bel canto

e.One™ series

REFLink

USER'S GUIDE

REFLink™

USB Device

TABLE OF CONTENTS

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. 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 REFLink

REFLink packaging contains the following:

> 1 (one) – REFLink
> 1 (one) – REFLink User's Guide
> 1 (one) – Power Cord
> 1 (one) – BNC to female RCA connector

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 they are 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 REFLink 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 REFLink uses little power and runs cool, it can be placed in many system locations without compromise. We do not recommend placing weights or other objects directly on the REFLink.

This may scratch or mar the chassis finish. Do not use harsh chemicals when cleaning the outside of your REFLink.

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

Design Features

Digital Inputs:
- Asynchronous High Speed USB up to 24/192

Outputs:
- Coaxial S/PDIF using a BNC connector
- Balanced AES using an XLR connector
- ST Fiber using Bel Canto's LightLink circuitry

Compatibility:
- Apple OSX Snow Leopard (10.6) or later
- Windows XP and Windows 7 with downloadable driver

The Bel Canto REFLink features a High Speed USB input data connection and several digital audio outputs: coaxial S/PDIF using a BNC connector, balanced AES using an XLR connector and ST Fiber using Bel Canto's LightLink circuitry. Sampling rates up to 192 kHz and word lengths up to 24 bit are supported.

Great care has been taken in the design of the Bel Canto REFLink to optimize the asynchronous interface between the internal 500MHz DSP core and the dual ultra-low phase noise oscillators to ensure the lowest possible jitter on all three of the digital audio outputs. Multiple stages of low noise, isolated power supplies drive individual sections of the circuit, while the output master clocks and line drivers are powered by a separate low noise power supply. There are two stages of galvanic isolation between the USB input and output and clock stages. No power is drawn from the USB input, reducing possible corruption and performance sensitivity from the USB cable and internal power on the computer source. The USB input and processor core are designed onto a daughter card that plugs into the main board with its low noise oscillators and output drivers and primary power supply and filters, this ensures optimum isolation between the USB input and the low jitter digital audio outputs.

Numerous factors contribute to the superb audio performance of the Bel Canto REFLink: the low noise electrical environment, isolation from mains born noise, the sophisticated uLink DSP core and software, the ultra-low phase noise oscillators and the high current/high speed high speed CMOS drivers and retiming devices. Our LightLink technology high speed ST fiber output section provides the best performance with top DAC devices such as our DAC3.5VB mkII that can take advantage of this most optimized digital audio connection.
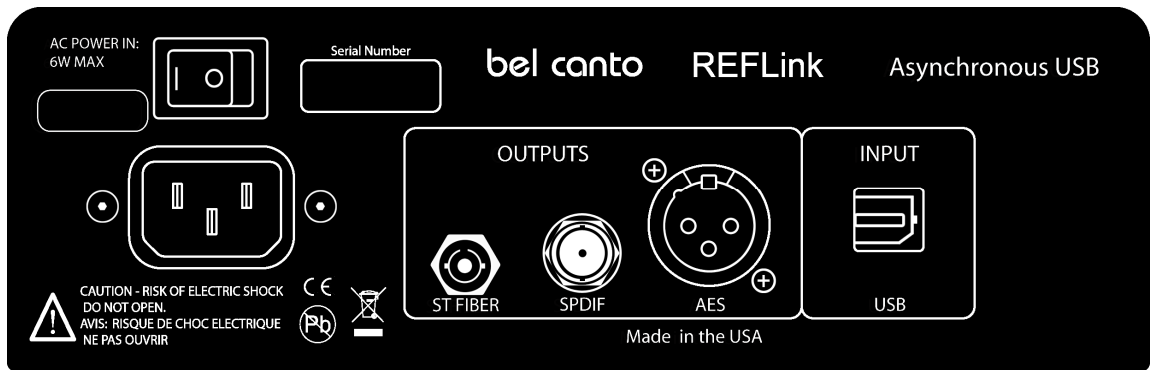
Single Knob Control Functions & Display

The REFLink features a 4 character display that has 3 modes. To access the different modes, press the knob in its center so that you can feel a click. The display will be highlighted, allowing you to change display modes by rotating the knob in either direction. The three display modes are:

- **01. Sample Frequency**
- **02. Firmware Revision**
- **03. Display Off:** Sample rate will appear when there is a change

There are no remote functions on the REFLink.

Rear Panel Connections

⚠ RISK OF ELECTRIC SHOCK! DO NOT OPEN!

Beginning in the upper left:

- **ON/OFF switch**: applies power when the switch is in the 1 position

- **IEC power cord jack:** Connect the supplied or a quality aftermarket power cord from this jack. Note the power setting indicated on the back of the unit before connecting the power

- **ST Fiber Output:** operates up to 24/192 data rate

- **S/PDIF Output:** BNC or RCA and operates up to 24/192 data rate

- **AES/EBU Output**: sends AES/EBU standard 110 ohm digital signal and operates up to 24/192 data rate

- **USB Input:** Digital input can be connected to a computer for playback of any audio format up to a 24/192 data rate. The system will automatically recognize the REFLink as an audio converter enumerated as *Bel Canto uLink Audio* when using Windows 98 or later and any version of Macintosh OSX

When all connections to and from the unit have been made then double check everything before plugging the REFLink into the power source. After turning on, the REFLink will go through its display check and show the software revision number.

⚠ **If the display is flashing 8888, immediately turn the unit off and then contact Bel Canto Design. (see pg 7)**

- The REFLink works natively with OSX 10.6 or later.
- To use with Windows XP or Windows 7, you must download a driver from www.belcantodesign.com/Support.html and follow the instructions accompanying the download.
- When installing driver on a Windows computer, ensure that REFLink is connected to the computer via USB and turned on.
- A power monitor chip is installed in your unit that senses the voltage and frequency of the incoming power. Prior to powering the unit, ensure that it is marked for your specific region's power voltage and frequency. It is also recommended you first power your unit up by plugging it directly into wall power. If the display flashes **8888 or 8.8.8.8.**, please contact Bel Canto or your dealer.

CONDITIONING

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

Specifications

Input:

High Speed USB connection - type B receptacle

Outputs:

Coaxial S/PDIF - BNC, 75Ω

Balanced AES type - XLR, 110Ω

High Speed ST Fiber

Features:

Supported sampling rates: 44.1kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192kHz

Supported word lengths: up to 24 bit

Supported operating systems: Apple Macintosh and Microsoft Windows

A USB cable is not included

Enclosure dimensions: 3.5"H X 8.5"W x 12"D including feet

Mains power: 100, 120 or 240VAC, 50/60Hz, IEC power input connector

Power consumption: 3 Watts

Features and specifications are subject to improvements and changes without prior notice.

Declaration Of Conformity

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: USB Audio Device
Models: REFLink
Date: January, 2012

Bel Canto Design, Ltd.
221 1st Street North
Minneapolis, MN 55401 USA
Tel: 612-317-4550
Fax: 612-359-9358

version 1.0