

# e.One<sup>by</sup> bel canto



## REFStream User's Guide

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# REFStream

Asynchronous Ethernet Media Renderer

## TABLE OF CONTENTS

Safety Information .....	2
Certifications/Standards .....	3
Warranty .....	4
Unpacking .....	4
Setup and Placement .....	4
Rear Panel Connections .....	5
Conditioning .....	5
Networked Audio .....	6-8
Tips for Operation .....	9
Specifications .....	9
Declaration of Conformity .....	10

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# Important Safety Information

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

## In The U.K.

### 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:

- Pull out the black fuse cover/carrier.
- Remove and dispose of the blown fuse.
- 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](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](mailto:info@belcantodesign.com).

## Unpacking Your REFStream

REFStream packaging contains the following:

- 1 (one) – REFStream
- 1 (one) – REFStream User's Guide
- 1 (one) – Power cord [6.6' – 2 meters long]
- 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. 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.

## Setup & Placement

The power supply on the REFStream is preset for the proper 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 if not used properly. Before powering this product, it is necessary to read and follow setup procedures.

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

Single Ended RCA and Balanced XLR connectors are available. XLR jacks allow balanced hookup using the standard North American pin configuration: Pin1 = Ground, Pin 2 = Signal +, Pin3 = Signal -



### **IMPORTANT!**

Make all connections  
before powering your  
unit!

# 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
- **Ethernet 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 REFStream as an audio converter appear as *Belcanto Renderer* when sources from any UPnP/DLNA compatible media server.

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

## CONDITIONING

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

# Networked Audio

There are many options for using the UPnP/DLNA compatible REFStream with your specific network, including NAS based Media Servers from Synology, QNAP and others. Our recommendation is to manage your audio collection and stream it using a dedicated MAC or PC running the latest version of JRiver MediaCenter 20. Additional storage can be added to the network using NAS or local USB hard drive storage. JRiver MediaCenter is a great sounding, powerful, reliable and versatile solution with excellent remote access control from either iOS or Android devices using JRemote or Gizmo. Below we describe the best setup options for streaming audio to the REFStream. Further detailed information on high performance UPnP/DLNA networked audio can be found at:

<http://www.computeraudiophile.com/content/524-complete-guide-hifi-upnp-dlna-network-audio/>

Once your MAC or PC based Media Server with JRiver MediaCenter is connected to your home ethernet network, and the ethernet input on the REFStream is also connected to the network, you can then begin to use MediaCenter to stream audio to the renderer. The network will also provide WiFi connectivity for control using JRemote on iPad/iPhone or Gizmo on Android.

Power up the REFStream after connecting it to the network and open JRiver. You can confirm that the REFStream is connected to the network and recognized by JRiver by going to **Playing Now** in the upper left navigation window and checking for 'Belcanto Renderer-XX.' The XX number is the last number in the IP address of the renderer. It can take 20-30 seconds for the renderer to appear. You will use the **Playing Now** to select the renderer for music playback in JRiver.



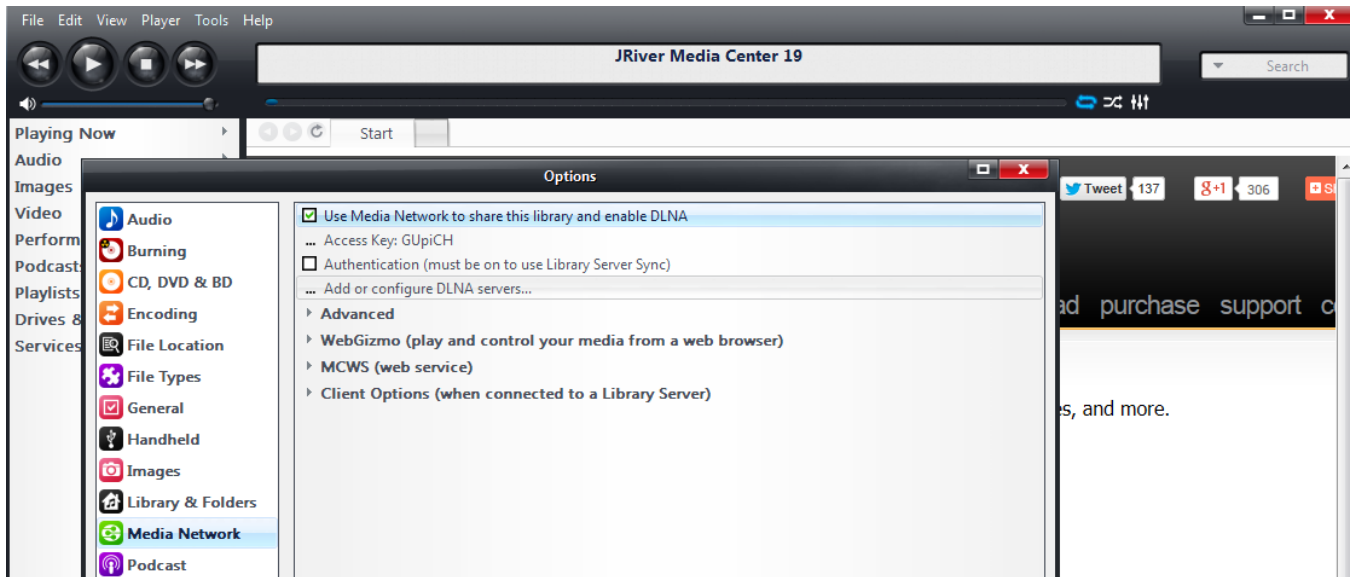
Setup the Media Network function in JRiver by navigating to Tools/Options as below:



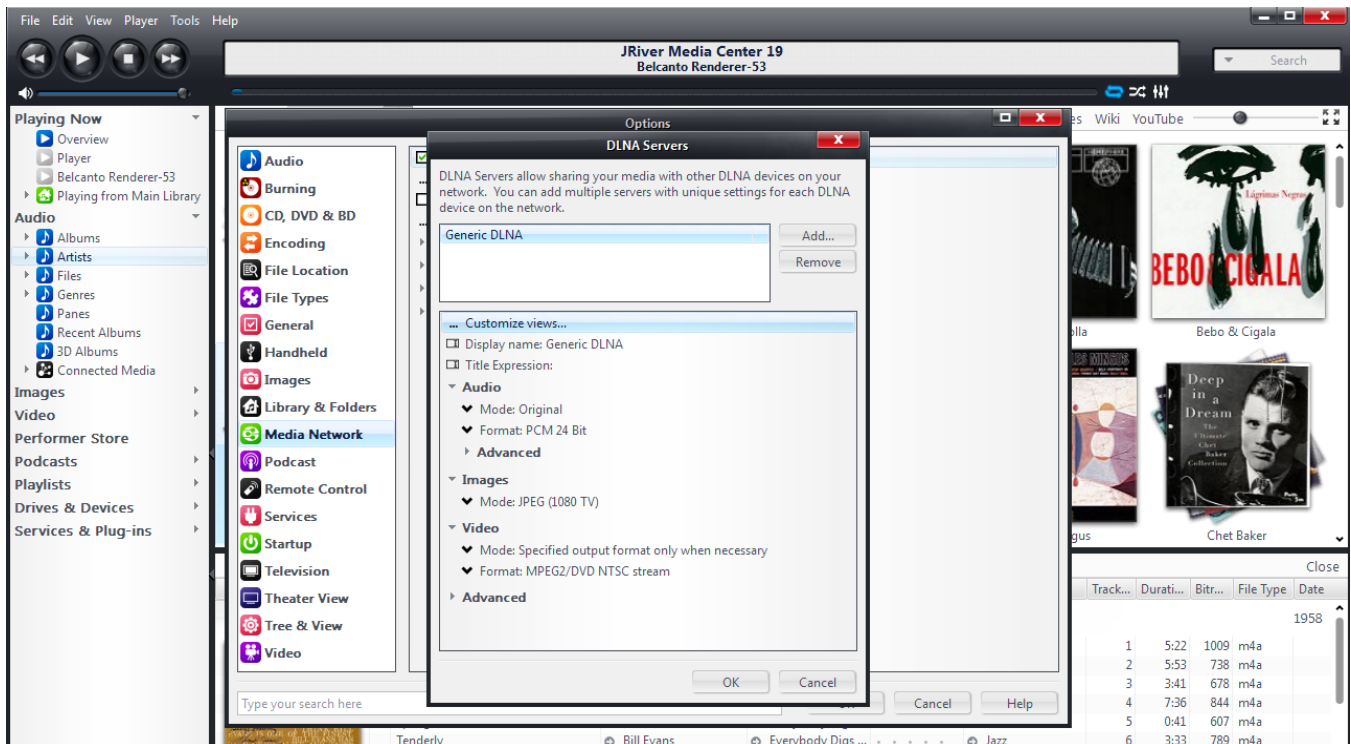


# Networked Audio

Go to Media Network and select **Use Media Network** to share the Library and enable DLNA and then go to **...Add or configure DLNA servers...**



In **...Add or Configure DLNA servers** you will want to setup the DLNA server as shown below:



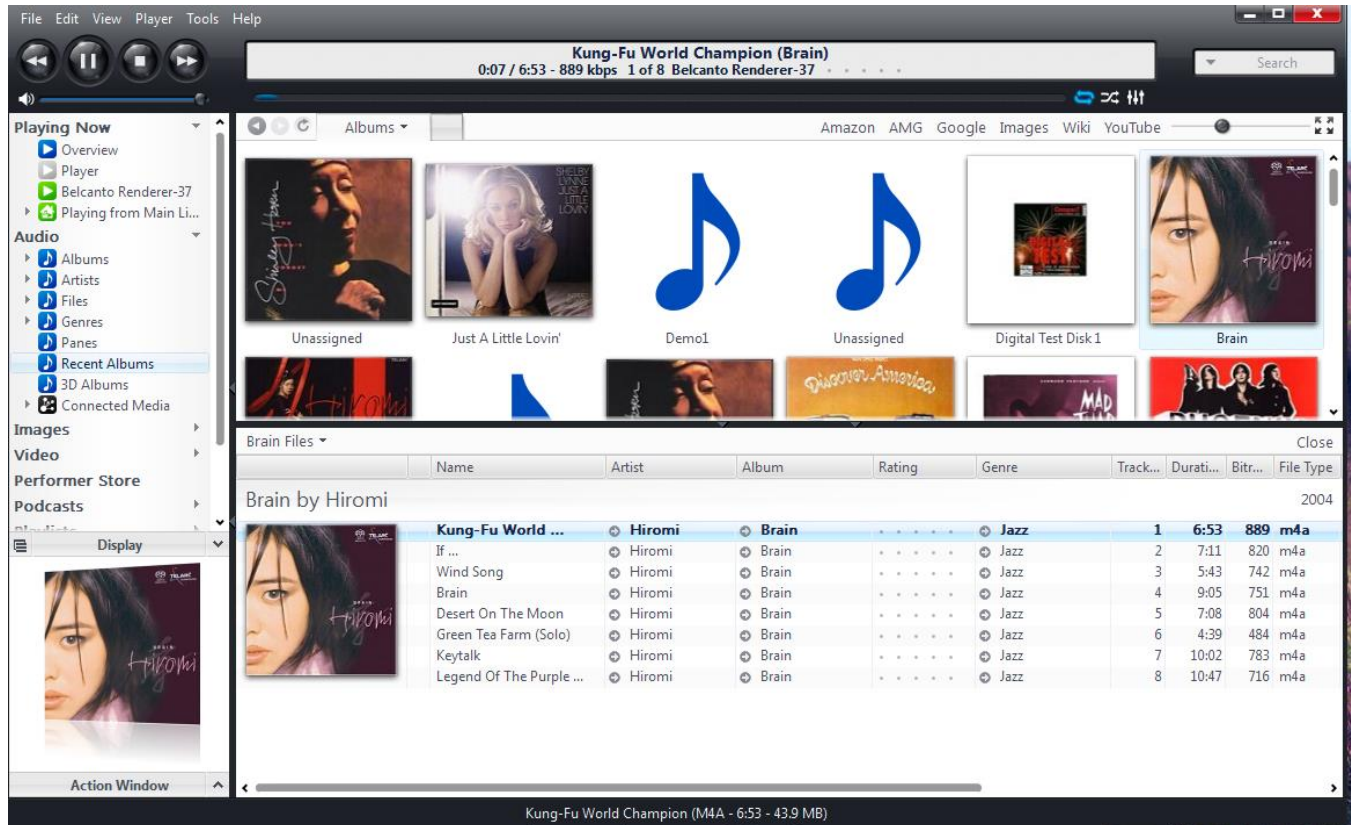
## Mode: Original

This setup provides the best performance for PCM and DSD digital music sources up to 24/192.



# Networked Audio

Playback window when streaming through the renderer:



The JRiver screen will appear as above when streaming music to the renderer. Note that the Belcanto Renderer-XX appears in the top window showing the streaming music.

If you are interested in downloading JRiver, Bel Canto is offering coupon codes for 20% off your purchase:

PC: BC9340

MAC: BC9340MAC

<http://www.jriver.com/index.html>

## Tips For Operation

### Power Up

We recommend leaving the REFStream powered on at all times as it benefits the overall sound quality and draws little power. If your system will not be used for an extended period of time, such as two weeks, or if there is an imminent electrical storm, we recommend shutting off your system.

## Specifications

**Input:** 10/100 Ethernet connection

**Master Clock noise:** 0.07 Picoseconds RMS

**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 Lossless File types: WAV, AIFF, FLAC, ALAC, DSF, DFF  
Supported word lengths: up to 24 bit and DSD64  
Supported operating systems: Apple Macintosh and Microsoft Windows  
An Ethernet 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 ON: MAX 10 Watts  
Power consumption OFF: 0.0 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.

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Minneapolis, MN 55401 USA

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

**Type of Equipment:** Ethernet Media Renderer

**Models:** REFStream

**Date:** September, 2014

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