loss or damage in transit.

Packing, insurance and freight on the return journey will be paid by Audiolab or their authorised agents or distributor if corrective work proves to be necessary.

13a: Technical Description

State-Of-The-Art

The Audiolab 8200CD/Q is a state-of-the-art external Stereo Digital to Analogue Converter, Fully Balanced Pre-Amplifier with Digital or Analogue modes (CDQ), and Clock-Locked CD transport.

Combining the ESS Sabre32 9018 DAC, Audiolab's proprietary fully balanced discrete Class-A analogue circuits plus 34 independent regulated power supplies, the CD/Q features an impressive array of Digital and Analogue inputs for USB, COAX, OPTICAL and Line level analogue sources.

For audio outputs, the CD/Q offers both true balanced XLR connectors as well as unbalanced RCA stereo connections on the rear panel.

The 8200CD/Q is software upgradeable via USB, making it the most flexible high performance combined CD / DAC / Pre-Amplifier on the market.

Jitter Reduction - The Audiolab Solution

Jitter has been identified as a major contributor to the difference in sound heard between CD players and digital playback devices. To achieve low jitter rates within a CD player is not complicated, providing care is taken with the design of the master clock. However achieving low jitter from outside digital sources is highly challenging as each device uses its own independent clock and synchronising these is critical to high performance.

Audiolab's solution is to use one Master Clock to control all digital sources. No matter whether digital data is being fed from the internal CD transport or from an outside computer, the 8200CD/Q re-samples and re-clocks the data to reduce jitter to almost immeasurable levels.

Audiolab delivers superb sonic performance by utilising a proprietary high performance discrete 84MHz Master clock, in conjunction with the Sabre32 patented sample rate converter, in order to reduce Time Domain errors (Jitter) from all Digital input sources. The result is 100% Jitter attenuation within the Digital domain – leaving only the inherent jitter of

the CD/Q's on board local Clock oscillator. This onboard Low Phase Noise Master clock achieves sub picoSecond (pS) jitter levels within the most critical frequency band. To all intents and purposes this level of jitter has no audible consequences.

Audiolab's "CATDA"- Time Domain Isolation

Even if the digital data fed to the 8200CD/Q's DAC is controlled via the internal Master Clock there is still the possibility that RF breakthrough and Power Supply coupling artefacts can interfere with the performance of the DAC. To avoid this critical issue the DAC in the 8200CD/Q is essentially isolated from any interference overlaid on the digital signal through the use of 3 cascaded stages of analogue time domain noise attenuation.

Audiolab resolves this in its uniquely developed "CATDA" (Cascaded Asynchronous Time Domain Attenuator) circuit. This circuit isolates the DAC substrate from the potentially detrimental analogue domain effects of non-synchronous digital input data. To achieve the ultimate performance level, 3 identical cascaded stages are used – each individual stage providing increased isolation, thereby maximising timing performance even at higher RF frequencies.

Upsampling / Oversampling

The Upsampling / Oversampling circuit converts the digital signal from one sample rate and bit depth to another. In the CD/Q, the sample rate is increased from the input sample frequency to 84.672MHz. All bit depths are extended to a minimum of 32 bits for internal processing.

This upsampling and extension to 32-bit resolution allows the DAC in the 8200CD/Q to perform at levels verging on the theoretical limit of digital audio processing. For example the implementation of a true digital volume control is now possible without the usual loss of data depth.

With CD and USB 44.1 & 88.2 kHz inputs, the Oversampling process is synchronous, while other inputs and sample rates are Asynchronous Upsampled.

The Audiolab's CD/Q operates in integer Oversampling or Upsampling mode, operating the DAC at 84.672MHz depending upon digital input source and sample rate as shown below:-

- With its internal Clock-Locked CD transport and 44.1 kHz based Asynchronous USB, the output DAC Rate is x1920 Integer Oversampled, Other non-synchronous 44.1 kHz digital input sources are x1920 times Upsampled.
- 48 KHz Digital input sources are x1764 Upsampled
- Asynchronous 88.2 kHz USB – Integer x960 times Oversampled, other 88.2 kHz input sources are x960 Upsampled
- 96 kHz Digital input sources are x882 Upsampled
- 176.4 kHz Digital input sources are x480 Upsampled

Selectable and Upgradeable Audiolab Digital Filters

As Digital audio reproduction technology has progressed, the importance of the characteristics of the reconstruction Digital filters has become appreciated and better understood. In particular the 'ringing' and 'pre- and post-echo' artefacts of steep slope digital filters are a cause for concern where audiophile-class reproduction is expected. Even where slow filter rates are used the additional RF noise output from such digital filter implementations can cause interference effects within the rest of the amplification chain.

The Audiolab 8200CD/Q features in-house Audiolab-developed user selectable Digital filters for optimal listening and measurement modes – in addition to the more conventional filter types for easy comparison – allowing the user to tune the CD/Q performance to his or her preference depending on system and musical tastes.

13b: Technical Description

- Optimal Time Domain – NOS (Preferable for Audiophile performance, Slow in-band roll off)
- Optimal Time Domain – ZS (Preferable for Audiophile performance, No in-band roll off)
- Optimal Frequency Domain (Measurement Mode filter)
- Standard Fast roll off
- Standard Slow roll off

In addition to the standard supplied filters, the CD/Q allows user upgradeable Digital filters via USB download, ensuring future-proof customisable performance.

Audiolab DAC

Due to the requirements of the Digital to Analogue conversion process, the majority of high performance DACs employs an Oversampling / Upsampling Digital domain filter, which proceeds to an analogue filter after the conversion process to attenuate unwanted higher frequency components. If allowed to pass through unfiltered, these high frequency components can cause instability and intermodulation distortion in many hi-fi amplifiers, especially those with ultra-wide bandwidth. On the other hand the use of analogue filtering close to the audio band can, in itself, introduce level and phase variations at, or near, audible frequencies.

The Saber32 DAC integrated circuit (Chip) provides the conversion of the Digital signal to the Analogue domain using 256 individual DACs per channel to increase inherent conversion resolution, while also reducing static conversion errors. This results in a total of 512 DACs used in a true balanced configuration within the 2 channel stereo CD/Q.

The conversion process within Audiolab CD/Q (256 DACs per channel each operating at 84.672MHz) results in a conversion process that is switching 3840 times higher than the typical audio upper bandwidth of 22 kHz. As a result of this Digital Upsampling technology, the analogue filters operate at frequencies well outside the audio band, ensuring no level and phase variations or intermodulation components affect the audio signal.

The ESS9018 Sabre32 DAC is a hybrid Multi-Bit Delta-Sigma DAC, which aside from its unique Jitter attenuation structure utilizes a novel "Hyperstream"

modulator. This is an advanced form of Multi-Bit Delta-Sigma modulator structure which combines several methods to optimise the conversion process. The Hyperstream modulator is designed for optimal transient response, thus eliminating dynamic response deficiencies & Noise floor modulation artefacts typical to traditionally designed Delta-Sigma DAC's.

Discrete Class-A Analogue Stages

In many CD players, whilst great attention may be paid to the DAC circuitry, scant effort is put into the analogue circuit design for the output stage.

Aside from the essential attention to the Master Clock Phase noise performance (Jitter), DAC section and PCB layout, the most critical part of the circuit design in the Audiolab CD/Q is the DAC's True Balanced analogue outputs — connected directly to a pair of proprietary AudioLab FET based Class A stages buffers per channel. These FET based High current Class A buffers make a huge difference to transparency, resolution and dynamic performance.

The use of FET Input stages of these output buffers result in a dramatic improvement of RF IMD rejection, and no measurable RF rectification – banishing the "Digital Brightness and Harshness" so commonly associated with most Digital products.

The CD/Q is fully DC coupled with no AC coupling capacitors. High Tolerance Polypropylene Film / Foil capacitors and Ultra Stable Very Low VCR 0.1% MELF SMD passive resistors are used within the signal path to achieve the highest possible audio performance.

Digital / Analogue Pre-Amplifier Mode Selection (CDQ)

The 8200CDQ offers the user full control of an Analogue or Digital Fully Balanced Class A Pre-Amplifier mode with the touch of a button. This means that the CDQ only needs to be connected to a stereo power amplifier or pair of monoblocks and high quality speakers to create a full hi-fi system. The

CDQ can be used both as a source (CD player), a digital pre-amplifier (from any digital source) and an analogue control unit (from tuners, tape sources etc.) of the very highest quality.

In Analogue Pre-Amplifier mode, the internal balanced DAC outputs or External Analogue line level inputs (the Line Level inputs are internally converted into balanced signals), are relay switched, then passed onto a High Precision Digitally controlled balanced stepped attenuator, which is then buffered by the high current FET input Class A fully balanced Output stages – resulting in a true fully balanced Class A signal path for highest signal fidelity.

With Digital sources, the owner can opt for shortening and simplifying the signal path even further - the entire Balanced Analogue Pre-Amplifier stage can be bypassed, with the Gain control now performed directly in the Digital domain with full 32Bit precision – thus resulting in the most direct signal path to your power amplifiers for Digital input sources.

In both Digital and Analogue Pre-Amplifier mode, the output level can be increased via the volume control to levels above 0db (Ref. 2Vrms) to allow for system Gain.

Discrete Class A Low Impedance Headphone Amplifier (CDQ)

The CDQ also includes a high-current, low impedance headphone amplifier (less than 1 Ohm output impedance). It will deliver the full rated performance of the DAC and Pre-amplifier to the headphones, while maintaining less than 0.001% THD+N under full load. The CDQ has a front panel mounted 1/4" headphone jack.

13c: Technical Description

96 Khz – 24bit Clock-Lock Asynchronous Usb

When connecting the Audiolab 8200CD/Q to a computer via USB, the DAC operates in "Asynchronous" USB mode (This should not to be confused with Asynchronous Sample Rate Conversion - ASRC), where the AudioLab DAC controls the flow (speed) of the Audio data streamed from the computer by providing a feedback control pipe (Control signal) to the computer over the USB Bus.

In Asynchronous mode, the Audiolab DAC has total control over the timing of the Audio Data transmission. The CD/Q will instruct the computer to Slow down or Speed-up the data transfer as necessary, thus avoiding any negative effects of a full or empty buffer levels which can manifest itself as audible dropouts, pops or clicks – this speed control of Data transfer is referenced solely to the DAC's internal Clock. Audio replay does not rely upon the computer's poor internal clock source. The computer is effectively Clock-Locked to the DAC's internal High precision, low Jitter Master Clock. This key feature at last provides audiophile standard Hi-Fi quality reproduction from PC based USB sources.

Remote Control Of PC Media Player

The Audiolab 8200CD/Q features a full system remote control, which not only allows control of each unit within the Audiolab 8200 range, but also uniquely provides control of the PC / MAC / Media device over the USB connection from the listening chair. When connected to a Computer, the CD/Q not only identifies itself as an Asynchronous DAC, but also as an HID compatible device (Human Interface Device) – this allows driverless control of the PC / MAC Media Player (Play / Pause, Stop, Track Select etc).

An external 3.5mm remote control loop is also included to facilitate connection other 8200 series components and to multi-room controllers etc.

The Power Supply

The stability and low noise of the power supply in any audiophile equipment is imperative to achieving ultimate performance. The CD/Q uses multistage regulation with a

total of 34 regulated supplies, of which 14 are ultra low noise discrete designs, combined with LC filtering for maximal inter-stage and RF isolation. A total of almost 250,000uF of bulk storage capacitance is used within the CD/Q.

Each section of the Audiolab 8200CD/Q, (The CD Transport section, Digital Input and processing, CATDA stages, Master Clock, DAC section, Class A Balanced Analogue filter sections, Class A Balanced Preamplifier sections, Balanced Volume Control Stepped attenuators and System micro processors), is independently regulated to prevent unwanted interactions between the circuits.

To achieve the very best from the ESS Sabre32 DAC chip requires the provision of Ultra Low Noise digital power supplies if it is to function at its optimum level. Noise on any supply rail within the DAC could cause added jitter and various forms of distortion. To avoid this, the Audiolab CD/Q implements 10 regulators surrounding the DAC section with bulk decoupling provided by Organic Ultra Low ESR capacitors.

Incorrect circuit board routing of the digital power supply or related Ground may also superimpose Digital noise artefacts into the Analogue circuits. The Audiolab's CD/Q employs a 100% inspected "Class 3" 4 layer PCB. 4 PCB copper layers are used to aid in optimal signal routing to help eliminate the risk of unwanted interactions between circuit stages.

High Quality SMT Component Manufacturing

The Audiolab 8200 CD/Q uses precision SMT manufacturing, with computerised optical inspection systems for 90% of its 1700+ components. The balance of components is hand inserted by our highly trained production team, and QC tested at each stage of the manufacturing process for consistency and performance. Every component from the simplest resistor to the power transformer within the 8200 CD/Q has been carefully selected and verified by the UK design team to achieve the highest audiophile standards.

14: Specifications and Features

SPECIFICATIONS & PRODUCT FEATURES

Output Level @ 1KHz (Standard Setting)	RCA: 2.05Vrms \pm 0.1 XLR: 4.1Vrms \pm 0.1
Frequency Response, Ref. 1kHz, 20Hz to 20kHz	RCA: \pm 0.2dB XLR: \pm 0.2dB
THD 1KHz, 0dB, 20Hz to 20kHz BW	RCA: <0.0025% XLR: <0.0008%
Crosstalk 1kHz	RCA: >120dB XLR: >130dB
Dynamic Range AwtD	RCA: >98dB XLR: >110dB

Product Features

- 32Bit 84.672 MHz Oversampled / Upsampled 512 Element MultiBit Array DAC
- x1920 times Oversampled with CD / USB 44.1kHz Source
- Asynchronous USB supporting 24 Bits / 96kHz with Driverless Remote Control of PC / MAC Media Player (Via HID Support)
- x2 176.4 KHz 24Bits Coax SPDIF Digital Inputs
- x2 96kHz Optical Digital Inputs
- x3 2Vrms Analogue Line level inputs (CDQ)
- Low Jitter Optical and Coax SPDIF Output (CD Digital Output only)
- Selectable Analogue or Digital Pre-Amplifier Mode (CDQ)
- High Current Single Ended & Balanced Discrete Class A Output stage's
- High Performance Direct coupled Discrete Class A Headphone Amplifier (CDQ)
- Custom CD Servo Design – with Ultra Low Noise PSU for OPU
- Full remote control & External Remote I/O loop
- 34 Regulated supply rails
- 14 Ultra Low Noise Discrete Regulators
- User Selectable Digital Filters – Software upgradeable Via USB Port
- Master Clock Jitter less then 3pS Short Term. Measured directly at DAC "XOut"
- Organic Ultra Low ESR capacitors, High Tolerance Polypropylene film / Foil capacitors, Ultra Stable Very Low VCR 0.1% MELF SMD resistors, 4 Layer PCB.



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Correct Disposal of this product. This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

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