

**FURMAN**  
PURIFY YOUR POWER

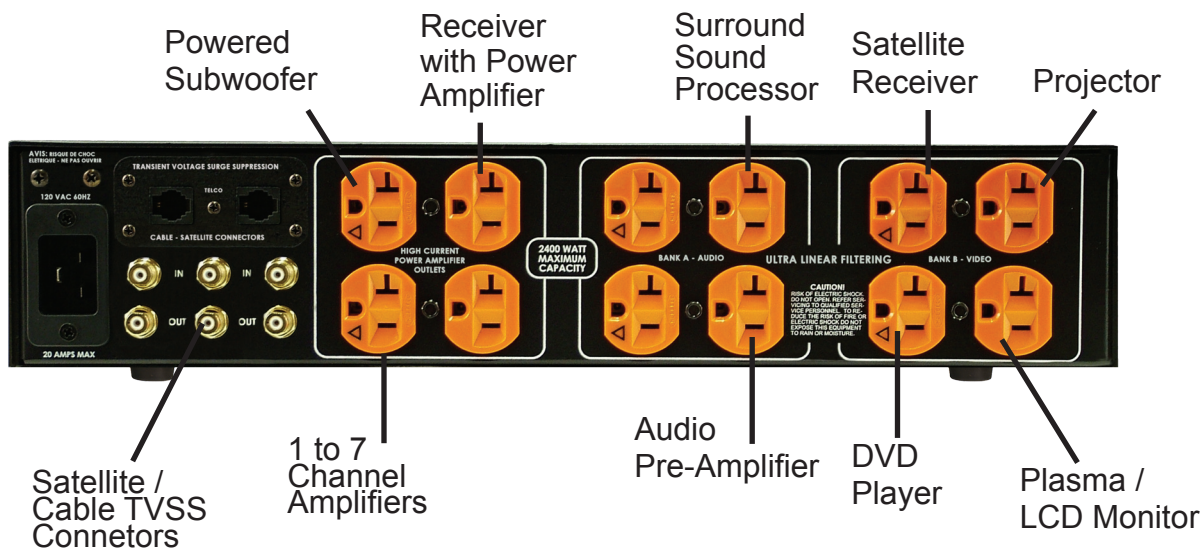
the  
**ELITE 20 PF**



## The Elite 20 PF Features

- Power Factor correction provides surplus current for power-starved amplifiers
- Ultra-Linear Filtering for stunning audio/video clarity
- Series Multi-Stage Protection Plus (SMP+) featuring Extreme Voltage Shutdown (EVS)
- Zero ground contamination circuitry protects critical digital components
- Ultrasonic bi-directional filtering isolates each audio and video outlet bank
- Retractable LED lamps illuminate a cabinet or rack full of equipment
- Detachable module for telco surge suppression and 3 pairs of cable / satellite TVSS isolated F-connectors

### Suggested AC Connection



## Introduction

For over 30 years, Furman has pioneered the development of AC power products for the most demanding audio, video, and broadcast professionals. Though the need for pristine AC power is nothing new, the Elite-20 Power Factor's technology and its unique implementation are revolutionary and without peer.

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 Elite-20 PF.

Today's power 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 Ultra-Linear Filtering Technology, televisions, projectors, DVD players, amplifiers, and processors are fed ultra-wide bandwidth linearly-filtered AC power. This dramatically reduces noise, ensuring consistent peak operation regardless of load conditions or the time of day. For the first time, you will see and hear your theater or audio system as it should be – uncompromised.

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 famous retractable front panel LED lamps allow easy viewing of either a rack or cabinet full of equipment, even when your theater lights are off.

At the center of the Elite-15 PF is our unique Power Factor Correction Circuit. For the first time, low-level analog, digital, and video components are not modulated or distorted via the power amplifier's extreme AC current demands. Further, the power amplifier sees a highly filtered, extremely low-impedance supply of AC power. The Elite-20 PF, in fact, has in excess of 4.5 Amps of continuous current reserve (over 55 amps peak charge) for the most extreme peak power demands. This technology enables power amplifiers and powered subwoofers to operate at peak efficiency, reaching levels of performance previously unattainable.

No longer will your amplifier's performance be at the mercy of your home's incoming AC power or inferior AC protection/filtering devices. The net effect is as if your power amplifier virtually doubled in power and improved immeasurably in quality.

When employing the Elite-20 PF, you will immediately notice far clearer, stunningly focused sound and visual images from your system. Video presentation will be crisp and colors true with greater gray and black scale definition, as well as noticeably improved depth and clarity. Sonic transients will be startlingly fast with bass fundamentals that

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shake foundations with their weight and visceral impact. Mid and high frequencies will bloom with sweet, non-glaring ease while imaging improves dramatically, all the while remaining true to your system's inherent virtues.

## 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 factory for servicing.

The box should contain the Elite-20 PF 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 Elite-15 PF 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

The Elite-20 PF 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 Elite-20 PF has been exposed to rain or other moisture.
- The Elite-20 PF does not appear to operate normally, or exhibits a marked change in performance.
- The Elite-20 PF has been dropped, or the enclosure damaged.

The Elite-20 PF requires that a safety ground be present for proper operation. Any attempt to operate the Elite-20 PF without a safety ground is considered improper operation and could invalidate the warranty.

## Power Source

The power source to which the Elite-20 PF is connected should be adequate for use at 20 Amps. The Elite-20 PF will operate with a 15 Amp service outlet; however, nuisance tripping at the circuit breaker panel may result if the systems continuous current draw exceeds 15 Amps.

## Placement

The Elite-20 PF 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

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components. Placement or proximity to other components is not critical, and the Elite-20 PF does not produce any appreciable heat under standard use. The Elite-20 PF may also be rack mounted in a standard 19" rack by attaching the Elite-20 PF rack ears. These rack ears (contained within the plastic rack kit package) mount flush with the back portion of the Elite-20 PF's front panel. They are attached to the chassis by installing each rack ear with (3) pan-head Philips screws contained within the Elite-20 PF 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.

## **Connection:**

### **AC Cable Routing**

Once the Elite-20 PF is placed, its AC cord's female end 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 Edison plug must be connected to an appropriate socket (see current rating recommendation above).

### **Connecting Components to the Ultra-Linear Filtering Video AC Outlet Banks**

The Elite-20 PF's four "Ultra-Linear Video AC Outlets" should be employed for critical video components such as DVD players, projectors, plasma, or LCD video screens. When employing the Elite-20 PF for a 2-channel audio system, a SACD player for example would be ideally suited for one of these outlets.

### **Connecting Components to the Ultra-Linear Filtering Audio AC Outlet Banks**

The Elite-20 PF's four rear panel and one front panel "Ultra-Linear Filtering Audio AC Outlets" should be employed for any component not

connected to the "Ultra-Linear Video AC Outlets," with the exception of receivers, power amplifiers and powered sub-woofers. These outlets possess the same exceptional AC noise filtering, and provide additional inter-component noise isolation to maximize system performance.

### **Connecting Components to the High Current Power Amplifier Banks**

All power amplifiers, receivers and powered sub-woofers should be connected to these four outlets.

Many Audiophile and premium Home Theater systems will have combined continuous current demands below 20 Amps. It is rare, in fact, for large power amplifiers to draw more than 4 Amps continuously. For superior performance, it is vital that an AC filter possess extraordinarily low impedance, and have the capability to pass peak current demands far in excess of the RMS (continuous) current rating.

The Elite-20 PF was designed to more than meet this demand. Additionally, our Power Factor Correction Circuitry effectively creates a current reserve in excess of 55 amps peak charge that is cleaner and faster than a dedicated line from your local power station. This feature eliminates any concern towards the current compression that can result from typical power conditioners, and the peak power reservoir benefits any power amplifiers performance dramatically.

### *Note about Power Factor Correction and Current Consumption:*

When power correction technology is employed with even the most sophisticated circuit breakers, it effectively adds to the perceived current load. Though the Elite-20 PF was designed for steady 20 Amp operation, and peak current demands many times that, the maximum total continuous current draw may be limited to a range between

1900 - 2300 Watts per Elite-20 PF employed.

The RMS current available before the circuit breaker trips varies due to what is referred to as a vector load. Simply put, the type of power supplies or electronic circuits connected to the Elite-20 PF will have an effect on its circuit breakers perceived current load, and therefore, when it will trip. Though the benefits of power factor correction far outweigh the small reduction in continuous current draw, this must be accounted for when constructing a large system with high RMS current demands.

The total continuous current draw of most electronic components is typically listed in Watts by their AC input cord or AC connector. Watt ratings are simply added to determine the total system RMS current draw. It should also be noted that the Elite-20 PF's power correction circuitry has no actual effect on the power drawn from your utilities' power meter. The Elite-20 PF draws a mere 12 Watts independent of other components, so it may be left on at all times.

## **Retractable Front Panel Lights and Dimmer Control**

The Elite-20 PF includes a front panel mounted dimmer control for the two retractable front panel light tubes. The dimmer knob controls the brightness of both light fixtures. Turn it clockwise to increase brightness; turn it counter-clockwise to decrease brightness. When the light tubes are fully inserted flush to the front panel, the light circuit is turned off via an internal micro-switch. Whether the light tubes are retracted or nearly flush with the front panel, there will be no appreciable heat regardless of dimmer setting due to the efficiency of our full light spectrum LED's.

## **Soft Start - Continuous Use and Break-In Time**

When power is first applied to the Elite-20 PF, (the front panel breaker- power toggle must be switched to the "on" position) the Soft Start feature is activated. There is an audible "clack" when the Elite-20 PF 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 Elite-20 PF's construction, design, or componentry to wear over the life time of the product, and there is no power draw from your electric service meter aside from the LED power indicator, lamps, and relay circuits. For this reason the Elite-20 PF 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 Elite-20 PF. 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 208 or 240VAC feed (this is a common occurrence if the 20 Amp outlet source is not a dedicated line, but instead has been wired with a daisy-chained neutral from a homes breaker box). The Series Multi-stage Protection (SMP) circuit senses voltages that are so high that operation would be impossible and shuts the power down before damage can occur. Upon initially applying power to these units, the Extreme Voltage indicator LED will light if the



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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 137V, 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, 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.

**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.

## Telco – Satellite – Cable Transient Voltage Surge Suppressors

The Elite-20 PF features transient voltage surge suppression for both standard telephone lines, as well as 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 Telco, Cable and Satellite connectors.

**Note:** It is not possible to make an a telco (telephone –line), satellite or cable protector “maintenance-free” as we have accomplished with the 120 VAC line. This would necessitate limited signal bandwidth that would not allow the signal to pass. Under extreme conditions, it is possible that the surge suppression in one of these devices could sacrifice itself after a catastrophic event. If the telephone, cable or satellite signal will no longer pass through our protector, please contact your local service representative, installer or Furman for servicing. Since the telco circuit is modular, replacement may be accomplished in seconds with a new telco TVSS module. To test this, simply disconnect the incoming and out going phone line from the Elite-20 PF. Connect the incoming connector to the component that formerly received the out going connector, thus by-passing the in-line protection. If the signal is present (but not when used with the Elite-20 PF) then the protection circuit is damaged (assuming it worked properly before a storm or catastrophic event). With Cable or Satellite protection, it is HIGHLY unlikely that the protection device will ever fail unless a severe lightening strike literally deforms the connector. If this occurs, return to Furman Sound for Servicing.

## Warranty:

Furman Sound, Inc. warrants to the original purchaser of this product, the Furman Elite 20 PF, that the product will be free from defects in material and workmanship for a period of three 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 Elite 20 PF 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,



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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.





## **ELITE-20 PF SPECIFICATIONS**

### AC Current Capacity:

Input - 20 Amp capacity required

Output - 16-20 Amps RMS \* (maximum, all outlets combined - continuous)

### Linear Noise Attenuation:

#### Transverse (Differential) Mode:

>40 dB from 5 kHz. - 100 kHz. >80 dB from 100 Khz. – 1GHz.

(Linear attenuation curve from 0.05 – 100 ohms line impedance)

### Transient Voltage Surge Suppression:

120 VAC - Series Multi-Stage Protection - Non-Sacrificial with Zero Ground Contamination.

(188 V peak clamping @ 6000V - 3000A input)

Extreme Voltage Shutdown (>137 VAC)

Telco Cable / Satellite (less than .1dB insertion loss)

### Power Consumption:

12 Watts for display and control circuits independent of actual load.

### Outlets:

1 (Ultra-Linearly filtered outlet - front panel)

8 (Ultra-Linearly filtered outlets with additional ultrasonic filtering for either video or audio components)

4 (power factor corrected amplifier outlets – 4.5 amps RMS reserve - resistive load - over 55 amps peak charge)

Dimensions: 4" H x 17" W x 14.75" D (Standard 1 RU height without feet)

Weight: 18 lbs.

Safety Agency Listing: NRTL-C (pending)

\* (Due to the power factor correction circuit, available RMS power varies with the reactance of the load (vector). However, this only affects the circuit breaker for continuous RMS current draw. Since power amplifiers will require high transient current demands, the Elite-20 PF will never succumb to current compression. Quite the opposite, in fact, it will buffer the power amplifier's power supply, while lowering the AC input impedance, allowing power amplifiers to work more efficiently).

# **FURMAN**

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