

Bel Canto Design

DAC 1

Upsampling D/A Converter

User's Guide and Operating Information (External & Internal Version)

DAC1

24/96 Up-sampling Digital to Analog Converter

The Bel Canto Design **DAC1** is a 2- channel digital to analog converter that up-samples 16/44.1 signal to 24/96 and applies a 48kHz slow roll off filter. The DAC1 has remarkable performance and long-term value through quality of design and versatility.

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Bel Canto Design grew from the quest to achieve the ultimate musical satisfaction from an audio system. This quest began with the discovery of the inherent sonic qualities and musical performance potential of a nearly forgotten technology, the single-ended triode amplifier. The ability of this type of amplifier to recreate the musical experience and evoke a powerful emotional response in the listener, much like the live event, inspired the development of the SET line of amplifiers through the ultimate expression of this technology. The SET circuit was developed for use as both a cornerstone for a modern audio system and as a reference tool for developing more accessible, modern home entertainment equipment.

For more than ten years this effort has continued and the result is a unique line of fine audio amplifiers, preamplifier, and source components that are designed to embody unparalleled musical reproduction. Bel Canto Design's goal is simply to provide the most expressive and powerful musical experience outside of the live event and bring some of the greatest musicians and their performances into the intimacy of your home.

Bel Canto Design

Design Features

The DAC1 was designed to reveal the exceptional musicality hidden within 16 bit/44.1kHz CD recordings. By up-sampling 16/44.1 material to 24/96 and applying Zero-Jitter and 48kHz slow roll-off technology, the DAC1 will compel you to reevaluate the performance potential of CD based digital audio. The DAC1 is also capable of playing 24/96 DAD recording, while still implementing the 48kHz slow roll-off filter, delivering stunning results.

- **The goal of the DAC1 Processor development was to remove the last sources of error in the conversion of digital music data to analog signal. These error sources are in four areas:**
 - 1) Timing Jitter in the DAC clock.
 - 2) Quantization noise in the Digital to Analog conversion process.
 - 3) Time domain smearing.
 - 4) Electromagnetic Interference (EMI) distortion sources.

- **These goals are achieved by utilizing the latest core technologies that focus higher performance in the digital receiver, sample rate converter and digital filter, each component critical to the Digital to analogue conversion process.**
 1. The latest SPDIF and up-sampling receiver technology eliminates Jitter sources on the DAC clock and 24 bit processing lowers the quantisation noise floor by over 40dB relative to 16 bit processor; **Result: Clearer more musical reproduction with superb low-level resolution.**
 2. Burr-Brown PCM 1704 24/96 DAC with 48kHz slow roll-off digital filter technology for minimal time domain errors. **Result: Eliminates the “digital harshness” associated with CD while providing better imaging and high frequency coherence.**
 3. Over-sampling receiver drives the DAC at 96 kHz insuring flat DAC response to beyond 30 kHz with slow roll-off filter; **Result: Minimal coloration of high frequency harmonics.**
 4. Over-sampling receiver allows use of a local Crystal Oscillator for Zero-Jitter performance on the critical DAC clock. **Result: Eliminates “digital harshness” while insuring that digital to analog conversion occurs under optimal conditions for the cleanest and most dynamic sound.**

Unpacking

Unpacking (External Version Only)

The box containing your **DAC1** contains the following parts:

- 1 - Power Cable for connection to utility power [1.85m, 6' long] (**External Box Version Only**)
- 1 – **DAC1** Digital Converter.
- 1 - Owner's Warranty / Registration Sheet

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

Save all packing materials as the packing is specially designed to protect the DAC1 during shipping or transporting. If you lose or damage the packing materials or carton, please contact your dealer or distributor before attempting to transport the preamplifier.

The DAC1's power supply is preset for the proper national voltages before you receive it. The power cable (External Unit Only) will have the correct plug for your local power system. If you believe this is not true, please contact your dealer immediately. Do not attempt to alter or change power settings yourself!

Initial Setup and Placement

- **Input Panel Connections:**

- One (1) S/PDIF (RCA type)
- One (1) Toslink (plastic optical)

Note: Only one of these two connectors can be used at a time. Which one of these two inputs you use may depend on the quality of the source output you connect it to. If you have both types of outputs available from your digital source we recommend that you try both before making a decision about which to implement.

- **RCA Main Output Jacks for Left and Right Channels (External Box)**

-These connectors are found on the opposite side of the Digital inputs.

The DAC1 has one pair of RCA type outputs that can be run into any line level input of any preamplifier or integrated amplifier/receiver with RCA type connectors. The output level is the standard 2 Vrms. As with all analog audio sources the quality of the cables is important to ultimate sonic performance and we recommend optimizing these for your system.

- **Placement of the DAC1 Within your System (External Box Only):**

The DAC1 may be situated within your system in any convenient manner desired. The most typical arrangement places the DAC1 near or behind the preamplifier or digital source in order to make as short a connection as possible.

- **Phase Invert Switch**

A small push button switch next to the RCA Digital Input will invert the absolute phase of the analog outputs when it is pushed in. This is performed in the digital domain and adds no circuitry to the analog signal path. It is provided for users with no other means to invert absolute phase and is set according to taste and source material.

- **Indicator Lamp**

A two-color LED lamp indicates when power is applied (red) and when a valid SPDIF / Toslink source is being received (green.)

Specifications

Input Sample Rates • 32 to 96kHz

Bit Depth • 16 to 24 Bit

Signal to Noise Ratio • > 112 dB A Weighted

Dynamic Range • 112 dB

THD (Distortion) • < 0.003%

Frequency Response • 0 to 48kHz - 3dB

Output Options • 1 Pair RCA

Input Options • 1 SPDIF (RCA Type), 1 Toslink (Plastic Optical)

Output Impedance • 50 ohms

Output Level • 2 Vrms Fixed

Power Requirements • 115/230 VAC; 50-60 Hz 10 watts

Size • 3.6 x 3.6 x 9 inches

Weight • 4lbs

Warranty Information

Please take a moment to fill out your warranty registration card. Returning this registration validates your warranty and allows us to send you information on product updates and new product development. Completion of this card is required within 15 days of purchase to ensure immediate warranty coverage.

Bel Canto Design offers a 5-year limited warranty on internal parts and workmanship that will replace any defective parts directly. This warranty is void if damage is due to abuse, neglect or unauthorized modification.

Bel Canto Design products are uniquely identified with a serial number on the back panel or the bottom plate of each unit. This number is required to validate your warranty, please reference 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. central time.