

M O O N
by SIMAUDIO

The performance of a lifetime



Owner's Manual
MOON 870A
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

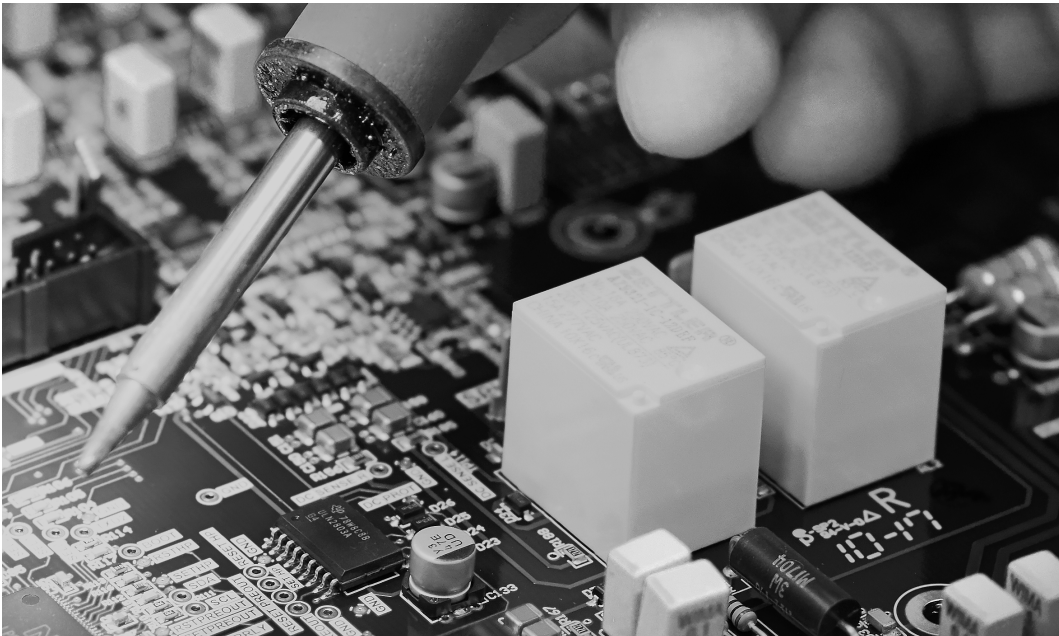
Thank you for selecting the MOON 870A Dual-Mono power amplifier as a part of your music system. This component has been designed to offer state-of-the-art high-end performance in an elegant package, hallmarks on which Simaudio has made its reputation. We have been building high-performance audio equipment for over 35 years, 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 870A 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 870A, we encourage you to please read this manual thoroughly to properly acquaint yourself with its features. We hope you enjoy listening to the MOON 870A 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 at

<http://www.simaudio.com>



Design Features

Your **MOON 870A** 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 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 to 5 watts for greater efficiency.

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 870A** 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

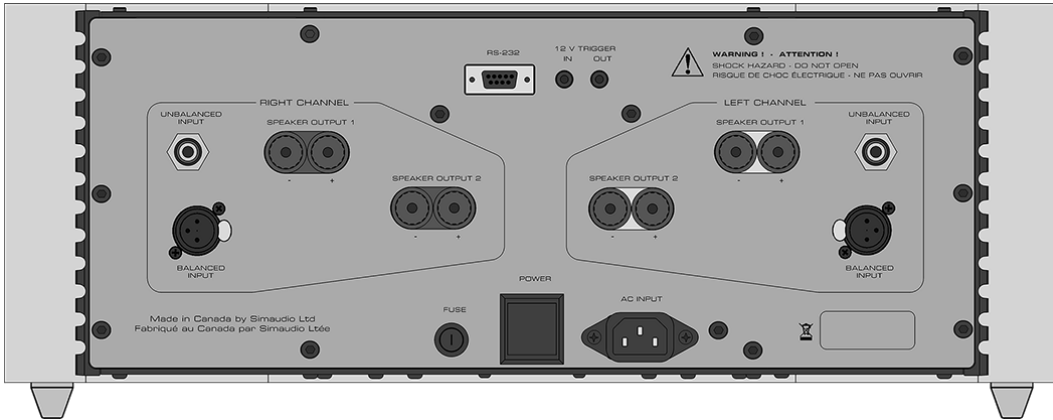
The MOON 870A Dual-Mono power amplifier is both powerful and heavy. It requires reasonable ventilation to maintain an optimum and consistent operating temperature, especially since it will radiate heat when driven hard. Consequently, it should be placed in a location with empty space around it for proper heat dissipation. You should never place another component 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 870A uses two large toroidal transformers in its power supply; even though they are well shielded, 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 870A 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.

Rear Panel Layout

Figure 1: 870A Rear panel



The rear panel will look similar to Figure 1 (above). Each channel has one balanced (differential) input on an XLR connector and one unbalanced (single-ended) input on a RCA connector. There is no switch to toggle from balanced mode to single-ended mode. You may operate the amplifier in either mode, but only one mode at one time for each channel.

When you're using the balanced XLR inputs, you must first remove the factory installed "dummy" XLR jumpers (see figure 2 below) from the back panel XLR connectors and store them in a safe place. These jumpers are required **ONLY** when using the single-ended RCA inputs. If you decide to switch to single-ended input mode, you must reinstall the XLR jumpers (between pins 1 and 3) exactly as show below:

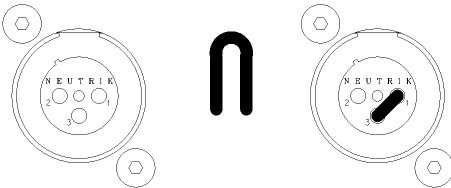


Figure 2: XLR connector without and with jumper accessory

There are two pairs of heavy duty gold-plated speaker binding posts for each channel to accommodate bi-wiring. They are each labelled "Right Speaker Out" and "Left Speaker Out".

The lower left section has an RS-232 input on a DB9 connector. To the right of this connector are two 12 Volt triggers, each on a 1/8" mini-jack; one input and one output, the latter for use in the event that wish you to "daisy chain" a second power amplifier on the same trigger circuit. The lower right section has from left to right; the "AC Fuse" socket cover; the power "main switch"; and the "AC Input" IEC receptacle for the power cord.

Connecting the Unit

Prior to making any connections or removing the XLR jumpers, the power amplifier must be turned off and the AC cable disconnected for at least 1 minute.

1. Connect the input cables running from your preamplifier's outputs, whether balanced or single-ended, to the amplifier's XLR or RCA input, respectively. We highly recommend that you use the balanced XLR input (provided that your preamplifier has balanced outputs) to take full advantage of MOON 870A Stereo Power Amplifier's capabilities. Please refer to the next section, "Balanced Operation" on for further information.

Do not connect cables to both the XLR and RCA inputs at the same time. Damage to both the 870A and the connected equipment can result that is not covered by warranty.

Don't hesitate to use high quality interconnect cables*. Poor quality interconnect cables can degrade the overall sonic performance of your system. It is recommended, though not mandatory, to use balanced interconnects between your preamplifier and the 870A when using long cable runs (i.e. more than 3 meters in length).

2. Connect your speaker, with the cable of your choice, to the 870A's speaker binding posts. Take care to respect the polarity ("+", "-") of the outputs. Once again, don't hesitate to use high quality speaker cables*. Poor quality speaker cables can degrade the overall sonic performance of your system. Both pairs of speaker connectors on each channel are connected together. Consequently, it doesn't matter which pair you use.

3. Connect the supplied AC power cable to the IEC receptacle, located on the amplifier's rear panel. Ensure that the AC wall outlet you use has a functioning ground. For the best sonic performance, it is preferable that you plug your 870A directly into a dedicated AC outlet and avoid using an extension cord.

* Please speak with your MOON Authorized Retailer about the benefits of high quality cables for your system.

Balanced Operation

When using an unbalanced interconnect, the audio signal runs through both the center wire and the shield/ground wire. Any noise picked up by this interconnect (ie. nearby magnetic fields such as an AC power cord) will be reproduced by the amplifier and heard through the loudspeakers. Conversely, a balanced interconnect has three separate conductors; one for the ground and two for the actual signal. These two signals are identical except that one is 180 degrees out of phase with the other. For example, when one conductor is carrying a signal of +5 Volts, the other will be carrying a signal of -5 Volts. When these two inverted signals on a balanced line are input into a differential power amplifier such as the MOON 870A, any noise picked up by the interconnect will be eliminated since a differential circuit amplifies only the difference between these two signals: Noise on a balanced interconnect will be equal on both conductors and therefore cancel out.

Bridged-Mono Operation

If you wish to operate the MOON 870A Dual-Mono Power Amplifier as a monoblock amplifier, it can be converted to bridged mode without any complex modifications. Only a Simaudio XLR-BRIDGE Y-cable is required. This custom cable will allow one input signal to be sent to both channels of the amplifier's inputs, as pictured above in Figure 3. One lead from the "Y" adapter must plug into right channel input and the other lead must plug into left channel input.

As well, you must use the positive terminal of each output binding post (exactly as in figure 3) for the loudspeaker connection. If you are unsure about how to accomplish a bridged-mono mode of operation, don't hesitate to contact your Authorized MOON dealer.

The MOON 870A produces 800 watts of output power at 8 ohms for a single channel when operating in bridged-mono mode.

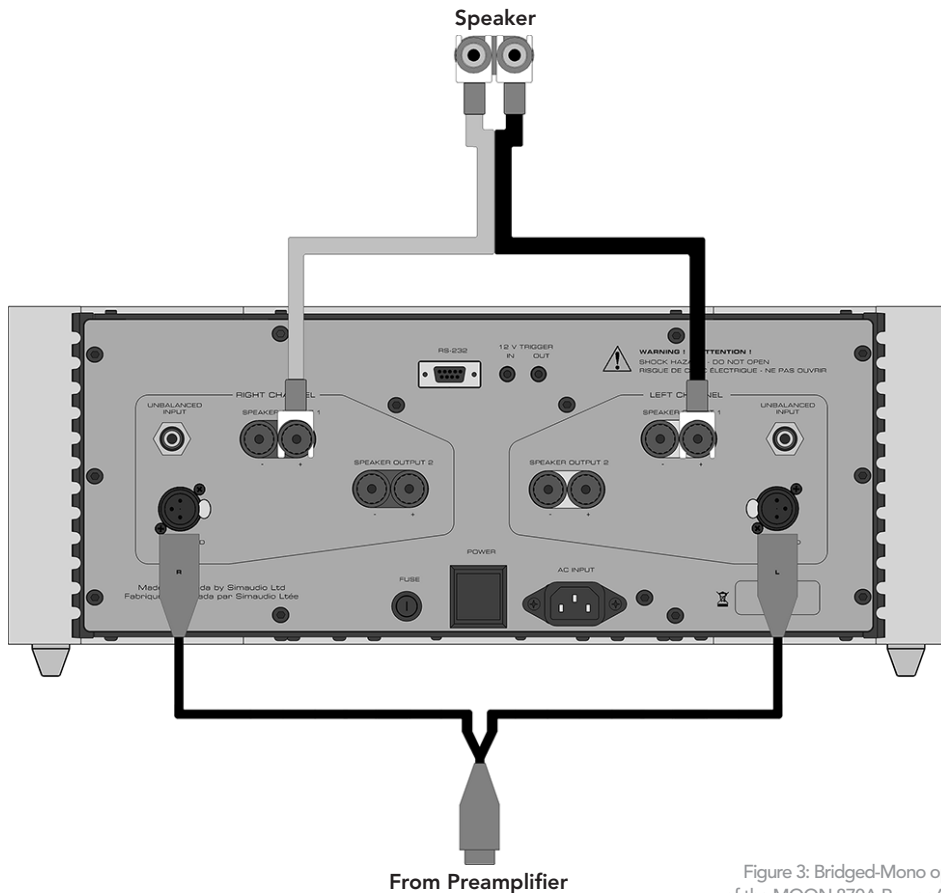


Figure 3: Bridged-Mono operation of the MOON 870A Power Amplifier

Operating the Unit

We recommend leaving your 870A 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 870A requires several hours of operation before reaching optimal performance after powering it up again.

TURNING ON YOUR 870A 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. Then turn on your preamplifier connected to the 870A. 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 870A 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 870A 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 870A on or off, you should always power up your preamplifier prior to powering up your 870A. As well, always power down your 870A prior to powering down your preamplifier.

TROUBLESHOOTING

The blue LED located on the front panel also indicates the operational status of your MOON 870A 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 870A 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 870A 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 870A via the main power rocker switch, then physically removing all inputs to the 870A leaving only the speakers connected. Attempt to power up your 870A 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 870A 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 870A. If not, immediately consult your dealer for assistance.

Remote Operation

Figure 4: Remote Operation with 12V Trigger



In figure 4 we have a 740P Preamplifier and 870A amplifier connected together via their respective 12V triggers; The 12V trigger output on the 740P is connected to the 12V trigger input on the 870A (using a 1/8" mini-jack cable). When you turn on the 740P via remote control (or its Standby button), the 870A will turn on automatically. The same rule applies when you put the 740P into Standby mode.

Specifications

Configuration	Fully balanced differential, dual-mono
Power Supply Transformers	2 x 1.3kVA
Power Supply Capacitance	240,000 μ F
Class Of Operation	A/AB
Input Impedance	47,500 Ω
Input Sensitivity	1400mV
Output Device Type	MOON Bipolars – 16 per channel
Output Power @ 8 Ω	300 W per channel
Output Power @ 4 Ω	600 W per channel
Output Power – Bridged Mono at 8 Ω	1200 W
Frequency Response	10Hz - 200kHz +0/-3dB
Gain	31dB
Signal-to-noise Ratio	106dB @ full power
Crosstalk @ 1kHz	105dB
Intermodulation Distortion	0.006%
THD (20Hz - 20kHz @ 1 W / 200 W)	0.015 % / 0.04 %
Power Consumption @ idle	70 W
AC Power Requirements	120V / 60Hz or 240V / 50Hz
Shipping Weight	98 lb / 44 kg
Dimensions (W x H x D, inches / cm)	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 10A fast blow (3AG)**
230V version uses a 5A fast blow (3AG)

If you require the IR or RS-232 codes for the MOON 870A, please visit the "Contact Us" section in the support page on our website at www.simaudio.com.

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