

Stable Power AC Line Voltage Regulator

**MODELS: RA-1210 (10 AMP)
RA-1220 (20 AMP)**

Instruction Sheet

Introduction

Thank you for your purchase of Furman Sound's Reference Series Stable Power AC Line Voltage Regulator, and congratulations on your choice. The RA-1210 and RA-1220 are no-compromise, no-expense-spared designs, with painstaking attention paid to the ultimate sonic and visual impact of every component within them. The Reference Series is the flagship AC power regulating and conditioning line of Furman Sound, a company that has pioneered AC power products for the most demanding professional audio and video professionals for more than 25 years.

Features

- Delivers a stable 120VAC +/- 1.5V with incoming voltage between 114VAC and 126VAC.
- High Current capability (20 Amps RA-1220, 10 Amps RA-1210).
- True R.M.S. AC voltage and current meter deliver laboratory-level accuracy.
- Extreme voltage shutdown and LED indicator ensure that neither excessive nor insufficient voltages ever reach your valuable equipment.
- Premium-quality magnetic circuit breaker with optimized current sensitivity prevent nuisance tripping.
- 800V peak 250 Amp capable active voltage-switching devices stand up to the toughest power demands.
- Ultra-low contact resistance Super-Spec AC outlets.
- Additional AC filtering for *Digital* outlets.

Description

In these days of overtaxed, commercial AC power facilities, and utilities lowering their standard voltage levels, the need for stable power has never been greater. A two volt rise or drop in AC voltage can dramatically impact power amplifiers and powered sub-woofers, robbing them of their peak power capability,. This causes them to overheat, and veer from their optimum performance capabilities. Premium performance requires *Stable Regulated AC Power*. Furman Sound's new RA-1210 and RA-1220 Stable Power AC Line Voltage Regulators provide a constant 120VAC while maintaining the ultra-low noise, cool operating, low-impedance operation that is the hallmark of the Furman Reference Series.

Page 2

With the Reference Series exclusive Ultra-Low Noise Stable Power AC Line Regulators, Power Amplifiers and Powered Sub-Woofers perform at their *full* potential. Sonic transients and low frequencies are startling in their visceral impact and clarity. When used with its Symmetrical Power sibling, (the RI-1210 or RI-1220) video monitors, pre-amplifiers, compact-disc transports, multi-channel processors, digital audio converters, and stereo system turntables are fed ultra-low-noise, finely regulated, isolated Symmetrical Balanced power. This provides two benefits: Not only does it ensure pure, Stable Power from your home's AC supply, it also *balances* it, reducing AC noise dramatically. Additionally, Furman Reference Series products generate virtually no heat, and are more than capable of the *full AC current demands* your system requires for maximum performance. AC regulators that convert incoming AC power into DC, and then synthesize an AC output are inherently inefficient, and may seriously limit your Power Amplifiers' full potential.

In addition, the RA-1210 and RA-1220 ensure that your sensitive equipment never operates outside of its optimal AC voltage range, *and* that damage will not occur from voltage surges or any power line irregularities. The RA's extreme voltage protection prevents your valued equipment from ever being ravaged by an electrical storm or careless power utility.

When employing Furman's Reference Series Symmetrical *and* Stable power conditioning, you will immediately notice far clearer, stunningly focused sound and visual images from your system. Video presentation will be crisp and colors true. Mid and high frequencies will bloom with non-glaring ease, and imaging will improve dramatically, all the while remaining true to your system's inherent virtues.

Installation

Before unpacking your unit, inspect the carton for any obvious severe damage to the box. Then open it and check the internal protective materials. If there is damage to the internal protective materials, contact the carrier who delivered the unit before proceeding with unpacking. If, after unpacking, shipping damage is evident, contact the carrier. Save all shipping and unpacking materials. You may need them if you ever return the unit to our factory for service.

The box should contain the RA-1210 or RA-1220 unit, detachable AC power cord, owner's manual, and warranty registration card. If anything is missing, please contact Furman Customer Service. Fill out and return your warranty registration card. Registration is recommended because it can be used to establish whether the unit is within the warranty period if your original ownership document is lost, and will assist us in informing you about upgrades or other vital information.

The power source to which a RA-1220 is connected must be adequate for use at 20 Amps continuous operation. Though the unit will function with a 15 Amp panel circuit breaker, it is not recommended, as vastly inferior performance and substandard protection (depending on your system's total current demands) could result. If your system includes power amplifiers or projectors with more than modest power demands, a panel circuit breaker with at least a rating of 20 Amps is essential for optimum performance. If other electrical loads are used on the same branch circuit, and your system's continuous current load is in well in excess of 10 Amps, we recommend a 30 Amp panel breaker wired with #10 gauge wire. For installations that must comply with NEC codes, a 20 Amp panel circuit breaker with a dedicated line (branch circuit) is the minimum requirement. The RA-1210 will function well with standard household 15 Amp panel breakers and a 15 Amp branch circuit. If other electrical loads are used on the same branch circuit, they should be relatively modest (well below 5 Amps total). If this is not the case, you will need to use a 20 Amp panel breaker and branch circuit. If in doubt consult your dealer or local electrician.

The RA-1210 and RA-1220 are manufactured with four rubber feet for placement on any table, cabinet, shelf, or floor capable of supporting its weight. Because of the Reference Series low-flux density Auto-transformer design, placement or proximity to other components is not critical, and the RI-1210 and RI-1220 do not produce any appreciable heat.

The Reference Series may also be rack mounted in a standard 19" rack by attaching the optional rack ears. These rack ears mount parallel to the back portion of the Reference Series' front panel. These optional rack ears are supplied with the necessary hardware and mounting instructions. The RA-1210 and RA-1220 require a Furman HRKIT-7 for rack mounting. When rack mounting, the (4) rubber feet located at the bottom of the RA's chassis may be removed. Simply loosen the Phillips screw that attaches each foot to the chassis by rotating the screw fully counter-clockwise until the foot falls free of the chassis. Due to the weight of the Reference series components, we recommend mounting these units at the bottom of your rack when choosing a mounting option. When rack mounting the RI-1210, RI-1220 or IT-Reference in tandem with your RA, we recommend placing the RA directly above the RI's or IT-Reference. This will allow the unit with the greatest weight to rest at or near the bottom of your rack.

Once the unit is placed, the detachable AC cord must be attached to the rear panel IEC male socket. It resides in the lower left-hand corner of the rear panel when facing the rear of the unit. Next, the male NEMA-15 connector must be plugged into the appropriate AC socket. This AC cord will carry substantial unbalanced AC current, so it should be dressed away from critical signal carrying cables, or at the very least, cross them at a 90-degree angle. All 3-prong AC cords exiting this unit should be dressed away from signal carrying cables as well.

If the RA-1210 or RA-1220 is used in tandem with one of Furman's *Symmetrical Power* conditioners, the RA should *supply* the Symmetrical Power Unit. Simply plug the AC input from the Symmetrical Power unit into any of the RA's analog AC outlets. In tandem operation, all of your system's components will be supplied from the Symmetrical Power unit, thus taking advantage of its additional filtering.

For systems incorporating only the RA-1210 and RA-1220, your components may be supplied from either the Analog AC outlets. To power any component with a digital processor or switching power supply, we recommend the Digital AC outlets. These four Digital AC outlets feature additional filtering. Their location is clearly labeled on the rear panel of your Reference unit. The remaining six outlets are for Analog components, (units without digital audio conversion, processing, or switching power supplies). There is absolutely no danger in connecting any component (Analog or Digital) to either outlet; there is simply a subtle improvement in performance when they are connected to their intended AC outlets. For those who wish to experiment, you may find optimum performance is obtained through a less than obvious combination of Digital and Analog AC outlets. Feel free to experiment or consult your dealer.

It should be understood that the primary purpose of the Reference Series Stable Power Regulators is the correction of AC power lines with sagging or fluctuating voltage. The RA-1210 and RA-1220 both incorporate RFI filtering, but for ultimate performance where low noise and clean, transparent performance is critical, the additional use of Furman's Symmetrical Power line is recommended.

AC Voltage and Current Meter

Your RA-1210 or RA-1220 contains a combination precision AC volt/current meter. This meter continuously monitors either the *incoming* AC voltage, or the total system AC current draw. To continuously read current or voltage, simply select the setting you wish to monitor by either pressing the voltage/current switch for current, or disengaging the switch for voltage. Since the AC voltage meter indicates incoming voltage, you should not be concerned by readings above or below 120VAC. The RA will automatically regulate the output to a continuous 120VAC, when the incoming voltage is within 114VAC to 126VAC. When the RA is properly regulating (a continuous 120VAC +/- 1.5V.), the green *in regulation* indicator will light.

Extreme Voltage Protection

If the incoming voltage drops below 90VAC or rises above 130VAC, the unit's extreme voltage protection circuit will engage. In the case of over voltage, the red over voltage indicator will light. This circuit shuts down the RA's output, and ensures that your valued equipment will never be damaged by faulty electrical work, or a poor AC supply from your utility.

Surge Protection

The RI-1210 and RI-1220 are capable of suppressing virtually any instantaneous voltage surge caused by lightning or commercial power. However, the protection device may be damaged if the over voltage surge or spike is sustained. The same is true if the device is made to absorb a *direct lightning hit*. The device in conjunction with the magnetic circuit breaker will protect your valued equipment. But in extreme circumstances, the *protection device* may be damaged. If so, the circuit breaker/power switch will not stay in the "on" position. If this occurs, your Reference unit must be serviced.

Fuses and Circuit Breakers

The RA-1210 and RA-1220 both utilize magnetic circuit breakers that also function as the power switch. These ultra-low resistance, noise-free breaker/switches are the finest in the industry. They will not nuisance trip under heavy turn-on surges, and will not develop noise with continued use. When the RA unit's current capacity is exceeded, they will trip, thus moving immediately to the off position. To reset, simply lift the switch to the on position. If there's other internal damage to the RA's circuitry, the meter's internal supply fuse, or a blown Varistor, the breaker will not reset. If this occurs, the unit may need servicing.

Safety Information

Please read and observe all of the safety and operating instructions before the RA-1210 or RA-1220 is operated. Retain these instructions for future reference:

- Do not disassemble or modify in any way. No serviceable user parts inside.
- Keep away from moisture and extreme humidity.
- Do not allow liquids or foreign objects to enter the unit.

The RA-1210 and RA-1220 should be serviced by qualified service personnel when:

- The power supply AC cord has been frayed or cut.
- Objects have fallen or liquid has spilled into the unit.
- The unit has been exposed to rain or extreme moisture.
- The unit will not operate, or function normally, showing a marked change in performance.
- The unit has been dropped, or its enclosure has been damaged.
- The power indicator will not light, even after resetting the circuit breaker (power switch).

The RA-1210 and RA-1220 require that the safety ground be utilized from the source AC power to the input of the Reference unit. This ground connection is necessary for optimum performance. Any attempt to operate the RA-1210 or RA-1220 without the incoming safety ground is considered improper operation and will invalidate the warranty.

RA-1210 / RA-1220 SPECIFICATIONS

Current Rating:

RA-1210 – 10 Amps Continuous at 114 – 126 VAC (9 Amps below regulation threshold of 113VAC)
RA-1220 – 20 Amps Continuous at 114 – 126 VAC (19 Amps below regulation threshold of 113VAC)

Regulation Range:

The RA-1210 and RA-1220 provide AC regulation for a continuous output of 120VAC (+/- 1.5V or less) with an input voltage range of 114VAC to 126VAC.

Auto Shutdown Range:

Below 90VAC or above 130VAC

Voltage/Current Meter Accuracy:

+/- 0.5% true R.M.S.

Outlets:

8 (Analog AC outlets)
4 (Digital AC outlets with additional filtering)

Protection:

Voltage spike protection – 400V peak@ 6500 Amps maximum surge pulse at 1 nanosecond

Noise Attenuation:

Transverse Mode – Greater than 60dB. 1-200MHz.

Dimensions:

3.5" H x 17.25" W x 17" D (both RA-1210 and RA-1220)

Weight:

RA-1210 – 32 lbs.
RA-1220 – 35 lbs.

Include Three Year Warranty template here

