FURMAN
PURIFY YOUR POWER

SPR-16 E

Owner's Manual

Features of the SPR-16 E

- Provides an ultra-stable 230 VAC supply from low or high voltage sources
- Linear Filtering Technology (LiFT) for unequaled audio / video clarity
- Series Multi-Stage Protection (SMP) for virtually maintenance-free AC surge suppression
- Cool running, noise free technology allows placement in critical listening environments
- Four pairs of TiVO friendly - High Definition ready cable/satellite loop through protectors
- 16 amp RMS capacity

Introduction

For over 32 years, Furman has pioneered the development of AC power products for the most demanding audio, video, and broadcast professionals. Though the need for stable AC power is nothing new, the SPR-16 E's technology and its unique implementation is revolutionary.

The extreme AC demands encountered in the professional audio/video arena have required technological developments far in excess of typical home theater/audiophile power products. In studios, live sound, and broadcast facilities, breakdown is unacceptable. Equipment failure or poor performance is costly. The same is true of today's home theater. Our solution based technology, extensive engineering expertise, and robust build quality have answered the challenge of today's corrupted power lines, and led to the creation of the SPR-16 E.

With today's chaotic demands on many municipal power facilities, AC voltage is often reduced so that it can be stretched to fulfill excess demand. This creates a substantial negative impact on your system's performance. Power amplifiers and powered sub-woofers cannot perform to their full potential. Even a relatively modest reduction in AC voltage can obliterate the sonic impact of an otherwise superior system. Just as problematic are excessively high line voltages. Excess voltage can overheat sensitive circuits, lower the life and reliability of projector lamps, and cause many circuits to shut down.

With the SPR-16 E's exclusive Stable Power AC Voltage Regulation Technology, voltage-starved power amplifiers and powered sub-woofers perform at their full potential. With the SPR-16 E, home theaters are supplied with constant, virtually unwavering AC voltage. This assures trouble-free service for any environment suffering from unstable power.

The SPR-16 E generates virtually no heat and produces none of the mechanical noise typical in inferior AC voltage regulators. Further, our zero-crossing solid state technology provides virtually unlimited peak current delivery,

avoiding the current limiting found in AC regulators that convert AC power into DC, and then synthesize an AC output signal.

In addition to unstable voltage, today's AC lines are plagued with RF and EMI noise. When connecting sensitive equipment to your home's power outlet, AC noise couples into your system's critical components. This AC noise masks low level signals and cripples performance. This low level content is critical because it relays the crucial harmonics and ambience in audio, as well as the depth and clarity in video. With Furman's exclusive Linear Filtering Technology, televisions, projectors, DVD players, and processors are fed linearly-filtered AC power. This dramatically reduces noise, ensuring consistent peak operation of your critical components regardless of load conditions or the time of day.

Another critical feature is our exclusive Series Multi-Stage Protection. This virtually maintenance-free surge suppression assures the highest level of AC protection possible, without sacrificing itself when the offending surge is severe – no damaged equipment, no service calls, no down time. Further, our digital AC input voltage and current meters allow precise measurements of both the AC line and the current load. These meters are a valuable asset when monitoring systems that are connected to today's potentially poor power grids. If desired, the meters can be dimmed when monitoring is not required.

When employing the SPR-16 E, you will notice far visual images from your system with stunningly focused sound. Video presentation will be crisp and colors true with greater gray and black scale definition, as well as noticeably improved depth and clarity. When installed in series with the IT-Reference 16 E, home theaters will reap the benefits of Furman's Stable Power, Power Factor Correction, and Discrete Symmetrical AC Filtering, ensuring performance without compromise – without peer.

Installation:

Unpacking

Before unpacking your unit, inspect the carton for any obvious severe damage to the box and internal protective materials. If internal damage is likely, 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 packing materials. You may need them if you should ever have to return the unit to the Furman approved servicing center.

The box should contain the SPR-16 E unit, detachable AC cord, rack mount kit, 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 should your original ownership documents be lost, and it assists us in informing you about upgrades or other vital information.

Safety Information - Warnings

Please read and observe all of the safety and operating instructions before the SPR-16 E is operated. Retain these instructions for future reference.

- Do not disassemble or modify in any way. No user-serviceable parts inside.

- Keep away from moisture and avoid excessive humidity
- Do not allow liquids or foreign objects to enter the unit
- Household lighting equipment may not be connected to the SPR-16 E because their sockets are not designed for use with balanced symmetrical power and may present a shock hazard. We recommend that only audio, video and computer processing equipment be connected to the SPR-16 E.

The SPR-16 E should be serviced by qualified service personnel when:

- The power supply cord or plug has been frayed or cut.
- Objects have fallen or liquid has spilled into the unit.
- The SPR-16 E has been exposed to rain or other moisture.
- The SPR-16 E does not appear to operate normally, or exhibits a marked change in performance.
- The SPR-16 E has been dropped, or the enclosure damaged.

Power Source

The power source to which the SPR-16 E is connected should ideally be adequate for use at 16 Amps. Though the system may function with a 10 Amp panel circuit breaker, nuisance circuit breaker tripping could result at your service panel. If your system includes multi-channel audio power amplifiers that require more than modest power demands, a circuit breaker with a rating of at least 16 Amps is essential for optimum performance.

Placement

The SPR-16 E is manufactured with four rubber feet for placement on any table, cabinet, shelf, or floor. These rubber feet may be easily removed with a standard Philips screw driver when rack mounting adjacent to other components. Because of the SPR-16 E's internal shielding, placement or proximity to other components is not critical, and the SPR-16 E does not produce any appreciable heat under standard use. The SPR-16 E may also be rack mounted in a standard 19" (48 cm) rack by attaching the SPR-16 E rack ears. These rack ears (contained within the plastic rack kit package) mount flush with the back portion of the SPR-16 E's front panel. They are attached to the chassis by removing the (2) countersunk screws on each forward-side of the chassis top cover. Each rack ear is installed with (3) pan-head Philips screws contained within the SPR-16 E rack mounting kit. The third screw used for each rack ear is for the center hole, located towards the rear and aids in stabilizing the unit when rack mounted.

Connections:

AC Cable Routing

Once the SPR-16 E is placed in your system, the female end of the AC cord must be plugged into the male IEC connector located on the lower left hand side of the rear panel (when facing the rear panel). Next, the male plug must be connected to an appropriate socket.

Connecting Components to the Digital - Video Component AC Outlet Banks

The SPR-16 E's four "Digital - Video Component AC Outlets" should be employed for critical video components such as DVD players, projectors, plasma, or LCD video screens. When employing the SPR-16 E for a 2-channel audio system, a pre-amplifier

and/or CD player would be ideally suited for these outlets.

It should be noted that since each of the AC bank's symmetrical outlets are in parallel (for instance, two per bank "A"), some component power supply noise could potentially "back-wash" between these units. For this reason it is recommended that systems with minimal componentry (three units or less, excluding the power amplifiers) utilize one "Discrete" bank per component. This will maximize performance by eliminating inter- component AC noise contamination entirely! For systems utilizing more componentry, a very high level of performance will still be achieved with careful routing of component AC cords to the SPR-16 E's three "Discrete" power banks. We recommend separating digital processors, DVD's, and CD players from pre-amplifiers, tuners, and tape machines. Further, video monitors and scalers should ideally be separated from audio components.

Connecting Components to the Linear Filtering Power Banks

The SPR-16 E's seven rear panel Linear Filtering Power Outlets should be employed for any component not connected to the four "Digital - Video Component AC Outlets." These outlets still have incredible AC noise filtering to maximize system performance.

Connecting Components to the 16 Amp High Current Outlet

The SPR-16 E's high current outlet possesses the same Linear Filtering Technology as the other 11 outlets, but it can supply 16 amps. This higher current IEC outlet is appropriate for ultra-high current amplifiers requiring more than a 10 amp tap (very rare) or for series connection to the Furman IT-Reference 16 E.

Soft Start - Continuous Use and Break-In Time:

When power is first applied to the SPR-16 E, (the front panel breaker- rocker switch must be switched to the "1" position) the Soft Start feature is activated. There is an audible "clack" when the SPR-16 E is first turned on or off. This sound is produced by the Soft Start circuit's 30 Amp relay engaging or disengaging. There is virtually nothing in the SPR-16 E's construction, design, or componentry to wear over the lifetime of the product, and there is no power draw from your electric service meter aside from the LED power indicator, and relay circuits. For this reason the SPR-16 E may be left with its power engaged permanently at a cost of pennies per month. This is an added benefit, as many audio/videophiles find performance improves significantly when leaving low-powered components permanently charged (turned on). In fact, this is true of the SPR-216 E. Though it will function flawlessly right from its shipping carton, the performance of its circuit parts will improve after approximately two weeks of continuous use or "break-in."

AC Transient Voltage Surge Suppression and Extreme Voltage Shutdown

Extreme Voltage Shutdown Indicator:

This LED is normally off. It monitors AC wiring faults – for example, accidental connection to an open neutral from a 300VAC or greater feed. When the Series Multi-Stage Protection (SMP) circuit senses voltages that are so

high that operation would be impossible, it shuts the power down before damage can occur. Upon initially applying power to these units, the Extreme Voltage indicator LED will light if the input voltage is above the extreme voltage cutoff, and power will not be applied to the unit's outlets. If the unit has been operating with an acceptable input voltage and subsequently that voltage exceeds 275V, it will shut off power to the outlet and the Extreme Voltage LED will light.

Protection OK Indicator:
Although the Furman SMP circuit assures virtually maintenance free protection from transient voltage spikes and surges, nature has a way of occasionally creating electrical forces that are beyond the capabilities of any Transient Voltage Surge Suppression device to absorb without some degree of damage. In the rare instance that this occurs, the blue LED located in the center of the front panel will dim completely, even though AC power is present at the unit's outputs. If this happens, some level of protection from voltage surges will remain, but the Furman's clamping voltage rating will be compromised. The unit must be returned to Furman Sound, or an authorized Furman Service Center for repair.

This blue LED indicator can be quite bright in some darkened rooms. If desired, there is a dimmer switch on the rear panel that will dim this indicator to a very low setting.

NOTE: If the mains power is above the high cutoff voltage and has caused the unit to remove power from its outlets, it cannot restore power without the operator manually turning the unit off, then on again. Avoid turning the unit back on without first checking the source of the problem, and perhaps changing the AC source.

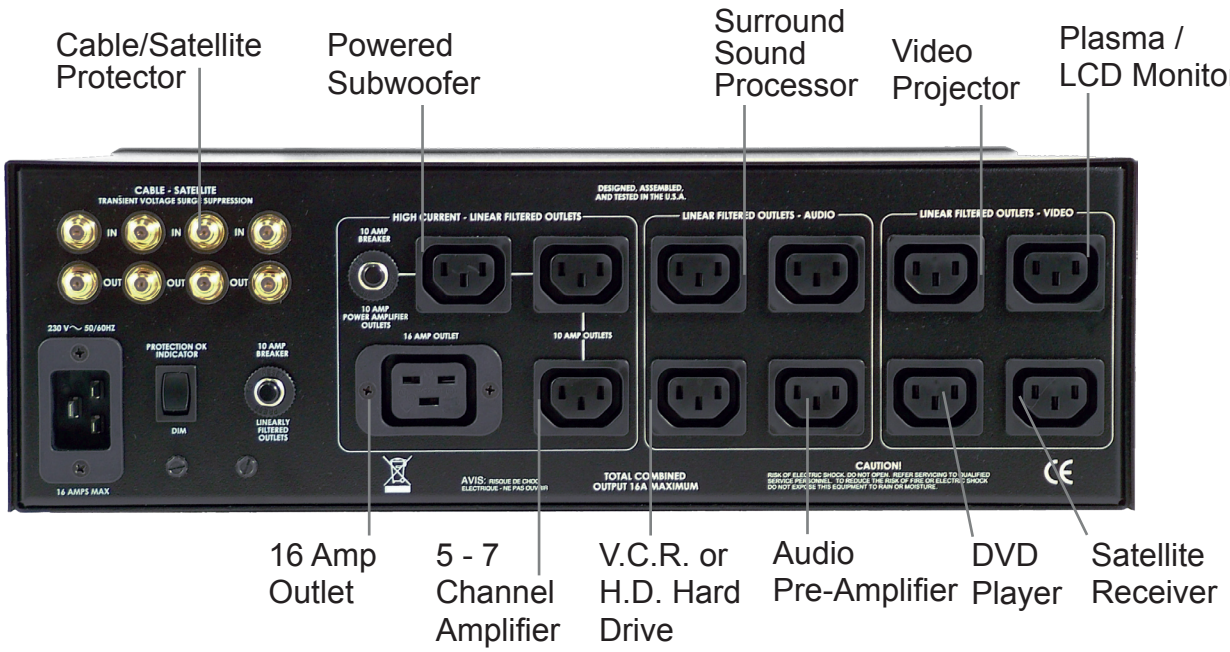
Satellite – Cable Transient Voltage Surge Suppressors
The SPR-16 E features transient voltage surge suppression for cable or satellite lines utilizing standard coaxial connectors. As these surge suppressors are in-line, they will require an additional cable to connect from their output to the control device requiring protection.

All in-line surge suppressors feature our exclusive ground contamination-free technology. This aids in eliminating audio buzzing, and the video hum-bars that can result from typical in-line suppressors. Further, our cable and satellite suppressors are TiVO friendly as well as HD-Digital Television ready. Both DC carrier signals as well as high bandwidth signals can pass through our circuit. In fact the bandwidth is less than 0.1dB loss at 1GHz!

To connect your cabling to these in-line protectors, simply follow the in and out indications marked next to the Cable - Satellite connectors.

AC Voltage and Current Meters
Your SPR-16 E contains a combination precision incoming AC voltage / current meter. This meter (located in the center of the front panel) 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 230 VAC.

Suggested AC Connection



Note:
If the SPR-16 E is mounted where it could be visible during use, we have included a variable dimmer for the blue digital voltage and current meters. This allows the user to entirely dim these lights when the room lights are turned off for optimum video viewing. The dimmer is adjusted via a small knurled knob located toward the left of the front panel. Turning the knob counter-clockwise will dim the voltage meters, while turning the knob clock-wise will increase the meter's brightness.

Warranty

Furman Sound, Inc. warrants to the original purchaser of this product, the Furman SPR-16 E, that the product will be free from defects in material and workmanship for a period of five years from the date of purchase. The purchaser of the product is allowed fifteen days from the date of purchase to complete warranty registration by mail or on-line at the Furman website. If the purchaser fails to complete the aforementioned registration, the warranty period will be reduced to one year from the date of purchase.

If the product does not conform to this Limited Warranty during the warranty period (as herein above specified), purchaser shall notify Furman in writing of the claimed defects. If the defects are of such type and nature as to be covered by this warranty, Furman shall authorize the purchaser to return the product to the Furman factory or to an authorized Furman repair location. Warranty claims should be accompanied by a copy of the original purchase invoice showing the purchase date; this is not necessary if the Warranty Registration

was completed either by mailing in the completed warranty card or by registering on-line at the Furman website. Shipping charges to the Furman factory or to an authorized repair location must be prepaid by the purchaser of the product. Furman shall, at its own expense, furnish a replacement product or, at Furman's option, repair the defective product. Return shipping charges back to purchaser will be paid by Furman.

CONNECTED EQUIPMENT WARRANTY: Furman Sound's Connected Equipment Warranty covers equipment that is damaged by transient voltage (an "Occurrence") while properly connected through the Furman SPR-16 E to a properly wired AC power line with a protective ground in an indoor location. Furman's Connected Equipment Warranty is limited to the amount of the deductible on the Purchaser's personal property insurance policy up to $500.00. In order to make a claim for this Connected Equipment Warranty, the Purchaser must forward a copy of his/her personal property insurance claim for the damaged equipment to Furman and complete the Furman Connected Equipment Warranty claim form (call Furman at (707) 763-1010 to obtain the form). Furman reserves the right to review the damaged Furman product, the damaged connected equipment, and the site where the damage occurred. All cost of shipping damaged equipment to Furman for inspection shall be borne solely by the Purchaser. Damaged equipment must remain available for inspection until the claim is finalized. The Connected Equipment Warranty is also in effect for a period of three years unless the Purchaser does not complete the warranty registration within fifteen days from date of purchase, at which time, the Connected Equipment Warranty period is also reduced to one year from the date of purchase.

All warranties contained herein are null and void if: the Furman Surge Protector in use during the occurrence is not provided to Furman for inspection upon Furman's request at the sole expense of the Purchaser, Furman determines that the Furman Surge Protector has been opened, improperly installed, altered in any way or tampered with, Furman determines that the damage did not result from the Occurrence or that no Occurrence in fact took place or Furman determines that the connected equipment was not used under normal operating conditions or in accordance with Manufacturer's instructions for the connected equipment. All Furman Surge Protectors must be plugged directly into a properly wired AC power line with a protective ground and must not be "daisy-chained" together in serial fashion with other power strips, UPS's, other surge protectors, three-to-two-prong adapters, or extension cords. Any such installation voids this warranty. The Furman warranty only protects against damage to properly connected equipment where Furman has determined, at its sole discretion, that the damage resulted from an Occurrence and does not protect against acts of God (other than lightning) such as flood, earthquake, war, terrorism, vandalism, theft, normal-use wear and tear, erosion, depletion, obsolescence, abuse, damage due to low-voltage disturbances (i.e. brownouts or sags), non-authorized program, or system equipment modification or alteration. Do not use this product in anyway with a generator, heater, sump pump, water-related device, life support device, medical device, automobile, motorcycle, or golf-cart battery charger. To be used indoors only and in dry areas. All warranties contained herein are null and void if used in anyway with any of the aforementioned devices.

THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Furman does not warrant against damages or defects arising out of improper or abnormal use or handling of the product; against defects or damages arising from improper installation, against defects in products or components not manufactured by Furman, or against damages resulting from such non-Furman made products or components. This warranty shall be cancelable by Furman at its sole discretion if the product is modified in any way without written authorization from Furman. This warranty also does not apply to products upon

which repairs have been affected or attempted by persons other than pursuant to written authorization by Furman.
THIS WARRANTY IS EXCLUSIVE. The sole and exclusive obligation of Furman shall be to repair or replace the defective product in the manner and for the period provided above. Furman shall not have any other obligation with respect to this product or any part thereof, whether based on contract, tort, strict liability, or otherwise. Under no circumstances, whether based on this Limited Warranty or otherwise, shall Furman be liable for incidental, special, or consequential damages. Furman's employees or representatives' ORAL OR OTHER WRITTEN STATEMENTS DO NOT CONSTITUTE WARRANTIES, shall not be relied upon by purchaser, and are not a part of the contract for sale or this limited warranty. This Limited Warranty states the entire obligation of Furman with respect to the product. If any part of this Limited Warranty is determined to be void or illegal, the remainder shall remain in full force and effect.

Warranty claims should be accompanied by a copy of the original purchase invoice showing the date of purchase (if a Warranty Registration Card was mailed in at the time of purchase or if the product was registered on-line, this is not necessary). Before returning any equipment for repair, please be sure it is adequately packed and cushioned against damage in shipment, and that it is insured.

SPR-16 E SPECIFICATIONS:

AC Current Capacity:
Input - 16 Amp capacity required
Output - 16 Amps RMS (15 Amps continuous @ 215 VAC)

AC Voltage Regulation:
Provides AC regulation for a continuous output of 230 VAC (+/- 3.0V typically) with an input voltage range of 213VAC to 245VAC. The SPR-16 E will function very well outside of its optimal voltage (capture range), but the regulation will not be held to +/- 3V.

Linear Noise Attenuation:
Transverse (Differential) Mode:
>40 dB from 10Khz. - 100 kHz. >80 dB from 100 Khz. – 1GHz.
(Linear attenuation curve from 0.05 – 100 ohms line impedance)

Transient Voltage Surge Suppression:
266 VAC - Series Multi-Stage Protection - Non-Sacrificial with Zero Ground Contamination.
Extreme Voltage Shutdown (>27 VAC)
Cable / Satellite (less than .1dB insertion loss)

Power Consumption:
2 Watts for display and control circuits independent of actual load.

Outlets:
1 (linearly filtered outlet – 16 amp)
7 (linearly filtered outlets)
4 (linearly filtered outlets with additional ultrasonic filtering for digital or video components)

Transient Voltage Surge Suppression:
230VAC Line – Series Multi-Stage Protection Plus - Non-Sacrificial with Zero Ground Contamination

Extreme Voltage Shutdown:
275V (+/- 5V)

Cable / Satellite Transient Voltage Surge Suppresion (less than .1dB insertion loss @ 1 GHz)

Dimensions:
152mm H x 432mm W x 413mm D (standard 3RU without feet)

Weight:
30 lbs (13.6 kg)

Safety Agency Listing:
CE

FURMAN

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