

M O O N
by SIMAUDIO

The performance of a lifetime



Owner's Manual
MOON 860A v2
Power Amplifier

WARNING

To prevent the risk of equipment damage or personal harm,
use only Class 2 rated loudspeaker wire properly terminated
and connected securely to the binding posts.

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Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves or another apparatus that produces heat.
9. 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 safety. If the provided plug does not fit into the outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus. Unplug mains cord during transportation.
11. Only use attachments and accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power cord or plug has been damaged; liquid has been spilled or objects have fallen into the apparatus; or the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. No naked flame sources, such as candles, should be placed on the apparatus.

WARNING:

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

	CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN	
CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.		



The lightning flash with the arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric 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 appliance



Marking by the "CE" symbol (shown left) indicates compliance of this device with the EMC (Electromagnetic Compatibility) and LVD (Low Voltage Directive) standards of the European Community

PLEASE READ ALL INSTRUCTIONS AND PRECAUTIONS CAREFULLY
AND COMPLETELY BEFORE OPERATING YOUR UNIT

1. ALWAYS disconnect your entire system from the AC mains before connecting or disconnecting any cables, or when cleaning any component. To completely disconnect this apparatus from the AC mains, disconnect the power supply cord plug from the AC receptacle.
2. The unit must be terminated with a three-conductor AC mains power cord which includes an earth ground connection. To prevent shock hazard, all three connections must ALWAYS be used. Connect the unit only to an AC source of the proper voltage; Both the shipping box and rear panel serial number label will indicate the correct voltage. Use of any other voltage will likely damage the unit and void the warranty
3. AC extension cords are NOT recommended for use with this product. The mains plug of the power supply cord shall remain readily accessible.
4. NEVER use flammable or combustible chemicals for cleaning audio components.
5. NEVER operate the unit with any covers removed. There are no user-serviceable parts inside. An open unit, especially if it is still connected to an AC source, presents a potentially lethal shock hazard. Refer all questions to authorized service personnel only.
6. NEVER wet the inside of the unit with any liquid. If a liquid substance does enter your unit, immediately disconnect it from the AC mains and take it to your MOON dealer for a complete check-up.
7. NEVER spill or pour liquids directly onto the unit.
8. NEVER block air flow through ventilation slots or heatsinks.
9. NEVER bypass any fuse.
10. NEVER replace any fuse with a value or type other than those specified
11. NEVER attempt to repair the unit. If a problem occurs contact your MOON dealer.
12. NEVER expose the unit to extremely high or low temperatures.
13. NEVER operate the unit in an explosive atmosphere.
14. ALWAYS keep electrical equipment out of reach of children.
15. ALWAYS unplug sensitive electronic equipment during lightning storms.
16. WARNING: Do not expose batteries or battery pack to excessive heat such as sunshine, or fire or the like.

Introduction

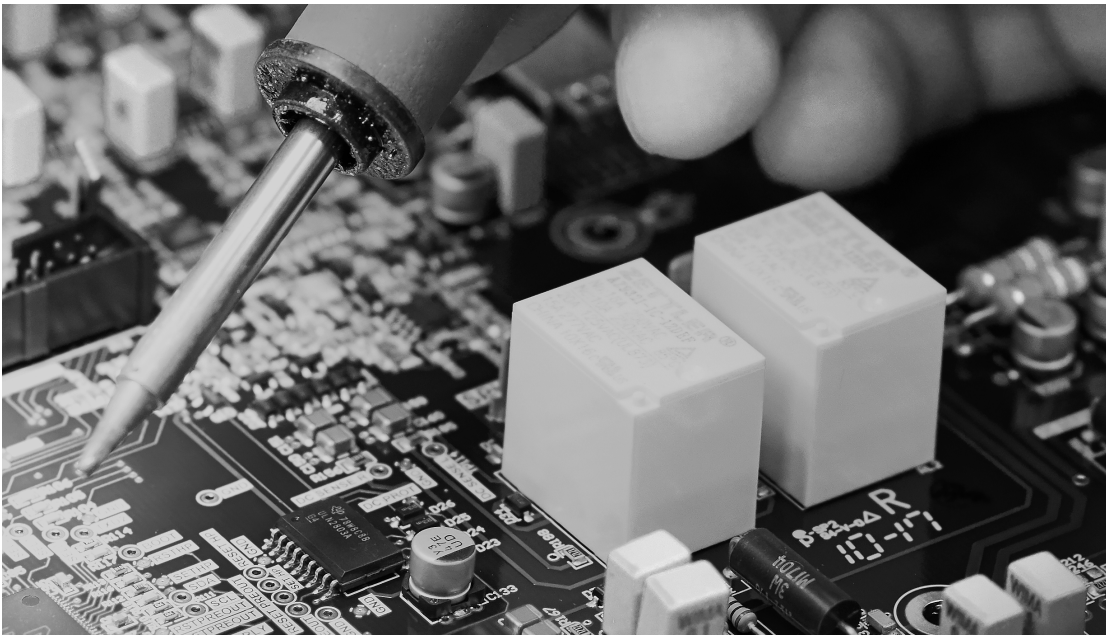
Thank you for selecting the **MOON 860A v2** Dual-Mono Power Amplifier as a part of your music system. This component has been designed to offer State-of-the-Art high-end performance in an elegant package, hallmarks on which Simaudio has made its reputation. We have been building high-performance audio equipment for almost 4 decades, and the know how gained through our cumulative experience is an important reason why MOON products are so musically satisfying.

Your new amplifier is a true Dual-mono design, whereby each channel operates completely independent of the other. The performance of your **860A v2** will continue to improve during the first 300 hours of listening. This is the result of a "break-in" period required for the numerous high quality electronic parts used throughout this amplifier.

Before setting up your new **MOON 860A v2**, we encourage you to please read this manual thoroughly to properly acquaint yourself with its features. We hope you enjoy listening to the **MOON 860A v2** Dual-Mono Power Amplifier as much as the pride we have taken in creating this fine audio product. We understand the power and emotion of music and build our products with the goal of faithfully capturing these elusive qualities.

The information contained in this manual is subject to change without notice. The most current version of this manual is available on our official website.

<http://www.simaudio.com>



Design Features

Your **MOON 860A v2** Dual-Mono Power Amplifier incorporates many significant design features to achieve its “world-class” level of performance. This is an abbreviated list of the more important features:

Proprietary “**Lynx**” Technology which eliminates global feedback.

A custom **proprietary toroidal transformer design** with lower magnetic, electrical and thermal loss, yielding an improved power transfer and lower regulation factor, resulting in increased current speed and better dynamics.

Fully **balanced differential** circuitry up to the output stage.

Output stable to any known speaker impedance.

Class A output up to 5 watts.

RS-232 port for i) full unsolicited bidirectional feedback in custom installation setups and ii) firmware updates.

An **oversized** power supply.

An **exceptionally short signal path** for a faster transient response.

Precision matched and fully decoupled **proprietary MOON bipolar output transistors** with unprecedented gain linearity resulting in improved bass response and even more accurate sonic reproduction.

A **high damping factor** which yields superior musical dynamics, improved signal speed and refined timbre accuracy.

Ultra **rigid chassis construction** to minimize the effects of external vibrations.

Designed to be **powered up at all times** for optimal performance.



Unpacking

The **MOON 860A v2** is very heavy and should be removed from its box with care. The following accessories should be included inside the box with your unit:

- AC power cable
- Warranty and Product Registration information (USA and Canada only)

Once the unit is unpacked, inspect it thoroughly and report any damage to your dealer immediately. We suggest that you keep all of the original packaging, storing it in a safe, dry place in case you're required to transport this product. The customized packaging is specially designed to protect the unit from any potential damage during transit.

Please write the serial number of your unit in the space provided below for future reference.

Serial Number

Installation & Placement

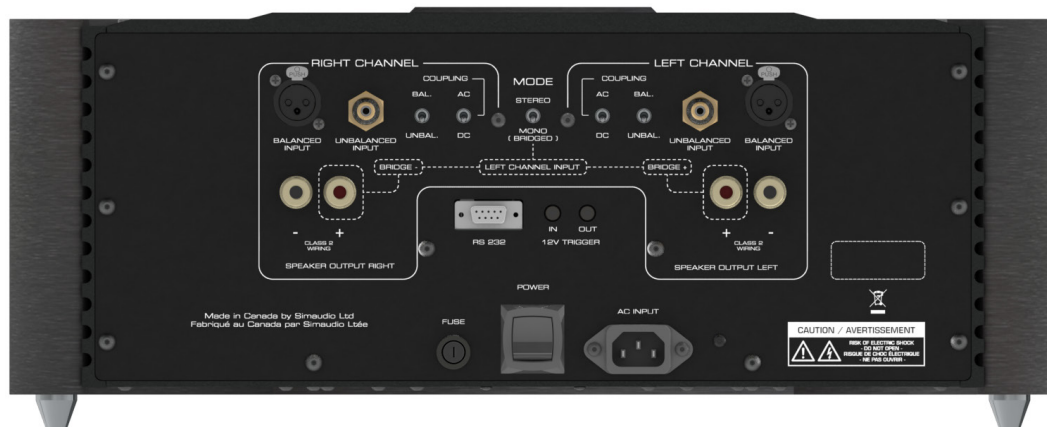
The MOON 860A v2 Dual-Mono Power Amplifier is both powerful and heavy. It requires reasonable ventilation to maintain an optimum and consistent operating temperature, especially since it will radiate heat when driven hard. Consequently, it should be placed in a location with empty space around it for proper heat dissipation. You should never place another component directly on top of this amplifier. As well, the amplifier should be placed on a solid, level surface. You should avoid placing it near a heat source or inside a closed cabinet that is not well ventilated as this could compromise the amplifier's performance and reliability. The 860A v2 uses two large toroidal transformers in its power supply; you should not place this amplifier too close to source components sensitive to EMI, such as turntables, phono preamplifiers and CD players.

If the surface you have chosen isn't perfectly level, each of the four (4) cones of your 860A v2 are height adjustable; carefully using your fingers, you can either raise each leg by turning the cone underneath clockwise, or lower each leg by turning it counterclockwise.

We strongly recommend that you leave these cones mounted to the component at all times for reasons related to both performance and aesthetics. Removing the cones and operating the amplifier without any feet will restrict air flow and damage the amplifier.

Rear Panel Connections and settings

Figure 1: 860A v2 Rear panel



For each (Left and Right) channel :

Balanced input : To connect your preamplifier or your source with variable volume control with balanced XLR output. Select the "BAL" setting at the switch besides the connector if you intend to use this connection.

Unbalanced input : To connect your preamplifier or your source with variable volume control with RCA (Single-ended) output. Select the "UNBAL" setting at the switch besides the connector if you intend to use this connection.

! Do not connect cables to both the XLR and the RCA input at the same time. Damage may happen. It is either one or the other input that can be used.

BAL /UNBAL switch : Select the input that is going to be used : "BAL" for the Balanced XLR input or "UNBAL" for the unbalanced RCA input.

Coupling (AC/DC) switch : Select to optimize with the connected preamplifier. With most preamplifiers, including all MOON preamplifiers, select DC. The AC setting is recommended for many older preamplifiers including many tube preamplifiers. If the 860A v2 shuts down with 2 or 3 sequential blinks of the front panel LED (see "operating the 860A v2") select the AC setting.

MODE (Stereo/Mono) switch :

For 2 channels stereo operation, select "Stereo". For monaural operation, (Requires a pair of 860A v2, to form a stereo system; one per loudspeaker) select "Mono"; See next section "Monaural Operation".

Speaker Output :

To connect to your loudspeaker. Polarity ("+" & "-") must be respected.

Monaural Operation

Monaural Operation allows the amplifier to develop much more power but requires a 2nd identical amplifier to drive the 2nd channel. To configure the amplifier in monaural mode, not only does the Mode switch need to be set to “Mono”, but also the connection needs to be as follows :

- Signal coming from the preamplifier or the source with volume control needs to be connected to the left channel (XLR or RCA).
- The loudspeaker cable needs to be connected to the "+" connector of each channel binding post, as indicated in Figure 2. The Left + binding post must be connected to the "+" of the loudspeaker, and the Right + connects to the "-" of the loudspeaker. See the indication in dotted lines on the back panel which relates to monaural operation.

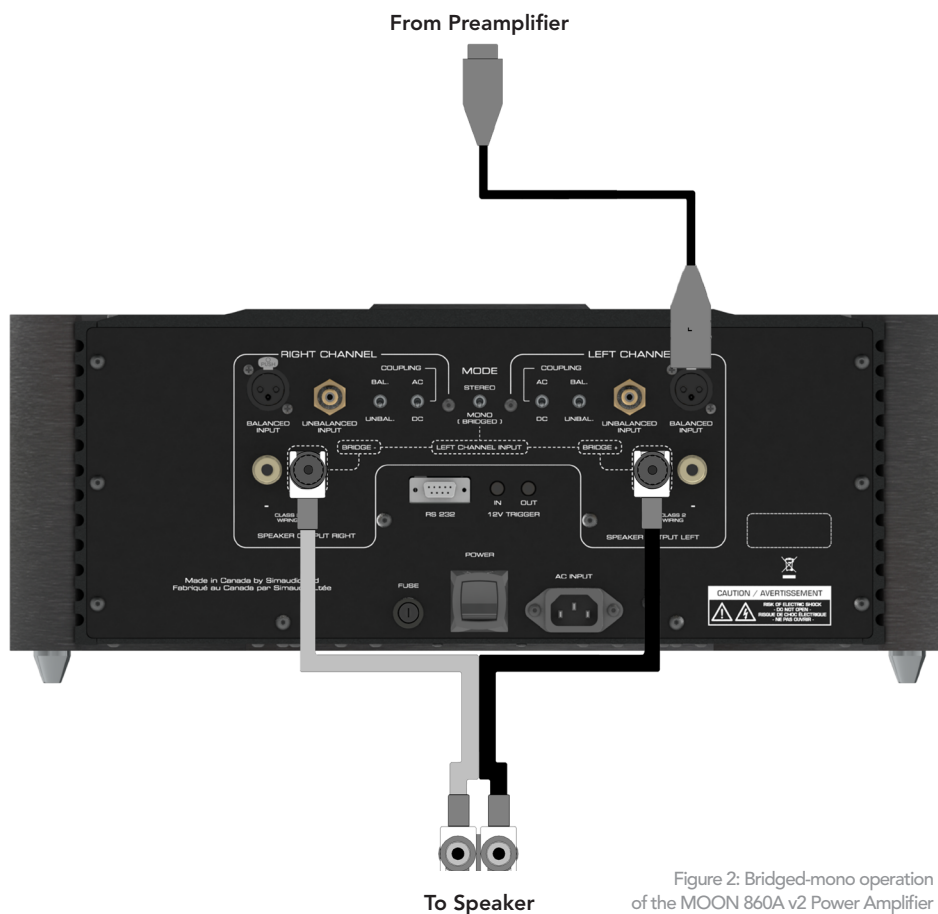


Figure 2: Bridged-mono operation of the MOON 860A v2 Power Amplifier

Operating the Unit

We recommend leaving your 860A v2 powered up at all times to maintain optimal performance. When you plan on being away for a few days, it may not be a bad idea to power off your amplifier. Please keep in mind that once fully “broken-in”, your 860A v2 requires several hours of operation before reaching optimal performance after powering it up again.

TURNING ON YOUR 860A v2 FOR THE FIRST TIME

Prior to turning the amplifier on for the first time, make sure that every cable is properly connected to avoid any problems. First, turn on your preamplifier connected to the 860A v2. Then, flick the main rocker switch, located on the rear panel, labeled “POWER” to the ‘1’ (on) position. The blue LED on the front panel will blink for up to 10 seconds while it achieves standby mode. When it stops blinking and is not illuminated, your 860A v2 is in standby mode. Next, briefly press the push button labeled “Standby” located on the front panel. You will hear a very faint click sound confirming that everything is in order. The blue LED on the front panel will illuminate, indicating that the 860A v2 is now powered up and ready for use.

ON AND OFF SEQUENCE

To avoid having any annoying noises (ie. “thumps” and “pops”) emanate from your speakers when powering your 860A v2 on or off, you should always power up your preamplifier prior to powering up your 860A v2. As well, always power down your 860A v2 prior to powering down your preamplifier.

TROUBLESHOOTING

The blue LED located on the front panel also indicates the operational status of your MOON 860A v2 Dual-Mono Power Amplifier. When the LED starts blinking on and off during use, the circuitry is either over-heating or has detected the presence of DC in the input signal:

Left Channel DC protection
LED blinks 2 times

Right Channel DC protection
LED blinks 3 times

Left Channel Over-heating
LED blinks 4 times

Right Channel Over-heating
LED blinks 5 times

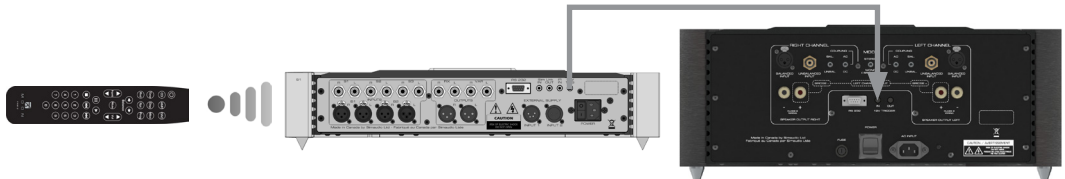
Unknown Problem
LED blinks 6 times

Your MOON 860A v2 is a “smart” power amplifier equipped with a self-diagnostic system that will automatically shut itself down when it detects DC (direct current) from any input. If your 860A v2 power amplifier turns itself off or will not power up, there may very well be DC present in one (or more) of the amplifier’s inputs coming from one (or more) of your preamplifier/processor’s outputs or connected source components. You must determine if there is any DC present. The best way to accomplish this is by first powering down the 860A v2 via the main power rocker switch, then physically removing all inputs to the 860A v2 leaving only the speakers connected. Attempt to power up your 860A v2 again: A successful power up will indicate the presence of DC coming from your preamplifier or one of your signal sources (ie. CD Player).

If your 860A v2 still doesn’t power up, turn off the main power switch and check the AC fuse. If the fuse appears OK, put it back in its socket and then try to power up again the usual way. If the fuse is blown, replace it with a fuse of the same rating, and repeat the above process. At this point, you should be able to power up your 860A v2. If not, immediately consult your retailer for assistance.

Remote Operation

Figure 3: Remote Operation with 12V Trigger



In figure 4 we have a 740P Preamplifier and 860A v2 amplifier connected together via their respective 12V triggers; The 12V trigger output on the 740P is connected to the 12V trigger input on the 860A v2 (using a 1/8" mini-jack cable). When you turn on the 740P via remote control (or its Standby button), the 860A v2 will turn on automatically. The same rule applies when you put the 740P into Standby mode.

Specifications

Output Power at 8Ω	225 W per channel
Output Power at 4Ω	450 W per channel
Output Power - Monaural mode at 8Ω	750 W
Input Sensitivity	1.2V
Input Impedance	47,500Ω
Gain	31dB
Signal-to-noise Ratio	110dB @ full power
Frequency response (full range)	10Hz - 100kHz +0/-3.0dB
Crosstalk @ 1kHz	-110dB
THD (20Hz - 20kHz @ 1 W)	0.005%
THD (20Hz - 20kHz @ 200 W)	0.03%
Intermodulation distortion	0.006%
Power Supply Capacitance	240 000μF
Shipping weight	90 lb / 40 kg
Dimensions (width x height x depth)	18.75 x 7.5 x 17.5 / 47.6 x 19.1 x 44.5

Balanced Pin Assignment: Pin 1 → Ground Pin 2 → Positive Pin 3 → Negative



Fuse replacement: **120V version uses a 8A fast blow (3AG)**
230V version uses a 4A fast blow (3AG)

If you require the IR or RS-232 codes for the MOON 860A v2, please visit the “Contact Us” section in the support page on our website at www.simaudio.com.

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