

User's Guide

bel canto



Dac3TM

e.OneTM Series

Audio DAC/Preamplifier
with Ultra-ClockTM

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Thank you for purchasing the Bel Canto Design Dac3. Your Dac3 sets a benchmark for design, quality and sonic performance, continuing Bel Canto's heritage of musicality and realism.

Dac3TM

Audio DAC/Preamplifier
with Ultra-ClockTM

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Warranty Information

Please take a moment to fill out your warranty registration sheet. Returning this registration validates your warranty. This information will not be sold or released outside Bel Canto. Your comments and suggestions help us continue to improve upon our products and services.

Bel Canto products are automatically covered by a 90 day factory warranty. With no additional cost, you have the option to extend your warranty by completing and returning the enclosed warranty registration form within 30 days of purchase, along with a copy of the original sales receipt from an authorized Bel Canto dealer. This will ensure prompt warranty coverage. This warranty is only valid to the original

owner who has returned the warranty sheet along with a copy of the original sales receipt, covering all internal parts and workmanship. This warranty is void if damage is due to abuse, neglect, or unauthorized modification. The cost associated with the return of this unit is the sole responsibility of the owner.

Bel Canto products are uniquely identified with a serial number on the back panel of each unit. This number is required to validate your warranty. Please reference the serial number if service is required. If you have any questions, comments, or if we can be of service, please contact us Monday through Friday 9:00 a.m. - 5:00 p.m. CT/USA.

Unpacking your DAC3

DAC3 box contents include the following:

- 1 (one) - Dac3 Digital to Analog Converter
- 1 (one) - Dac3 User's Guide
- 1 (one) - Power cord [6.6' - 2 meters long]
- 1 (one) - Remote Control
- 1 (one) - Warranty Sheet

Carefully unpack each piece and check for shipping damage. If there is any damage, or if anything is missing, please contact your dealer, distributor or Bel Canto Design.



IMPORTANT: Save all packing materials as the packing is specially designed to protect the unit during transportation or shipping. If the packaging becomes lost or damaged, please contact your dealer, distributor or Bel Canto before attempting to transport your unit.

Power Connection

The power supply on the Dac3 is preset for the proper power voltage. The power cable should have the correct plug for your local power system. If you believe this to not be true, please contact your dealer immediately.



Warning!

Do not connect power to this product yet!

This product, like any electrical component, can be dangerous and cause injury unless correct handling procedures are observed and used. Before powering this product it is necessary to read and follow proper setup and procedures.

Placement and Initial Setup

Because the Dac3 runs cool it can be placed in many system locations without compromise. We do not recommend placing weights or other objects directly on the Dac3. This may mar or scratch

the chassis finish. Do not use harsh chemicals when cleaning the outside of your Dac3.



IMPORTANT: Make all connections before powering your unit.

Design Features

The Bel Canto Dac3 represents a powerful statement in high performance audio Data Converters. Its superb audio performance and transparency renders it a modern standard in DAC design:

- Ultra-Clock™ master reference clock provides superb dynamics, spatial resolution and accuracy of timbre.
- 130dB dynamic range ensures uncompromised audio quality
- 5 digital inputs including AES, SPDIF-BNC, SPDIF-RCA, USB and TOSLINK
- 4-layer PC board design for superior signal routing, grounding and power supply routing
- Latest generation of low-noise, low-distortion, high speed, class A biased, fully balanced audio circuits provide superb measured and subjective audio quality
- Multi-stage power supplies for precise power to the sensitive analog and digital circuitry
- Independent Analog and Digital power transformers and power supplies for optimum isolation and system grounding
- Digital level control with 4.5Vrms balanced outputs for driving a power amp directly, providing the greatest system transparency and dynamic performance
- Single-Knob user interface provides simple, intuitive control function
- Dual stage de-jitter architecture ensures optimum jitter performance
- 24/192 DAC operation and slow-rolloff analog and digital filters for optimum phase performance, enhanced image placement and natural harmonic structure
- Select audio-grade passive components throughout analog current conversion, filtering and fully balanced output buffer section for best sonic performance
- Full Galvanic Isolation on all digital inputs for optimum rejection of ground and common mode noise

Front Panel Control Knob:

The control knob is a continuously rotating control with a push-switch function.

Standby Mode:

Pressing and holding the control knob for 2 seconds will take the Dac3 out of Standby and in to operating mode. The unit will come up in a soft mute mode. The operating input will be indicated for several seconds and then it will go to the volume control mode. To place the Dac3 in Standby mode press and hold the control knob for 2 seconds.

Variable Output Mode:

The Dac3 Variable Output operating mode, selected from the rear panel Fixed/Variable output switch, allows you to change volume level by rotating the knob. The volume down function (counter-clockwise rotation) is very rapid and allows quick changes in the volume level. Volume up (clockwise rotation) functions rapidly up to a displayed volume level of 65.0. There is a pause at 65.0 until the display dims then the volume up function continues more slowly. This operation makes it difficult to accidentally set a volume level that is too high.

Input Selection Mode:

Pressing the control knob in briefly will toggle into the input selection mode. The selected input will be displayed for 5 seconds. During this time you can rotate

the control knob to scroll to the desired input. Pressing the knob again will select the indicated input. The volume level will automatically ramp down and up during this selection process. If the control knob is not pressed for 5 seconds, the indicated input will automatically be selected and the Dac3 will return to the default volume control mode. Inputs are indicated as: AES, SP1 (SPDIF1), SP2 (SPDIF2), opt (TOSLINK), and USB.

Fixed Output Operating Mode:

Pressing the rear panel Fixed/Variable Output switch to the in position will set the Dac3 in a fixed output operating mode. This mode is used when driving an analog preamp or integrated amplifier input. The volume control function is then provided by the associated preamplifier or integrated amplifier.

To use the Fixed Output mode set the output level to 100.0 for a 2.25Vrms maximum level from the RCA outputs or 4.5Vrms level for the Balanced XLR outputs. If you want the outputs set for a lower level then set the volume control to a lower level. for example, for about 2Vrms out from the balanced outputs set the volume control to 93.0. This will represent about a 2 Vrms output level on the balanced outputs. When the level is set then press the rear panel Fixed/Variable Output button. The front panel display will now show the selected input. Rotating the knob will scroll to different inputs and the Volume and Mute functions on the remote will not function.

Front Panel Digital Lock Indicator

When no digital input signal is present on an input the first decimal point on the display will blink on and off. For example the display will show: . 65.0

and the first decimal point will be slowly blinking. If this occurs you need to check that the correct input is selected and then check that the digital source is connected, active and functioning correctly.

Remote Control

Mute: (available only on the remote)

The Dac3 starts up in Soft Mute. This level is 20dB below the displayed volume level. When MUTE is first pressed it goes to the Soft state, indicated by 2 decimal points on the volume display (i.e. 65.0.). Pressing MUTE again rapidly will fully MUTE the outputs. Full mute is indicated by 4 decimal points in the volume display (i.e. .6.5.0.). This control is disabled when the Dac3 is in Fixed Output Mode.

DAC In:

This is used to toggle through the inputs, when initially pressed it will indicate the currently selected input.

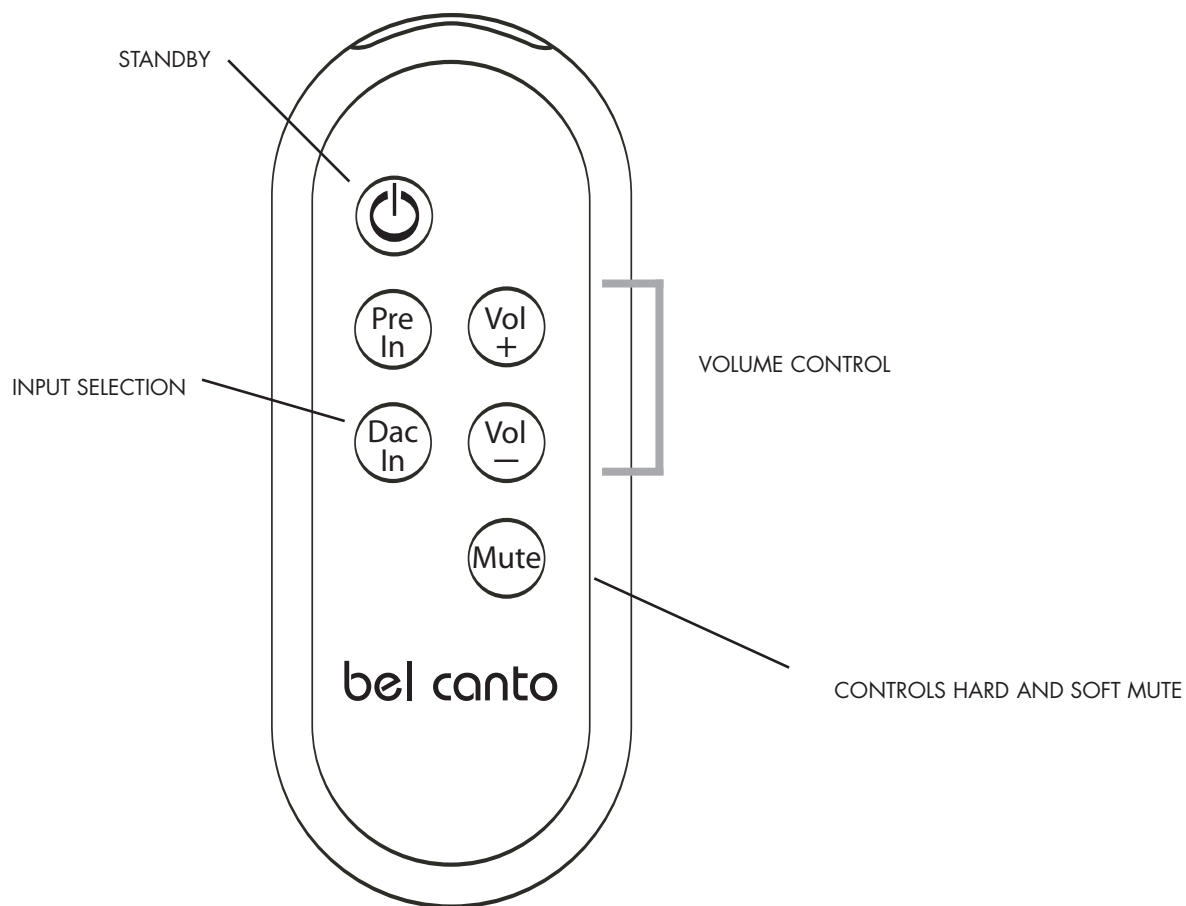
Standby:

Used to toggle the DAC3 into and out of standby mode. Standby hard mutes the outputs while keeping all circuitry running, maintaining optimum circuit performance. Before unplugging the DAC3 from mains power it is recommended to place it in standby first. Standby is indicated by the presence of 2 dashes on the display - - .

Volume +, Volume -:

These increase (+) and decrease (-) the volume level on the Dac3. They can be pressed multiple times or held to scroll volume up and down. These controls are disabled when the Dac3 is in Fixed Output Mode.

Remote Control



Conditioning

The Dac3's sonic performance will start to stabilize after 100 hours of continuous power up.

Dac3 Rear Panel Connections



Dac3 Rear Panel

Insure that the Fixed/Variable Output button is in the out (variable) position if using the Dac3 directly into a power amplifier. Operation in fixed mode directly into the amplifier could cause extreme output levels, clipping and damage to the loudspeakers, amplifier or your ears!

AES/EBU Input accepts any AES/EBU standard 110 ohm digital source and operates to at least a 24/96 data rate

SPDIF1 and SPDIF2 accept BNC or RCA connections from any 75 ohm SPDIF source and operate to at least 24/96 data rate

TOSLINK input accept any standard plastic or glass fiber optical TOSLINK cable and operates to 24/96 data rate

USB input can be connected to any Macintosh or PC computer for playback any audio format up to a 16/48 data rate. The system will automatically recognize the Dac3 as an audio converter when

using Windows 98 or later or any recent Macintosh operating system.

XLR 4.5Vrms or RCA 2.25Vrms outputs are used for directly driving a power amplifier in variable output mode or a preamplifier input when in fixed output mode.

IEC power cord jack: Note the power setting indicated on the back of the integrated amplifier before connecting the power.

When all connections to and from the unit have been made then double check everything before plugging the Dac3 into the power source. The Dac3 will come up in standby, indicated by a pair of dashes on the front panel (- -).

What to do if there is hum or ground noise

The design of the Dac3 reduces the chance for ground loop induced hum and noise but we still recommend that you use shorter interconnect cables to the Dac3 inputs and connect all power cables to a

common outlet box or power conditioner unit to reduce the possibility for ground current noise being induced into the audio signal path.

Dac3 Operating Tips

Output Connections

We strongly recommend that you use the Balanced XLR output to drive your e.One amplifier. Because of the DC coupled nature of the Dac3 there is a small residual DC offset on the outputs. This is typically less than 10mV (0.01 Volts) and will not be a problem for any Bel Canto amplifier or any vacuum tube or solid state amplifier with AC coupling or DC servo control. There is no problem connecting to a preamp. If using a Bel Canto preamp there will be no small click or pop when selecting the input. Other pre-amplifiers that do not ramp the volume up or down may produce a small click when selecting the Dac3 input.

Power Up

We recommend leaving the Dac3 powered at all times as the sonic quality is best after several hundred hours of play and 48-72 hours of power on after the initial break-in time.

Connection to a Computer

The USB port can be used for up to 16/48 data, enough for any CD source. For connection at 24/96 or higher data rates we recommend using a quality sound card with SPDIF, AES/EBU or glass TOSLINK connection. For more details on optimizing computer audio sources please refer to our On-Line guide at: www.belcantodesign.com

Dac3 Specifications

Digital Section:

16/32 to 24/96 Inputs • AES 110ohm XLR, SPDIF 75ohm BNC and RCA, TOSLINK

16/32 to 16/48 Input • USB

All inputs are galvanically isolated from the internal circuit and chassis grounds.

Master Clock jitter: 1picosecond RMS, 5 picoseconds Peak-Peak

Analog Section:

Maximum Output • 4.5Vrms balanced XLR, 2.25Vrms RCA

Output Impedance • 200 ohms balanced XLR, 500 ohms RCA

Frequency Response • 20Hz-20kHz, +/- 0.5dB

THD+N • <0.001%, 4.5Vrms balanced Out, 1KHz

IMD (CCIF) • <0.0005%, 19:20KHz, 4 ohms

Output Noise • 3uVrms A-weighted 20Hz-20KHz

Dynamic Range • 129 dB A-weighted 20Hz-20KHz

Idle power draw • 15 Watts

Power Requirements • 120 VAC 50-60 Hz or 220-240 VAC 50-60 Hz

Dimensions • 8.5" W x 12.5" D x 3" H (216 mm x 318 mm x 75 mm)

Weight: • 14lbs. (6.5 kg)

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