

# bel canto

## Celio

**Balanced Single-ended Audio Power Amplifier**

**User's Guide and  
Operating Information**

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# Celio

## Balanced Single-ended Audio Power Amplifier

The **Celio** is a dual configuration, stereo/mono power audio amplifier using a unique Bel Canto Design, Balanced Single-ended circuit architecture. This design combines the musicality of the single-ended triode amplifier with higher power and versatility of a FET based design.

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*Bel Canto grew from the quest to achieve the ultimate musical satisfaction from an audio system. This goal 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 Orfeo line of amplifiers through the ultimate expression of this technology. The Orfeo amplifier was developed to be used as both a cornerstone for a modern audio system and as a reference tool to explore the reasons behind the single-ended triode amplifier's uniquely musical attributes.*

*For the better part of a decade this quest continued and has resulted in the birth of a line of fine audio components in Bel Canto's series of solid state, balanced single-ended, amplifiers and matching components. These components share the inherent musical qualities of the reference amplifier. They are conceived from a marriage of some of the oldest audio technologies developed by Bell Labs and Western Electric in the early part of the century and the latest technologies, including materials technologies in the active and passive components, digital audio technologies and active device technologies bring inherently musical performance to a wider audience than the single-ended triode could alone.*

*The **Celio** presented in the following pages is designed to maintain very high value in its range and retain this value for many years, both because of the quality of design and manufacturing and also the timelessness of each component's musical performance.*

*Bel Canto Design*

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# Design Features

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- Zero feedback
- Single balanced JFET voltage gain stage
- Balanced Single-ended MOSFET class A driver stage
- Balanced complementary MOSFET class A/AB output stage
- Transformer coupled output for optimum MOSFET load impedance matching provides low distortion and output impedance with zero feedback
- Distortion <1% at maximum output (typically 0.01% at 1 watt out)
- Damping Factor >10 through the audio frequency range
- High thermal stability in all stages
- Fully regulated, separate, Zero Feedback power supplies for all stages including the output stage
- Audio Grade capacitors for coupling and decoupling used throughout
- True Balanced inputs
- Output into 4, 8, 16 ohms (2, 4, 8 ohms in 100 watt Class AB configuration)
- Outputs can be paralleled for 100 to 200 watt monoblock use with no loss of performance
- Standby circuit maintains optimum sound quality and saves power when not listening
- Protection circuitry outside signal path
- >20 amps peak current capability (>40 amps in mono)

No loss of quality occurs when the **Celio** is operated in mono at 2X power output. As opposed to other amplifiers which bridge the output to increase power in mono we put the outputs in parallel. This can be done because of the transformer output stage.

The **Celio** uses a balanced output transformer to provide an optimum effective load impedance for the output MOSFETs. Another advantage of the **Celio** is that the output stage operates optimally even when driving 4 or 2 ohm loudspeakers. If the user requires the extra 3 dB of output capability because of low efficiency loudspeakers or very high listening levels the output stage can be run to higher power by mismatching the load impedance. This allows the **Celio** to drive nearly 85 watts per channel stereo into 8 or 4 ohm loads, or approximately 170 watts mono.

## Warm Up

The **Celio's** sonic performance will start to stabilize after approximately forty (40) hours of continuous power up, and will continue to improve over several hundred hours of use.

# Unpacking

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## Unpacking

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

- 1 - **Celio** User's Guide
- 1 - Power Cable for connection to utility power [6' 7" - 2 meters long]
- 1 - **Celio** audio power amplifier
- 1 - Input Shorting Plug for RCA input use
- 1 - Owner's Warranty & Registration Card

Carefully unpack each piece and check for shipping damage. If there is any damage, or if

any piece is missing, please contact your dealer or Bel Canto Design, Ltd. **Save all packing materials** as the packing is specially designed to protect the amplifier for shipping or transporting it. If you lose or damage the packing materials or carton, please contact your dealer or distributor before attempting to transport the amplifiers.

***The Celio's power supply is preset for the proper national voltages before you receive it. The power cable 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!***

### Warning

#### **Do not connect power to this amplifier yet!**

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

***Do not open up your Celio (do not remove the chassis covers). There are no user serviceable parts inside. Any tampering of internal parts will immediately void your warranty.***

***Complete and mail the Owner's Registration Card immediately in order to activate your warranty.***

# Initial Setup

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## Line Level Inputs

Two input jacks are provided per channel. The RCA Jack is a standard input which accepts single-ended sources. The Female XLR jack allows true balanced hookup operation using the standard pin configuration:

- Pin 1 Ground
- Pin 2 Input +
- Pin 3 Input -

If there is a problem with noise or hum at the amplifier outputs when using a single-ended source, this may be because the ground side of the RCA jack is not connected to the circuit ground of the amplifier. To connect this to the ground short the Pin 3 (Input -) of the XLR to

**The Class A/AB High Bias Stereo** mode allows 50 watts of power to be delivered to loudspeakers with 4, 8 or 16 ohm impedances. These connections are made following the left most set of output terminal nomenclature.

Pin 1 (Ground) using the supplied shorting plug. This should be adequate to correctly ground most systems with stereo preamplifiers.

## Loudspeaker Connection and Power Output Options

The output transformer allows you to optimize the output stage connections for various loudspeaker requirements. Given the variances in loudspeakers, you are encouraged to experiment with the different amplifier outputs (i.e.: 4, 8 or 16 ohms). Use the output configuration which sounds best with your loudspeakers and with your personal listening requirements.

**The Class A/AB Stereo** mode allows approximately 100 watts of power to be delivered to loudspeakers with 2, 4 or 8 ohm nominal impedance.

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## Mono Mode Operation

The **Class A/AB High Bias Mono** mode uses both output stages in parallel to provide 100 watts of high bias class A/AB power to 2, 4 and 8 ohm nominal loudspeaker impedances. This mode requires the use of a second **Celio** for stereo operation, of course, but it will provide the highest quality of output for lower sensitivity loudspeakers and very high listening levels. These connections are made following the center set of output terminal nomenclature. Note that it is necessary to provide a short bridge between the adjacent set of output terminals used for the loudspeaker hookup. Bel Canto Design or your dealer can supply special silver plated shorting bars for this use. Always connect the + terminal to the + and the - terminal to the -, and always connect just two sets of terminals in parallel depending on the loudspeaker impedance connections.

## Standby Operation

The front panel has one push button for putting the **Celio** into and out of standby. The **Celio** has been designed to remain powered up at all times. The front panel LED is GREEN when the **Celio** is in normal operating mode. When not being used to play music signals the amp goes into a standby mode when the button is pushed, the LED then becomes RED. The standby mode reduces the output stage bias so that less power is used by the amp. This allows the **Celio** to remain powered and reduces warm up time to only a few minutes as the output stage stabilizes.

*NOTE: Standby does not mute the output to the loudspeakers.*

# Initial Setup

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## Placement Of The Celio Within Your System

The most typical arrangement places the **Celio** on the lower shelf of a rack or shelf unit; some users prefer to have the **Celio** on its own stand.

Whichever method is preferred, it is recommended to use a high quality type stand capable of dissipating vibration and resonance into the floor area.

Always allow adequate ventilation space over the top and at the rear of the **Celio**.

**A minimum of 3" to 4" (77 mm - 102 mm) clearance on the top, and 4" (102 mm) on the back is necessary; more is recommended.**

We do not recommend placing weights or other objects directly on the **Celio**. This can block or reduce ventilation, and may mar or scratch the chassis finish. Use a warm, damp soft cotton cloth for cleaning the outer surfaces.

## Specifications

Power output per channel into 2, 4 or 8 ohms • 50 watts Class A/AB

• up to 170 watts Class AB Mono

Bandwidth -3dB • 2Hz-30KHz

Input level for full watts output • 1 Volt rms on balanced input

Signal to Noise Ratio re 1 watt out • >96 dB A weighted

Distortion at 10 watt 1kHz • <0.1% low order harmonic

Damping Factor • >10 across full bandwidth

Input configuration and impedance • single-ended/balanced 100Kohm

Gain at 8 ohm tap • 25 dB with balanced input

Power Requirements • 100-120 VAC 50-60 Hz or 220-240 VAC 50-60 Hz

• 300 Watts

Size • 17.5" W x 16" D x 6.5" H (445 mm x 407 mm x 165 mm)

Weight • 65 lbs (29.25 kg)

## 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 requested 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.

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