

User's Guide and Operating Information

bel canto



eVo2™

eVo4™

eVo6™

**Digital Power Processor
Audio Power Amplifiers**

Bel Canto Design, LTD.
212 Third Avenue North
Minneapolis, MN 55401
Phone: (612) 317.4550
Fax: (612) 359.9358
www.belcantodesign.com
Info@belcantodesign.com
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Thank you for purchasing a Bel Canto Design **eVo** amplifier. As the proud owner of an **eVo** you can expect high quality performance for years to come. The **eVo** presented in the following pages is designed to maintain very high value, setting the benchmark for design, quality and sonic accuracy while maintaining our heritage of musicality and realism. The **eVo** amplifiers are multiple configuration, multi-channel power audio amplifiers using a unique Bel Canto Design, **eVo** Digital Power Processor circuit architecture.



Digital Power Processor, Audio Power Amplifiers

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Design Features

- High efficiency Digital Power Processing output stage for cool operation
- Analog signals are processed at small signal level, all large signal power is generated using the switching output stage
- 700 watts of continuous power output capability in Balanced Mono mode
- Optimized balanced and single-ended input stage
- THD and IMD <0.05%
- Damping Factor >100
- High thermal stability in all stages
- Regulated, low noise supplies for all analog stages
- Audio Grade decoupling capacitors and resistors used throughout
- Soft clipping insures graceful over load
- High efficiency 'green' amplification
- Comprehensive protection circuitry outside the signal path

The **eVo** Digital Output Stage and Digital Power Processor

The Bel Canto Design **eVo** digital output stage is of unique simplicity. The output uses 2 N channel MOSFET switches switching between the power supply rails. These switches turn on and off within 30 billionths of a second and provide an onresistance path to the supplies of a few thousandths of an ohm. These switches switch alternately between the supplies at a rate over 600,000 cycles per second (600 kHz). When no audio signal is present, the ratio between the time at the positive supply and the negative is balanced to provide no audio frequency output. The switching stage is isolated from the loudspeaker by a single LC filter stage. This 80kHz second order filter is used to reject high frequency energy and maintain linear phase response.

Furthermore, the digital power processor adds small levels of high frequency dither to insure that an inherently linear output stage characteristic is maintained from very low to very high output levels. The audio frequency information modulates the output stage by changing the time relationship between the positive and negative supply rails. The critical timing information is controlled by the digital power processor and the effective switching frequency is changed over a 200 kHz to 1500 kHz range. This spreads the digital energy created by the amplifier over a wide bandwidth, greatly reducing the energy at any one frequency. This permits using a simple LC filter to remove the high frequency energy and maintains excellent phase response.

Design Features (cont'd)

Feedback is taken before the LC filter and fed back to the digital power processor. This feedback is used to insure that any variations in the switching speed of each output device are compensated for, optimizing the linearity of the output stage.

Warm-Up

The **eVo** amplifier's sonic performance will continue to improve over the first several weeks of operation. Because of the very low standby operating power we recommend continuous power-up unless the system is not to be used of an extended period. This will prolong the amplifier's life and insure optimum performance at all times..



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 setup and use procedures. Do not open up your eVo amplifier (do not remove the chassis cover). 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.

Unpacking your new Evo

The box containing your eVo amplifier contains the following parts:

- 1 (one) - **eVo** audio power amplifier
- 1 (one) - **eVo** 2/4/6 User's Guide
- 1 (one) - Power Cable for connection to utility power [6' 7" - 2 meters long]

Carefully unpack each piece and check for shipping damage. If there is any damage, or if a 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. If you lose or damage the packing materials or carton, please contact your dealer or distributor before attempting to transport the amplifiers.



Warning!

The eVo amplifier'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!

Initial Setup

Please refer to the front and rear panel diagrams, as needed. [Page 8]

Line Level Inputs



Warning:

Always disconnect power to the amplifier when changing cables.

Two inputs per channel are provided. The RCA jack is a standard input that 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 -

Optimizing Input Grounds

System ground optimization is critical to achieving low noise performance. This is especially critical when using the RCA inputs.

The XLR/RCA switch is used to optimize the grounding at the amplifier inputs. Setting the XLR/RCA switch in the RCA position connects the RCA ground to the chassis and the power cable.

If using Balanced XLR cables then leave the switch in the XLR position, otherwise the negative XLR input will be shorted to the amplifier ground.

If using the RCA inputs and the Preamplifier has a floating ground then using the RCA switch position will give the lowest noise operation. This will connect the system ground

to the power ground at the amplifier. Try connecting the RCA ground to chassis ground by depressing the RCA/XLR switch button (RCA position). If this button is depressed and there is ground noise or hum then try setting this switch in the XLR position.

Putting this switch in the XLR position effectively lifts the RCA ground on the amplifier input and can prevent ground loop noise. This is especially useful for systems using more than one amplifier chassis or when using the **eVo4** or **eVo6** amplifiers in a system.

These procedures should be adequate to correctly ground most systems.

Loudspeaker Connection and Power Output Options



Warning!

Make certain that any output terminal is not connected to a chassis or earth ground.

Connect loudspeakers to the outputs of the **eVo** amplifier using the 5-way binding posts located on the rear of the amplifier. The red or black center plug in the output post can be removed for use with banana type connectors. Unscrew the binding

post until the center plug comes out. Do not connect speaker terminals to a chassis or earth ground connection. The Anti-Phase operation of the outputs would result in one of the active outputs being connected to ground and cause the amplifier to go into protection mode and shut itself off. Also when connecting the amplifier in balanced-mode mono operation both terminals are driven actively and can not be grounded.

Balanced Mono Mode Operation

High-power balanced mono operation can be obtained with the simple push of a button. Connect one input cable to any of the 4 input jacks on an **eVo2** or input jack sets on an **eVo4** or **eVo6**. Then depress the MONO/STEREO mode button. Connect the loudspeaker to the output terminals indicated for mono-mode operation on the back panel.

Power On and Operation

The front panel switch or rear panel 12 volt trigger input is used to power on the amplifier. When using the 12 volt trigger the front panel switch should remain in the off (out) position. The **eVo** amplifiers have been designed to remain powered up at all times, their very low standby power is conducive to this. The blue front panel LED remains on when the **eVo** is in normal operating mode. When the amplifier shuts down in protec-

tion mode a small red LED lights next to the front panel power switch. If this occurs, remove power and insure that no output terminal is connected to ground or to another terminal. Restore power and the amplifier should return to normal operation. If not then there may be an internal fault and the amplifier should be returned to an authorized service center. Contact your dealer, distributor or Bel Canto Design.



eVo2



eVo4



eVo6

Amplifier Placement

eVo Amplifier Placement Within Your System

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

Because the **eVo** runs so cool it can be placed in many system locations without compromise.

We do not recommend placing weights or other objects directly on the eVo. This may mar or scratch the chassis finish. Dampen a soft cotton cloth with warm water for cleaning the outer surfaces.

Specifications

	eVo2		eVo4		eVo6	
Output power	2 Ch.	1 Ch.	4 Ch.	2 Ch.	6 Ch.	3 Ch.
@ 8 Ohms	120 W	400 W	120 W	400 W	120 W	360 W
@ 4 Ohms	240 W	700 W	240 W	600 W	240 W	600 W
Gain	23dB	29dB	23dB	29dB	23dB	29dB
Bandwidth	1Hz -80KHz ~3dB		1Hz -80KHz ~3dB		1Hz -80KHz ~3dB	
THD and Noise	< 0.05% THD at 1WRMS		< 0.05% THD at 1WRMS		< 0.05% THD at 1WRMS	
Damping Factor	>100, below 100Hz		>100, below 100Hz		>100, below 100Hz	
Input Impedance	100k/200k Bal		100k/200k Bal		100k/200k Bal	
Inputs	XLR & RCA		XLR & RCA		XLR & RCA	
Outputs	2 pr. 5-Way		4 pr. 5-Way		6 pr. 5-Way	
Ide Power Draw	15 Watts		30 Watts		45 Watts	
Dimensions-inches WxDxH	17.5 in x 14.5 in x 4.5 in		17.5 in x 18.5 in x 4.5 in		17.5 in x 18.5 in x 4.5 in	
Dimensions-mm WxDxH	44.5 cm x 37 cm x 11.5 cm		44.5 cm x 47 cm x 11.5 cm		44.5 cm x 47 cm x 11.5 cm	
Weight	36 lbs (14.5 kg)		40 lbs (18kg)		42 lbs (19 kg)	
Features and specifications are subject to improvements and changes without prior notice.						

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