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851 Mono Power Amplifier

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About

About Boulder Amplifiers, Inc.

Boulder was founded in 1984 and is the last high-performance audio manufacturer operating in North America to still perform all of its own design, engineering and manufacturing inhouse. While this form of production may be more costly than outsourcing, the resulting quality control and reliability of the finished products are never compromised.

In 2016, Boulder moved into a new, purpose-built production facility to increase manufacturing efficiency and offer space for expansion to meet the needs of future growth.

Thank You

Congratulations and thank you for selecting the Boulder 851 Mono Power Amplifiers for your high-performance sound system. We are certain it will provide you with many years of listening pleasure.

The 851 represents the concerted efforts of numerous Boulder designers, engineers, and technicians working to bring you the best audio playback components in the world. Please take a few minutes to read through this instruction manual prior to using your 851s. This will help you understand the many functions and capabilities of the device. It will also allow you to maximize the convenience and performance for which it was engineered.

Your Boulder 851s have undergone extensive laboratory tests for safety, functionality and technical excellence. In addition, it has been individually subjected to rigorous listening trials in our sound room utilizing a wide range of musical material. No product ever leaves our factory until we are totally satisfied that it achieves its full potential.

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Introduction

Placement of the 851 Mono Power Amplifier

Your Boulder 851 Mono Power Amplifier is designed to reduce interference from external magnetic and radio fields (RF). While placement is not critical, known magnetic fields should be avoided.

The 851 Mono Power Amplifier will generate some heat. Therefore, it should be located in an area with ample air circulation. Specifically, be certain that the heat sinks are unobstructed by objects that could potentially block airflow. Do not place the amplifier on deep carpet and be sure that the amplifier has a minimum of 3 inches (8 cm) of free airspace on all sides.

You may want to have access to the rear panel for cable changes. Although input cables can be as long as necessary, it is suggested that speaker cables be as short as possible.

Connections

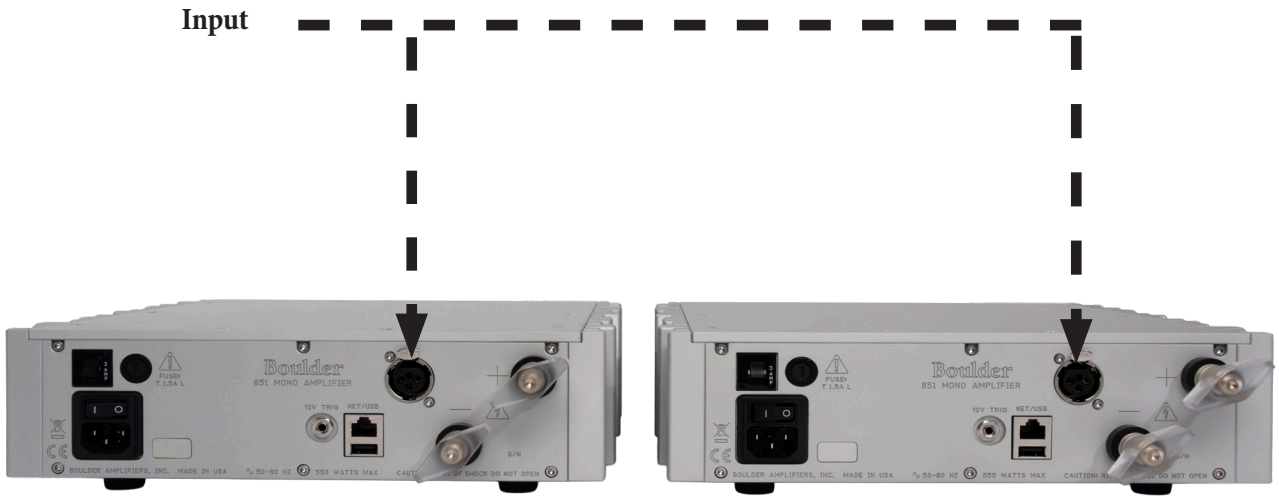
Connecting to a Network

In order for the 851 to download software updates as necessary, it will need to be connected to a network with an active Internet connection. Connect a network cable between the 851 and a network router or switch. Use the Ethernet connector on the rear panel of the 851.

Connecting to a Balanced Source

To fully realize the sonic potential of your 851 Mono Power Amplifier, always use balanced connections. Balanced cables minimize interference from magnetic and RF sources.

Connect the cables from your source or preamplifier outputs to the input connections provided on the rear panel of the 851.



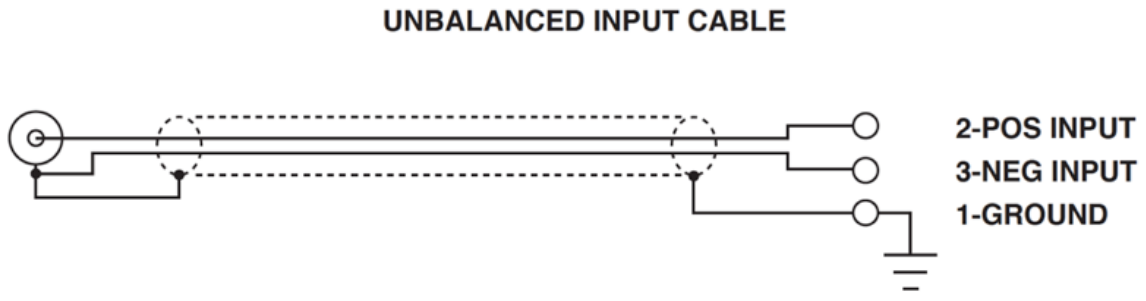
Connections

Connecting to an Unbalanced Analog Source

Although the inputs are all of the 3-pin XLR type, an unbalanced source can easily be accommodated by using an unbalanced to balanced cable. This cable has an RCA phono-style connector on the source end and a 3-pin XLR connector for the on the 851 end.

The negative input (pin 3) should be wired to ground only at the RCA connector. This brings the inverted input reference of the 851 to the unbalanced source ground, thus reducing ground loops.

Another option for connecting unbalanced sources is the Boulder ABL2 input adapter. It converts a balanced input into an RCA phono input at the rear of the 851. Like the above cable, the negative side will then share the shield wire with the chassis ground and will not have the best hum rejection.



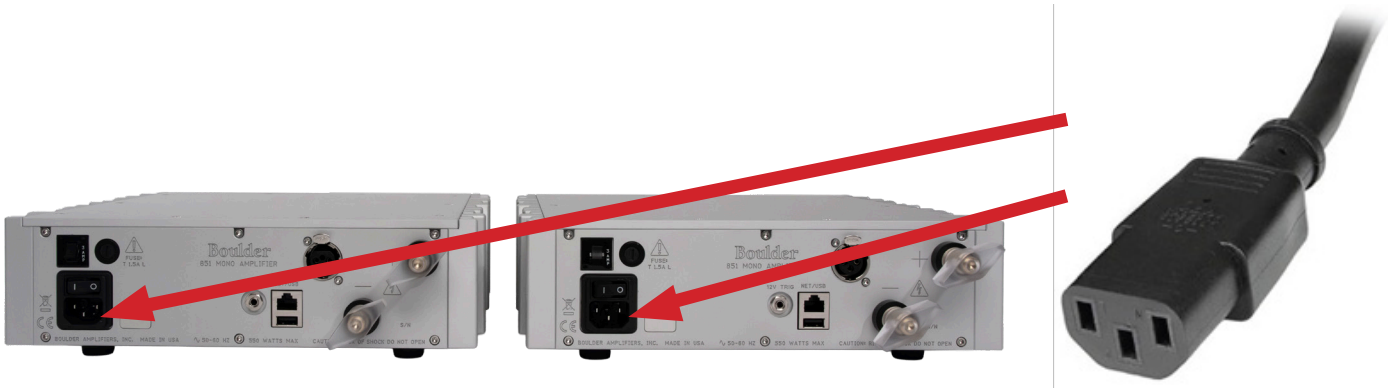
Connections

Connecting to the AC Mains Outlet

Your 851 Mono Power Amplifier is supplied with a mains power cable suitable for the location where it was purchased. It is constructed of large enough wire gauge and a plug appropriate for your AC line voltage. Do not substitute another power cable.

Exact voltage and frequency compatibility is stated in the specifications section. See page 5-13.

Once the 851 Stereo Power Amplifier is connected to a live mains outlet and the rear panel switch is moved to the "On" position, the LED on the front panel will illuminate red for a short time. During this time the 851 is booting up. The LED will then pulse white on and off, indicating that the supervising microprocessor is powered up and the amp is ready to be turned on using the front panel Standby button.



Connections

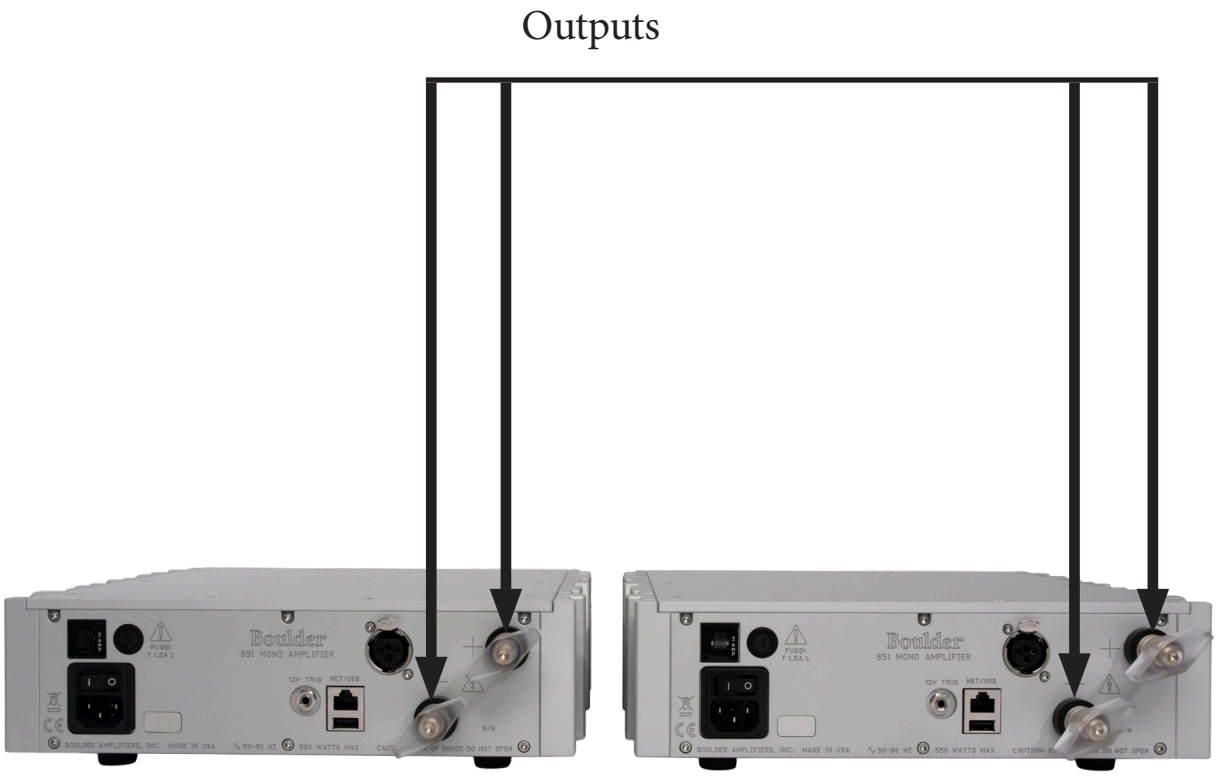
Connecting Your Loudspeakers

Do not use a wrench or any other type of tool on the output terminal binding posts. Tighten these connectors by hand only.

WARNING: This is a high-powered amplifier! There is high voltage potential at the terminals when driven. Connections should only be made with the AC mains disconnected!

Select speaker cable spade terminals that will accept .250-inch (6 mm) diameter binding posts.

Note: There is no provision for the use of banana plugs. Banana plugs are proven to lose spring tension and come loose over time, increasing contact resistance and distortion. We also do not recommend the use of banana plugs at the speaker end for these reasons.



Operation

Powering Up

With all connections made, you are ready to listen to your Boulder 851 Mono Power Amplifier.

To turn the amplifier on, turn the rear panel **Master AC Switch** to the **ON** position.

The LED will then slowly pulse white on and off, indicating that the supervising microprocessor is powered up. At this time, press the front panel button to bring the unit out of Standby mode.

Because of the large inrush currents associated with the large toroidal transformer, power relays are used to turn on the amplifier. These are under control of the supervising ARM processor. During the power up sequence, you will hear two sets of two relay clicks, separated by short intervals.

Once powered up, the front panel LED will steadily glow **white** to indicate normal operation.

To turn the amplifier off, press the **Standby** button again. The indicator will then slowly and continuously change from **white**, to **dark**, and back to **white**. This indicates that the amplifier is in Standby mode.

NOTE: Because the 851 greatly reduces power consumption when in Standby mode, it is only necessary to place the amplifier in Standby when not in use. You do not need to turn the 851 off via the Master AC Switch on the rear panel. The 851 was designed for years of operation in this manner and no damage to the unit will occur.

Operation

Input DC Offset Voltage Detection

The Boulder 851 is a direct-coupled power amplifier with a servo for zeroing out DC voltage offset coming from the preamplifier or other sources connected to the amplifier's input.

If the DC at the inputs is sufficient enough to cause potentially damaging voltage at the output terminals, a protection circuit will mute the amplifier's output. The front panel LED will also turn red. This condition will continue until the source of DC is corrected or removed.

If the indicator remains red, it is recommended that the user correct the DC offset of the source device before continuing.

Thermal Protection

A thermal protection circuit prevents high operating temperatures that are unpleasant to the touch and potentially harmful to the amplifier. A thermal cutout circuit will mute the amplifier when the heatsinks reach 70°C, and the front panel LED will turn red. If this happens, the output level of the system should be reduced and more ventilation should be provided for the amplifier. Once the amplifier temperature cools to 60°C operation may resume.

Operation

Maintenance

No routine maintenance is required for the 851 Mono Power Amplifier. However, to keep operating temperatures at a minimum, be sure that the heat sinks are not obstructed and remove any dust buildup that may occur.

Errors Requiring Boulder Dealer Service

If the 851 Mono Power Amplifier will not turn on and the front panel LED blinks red, an error requiring dealer service has occurred. The indicator may flash red in a specific sequence to define its error code for an authorized Boulder technician. If you are experiencing this problem with your 851, contact your Boulder dealer immediately.

Operational Errors

At times the 851's front panel LED may flash red but continue operating normally. This is an Operational Error and indicates that there is a fault somewhere else in the system or in the use of the amplifier.

Conditions that will be indicated as Operational Errors may include:

- DC offset at the input of the amplifier (from a source or preamplifier)
- Thermal limit or safe operating temperature of the amplifier exceeded

Appendix

Technical Specifications

Continuous Power 8Ωs	100 W
Peak Power, 8Ωs	150 W
Continuous Power 4Ωs	200 W
Peak Power, 4Ωs	250 W
Peak Power 2Ωs	350 W
Balanced Analog Inputs	1 Pair of Balanced 3-Pin XLR connectors. One connector per chassis
Outputs	1 Pair of 0.25” Spade binding posts.
Distortion, THD	0.002%
Equivalent Input Noise (EIN), 20kHz BW	2.7µV
Input Impedance	100kΩ Balanced
Frequency Response, 20 Hz to 20 kHz	+0.0, -0.06dB
Frequency Response, -3 dB	0.04 Hz and 150 kHz
Maximum Analog Gain	26.0 dB
Power Requirements (Country Specific configured)	100V, 120V, 240V 50 - 60 Hz
Power Consumption	something W Maximum Something else W Idle

Note: All measurements taken at 240V

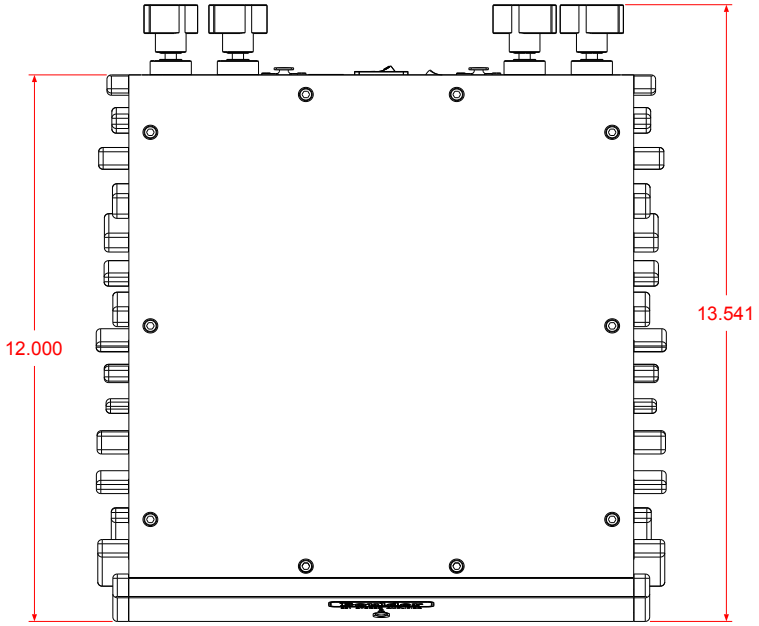
Appendix

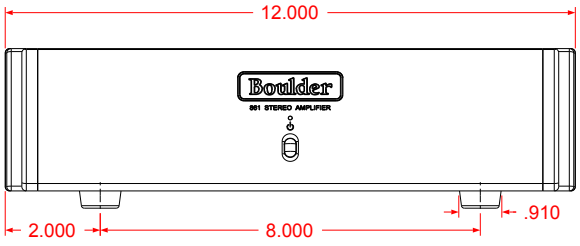
Weights and Dimensions

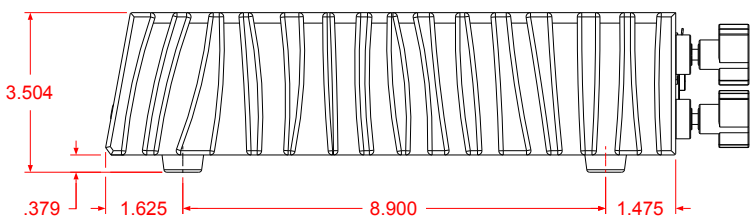
851 Mono Power Amplifier Chassis:	**12” W x 12” D x 3.25” H (21.5 lbs) each.** **30.5 cm W x 30.5 cm D x 8.3 cm H (9.75 kg) each.**
Shipping:	**24” W x 23” D x 14” H (25 lbs) each** **61 cm W x 59 cm H x 36 cm H (11.34 kg) each**

Appendix

851 Mono Power Amplifier Dimensions







Appendix

Troubleshooting

SYMPTOM	CAUSE	REMEDY
No Power Indication	Master AC Power Switch on Rear Panel is not ON	Turn on Master AC Power Switch
	851 is not Plugged in	Connect Power Cord to AC Mains Outlet
	851 Boot-Up is Locked	Turn Off Unit From Master AC Switch and Back on
	Home Circuit Breaker is Tripped	Reset Home Circuit Breaker
	Low Line Voltage	Have Power Cable Tested or Replaced
Power Indication but No Sound	No Signal from one Channel	Check Cables, Connections, Swap Cables and see if the Problem Follows
	No Signal out of 851	Check Interconnect and Speaker Cables, make sure it is out of Standby and Power LED is Solid White

Appendix

Notes: