

# **FURMAN**®

220V-240V CONSUMER ELECTRONICS LINE



**FURMAN**



For well over 30 years, Furman has been the leading manufacturer of AC power conditioners, AC voltage regulators, balanced isolation transformers, and AC distribution equipment for audio, video, and broadcast professionals. Our products are relied upon by respected professional musicians, renowned recording and film studios, and major touring and performance companies throughout North America and across the world. They choose Furman for our reputation for reliability and our years of engineering expertise focusing on the specific needs of industry professionals that cannot afford equipment failure or downtime.

Introduced in 2001, Furman's acclaimed line of consumer power management products build upon the virtually maintenance free, performance enhancing technology found in our professional line. With components that have been re-engineered from the ground up, Furman's consumer electronics product line is designed to meet the specific challenges found in today's home theater systems.

While we at Furman are proud of our history, we are focused on the future and our commitment to stretch the bounds of technology to provide the most advanced power management solutions for any application.



*Furman/Panamax Headquarters  
Petaluma, California, USA*





The need for advanced power management solutions is becoming more and more apparent. Today's A/V technologies are more sophisticated than ever, but the AC grid that powers our equipment is increasingly overtaxed, antiquated, and dilapidated. AC problems that went unnoticed fifty or sixty years ago (when our power system was put in place) can now cause performance issues, unreliability, and damage to sensitive components.

Furman's solutions are engineered to address today's real-world needs. Below are some of the advanced exclusive technologies you will only find in Furman products.

### Series Multi-Stage Protection (SMP)



Typical surge suppressors rely exclusively on sacrificial components to protect your equipment from voltage surges and spikes. They are designed to "take the bullet" when exposed to a catastrophic voltage irregularity, hopefully saving your equipment, but sacrificing internal components in the process. In a best-case scenario, this leaves your equipment unprotected until the surge suppression device can be repaired or replaced. In the worst case, the device can't absorb the entire surge before failing, letting voltage pass into your system and damage your equipment. Furman's technology is different.

Furman's SMP circuit has been tested to withstand multiple 6000V or 3000A pulses without sustaining any damage, with a peak clamping voltage of 376V AC. The protection offered by Furman's SMP is far beyond the demands placed on typical surge suppressors, but by utilizing a professional-level circuit, you can rest assured that your equipment is safe.



*Furman's SMP clamps transient spikes at 376V AC with no circuit degradation.*

The key to our SMP suppression system is that the severity of the offending voltage spike is critically damped so that the overall energy level is reduced to a fraction of what the clamping device can handle. So, like a well-tuned shock absorber, the SMP circuit protects itself, as well as your connected equipment.

### Extreme Voltage Shutdown (EVS)



An extreme voltage condition (sustained overvoltage) represents one of the most common and devastating power dangers faced by your equipment. A power pole that was damaged in a storm or accident, or a lost or intermittent neutral wire in a multiple zone system, can result in a sudden connection in excess of 400 volts AC. Most extreme voltage conditions will result in destroyed equipment, or, at best, a destroyed surge suppression system. In either event, equipment service is certainly required.

Furman's EVS protects against these scenarios by employing a circuit that constantly monitors the incoming AC. When voltage is detected at 15% above nominal, a power relay opens, cutting off the AC supply to all connected equipment and critical circuits. Once the voltage is corrected, the unit may be reset and normal operation may continue.

## Linear Filtering Technology (LiFT)

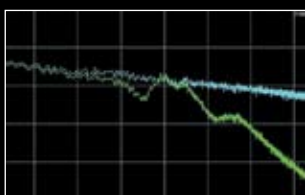


While delivering your power, your AC tap also delivers a significant amount of line noise. This is due to many reasons: the widening popularity of switching power supplies and the harmonics they backfeed into our AC power mains, the deterioration of our power grid from age and use, and the noise pollution generated from the massive amounts of electronic devices on our grid at any given time, among others. When this AC noise couples into critical circuits, it will distort and mask low-level signal information. This information is vital to today's high-performance, high-definition video and audio.

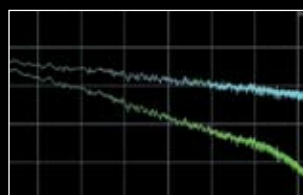
Furman's LiFT employs a finely tuned low-pass filter to reduce the differential AC noise coming through your line. What is significant about Furman's filtering is that it reduces the AC noise in a linear fashion across a very wide bandwidth. Prior

filtering schemes (such as those found in most AC conditioners and in Furman's own conditioners prior to developing LiFT) reduce noise unevenly, creating a noise attenuation curve that resembles a roller coaster. This is akin to a poor job of equalizing a recording.

With Furman's LiFT, differential AC noise is reduced linearly, across a very wide bandwidth, even extending into the video frequencies. This results in a lower noise floor for your audio system, improved picture on your video display, and protection from possible data corruption and losses caused by low-level differential AC noise fed into digital systems.



*Output of real-time noise analysis software, showing the noise attenuation curve of a standard AC noise filter. Note the uneven shape of the curve (the green line).*



*Output of the same analysis using Furman's Linear Filtering Technology. As you can see, the noise attenuation curve is smooth and linear, without the resonant peaking seen in the standard filter.*

## Power Factor Technology (PF)



Furman's Power Factor Technology was designed to help power amplifiers sound their best and reproduce audio signals accurately. While a typical 10 amp tap is enough to supply the modest RMS current draw needed by most power amplifiers, the extremes and dynamics of an audio presentation may require the power amplifier to draw in excess of 30 amps for a brief moment. The punch of a bass guitar, the forceful hammering of a dense piano chord, or the ringing crash of a drummer's cymbal are all audio transients that can require a power amplifier to provide more current than is available to reproduce the signal. When this occurs, the transients can be

blurred, compressed, and squashed, resulting in the audio presentation losing the drama and excitement that was intended by the artist who recorded the program.

With Furman's Power Factor Technology, power amplifiers are supplied a momentary current reservoir which lowers the AC line impedance while providing over 55 amps of peak current to draw from. Simply put, Power Factor Technology allows power amplifiers to get the current they need when they need it most.

## Stable Power Regulation – SPR



Because of the chaotic demands on many power facilities and deterioration of power lines, 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. Low voltage can also burn out a component's power supply, as the internal power supply must work harder to make up for the lack of incoming voltage. 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 Furman's exclusive Stable Power Regulation Technology, incoming voltages that are either too low or dangerously high are converted to a stable, steady 230 AC (typically  $\pm 5V$ ). This allows a voltage-starved system to perform at its full potential. Electronic components are supplied with constant, unwavering AC voltage, assuring trouble-free service for any environment suffering from unstable power. Furthermore, Furman's Stable Voltage Regulation generates virtually no heat, and produces none of the mechanical noise typical in inferior AC voltage regulators. 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, then synthesizing an AC output signal.

## Discrete Symmetrically Balanced Power



While differential AC noise (such as electromagnetic and radio frequency interference) can be effectively reduced with a low-pass filter such as Furman's LiFT, common mode AC noise - the cause of ground loops and video hum bars - requires more advanced solutions. To effectively reduce common mode noise requires the use of an isolation transformer, and the most effective of these are true symmetrically balanced isolation transformers.

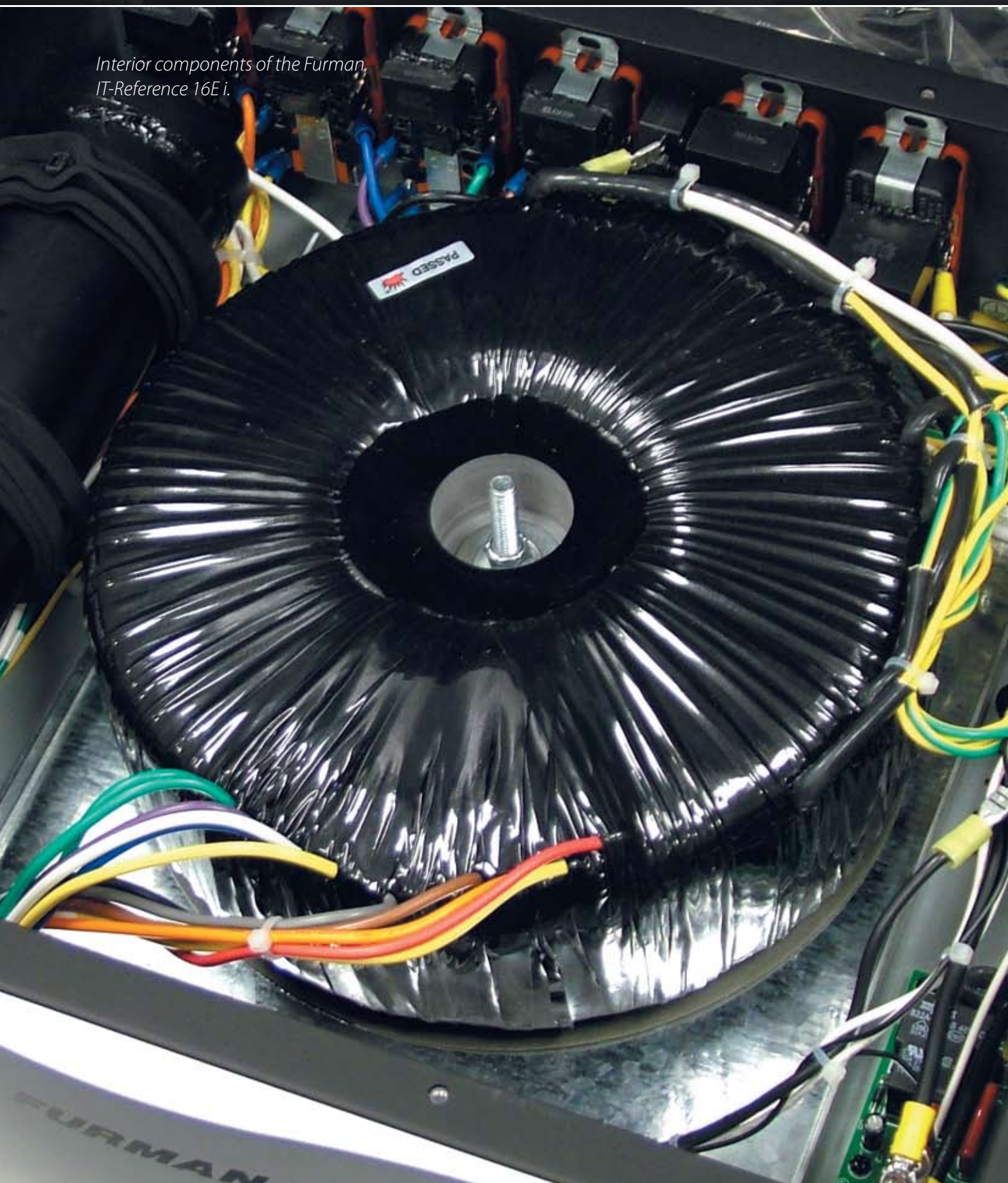
Furman's Discrete Symmetrically Balanced Power is achieved by running the incoming AC into a 1:1 isolation transformer with a precisely placed center tap on the transformer's secondary. The incoming voltage (230V on the line terminal and 0V on the neutral and ground) is split into perfect halves on the transformer's output. The AC line now has 115V on the line and 115V on the neutral when referenced to the new center-tapped ground, which remains at 0V AC. What is significant about this is that the two 115V AC terminals are now in opposite polarity. This completely cancels all common

mode noise from the incoming AC line. This noise reduction is extraordinarily efficient and linear across a huge frequency range, and the result is perfectly clean power devoid of ground loops and AC hum noise.

Furman's newly refined isolation transformers utilize Dual Screen Technology, which yields the widest bandwidth of noise reduction available. This allows Furman's Discrete Symmetrically Balanced Power units to uncover unprecedented levels of video and audio detail, while ensuring that plasmas, LCD screens, or video projectors are free of AC ground contamination from an audio processor or power amplifier.



*Interior components of the Furman  
IT-Reference 16E i.*



# IT-Reference 16Ei

DISCRETE SYMMETRICALLY BALANCED AC POWER CONDITIONER, 16A

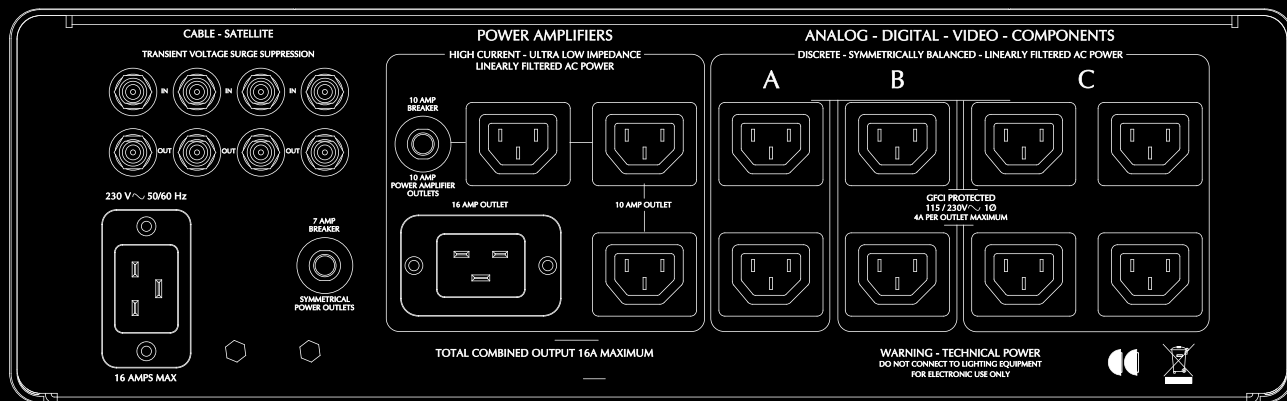
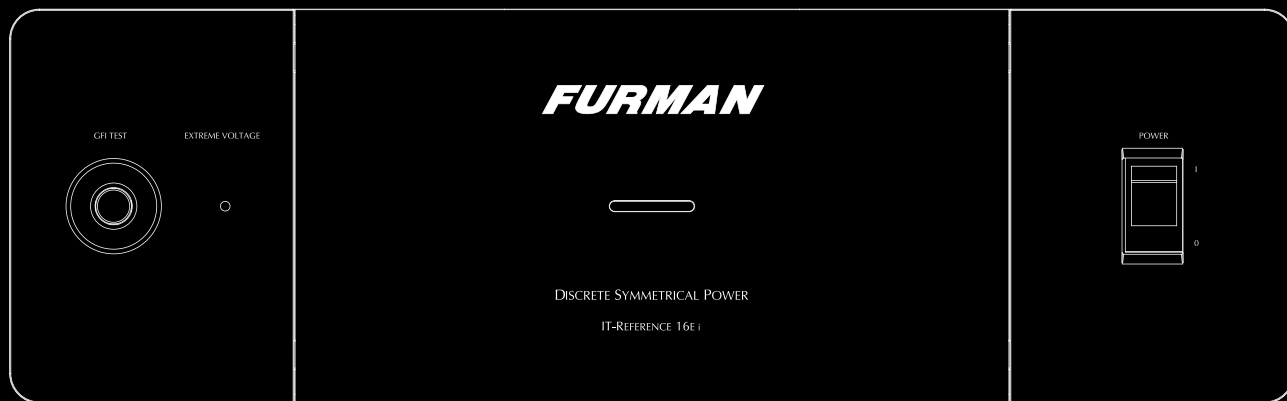
SMP

EVS

LIFT

PF

DSBP





Designed for the most ambitious high-current audiophile, videophile and home theater systems, the Furman IT-Reference 16E i's Discrete Symmetrical Power features total isolation between its four filtered high-current outlets and each of its isolated symmetrical power AC outlet banks. This positively breaks noise inducing ground loops, hum bars, and power supply backwash between critical interconnected equipment, all without compromising electrical safety. Furman's newly refined isolation transformer featuring Dual-Screen Technology yields the widest bandwidth of noise reduction available, enabling the IT-Reference 16E i to uncover unprecedented levels of video and audio detail. The IT-Reference 16E i also features Furman's Power Factor Technology to ensure optimum performance for current

starved power amplifiers and powered subwoofers, while Furman's Linear Filtering Technology provides a finely tuned low-pass filter to remove differential noise from the incoming AC line. The IT-Reference 16E i delivers pristine, flawless AC power to connected equipment, and may be combined with the Furman SPR-16E i Stable Power Regulator to provide the most comprehensive AC power management solution possible.



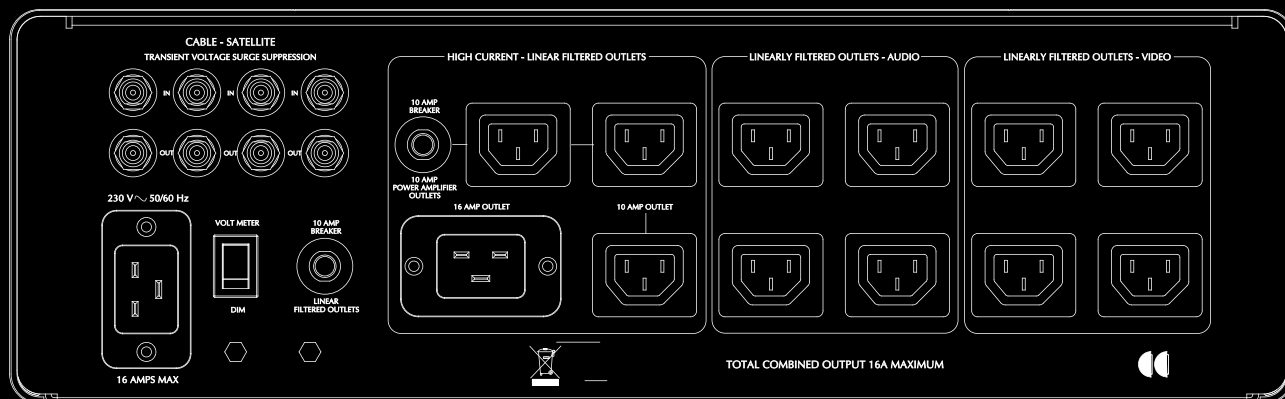
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## FEATURES

- Discrete Symmetrically Balanced Power with Dual Screen Technology cancels hum-inducing noise from audio and video
- Five discrete power banks eliminate inter-component interference and noise
- Power Factor Technology provides over 80A surplus current for power-starved amplifiers
- Linear Filtering Technology for unequalled audio / video clarity
- Virtually maintenance-free AC surge suppression
- Extreme Voltage Shutdown (EVS) guards against prolonged overvoltage conditions
- Zero ground contamination circuitry protects critical digital components
- 4 pairs of HD-ready cable / satellite isolated TVSS protected F-connectors
- 16A capacity

# SPR-16Ei

STABLE POWER AC VOLTAGE REGULATOR, 16A



With the SPR-20i's exclusive Stable Power AC Voltage Regulation Technology, home theaters are supplied with constant, virtually unwavering AC voltage. This assures trouble-free service for any environment suffering from unstable power.

The SPR-16E i's solid state multi-tap autoformer provides AC regulation for a continuous output of 230VAC (+/- 5.0V typically) with an input voltage range of 213VAC to 245VAC (the SPR-16E i will regulate voltages well beyond 213VAC to 245VAC, but not within 5.0VAC). This unit generates virtually no heat and produces none of the mechanical noise typical in inferior AC voltage regulators, making it ideal for use in critical listening environments. Further, our microprocessor-controlled, 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, then synthesizing an AC output signal.

The SPR-16E i also features Linear Filtering Technology for unsurpassed differential AC noise reduction, Series Multi-Stage Protection to provide virtually maintenance-free suppression from transient voltage surges and spikes, and Extreme Voltage Shutdown to guard against prolonged overvoltage conditions.

The SPR-16E i may be used in combination with a Furman IT-Reference 16 E i Discrete Symmetrical Power Conditioner, providing the most comprehensive AC power management solution available.



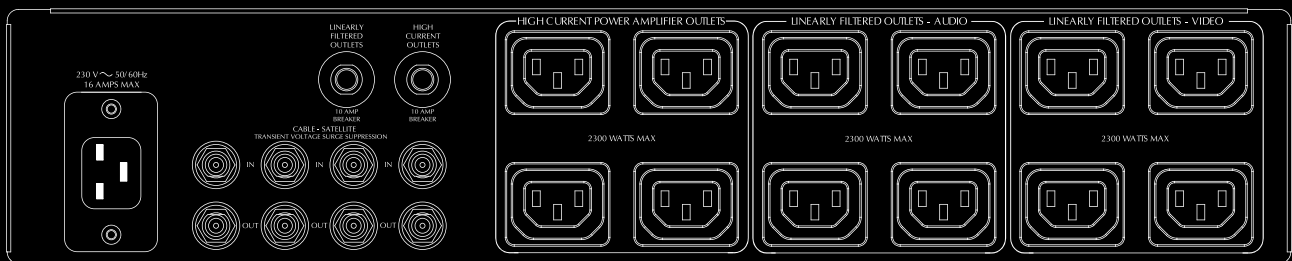
## FEATURES

- 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 provides maximum AC surge suppression
- Extreme Voltage Shutdown (EVS) guards against prolonged overvoltage conditions
- Zero ground contamination circuitry protects critical digital components
- Ultrasonic bi-filtering isolates digital/video circuits, analog components, and high-current components from one another
- Cool running, noise free technology allows placement in critical listening environments
- Laboratory precision grade voltmeter displays incoming voltage
- 4 pairs of HD-ready cable / satellite isolated TVSS protected F-connectors
- 16A RMS capacity



# ELITE-16 PF E i

ULTRA-LINEAR FILTERING AC POWER CONDITIONER, 16A



The Furman Elite-16 PF E i is engineered to provide today's home theater systems with clean, ultra-low noise AC power to assure maximum performance. The Elite 16 PF E i's Ultra-Linear Filtering reduces noise across an even greater bandwidth than Furman's Linear Filtering Technology - in fact, the Elite-16 PF E i is so substantial in its ability to unmask critical signal content, its performance is surpassed only by the Furman Reference Series.

The essence of the Elite-16 PF E i is Furman's unique Power Factor Technology. The Elite-16 PF E i has a current reserve of over 55 amps peak charge (4.5 amps RMS) for the most extreme peak power demands. This technology enables power amplifiers and powered subwoofers to operate at maximum

efficiency, reaching levels of performance previously unattainable. Furthermore, the Elite-16 PF E i's 16A capacity provides sufficient current for large power amplifiers and other current-hungry components.

The Elite-16 PF E i's dual retractable front panel LED lights provide ideal, discreet illumination to a rack or cabinet full of equipment.

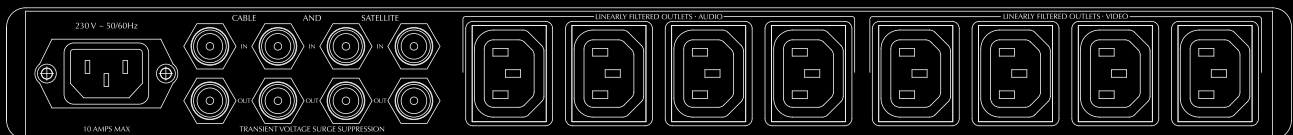


## FEATURES

- Power Factor Technology provides over 55 Amps peak charge surplus current for power-starved amplifiers
- Ultra-Linear Filtering Technology for unequaled audio and video clarity
- Series Multi-Stage Protection provides maximum AC surge suppression
- Extreme Voltage Shutdown (EVS) guards against prolonged overvoltage conditions
- Zero ground contamination circuitry protects critical digital components
- Ultrasonic bi-filtering isolates digital/video circuits, analog components, and high-current components from one another
- Retractable LED lamps illuminate a cabinet or rack full of equipment
- 4 pairs of HD-ready cable / satellite isolated TVSS protected F-connectors
- 16A capacity

# ELITE-10 E i

LINEAR FILTERING AC POWER CONDITIONER, 10A





The Furman Elite-10 E i packs Linear Filtering Technology, robust SMP protection, front panel pull-out rack lights, and a digital front panel voltmeter all in a convenient, slim package.

Furman's exclusive Linear Filtering Technology unveils the low-level signals masked by AC line noise. 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. The Elite-10 E i's Linear Filtering Technology dramatically reduces AC noise in a linear fashion across a very wide bandwidth.

The Elite-10 E i also features SMP surge protection, assuring the highest level of protection available. Furman's SMP has been tested with multiple 3000A/6000V pulses without sustaining any damage - well beyond the capabilities of a typical surge suppressor.

The front panel of the Elite-10 E i offers two retractable LED lamps for rack or cabinet illumination. These lamps are ideal for use in a home theater environment, allowing discreet

illumination of equipment when theater lights are off. The lights feature a dimmer knob and automatically switch off when pushed into the chassis. Also featured on the front panel is a laboratory-precision grade voltmeter which displays incoming line voltage.



## FEATURES

- Linear Filtering Technology (LiFT) for stunning audio / video clarity
- Series Multi-Stage Protection provides maximum AC surge suppression
- Extreme Voltage Shutdown (EVS) guards against prolonged overvoltage conditions
- Retractable LED lamps illuminate a cabinet or rack full of equipment
- Zero ground contamination circuitry protects critical digital components
- Ultrasonic bi-filtering isolates digital and video circuits from analog components
- Laboratory precision grade voltmeter displays incoming voltage
- 4 pairs of HD-ready cable / satellite isolated TVSS protected F-connectors

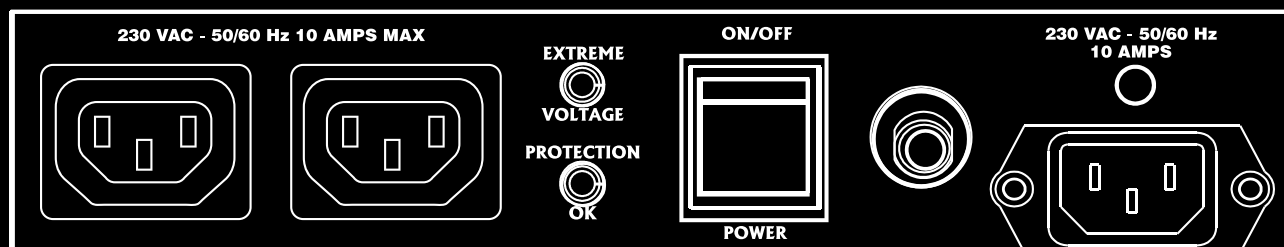
# AC-210E

COMPACT LINEAR FILTERING AC POWER CONDITIONER, 10A

SMP

LiFT

EVS



At only 45mm H x 127mm W x 216mm D, and weighing in at only 1.36kg, the AC-210E's compact, low-profile design makes it ideal for mounting to the back of a flat-screen television, to the top of a video projector, or anywhere that discretely located, remote power protection and purification are needed. Included mounting brackets make installation simple and easy.

The Furman AC-210E offers two outlets providing Linear Filtering Technology, Series Multi-Stage Protection, and Extreme Voltage Shutdown - the essential features of the larger Elite Series products.

When employing the AC-210E, connected equipment will reap the benefits of the most advanced surge and spike protection available, thanks to Furman's SMP and EVS circuitry. Additionally, Furman's Linear Filtering Technology smoothly reduces AC line noise to maximize performance of audio and video components.

The AC-210E is the perfect accessory for home theater installations that require advanced power conditioning in a discreet or remote location away from the main equipment rack.



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## FEATURES

- Series Multi-Stage Protection provides the highest level of protection available
- Linear Filtering Technology significantly reduces AC line noise
- Extreme Voltage Shutdown protects equipment from dangerous overvoltage conditions
- Zero ground contamination circuitry assures delivery of pure AC
- Compact chassis design allows for discrete, unobtrusive placement
- Included mounting brackets for easy installation.



Furman 220V-240V products ship with an IEC inlet with a removable IEC-to-SCHUKO power cord and IEC outlets. A wide variety of high quality adaptor cords are available to provide compatibility with various regional AC standards.

## IEC to IEC Adaptor Cords

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### ADP-10E1

To plug components with removable 10A IEC cords into Furman products with 10A IEC outlets. 10A Male IEC to 10A Female IEC, 1 meter long.

### ADP-10E2

To plug components with removable 10A IEC cords into Furman products with 10A IEC outlets. 10A Male IEC to 10A Female IEC, 2 meters long.

### ADP-16E2

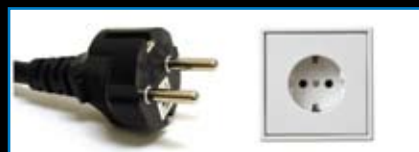
To plug components with removable 16A IEC cords into Furman products with 16A IEC outlets. 16A Male IEC to 16A Female IEC, 1 meter long.

## Power Cords (Western Europe) IEC / SCHUKO

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### ADP-IEC EURO

- To plug components with European SCHUKO plugs into Furman products with 10A IEC outlets. 10A Male IEC to Female SCHUKO, 0.1 meters long.



### SCHUKO-10

- For use with 10A Furman products with removable IEC power cord. 10A IEC Female to SCHUKO Male, 2.5 meters long

### SCHUKO-16

- For use with 10A Furman products with removable IEC power cord. 16A IEC Female to SCHUKO Male, 2.5 meters long

## Power Cords (Australia/New Zealand) IEC / Australian

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### ADP-AUS

- To plug components with Australian plugs into Furman products with 10A IEC outlets. 10A Male IEC to Female Australian, 0.1 meters long.



### AUS-10

- For use with 10A Furman products with removable IEC power cord. 10A IEC Female to Australian Male, 2.5 meters long

### AUS-15

- For use with 16A Furman products with removable IEC power cord. 15A IEC Female to Australian Male, 2.5 meters long.

## Power Cords (United Kingdom) IEC / UK

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### ADP-IEC UK

- To plug components with UK plugs into Furman products with 10A IEC outlets. 10A Male IEC to Female UK, 0.1 meters long.






### UK-10

- For use with 10A Furman products with removable IEC power cord. 10A IEC Female to 10A UK Male, 2.5 meters long.

### UK-16

- For use with 16A Furman products with removable IEC power cord. 16A IEC Female to 13A UK Male, 2.5 meters long.

						
		IT-Reference 16 E i	SPR-16 E i	Elite-16 PF E i	Elite-10 E i	AC-210 E
Current Capacity		16A	16A	16A	10A	10A
Outlets	DSBP + LiFT	8	-	-	-	-
	PF + LiFT	4	-	4	-	-
	SPR + LiFT	-	12	-	-	-
	LiFT	-	-	8	8	2
Non-Sacrificial Surge Suppression		Yes	Yes	Yes	Yes	Yes
Extreme Voltage Shutdown (EVS)		Yes	Yes	Yes	Yes	Yes
Retractable Front Panel LED Lights		No	No	Yes	Yes	No
Linear Filtering Technology (LiFT)		Yes (Ultra-LiFT)	Yes	Yes (Ultra-LiFT)	Yes	Yes
Ground Contamination Free Circuitry		Yes	Yes	Yes	Yes	Yes
Power Factor Technology (PF)		Yes (80A Peak)	No	Yes (55A Peak)	No	No
Stable Power Regulation (SPR)		No	Yes (230V)	No	No	Yes
Discrete Symmetrically Balanced Power (DSBP)		Yes	No	No	No	No
Width (mm)		432	432	432	432	127
Height (mm)		152	152	101,6	54,6	45
Depth (mm)		413	413	375	375	216
Rack Height (RU)		3RU	3RU	2RU	1RU	1/2RU
Weight (kg)		40	15,5	8,16	4,99	1,36



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