

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



REF600M  
User's Guide

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

# REF600M

Mono Power Amplifier  
with



IMPEDANCE  
OPTIMIZED  
INPUT™

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Bel Canto Design Limited  
221 North 1<sup>st</sup> Street  
Minneapolis, MN 55401  
United States

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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, e.g. near a bathtub, kitchen sink, laundry tub, in a wet basement, near a swimming pool etc.
- Clean only with a dry cloth.
- Install in accordance with the Manufacturer's instructions.
- 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.
- 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.
- Do not expose the apparatus to liquids or moisture, 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: 1) Pull out the black fuse cover/carrier. 2) Remove and dispose of the blown fuse. 3) 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.

## 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/home/support/warranty-registration/eone/>) 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](mailto:info@belcantodesign.com).

## Unpacking the e.One REF600M

Carefully inspect each item for any visual damage. If there is any damage, or anything missing from the list below, please contact your dealer or distributor.

Stream packaging contains the following:

- 1 (one) – REF600M
- 1 (one) – REF600M User's Guide
- 1 (one) – Power cord [6.6' – 2 meters long]

**IMPORTANT:** Save all packing materials as they are specially designed to protect the e.One REF600M during transportation. If the packing materials are compromised, contact your dealer, distributor, or Bel Canto for proper packaging before attempting to ship your e.One Stream.

## Power Connection

The power supply in the e.One REF600M 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.



## Setup & Placement

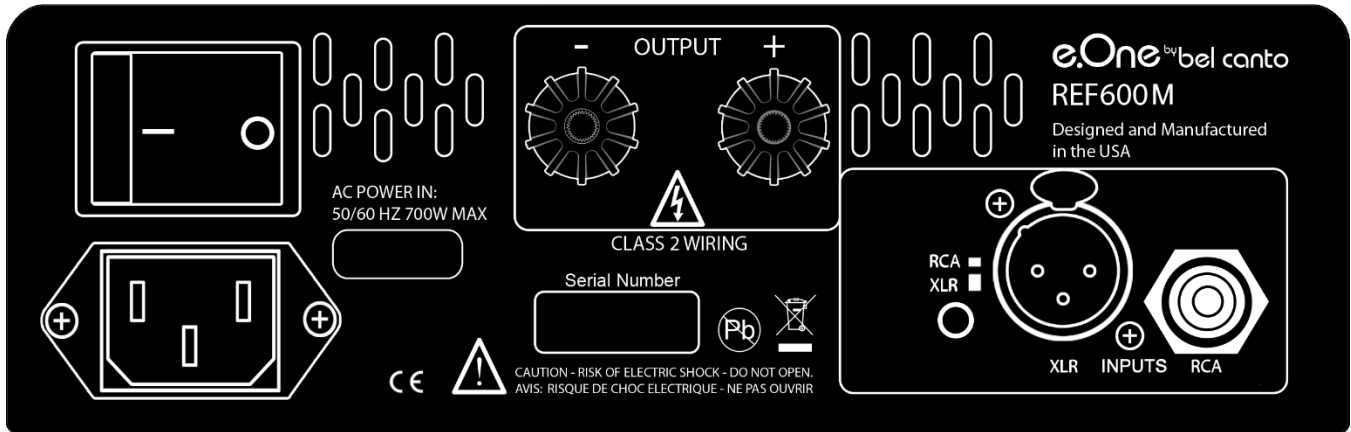
The e.One REF600M can be placed in many locations without compromise. We do not recommend placing weights or other objects directly on the REF600M. This may scratch or mar the chassis finish. Do not use harsh chemicals or abrasives when cleaning the outside of your REF600M. Use a clean microfiber cloth to remove fingerprints from the chassis.

Single Ended RCA and Balanced XLR connectors are available. XLR connectors follow the standard AES pin configuration:

- Pin 1 Ground
- Pin 2 Signal +
- Pin 3 Signal -

We recommend placing the e.One REF600M in an easily accessible location near your source components.

# Rear Panel Connections



**Never Connect the Positive Speaker Output to Any Ground Contact!  
Use Class 2 Wiring for all Loudspeaker Connections!**

Connecting the Positive Speaker Output on the REF600M to Ground will cause the amplifier to go into protection and could damage the amplifier and void the warranty. The Negative output is connected to Ground internally.

- Power Switch: Power is OFF when the switch is toggled to the 0 position and ON when in the I position and when there is no voltage on the 5/12V Trigger input.
- Input Connections and RCA/XLR switch: When using RCA cables for the input ensure that the RCA/XLR switch is pressed **in** to the RCA position. When using XLR cables ensure that the switch is **out** in the XLR position. **Do not connect both XLR and RCA cables to the inputs at the same time!**
- Output Connections: Attach your loudspeaker to the output connectors. Be sure that the polarity of each speaker is correct and the same so that no phase inversion can occur. **DO NOT USE TOOLS** to tighten binding posts.
- IEC Power Cord Jack: Connect a heavy gauge power cord from this jack to the wall power supply. Note the power setting indicated on the back of the amplifier before connecting the power.
- **Double-check all connections to and from the amplifier. Power on the DAC or preamplifier in your system, activate its Mute setting, and then power on the REF600M.**

## Tips for Operation

### The REF600M and DC Coupling

The REF600M is DC coupled with no coupling capacitors in the signal path. This optimizes audio signal quality, maximizing micro and macro-dynamic performance. While the amplifier will protect itself and your loudspeakers from excessive DC offset, it is critical to ensure that any Preamplifier or DAC has low DC offset at its output as this will be amplified by the REF600M. If there is excessive DC into the REF600M the amplifier will shut itself and the main power supply off, protecting both the amp and loudspeaker from damage. If this occurs then have the DC offset of the signal source checked by a qualified technician.

### What to do if there is hum or ground noise

In case there is hum or ground noise, check that the RCA/XLR switch is in the correct position for the type of connection being used.

Ensure that the preamplifier or any source components are not producing hum by setting the preamplifier to a MUTE or Standby setting.

The design of the REF600M reduces the chance for ground loop induced hum, but we still recommend using shorter interconnect cables to the preamplifier or DAC. Connect all power cables to a common outlet box or power conditioner unit to reduce the possibility for ground current noise being induced into the audio signal path.

If you choose to power your source and preamplifier components from a different AC supply than used for the REF600M amplifiers, we recommend that you use a high quality balanced XLR cable driven from a true balanced XLR preamplifier output.

**We do not recommend** that you resort to 'cheater plugs' or some other means to disconnect the power ground from the REF600M as this may lead to dangerous operation and void the warranty.

The small green LED lamp indicates that power is connected to the REF600M and that the power switch is in the ON position. If the amplifier detects a fault or short circuit in the output connections, it will go into a protection mode and stop playing. If this occurs toggle the power switch to the OFF position and check the speaker cabling to ensure that no speaker output is either shorted together or connected to a ground. When you are certain that the loudspeaker cabling is correct, power the unit ON again, check that the green LED is lit and that music will play.

There is an internal fuse protection on the REF600M. If the power switch is in the ON position, the power cable is connected to a functioning power outlet at the correct voltage and the green LED is not lit, this indicates that the internal fuse may have blown. If this occurs contact your dealer, distributor or Bel Canto for service. There are no user replaceable fuses or other parts. Opening the chassis will void your warranty.

### Power Up

We recommend leaving the REF600M powered on 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.

### Output Connectors

Bel Canto amplifiers are all equipped with WBT Nextgen binding posts that accept spade lugs measuring 6mm<sup>2</sup>, standard 4 mm<sup>2</sup> banana plugs, and wire with a diameter of 6mm<sup>2</sup> (10AWG). **DO NOT USE TOOLS** when tightening binding posts as it can damage the connector.

# Specifications

Power Output 1% THD:	600W 4 ohms, 300W 8 ohms
Minimum Load:	2 ohms
Peak Output Current:	27 amperes
Frequency Response:	+/-3 dB 0Hz-50KHz, all loads
THD+N:	0.003% 1W, 1KHz, 4 ohms
IMD (CCIF):	0.0003%, 1W, 14:15KHz, 4 ohms
Output noise:	35uVRMS A-weighted 10Hz-20KHz
Voltage gain:	27dB (internal switch select for 33dB)
Damping factor:	>1000
Output Impedance at 100Hz:	<8 milliohms
Dynamic Range:	121dB
Input Voltage for Max Output:	2.3Vrms at 27dB gain
Input connections:	Single-ended RCA or balanced XLR
RCA input impedance:	100Kohms
Balanced input impedance:	200Kohms
Output connections:	1-set WBT nextgen 5-way binding posts
Power On usage:	22W
Power Off usage:	0.0W
Internally Set Operating Voltages:	100-120VAC or 230-240VAC 50/60 Hz
Size:	8.5 x 3.5 x 12[inches], 216 x 88 x 305[mm] (WxHxD)
Weight:	15lbs, 7Kg

*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 62368-1:2014+A11:2017

**Manufacturer:**

Bel Canto Design, Ltd.

221 1<sup>st</sup> Street North

Minneapolis, MN 55401 USA

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

**Type of Equipment:** Power Amplifier

**Models:** REF600M

**Date:** October, 2020

**Bel Canto Design, Ltd.**

221 1<sup>st</sup> Street North

Minneapolis, MN 55401 USA

**Tel:** 612-317-4550

**Fax:** 612-359-9358



# bel canto

**221 First Street North, Suite 300  
Minneapolis MN 55401**

P: 612.317.4550

[www.belcantodesign.com](http://www.belcantodesign.com) | [info@belcantodesign.com](mailto:info@belcantodesign.com)

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