Codex

Owner's Manual

USB DAC + Headphone Amp + Preamp

Table of

Contents

Welcome to

Ayre

Ayre was founded in 1993 with a single purpose —
to bring the full beauty of music to your own home.
Our mission is to find ways of capturing the essence
of the music, delivering the same level of
engagement we experience with live music —
compelling and powerful, with a deep emotional
connection to the artist.

This is why our team innovates relentlessly, with
inspired creativity and without compromise. Each
new design pushes the boundaries of knowledge and
allows us to journey more deeply into the heart of
the music. Ayre builds equipment that brings your
music to life.

To our North American customers, please be
sure to mail your warranty registration card and
photocopy of your original sales receipt within 30
days in order to extend the warranty to five
years.

Introduction

The advanced design of the Codex combines three distinct musically powerful components into a single compact unit:

1) A world-class digital-to-analog converter (DAC).

The USB connection accepts any sound file your computer or music streamer can play. The Codex uses a high-performance version of the USB asynchronous transfer mode (Streamlength™) that delivers audibly improved sound quality over standard asynchronous USB DACs.

The TosLink optical input is for use with virtually all A/V sources (disc players, networked audio devices, cable boxes, satellite dishes, et cetera). An optical connection totally isolates the audio ground from that of the connected system, elevating the performance of both.

2) The headphone amplifiers are capable of driving virtually any headphone on the market to previously unheard levels of performance. You will be astonished at the hidden potential of your current earphones.

In addition to providing receptacles for both ¼" and twin 3.5 mm connectors for shared listening, the Codex also supports the latest fully-balanced headphones. This brings a new dimension to the sound that will deepen your musical experience.

Many standard headphones can be converted to balanced operation simply by replacing a removable cable with a special aftermarket cable. Contact your headphone manufacturer directly for information regarding conversion to balanced operation.

The convenient front-panel volume control operates purely in the digital domain, yet retains a full 24 bits of resolution (144 dB of dynamic range) all the way down to an attenuation level of -60 dB. This breakthrough technology far surpasses the performance of any conventional volume control.

3) The Codex also functions as the heart of a home stereo system — a preamplifier — when combined with amplifiers and loudspeakers. The transition from stereo system to headphone amplifier is both seamless and automatic.

This unprecedented level of performance and flexibility enables all music lovers to enjoy a new level of musical pleasure.

Avoiding the use of wireless networks (e.g., Wi-Fi), by employing wired connections instead, will reduce RFI levels in your home and result in improved sound quality for any music system.

Installation

The Codex is simple and intuitive to connect and use. The following guidelines will ensure that the installation goes smoothly.

Inputs

The Codex offers two inputs, the USB input for connection with a computer or music streamer, and the optical TosLink input for connection with an A/V source such as a disc player, cable box, or satellite receiver.

Both offer electrical isolation from the connected source. Each is optimized for its intended function.

USB

The USB input connects with computers and music streamers. The Codex uses the USB "B" type connector designed for peripheral devices. The rectangular "A" type connector at the other end of the cable plugs directly into the host device.
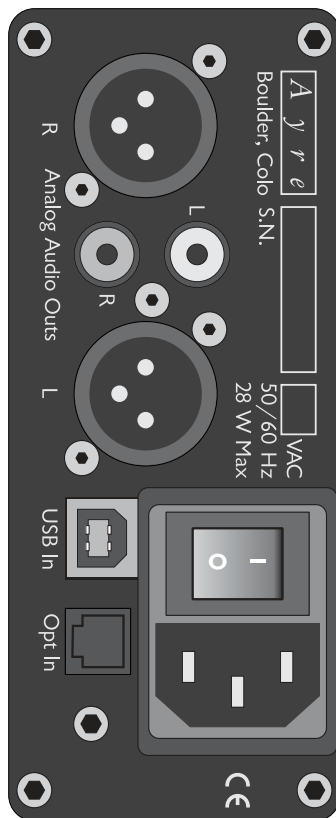
The maximum recommended USB cable length is 10 feet (3 meters). Hubs and/or extenders may cause problems if the transit time for the feedback pipeline is too great, interfering with the asynchronous USB transfer protocol.

⚠ **Computers using Windows must install the USB audio driver included on the CD-ROM or downloaded from: www.ayre.com/usb_driver.htm**

TosLink

The TosLink input uses an optical cable (not included). Higher grades of optical cables will yield improved sound quality. While TosLink is capable of transmitting up to 30' (10 meters), shorter lengths will provide a more reliable connection, especially at higher data rates.

The USB input provides lower levels of jitter, and is the preferred connection if a source device has both USB and TosLink outputs.

Analog Outputs

The Codex offers both headphone outputs on the front panel, as well as line-level outputs on the rear panel for connection to a home stereo system.

Headphone Outputs

The Ayre Codex offers three headphone jacks, two 3.5 mm mini-phone jacks, and one ¼" phone jack.

Only use stereo phone plugs (two or three insulating rings) with any headphone jack. Use of mono phone plugs (one insulating ring) may damage the unit.

Each of the 3.5 mm mini-jacks has its own dedicated buffer. The Codex is designed to either use a single pair of modern balanced headphones or two pairs of conventional single-ended headphones.

Line-Level Outputs

The rear of the Codex features both balanced and single-ended outputs for use with stereo systems using amplifiers and speakers. Balanced connections are made via XLR connectors, while single-ended connections are made via RCA connectors.

When you have a choice, a balanced connection will offer slightly higher sound quality than a single-ended connection.

It is not possible to connect the XLR outputs to conventional single-ended equipment with RCA input jacks without damaging the Codex. Attempts to do so will void the warranty.

AC Power

The Codex may be plugged directly into an unswitched wall outlet. Although proprietary RFI (radio-frequency interference) filtering is built into the unit, in some situations an AC power-line filter (such as those offered by Ayre) may provide additional sonic benefits.

As virtually all computers use switch-mode power supplies that introduce unwanted RFI on the AC power line, it may be beneficial to use an AC power line filter for the computer and its accessories (e.g., display monitor), many of which also utilize switch-mode power supplies.

Configuring the Computer

⚠ **Computers using Windows must install the USB audio driver included on the CD-ROM or downloaded from: www.ayre.com/usb_driver.htm**

No matter what operating system (OS) your computer uses — Apple, Windows, or Linux — you'll need to set up your computer to perform several different tasks:

• Transferring music to your computer's hard drive, either by converting the files from your CD collection, commonly called "ripping", or by purchasing files that are downloaded via the internet.

• Labeling the files you have transferred with the names of the song, artist, album, et cetera, commonly called "tagging". (Downloaded files will normally already have the "tags" included.)

• Using a music player program to organize your music collection and play it back.

• Optionally record music selections back onto CDs for playback in your car or other places, commonly called "burning".

• Optionally transfer part of your music collection to a portable music player.

A few programs can perform all of these functions, for example J.River Media Center (Apple and

Windows), iTunes (Apple and Windows), and
Foobar (Windows). Some users will prefer to use a
combination of other specialized programs to
perform these functions.

An introductory guide to setting up your computer
is available at the Ayre website:

www.ayre.com/usb.htm

Detailed information may be obtained from the
website of the computer music player software you
have selected.

Operation

The front-panel control on the Codex USB D/A converter is a combination volume knob and momentary push switch. The display provides all information needed for easy operation.

The master power switch is on the rear panel above the AC mains connector.

Display

Higher sampling rates can provide higher sound quality. "64" indicates the incoming signal is standard DSD-64, while "128"indicates double-rate DSD-128.

When playing music, the display will show the sample rate (in kHz) of the incoming audio data. When the volume is changed, the volume level (0 to 100) will be displayed for three seconds before reverting to the sample rate.

Volume Control

The volume control ranges from 0 to 100 in 1.0 dB steps. It also has a switch activated by pressing the knob. This controls both the mute and setup menu functions.

Mute

A brief press of the volume control will mute the Codex, which is indicated by the volume level flashing. Another brief press will return the volume to the previously selected level.

When the Codex is muted, increasing the volume level will also release the mute. Decreasing the volume keeps the unit muted.

Setup Menu

There are four functions that can be controlled through the setup menu; Input Selection, Output Mode, Display Brightness, and Firmware Revision.

While in the setup menu, the display will flash when an input is required.

Pressing the volume knob for three seconds will enter the setup menu of the Codex. Rotating the volume knob will display the available choices. Pressing the volume knob will select the displayed choice and exit the menu.

Input Select (І п𝑃)

The input select menu has two choices, USB (𝑈5𝑏) and optical (𝑂𝑃𝑡). USB is the connection for a computer or streamer, while optical is for a TosLink optical cable.

Output Mode (*OUt*)

The output mode menu has two choices, preamplifier (*PrE*) and DAC (*dAC*). The proper setting is determined by whether your loudspeaker playback system has a volume control or not.

If you run the Codex directly into a power amplifier or powered speakers without any volume control, choose the preamplifier mode and the volume control will be active.

If you connect the Codex to a preamplifier or powered speakers with a volume control, select the DAC mode and the output level will be at a fixed level and the volume control will be deactivated.

While in DAC mode, inserting any headphone plug into the front panel will temporarily activate the volume control, presetting the output level to "66". Removal of all headphone plugs will restore the unit to DAC mode, with a fixed output level from the rear-panel jacks.

It is not recommended to use the rear-panel connectors to drive a stereo system while simultaneously listening to headphones.

In single-ended mode, the rear-panel jacks will not output the correct signals. While this will not damage any equipment, you will not hear the proper sound quality from your speakers in this situation.

Display Brightness

The display brightness menu has four choices:

d 3 = Bright
d 2 = Medium
d 1 = Dim
d 0. = Off

If "Off" is selected, the rightmost decimal point will remain illuminated to indicate that the unit is still on. If the sample rate or volume level is changed, the display will illuminate for three seconds.

Firmware Revision

The installed firmware revision will be indicated on the display as r 1.0 for "Revision 1.0", for example.

Balanced Operation

The fully-balanced audio circuitry of the Codex improves the sound quality as any imperfections in the power supply are cancelled.

Many audio systems offer true balanced operation, and this is the default operating mode of the Codex. With balanced operation, each channel has two equal and opposite signals, compared to just one signal per channel with conventional circuits. An LED illuminates on the front panel to indicate when the Codex is operating in balanced mode.

It is not possible to operate conventional single-ended equipment (headphones or stereo systems) in balanced mode from any source.

14

⚠️ **Do not attempt to use the balanced outputs with conventional single-ended equipment, as damage to the Codex may result.**

As most headphones are wired for single-ended operation, insertion of any single headphone into one of the front-panel jacks will automatically switch the Codex into single-ended mode.

💡 It is not recommended to use the rear-panel connectors to drive a stereo system while simultaneously listening to headphones.

⚠️ **In single-ended mode, the rear-panel jacks will not output the correct signals. While this will not damage any equipment, you will not hear the proper sound quality from your speakers in this situation.**

When two 3.5 mm mini-plugs are connected, the setup menu is automatically entered and the Codex will ask if you have connected two separate headphones for shared listening with a friend, or a special balanced headphone cable with two 3.5 mm mini-plugs.

The display will flash to indicate that an input is required. Rotate the volume knob to select either "Shared" mode (*Shr*) for two headphones or "Balanced" mode (*bAL*) for special balanced headphones. Press the volume knob to enter the desired selection and exit the setup menu.

Specifications

Audio Input Signal	44.1, 48, 88.2, 96, 176.4, 192, 352.8 and 384 kHz PCM 16, 20, and 24 bits 2.8224 and 5.6448 MHz DSD 1 bit (DSD over PCM = "DoP")
Maximum Output Level Headphone or Preamp Modes	7.2 V RMS – balanced outputs 3.1 V RMS – single-ended outputs
Maximum Output Level DAC Mode	4.0 V RMS – balanced outputs 2.0 V RMS – single-ended outputs
Analog XLR Output Polarity	Pin 1 = Ground Pin 2 = Non-inverting (Positive) Pin 3 = Inverting (Negative)
Power Consumption	28 watts
Dimensions	2-¼" W x 9" D x 5-¼" H 5.5 cm x 23 cm x 13.7 cm
Weight	3 pounds 1.4 kg

Statement of

Warranty

North American Warranty

Your Codex USB D/A converter + headphone amplifier + preamplifier has a warranty period of ninety days from the date of original purchase against defects in workmanship and materials. This ninety-day coverage is automatic upon acceptance of delivery and no registration is required.

Additionally you have the option, at no cost, to extend the warranty for a period of five years from the date of original purchase by returning the completed Warranty Registration Card and a photocopy of your original purchase receipt in the enclosed postage-paid envelope to Ayre within thirty days of product delivery. This optional warranty is only available within the thirty-day registration period, and only applies when the unit has been purchased from an authorized Ayre dealer.

North American Warranty Statement

1. If any defects are found in the materials or workmanship of this Ayre product within the warranty period, the unit will be repaired or replaced by Ayre Acoustics, Inc. (Ayre) or its authorized agent.

2. Purchaser must return the product, packed in the original shipping carton, freight prepaid to:

> Ayre Acoustics, Inc.
> 2300-B Central Avenue
> Boulder, Colorado 80301

or to Ayre's authorized agent. The product must be accompanied by a written description of the defect and a photocopy of your original purchase receipt. Ayre will not be responsible for any shipping damage and strongly recommends the purchase of shipping insurance.

3. Ayre reserves the right to inspect any product that is the subject of any warranty claim prior to repairing or replacing it. Final determination of warranty coverage lies solely with Ayre.

Out-of-warranty claims will be billed for labor, materials, return freight, and insurance as required. Any product for which a warranty claim is accepted will be returned to the purchaser and the cost of shipping and insurance will be factory prepaid within the boundaries of the USA. Units to be shipped outside of the USA will be shipped freight collect only.

4. Ayre strives to manufacture the finest possible equipment, and therefore reserves the right to make improvements on its products, without necessarily assuming any obligation to retrofit such changes upon its previously manufactured models.

5. The above warranty is the sole warranty given by Ayre, and is in lieu of all other warranties. All implied warranties, including warranties of merchantability or fitness for any particular purpose shall be strictly limited to the duration of the above warranty. Ayre shall have no further obligation of any kind, whether express or implied. Further, Ayre shall in no event be obligated for any incidental or consequential damages as a result of any defect or any warranty claim, whether express or implied.

6. Ayre does not authorize any third party, including any dealer or sales representative, to assume any liability of Ayre or make any warranty for Ayre. The unit must not have been altered or improperly serviced. The serial number on the unit must not have been altered or removed.

7. The remaining period of this warranty is only transferable to subsequent purchasers if the product is resold by an authorized Ayre dealer.

International Warranty

Warranty terms outside of North America may vary. Please contact the authorized Ayre distributor in your country of purchase for the terms of warranty and also the service itself.

A Place for

Notes

Serial Number: _____

Purchase Date: _____

Dealer: _____

Salesperson: _____