bel canto

e.One™ series

CD2

USER'S GUIDE

CD2

CD Transport/Player

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Important Safety Instructions

Explanation of symbols used in this manual or on the rear/underside of the apparatus:

The Lightning Flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product enclosure that may be of sufficient magnitude to constitute a risk of shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

- Read, keep and follow these instructions.

- Heed all warnings.

- Do not use the apparatus near water, ie near a bathtub, kitchen sink, laundry tub, in a wet basement, near a swimming pool etc.

- Clean only with dry cloth.

- Do not block any ventilation openings. Install in accordance with the Manufacturer's instructions. Site the apparatus so that its location or position does not interfere with its proper ventilation. For example, the apparatus should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings, or placed in a built in installation such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.

- Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet; consult an electrician for replacement of the obsolete outlet.

TO COMPLETELY DISCONNECT THIS APPARATUS FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE.

THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY ACCESSIBLE.

Disconnect supply cord before changing fuse. Refer servicing to qualified service personnel.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE AND OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHOULD NOT BE PLACED ON THIS APPARATUS.

- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and at the point where they exit from the apparatus.

- Unplug this apparatus during lightning storms or when unused for long periods of time.

- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug has been damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

- Mains plug: Use the mains plug to disconnect the apparatus from the mains supply. The mains plug must be accessible at all times. Use the mains switch (if applicable) when the apparatus is not in use.

- Objects and liquid entry: Do not let objects or liquids fall into the apparatus. Do not expose the apparatus to dripping or splashing. Do not place a vessel containing liquid on top of the apparatus.

- No naked flame sources, such as lighted candles, should be placed on the apparatus.

- The apparatus has been designed for use in moderate and tropical climates

Fuse replacement:

This appliance is fitted with a non-rewireable 10 amp mains plug. The plug contains a 10 amp fuse. If the fuse has blown it can be replaced as follows:
a) Pull out the black fuse cover/carrier.
b) Remove and dispose of the blown fuse.
c) Fit a new 10 amp BS1362 approved fuse into the carrier and push the carrier back into the plug.

Always ensure the fuse cover is fitted. If the fuse cover is missing do not use the plug. Contact your Bel Canto retailer to obtain a replacement fuse cover. Fuses are for fire protection and do not protect against electric shock.

WARNING: THIS APPLIANCE MUST BE GROUNDED.

FCC NOTICE

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.

Green By Design

All Bel Canto products make use of compact and efficient design principles. Our products use less resources per unit to produce better performance than ever before. Everything from reduced packaging volume, to less weight in transport helps to reduce the overall environmental impact of bringing our products into the market.

Our products make very efficient use of electricity. Low energy usage and compact size ensure that the physical and environmental footprints of all Bel Canto products are minimized. Quality and performance play into this approach as all of our products are designed to remain vital and valid performers for many years. Should you want to upgrade to one of our new products, we even offer trade-in value for your old Bel Canto product to ensure that it is recycled in the most efficient and responsible manner.

RoHS and WEEE

All of our current products are designed and produced to RoHS standards, ensuring that dangerous materials do not enter the waste stream. Lead free electronics assemblies and environmentally safe finishing and production methods are utilized to ensure that our products and processes are environmentally safe.

Bel Canto Recycles

Bel Canto has always been a forward thinking company. In the same way that we are focused on the development of high-end audio products, we are also conscious of what we leave behind. For many years we have implemented environmentally sound measures to make the most efficient use of resources and keep our impact at a minimum.

We reuse or recycle more than 99% of the packing materials for our incoming parts shipments. Each year we divert massive amounts of cardboard, paper, plastic film, and Styrofoam from landfills. Our plastic and Styrofoam is delivered directly to local facilities that process it on site for use in their manufacturing. Steel, aluminum, and other metal waste products are delivered to local metal scrap yards for recycling back into the production stream.

We also participate in Waste Management's e-Cycling program. All electronic waste is processed in the US, with hazardous material being separated from non-hazardous, at ISO 9001 and ISO 14001 certified regional processing centers.

Our commitment to responsible production processes ensures that the absolute minimum of material used in the making of our products enters the waste stream.

Warranty Information

Bel Canto products are automatically covered by a 90 day factory warranty that covers all internal parts and labor. Register online (http://www.belcantodesign.com/Belcanto_Warranty.html) within 30 days of purchase from an authorized dealer to automatically extend your warranty for 2 years starting from the date of purchase. If you do not have web access, please contact your dealer for assistance. Upon fully completing registration, within 5 business days you will receive an email that officially validates your warranty. Your information will be used for internal use only and will not be sold or released outside Bel Canto. Your comments and suggestions are appreciated and help us continually improve our products and services.

The warranty is only valid to the original owner and is non-transferable. Damage caused by unauthorized modification, abuse, or neglect of product will void your warranty. Any cost associated with return of product is the sole responsibility of the owner. All returns require a return authorization number issued after completing the RMA form in the support section of our website. If you have any questions, please feel free to contact us online at info@belcantodesign.com.

Unpacking Your CD 2

CD2 packaging contains the following:

> 1 (one) – CD2 CD Player
> 1 (one) – Magnetic Puck and Pouch
> 1 (one) – BNC to RCA Adapter for the SPDIF output
> 1 (one) – CD2 User's Guide and Warranty Sheet
> 1 (one) – Power Supply and Power Cord
> 1 (one) – Remote Control

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.

NEVER pack the CD2 with the Magnetic Puck on the Turntable.

IMPORTANT: Save all packing materials as it is specially designed to protect the unit during transportation or shipping. If the packing 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 CD2 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.

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.

⚠️ **WARNING!**
Do not connect power
to this product yet!

Setup & Placement

Because the CD2 runs cool, it can be placed in many system locations without compromise. We do not recommend placing weights or other objects directly on the CD2. This may scratch or mar the chassis finish. Do not use harsh chemicals when cleaning the outside of your CD2.

Placement on top of your furniture or on a shelf with at least 6 inches of clearance above the CD2 will ensure that you can access the top loading CD transport mechanism. Placement in a relatively sheltered environment will ensure that the CD2 can operate un-impeded by dust or animals.

⚠️ **IMPORTANT!**
Make all connections before powering your unit!

Design Features

The Bel Canto CD2 is designed to recover the digital audio data from a CD error-free and with extremely low jitter:

- Ultra-Clock^{TM} architecture recovers the data with minimal clock jitter

- CD-PRO2 top load mechanism for quality and longevity

- 24/192 upsampling maximizes dynamic range potential from inboard DAC

- 4-layer PC board design for superior signal routing, grounding and power supply routing

- Outboard regulated power supply provides firm foundation for multiple local regulators

- Multi-stage power supplies for precise power to the sensitive analog circuitry

- 24/192 integrated DAC with 112dB of dynamic range

- Ultra low noise second stage independent regulation for the analog sections

- High speed isolation transformers on AES and SPDIF digital outputs for optimum interface to outboard DAC

- Selectable Fixed or Variable analog outputs can drive amplifier directly

- 4Vrms Balanced and 2Vrms single ended analog outputs

- Single front panel control for simple operation

- Comprehensive drive functions available from full-system remote control

- Ultra-efficient Green Technology design with 5W operating power dissipation

CONDITIONING

The sonic performance of the CD2 will begin to stabilize after 100 hours of continuous power up.

CD 2 Care & Warnings

DO NOT OPERATE the CD2 WITHOUT a CD in PLACE

If you attempt to take the CD2 out of Wait State when no CD is present, it will go back into Wait State. The CD Laser is inactive whenever the CD2 is in Stop mode or Wait State. The Laser will not operate without a CD and the Magnetic Puck on the turntable. You can ONLY take the CD2 out of Wait State with a CD in place and the Magnetic Puck on the CD.

NEVER REMOVE the PUCK while the CD is SPINNING

NEVER PRESS DOWN on the CD2 turntable as this will damage the turntable mechanism.

NEVER DROP the PUCK or ANY OTHER OBJECT on the TURNTABLE.

NEVER PACK or SHIP the CD2 with the PUCK on the TURNTABLE.

Undue pressure or shock to the turntable will damage the mechanism. Repair of the mechanism for this damage is not covered under the CD2 warranty.

Also, **NEVER TOUCH the LENS of the CD MECHANISM.** Only clean it with a cloth designed for cleaning Optical Disc player lenses. You can use a small puff of clean air to remove minor dust buildup or just play a CD and the motion of the CD should keep the lens clear of dust. If you are concerned about dust buildup in your environment you can leave a blank CD in place to cover the mechanism when not using the CD2.

REPAIR of the CD2 MECHANISM DUE to MISHANDLING is NOT COVERED by the CD2 WARRANTY.

There are no user serviceable parts inside the CD2 chassis. Opening the chassis will void the warranty.

There are no fuses inside the CD2.

Use only with the supplied Bel Canto CD2 desktop power supply, the LNS1, or the VBS1. Using a power supply not provided by Bel Canto will void the warranty.

Single Knob Control Functions & Display

Several Operating Modes are displayed using the left-most 7-segment display:

- Two Vertical Lines Indicate Pause
- a Square indicates Stop
- a Blinking Segmented Square indicates Play

CD2 in Fixed Output Mode (Fixed/Variable IN):

The Fixed/Variable button is located to the right of the RCA outputs. *See Page 10 for the back panel diagram.*

When powering up, CD2 goes through a display check and comes up in Wait State indicated by four dashes on the display: - - - -.

Place a CD on the CD2 and then place the magnetic puck on the CD. It will automatically center and clamp itself in place.

Press the center of the front panel knob for 2-3 seconds. You will then see the firmware revision displayed for a couple of seconds and the CD will spin while 4 dashes are displayed. Once the CD Table of Contents is read the display will indicate the total CD time and the number of tracks.

A 01 display indicating track 1 with 2 vertical dashes   (||) in the left hand mode indicator display will indicate that the CD2 is in Pause mode and is ready to play the CD. Initiate **Play** by pressing the front panel knob once. Scan to a new track by rotating the control. This works while in Pause, Play or Stop modes.

To **Pause** while playing press the knob once.

To **Stop** at any time press the knob twice. The CD2 will remain on the current track and re-start the track when Play is resumed. A center press on the control will be acknowledged by the display brightening momentarily. When in Play mode the mode indicator shows a square with sequenced blinking segments. Stop is indicated by a stationary square. The CD will be stopped. In Play and Pause modes the CD will continue to rotate.

CD2 in Variable Output Mode (Fixed/Variable OUT):

Operation will be the same as above except that rotating the front panel knob while in Stop or Play mode will indicate the volume level and then change the volume up or down as the knob is rotated. Rotating the knob in Pause mode will change the track number to be played. The volume display will stay lit for several seconds before going back to the mode indicator/track number display

The CD2 Remote Control has a comprehensive set of control features that are not available on the front panel control.

To access all CD2 control features press the button marked CD on the remote control.
e.One DAC or Preamp functions can be controlled by selecting DAC or PRE on the remote. The Main CD controls will still operate in the DAC and PRE modes.

Display: Toggles the Display ON and OFF. When in OFF mode, the Display will come on momentarily when changing the CD2 operation.

Mute: In variable output mode this will switch the analog outputs from Soft to Hard Mute and Un-muted modes. Soft mute is indicated by two decimal points in the far right of the display. Hard mute is indicated by 4. **If you are not using your CD2 and would like to keep it powered ON, Hard muting is recommended.**

Pause ||: Toggles the Pause mode ON and OFF. The Mode Indicator will show the pause or play mode as appropriate.

Stop: Indicated by a solid square and will place the CD2 in Stop mode when pressed. The CD2 will remain on the current track and re-start the track when Play is pressed.

PLAY>: Initiates playback of the displayed track.

VOL+ : Increases the volume setting in Variable Output mode. This will Punch Through to any Bel Canto unit in Variable Output mode. The display will show the volume level while changing.

VOL- : Decreases the volume setting in Variable Output mode. This will Punch Through to any Bel Canto unit in Variable Output mode. The display will show the volume level while changing. *See Page 7 for an explanation of Fixed/Variable output modes.*

|<<: Track Decrement to reduce the track number.

>>|: Track Increment to increase the track number.

<<: Slow playback speed in real time. Pressing twice will reduce speed further, press Play to resume normal playback.

>>: Increase playback speed in real time. Pressing twice will increase speed further, press Play to resume normal playback.

Rpt1: Repeat playback of the current track while in play mode. The Mode Indicator changes from the bottom left corner to the top left corner to indicate mode. Press Rpt1 to turn the repeat mode off. Stopping playback will also turn the repeat mode off.

Rpt All: Repeat playback of the entire CD while in play mode. The Mode Indicator changes from the bottom left corner to a full height Mode Indicator to indicate this mode. Press Rpt All to turn the repeat mode off. Stopping playback will also turn the repeat mode off.

TIME: Shows the track time played while the CD is playing or Paused. Pressing the TIME button will change the Display back to standard mode.

Number Buttons: The 1-9 and 0 buttons are used to directly select any track number for playback. Track 10 and above are directly selected by keying in the number. If you select a track beyond the number of tracks on the CD no action will result and the current track will continue playing.

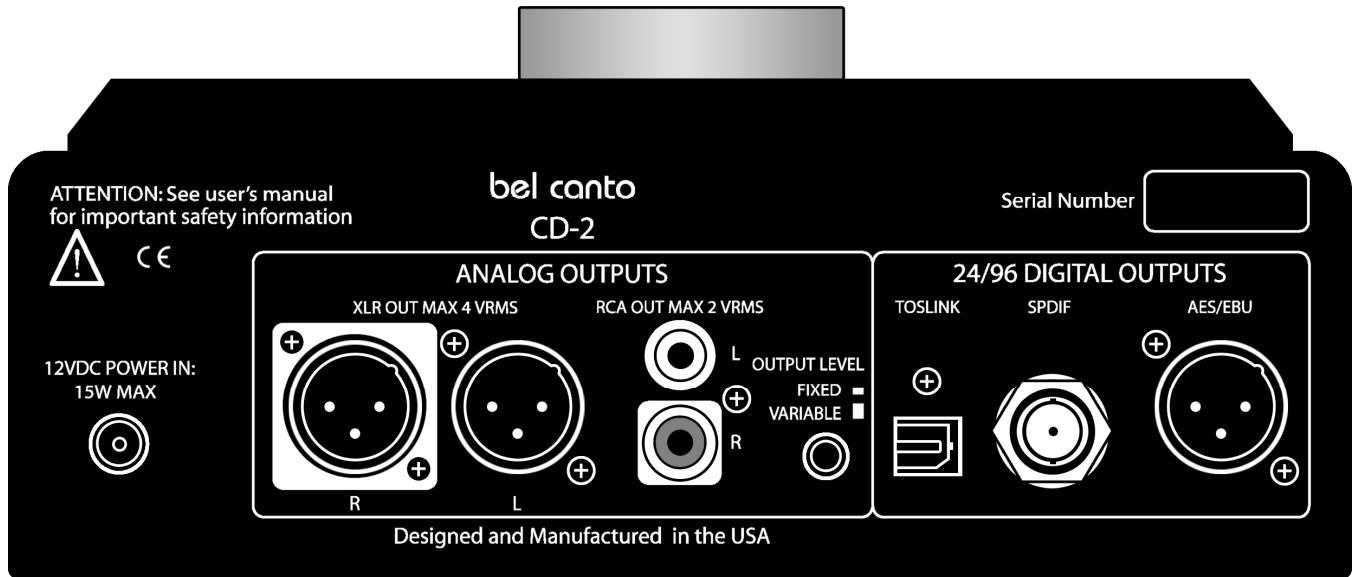No other remote buttons are active for use with the CD2.

Sample Rate Setting

The CD2 digital outputs operate only at 16/44.1. Any processing of the digital data will be handled by your external DAC.

The 192kHz setting is used only when using the CD2 analog outputs.
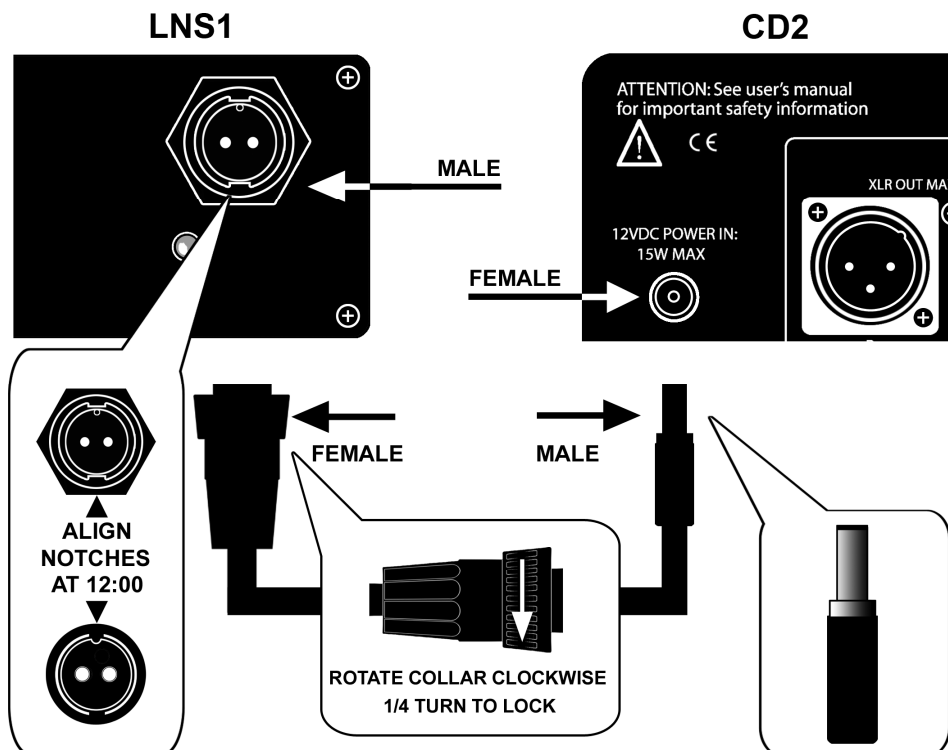
Rear Panel Connections

IMPORTANT: If using the CD2 directly into a power amplifier, ensure that the Fixed/Variable Output button is in the OUT (variable) position. Operation in Fixed Mode directly into the amplifier could cause extreme output levels, clipping and damage to the loudspeakers, amplifiers or your ears!

- 12VDC power interconnect jack to interface with either the CD2 desktop power supply, the Bel Canto LNS1 or Bel Canto VBS1 power supplies. Contact your local dealer if you wish to upgrade your power supply to the LNS1 or VBS1

- XLR Balanced 4Vrms analog outputs

- RCA Single Ended 2Vrms analog outputs

- Fixed/Variable button

- TOSLINK output accepts any standard plastic or glass fiber optical TOSLINK cable and operates to 16/44.1 data rate

- SPDIF output accepts BNC or RCA connections and operates at a 16/44.1 data rate

- AES/EBU output transmits a 16/44.1 data rate

Double check all connections to and from the unit before plugging the CD2 into the power source. The CD2 will come up in Wait State, indicated by four dashes on the front panel: - - - -

LNS1

CD2

MALE

ATTENTION: See user's manual
for important safety information

⚠ CE

XLR OUT MAX

12VDC POWER IN:
15W MAX

FEMALE

ALIGN
NOTCHES
AT 12:00

FEMALE

MALE

ROTATE COLLAR CLOCKWISE
1/4 TURN TO LOCK

- The CD2 must be powered by either the desktop power supply, the VBS1 or the LNS1. If using the VBS1, please refer to the VBS1 User's Guide for connectivity. If using the LNS1, please read the following:

- The LNS1 is designed to power Bel Canto CD2 or VB equipped products only. Use of any cable other than the supplied power interconnect may damage either the LNS1 or VB equipped unit and will void any warranty. Certain non-VB equipped Bel Canto units can be factory upgraded. To begin the upgrade process, fill out the RMA form in the Support Section of our website.

- When connecting your CD2 to the LNS1, be careful to observe the alignment notches on the LNS1 power receptacles and the power interconnect cable.

- When inserting the power interconnect cable, align the notch on the cable end and the alignment teeth on the outer sleeve to the 12 o'clock position. This will allow the interconnect cable to fully seat and ensure that the plug mates correctly with the power receptacle.

- Once the power interconnect cable is fully seated in the receptacle, lock in the power interconnect cable by turning the outer sleeve clockwise one quarter turn. Proper seating of the LNS1 cable will ensure safe and secure operation of the LNS1 and all connected components.

- The LNS1 has been designed to run on non-regulated, non-filtered AC Mains. Usage of any additional isolation or filtration from the AC Mains supply may compromise LNS1 performance.

Tips For Operation

- The precision machined and polished turntable axis is designed to center the magnetic puck for stable rotation, minimizing a potential source of low frequency jitter. This axis is polished to prevent scratching of the CD surface because of contact with the axis when placing or removing a CD from the turntable.

- The magnetic puck can be stored either on the top surface of the CD2 top cover or on the turntable axis when not playing a CD.

- A blank CD-ROM can be used as a cover over the CD mechanism when not using the CD2.

- There will be low level pops on the analog outputs when disconnecting or reconnecting the external power supply. The CD2 incorporates a hard mute circuit to minimize these pops but there is some residual level. To avoid any pops mute the preamplifier or power down the amplifier that the CD2 is connected to whenever connecting or disconnecting the power supply for the CD2.

- Note that mechanical noises from the CD2 linear tracking mechanism are normal when changing tracks and that there is a very low level motor noise while playing the CD. The CD rotating speed also will change as the CD plays to the outside tracks. The CD rotation slows on the higher numbered tracks.

- **Volume Control Punch Through:** The Volume Up and Down functions on the remote control will affect any Bel Canto unit in Variable Output mode regardless of whether PRE, DAC, CD or TUNER is selected. It is recommended that only the device with volume control closest to the power amps be in Variable Output mode. Any other devices that are capable of volume control should be in Fixed Volume mode.

Operation As Digital Transport

- The CD2 produces a low jitter data-stream from any of the 3 digital outputs.

- 110 ohm AES/EBU balanced, 75 ohm BNC SPDIF or the TOSLINK output can be used as required. Any or all of the outputs can be connected to any digital playback device.

- While using the CD2 as a Digital Source you can disable the analog output section by selecting Variable Output, scrolling the Volume control level to 0.0, and then pressing the Fixed/Variable button IN to select the Fixed position.

- A BNC to RCA female adapter is included for use with RCA terminated cables on the SPDIF digital output.

Operation As CD Player

- The high dynamic range analog outputs of the CD2 can be used to drive an amplifier directly. This is best achieved by using the 4Vrms balanced XLR outputs directly into the balanced inputs of your power amplifier.

- Place the Fixed/Variable button OUT to select the Variable position. You can then control the volume level of your CD playback through the volume control of the CD2.

- The RCA outputs can also be used directly into the RCA jack of an amplifier. The output level of the RCA outputs are 6 dB lower than the balanced XLR outputs.

- For use into an analog preamplifier scroll the volume level to 100.0 and press the Fixed/Variable button to the IN Fixed position and use the volume control on the analog preamplifier to control system level.

Disc Compatibility: CD-DA (Red Book IEC908), CD-R and CD-RW discs

Digital Outputs

Maximum Data Rate/Bit Depth: 44.1kHz/16bit

Digital Output types: AES/EBU XLR, SPDIF BNC, TOSLINK

AES/EBU Digital Output Level: 2.7V p-p

PDIF Digital Output Level: 1.2V p-p

All Digital outputs are galvanically isolated

Analog DAC Outputs

Data Rate/Bit Depth: 192kHz/24bit

Output Levels: Single Ended RCA 2Vrms, Balanced XLR 4Vrms

Dynamic Range: 112dB A-Weighted

THD+N: <0.002%

Output Impedance: RCA 100 ohms, XLR 200 ohms

Frequency Response: 20Hz-20Khz +/-0.1 dB

Ultra-Clock

Accuracy: 0.0001%

Jitter: 2 ps rms

Features:

Slow roll-off linear phase digital filter

Fixed or adjustable analog output

External regulated power supply

CD-Pro2LF mechanism

Power draw: 5 Watts

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

Dimensions: 8.5" W x 12.5" D x 4.5" H (216 mm x 318 mm x 115 mm)

Weight: 18lbs. (8.2 kg)

External Power Supply:

IEC 3-prong grounded plug

Class II power supply: 100-240VAC 50/60 Hz 0.5A

Application of Council Directive(s):
2004/108/EC and 2006/95/EC, as amended

Standard(s) to Which Conformity Is Declared:
EN 55013:2001 + A1:2003 + A2:2006
EN 55020:2007
EN 61000-3-2:2006
EN 61000-3-3:1995 + A1:2001 + A2:2005
EN 60065:2002/A12:2011

Manufacturer:
Bel Canto Design, Ltd.
221 1st Street North
Minneapolis, MN 55401 USA

The equipment identified here conforms to the Directive(s) and
Standard(s) specified above.

Type of Equipment: CD Player/Transport
Models: CD2
Date: January, 2012

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