FURMAN®

Power Conditioning

PRO-SERIES 20 AMP POWER CONDITIONERS

20 AMP PRO SERIES

MODELS PM-PRO, PS-PRO, PL-PRO

FEATURES COMMON TO ALL MODELS

- 20 Amp (2400 Watt) rating handles even the largest amps
- Multiple levels of protection components can safely absorb large spikes and provide highly effective RF filtering — the most comprehensive protection available anywhere!
- Extreme Voltage Shutdown guards against destructive wiring faults
- Critical functions are monitored by a “smart” microprocessor; LED status indicators report on problems
- Precision magnetic circuit breakers (PL-PRO, PM-PRO only)
- Heavy duty 10 foot, 12 gauge line cord
- Eight widely-spaced, switched rear outlets and one unswitched front outlet

DESCRIPTION

The PRO Series are Furman’s top-of-the-line power conditioners. They provide the most complete and comprehensive protection from power line-related transient voltages, noise, and wiring faults available. Their many special features were designed specifically to provide maximum protection from the type of hazards faced by delicate digital pro audio and video equipment.

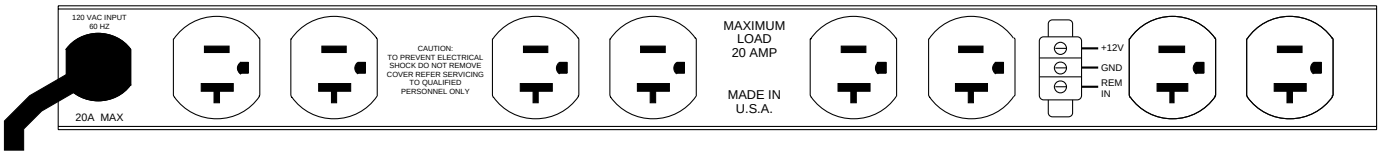
Power line disturbances are real, and they are inevitable. According to Consumer Reports (November, 1994), “One significant surge a day is the norm. High-exposure areas may experience perhaps a hundred smallish spikes a day.” Proper protection is essential for costly equipment, even more so if it is frequently moved from location to location. But there is a wide range of differences in the performance available from the protection products available.

What sets the PRO Series apart from other conditioners is the quantity, quality, and configuration of the suppression devices used. These include MOV’s, gas discharge tubes, fast-blow fuses, and high voltage inductors and capacitors. This unique combination can safely absorb and dissipate large spikes from nearby lightning strikes and other sources (up to 11,000 amps across any wiring mode — line-neutral, line-ground, or neutral-ground), as well as highly attenuate audible high frequency noise. Precise high-inrush magnetic circuit breakers avoid the false tripping often encountered with large reactive loads like power amps.

An additional feature, Extreme Voltage Shutdown, fights a hazard particularly common in the entertainment industry: wiring faults — for example, accidental connection to 220V. It senses voltages that are so high or low that operation would be impossible (under 80V or over 140V) and shuts the power down before damage can occur. LED status indicators (“Protection OK” and “Ground OK”) monitor the integrity of the protection devices and grounding, and report if the protection is compromised.

Furman Sound, Inc.● 1997 South McDowell Blvd.● Petaluma, CA 94954 USA
Phone: (707) 763-1010● Fax: (707) 763-1310● Web: http://www.furmansound.com

PS-PRO Rear View



PL-PRO and PM-PRO are similar except the terminal strip is not present.

THE FOUR PRO-SERIES MODELS

There are three rackmount PRO Series models. **The PL-PRO Power Conditioner/Light Module** has the familiar slide-out rack lights pioneered by Furman. It also provides an accurate, self-checking AC voltmeter that not only measures normal voltages, but also flashes eye-catching special pattern alerts for off-scale but not extreme conditions (80-90 or 130-140 volts). A new feature exclusive to the PL-PRO utilizes microswitches to turn each light tube off or on automatically when pushed in or pulled out. **The PM-PRO Power Conditioner/Monitor** is for applications where lights are not needed. It features the same AC voltmeter as the PL-PRO, and adds a true RMS-reading AC ammeter, which will give a reliable indication of current draw even for highly nonlinear loads like amplifiers and switching power supplies. The **PS-PRO Power Conditioner/Sequencer** is capable of powering up a rack full of equipment in a 3-step delayed sequence. The sequence is reversed for power-down. The sequence can be initiated with either momentary or maintained switches, locally or remotely. A duplex outlet is provided for each delay step. A front panel screwdriver adjustment sets the delay time. A locking switch with a removable key is provided for maximum security. The PS-PRO also contains special circuitry to detect additional wiring faults such as reversed hot and neutral, missing ground or neutral, etc. One or more PS-PROs may be installed in remote locations and operated via low-voltage wiring.

A fourth model (not shown in the photo), the **PowerPort Remote AC Power Controller**, is a half-rack or wall-mount unit that has all PRO Series protection features and is the basic 20 amp building block of a permanently wired, sequenced system that can be expanded to any size. Large installations drawing hundreds of amps can be accommodated by daisy-chaining as many PowerPorts as needed. PowerPort features are described in a separate data sheet.

All PRO Series rackmount models come with a ten foot, 12 AWG power cord, and have eight widely-spaced rear outlets that can accommodate bulky plug-mounted power supplies, as well as a front-panel unswitched outlet.

OPTIONS

- **"-G" Suffix:** provides "super spec", isolated ground 120V outlets for special applications. Please consult factory before ordering to determine suitability in your application.

Architects and Engineers Specifications

The Power Conditioners shall mount in a standard 19" rack, and shall occupy one rack unit ($1^3/_4$") of rack space.

There shall be at least eight switched outlets supplying conditioned power on the rear panel and one unswitched outlet on the front panel, with a front panel-mounted 20 amp, high-inrush magnetic circuit breaker rated for use as a master switch. No outlet shall receive power if the mains voltage is "extreme" (defined as under 80V or over 140V). Spikes shall be clamped to no more than 200 V peak in any mode (line to neutral, neutral to ground, or line to ground). MOV's for spike absorption shall be redundant in each mode, placed across the lines on both sides of the RF filter, and an additional device such as a gas discharge tube shall be placed across the hot-neutral mode to absorb spike remnants. Response time shall not exceed 1 nanosecond. The unit shall absorb a surge current of up to 11,000 amperes across any mode for 10 ms without damage. RF noise attenuation shall exceed 40 dB in both differential and common modes from 1 to 200 MHz. The AC cord shall be 12 AWG and ten feet long.

Where provided, voltmeters shall read from 90 to 128 volts in steps of two volts, and shall indicate marginal voltages with different, easily recognizable flashing patterns for below- and above-scale conditions. Ammeters shall read from 0 to 20 amps, in steps of two amps, and shall respond to RMS current. The meter segments shall be color coded, and of sufficient brightness to be readable in a dark area from a distance of 20 feet. The meters shall read whenever the unit is plugged into the AC power line. Where rack lights are included, a dimmer control shall be provided, and the lights shall turn off when pushed in.

The units shall be the Furman PRO-Series Power Conditioners.

Three Year Warranty

The Furman PRO-Series is protected by a three year limited warranty covering defects in materials and workmanship.

PRO-SERIES SPECIFICATIONS

Current rating:	20 Amps (2400 Watts at 120 VAC)
Input Voltage:	85 to 264 VAC
Meter Accuracy:	Voltmeter: ±2 VAC; Ammeter: ±2 amps, calibrated with trimpot adjustments
Spike Protection Modes:	Line to neutral, neutral to ground, line to ground
Spike Clamping Voltage:	TVSS rating 400V peak, L-N, N-G, L-G (tested to UL 1449)
Response time:	1 nanosecond
Maximum surge current:	11,000 amps (8 x 20mS pulse)
Maximum spike energy:	550 joules total
Noise attenuation:	Differential mode: Greater than 40 dB; Common mode: greater than 60 dB; both 1 to 200 MHz
Mechanical:	Dimensions: 1.75" H x 19" W x 10" D. Weight: 6 lbs (2.7 kg). Construction: Steel chassis, zinc chromate plating; .125" brushed and black anodized aluminum front panel; glass epoxy printed circuit boards.
Power Consumption:	PM-PRO, PS-PRO: 6 watts PL-PRO: 20 watts
Safety Agency Approvals:	UL, C-UL, listed.

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The Furman PRO-Series is manufactured in the United States of America.