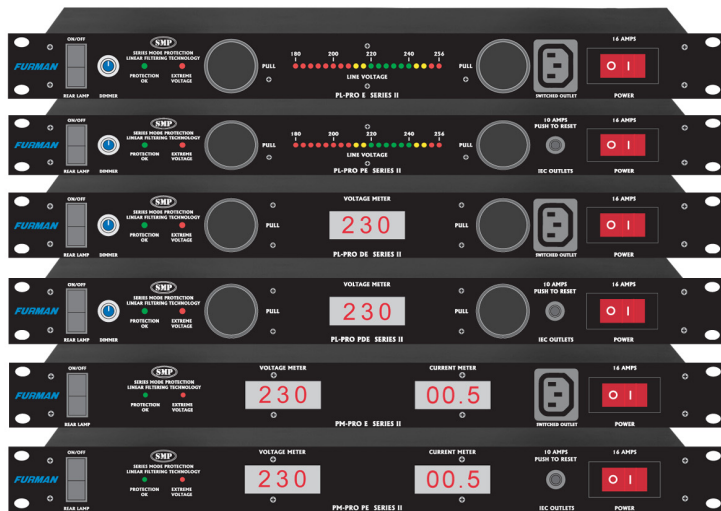


**FURMAN**  
PURIFY YOUR POWER

the 16 amp  
**series II**  
power conditioners



**Models:**  
PL-PRO E II  
PL-PRO PE II  
PL-PRO DE II  
PL-PRO PDE II  
PM-PRO E II  
PM-PRO PE II

# SERIES II 16 AMP POWER CONDITIONERS

## Furman Series II Features

- SMP+ : advanced surge protection, extreme voltage shutdown, ultra-low clamping voltage
- LiFT (Linear Filtering Technology) with zero ground contamination
- E Models have 10 IEC rear panel outlets and one front panel outlet
- PE models have 5 IEC rear panel outlets with a front panel circuit breaker, and 3 PowerCon rear panel outlets
- BNC connector on the rear panel allows you to attach any standard (12VAC 0.5 amp) gooseneck lamp to illuminate the rear of your rack
- 16 amp rating, with circuit breaker
- Three year limited warranty

## PL-PRO E & PE II Additional Features

- Two retractable, long-life, low-heat LED light fixtures with dimmer control for rack illumination



PL-PRO E II front panel

- Front panel bar graph meter displays incoming line voltages from 180 to 256 volts ( $\pm 4$  V)

## PL-PRO DE & PDE II Additional Features

- Two retractable, long-life, low-heat LED light fixtures with dimmer control for rack illumination



PL-PRO DE II front panel

- Laboratory precision Digital Voltmeter displays incoming line voltage ( $\pm 1.5$  VAC)

## PM-PRO E & PE II Additional Features

- Laboratory precision Digital Voltmeter displays incoming line voltage ( $\pm 1.5$  VAC)



PM-PRO E II front panel

- True RMS Current Meter displays power draw ( $\pm 0.5$  amp)

# SERIES II 16 AMP POWER CONDITIONERS

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## INTRODUCTION

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Thank you for purchasing a Furman Series II Power Conditioner, and congratulations on choosing the best protection for your electronics. Series II Power Conditioners feature Furman's revolutionary SMP+ circuitry, as well as our exclusive Linear Filtering Technology (LiFT). Together, SMP+ and LiFT comprise what is, without question, the world's most advanced and comprehensive transient voltage surge suppressor / conditioner.

## SMP+

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Furman's SMP+ surge suppression incorporates multiple protection technologies including MOV's along with a powerful filter to remove noise from the AC line, making it the most advanced and reliable power conditioning technology available. Unique to Furman's SMP+ is its unparalleled clamping voltage. While other designs clamp at voltages that are well above 450 Vpk, SMP+ clamps at 376 Vpk, (266 VAC RMS). This unprecedented level of protection is only available with Furman's SMP+ technology. Additionally, Furman's trusted over-voltage circuitry protects against those all-too-frequent accidental connections

to 380 VAC, by shutting off the incoming power until the over-voltage condition is corrected.

## LiFT (Linear Filtering Technology)

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Unfortunately, traditional AC filter / conditioners have been designed for unrealistic laboratory conditions. Prior technologies, whether multi-pole filter or conventional series mode, could actually harm audio and video performance more than they helped, due to the resonant peaking of their antiquated, non-linear designs. Under certain conditions, these designs could actually *add* more than 10 dB of noise to the incoming AC line! Worse still, digital data loss, the need to re-boot digital pre-sets, or destruction of digital converters are frequently caused by excessive voltage spikes and AC noise contaminating the equipment ground. Furman's SMP+ with LiFT takes another approach, ensuring optimal performance with linear filtering and zero leakage to ground.

## SAFETY INFORMATION

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To obtain best results and maximum protection from your Furman Series II Power Conditioner, please read this manual carefully before use.

# SERIES II 16 AMP POWER CONDITIONERS

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## WARNING

To reduce the risk of electrical shock, do not expose this equipment to rain or moisture. Dangerous high voltages are present inside the enclosure. Do not remove the covers. Refer servicing to qualified personnel only. The lightning flash with an arrowhead symbol is intended to alert all users to the presence of dangerous un-insulated voltages within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

## IMPORTANT SAFETY INSTRUCTIONS

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(Please read prior to installation)

1. Read all safety and operating instructions before installing your Series II unit. Retain this manual for future reference.
2. Do not use your Series II unit near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, swimming pool, or in a wet basement.
3. Do not operate your Series II unit near radiators, heat registers, stoves, or other heat sources.
4. Connect your PL-PRO E II, PL-PRO DE II, or PM-PRO E II only to a 220 – 240 VAC, 50 Hz, 16 amp grounded electrical outlet. Do not defeat the ground or change the polarization of the power plug.
5. Do not make or break connections to the PowerCon outlets of “P” models while the unit is switched on.
5. Route the power cord and other cables where they are not likely to be walked on, tripped over, or stressed. Pay particular attention to the condition of the plugs, and to cords and cables at the point where they exit your Series II unit. Replace damaged cords and cables immediately to prevent risk of fire or injury.
6. Clean your Series II unit with a damp cloth only. Do not use solvents or abrasive cleaners. Never pour liquid on or into the unit.
7. Your Series II unit should be serviced by qualified service personnel if:
  - The power supply cord or the plug has been frayed, kinked, or cut.
  - Objects have fallen or liquid has spilled into the unit.
  - The unit has been exposed to rain or other moisture.
  - The unit does not appear to operate normally.
  - The “Protection OK” indicator is not lit.
  - The unit has been dropped, or the enclosure has been damaged.
  - The retractable LED lights have failed (*not applicable to the PM-PRO E II*).
8. Your Series II unit requires that a safety ground be present for proper operation. Any attempt to operate the unit without a safety ground is considered improper operation and could invalidate the warranty.
9. Do not attempt to service your Series II unit beyond what is described in this manual. All other servicing should be referred to qualified service personnel.

# SERIES II 16 AMP POWER CONDITIONERS

## ADDITIONAL FEATURES

All PL-PRO Series II models include an 8 foot, 1.5mm x 3 gauge heavy-duty power cable. A rear mounted BNC jack accepts any standard (12 VAC 0.5 amp) gooseneck lamp for rear rack illumination.

### PL-PRO SERIES II E, PE, DE & PDE

These models feature LED rack lights which produce virtually no heat and provide an extremely long life span. A dimmer control for the rack lights allows the user to adjust the level of illumination or simply switch the lights off. A rear mounted BNC jack accepts any standard (12 VAC 0.5 amp) gooseneck lamp for illumination at the rear of the rack.



PL-PRO PE II

### PL-PRO SERIES II E & PE

These models offer a 20-segment LED bar graph meter that displays incoming voltage between 180 and 256 volts in 4-volt steps. The normal range voltages are indicated in green, with moderately and extremely high or low voltages in yellow and red respectively. The voltmeter's accuracy is  $\pm 4$  volts. It can easily be re-calibrated, if necessary.



PL-PRO PDE II

### PL-PRO SERIES II DE & PDE

These models offer a laboratory-precision digital meter that displays incoming voltage in 1-volt steps. The voltmeter's accuracy is  $\pm 1.5$  volt.

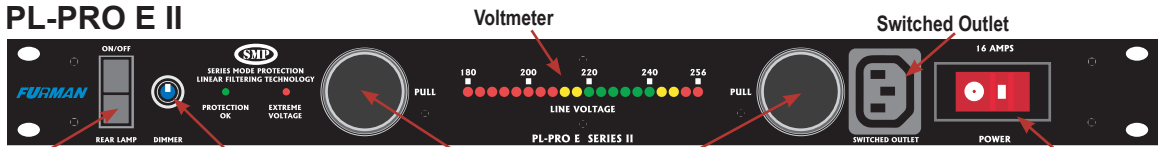


PM-PRO PE II

### PM-PRO SERIES II E & PE

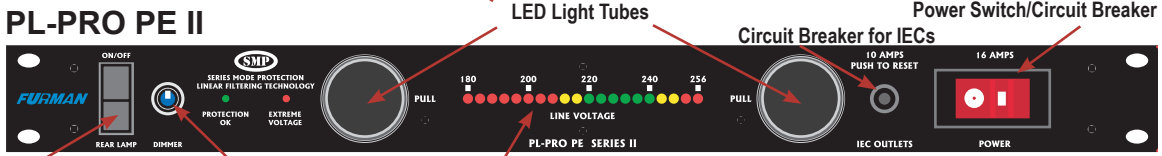
These models include two laboratory-precision digital meters: a voltage meter that displays incoming voltage in 1-volt steps, and a true RMS current meter that measures the AC power draw within 0.5 amp.

## PL-PRO E II



Rear Light Switch    Light Tube Dimmer

## PL-PRO PE II



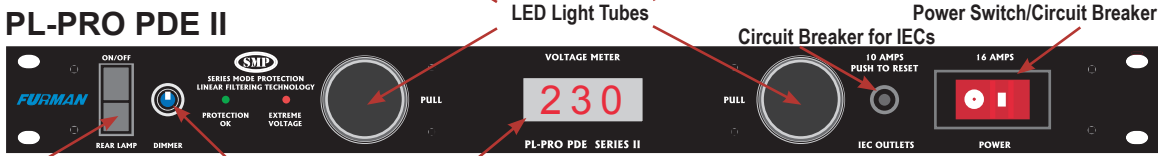
Rear Light Switch    Light Tube Dimmer

## PL-PRO DE II



Rear Light Switch    Light Tube Dimmer

## PL-PRO PDE II



Rear Light Switch    Light Tube Dimmer

## PM-PRO E II



Rear Light Switch

## PM-PRO PE II



Rear Light Switch

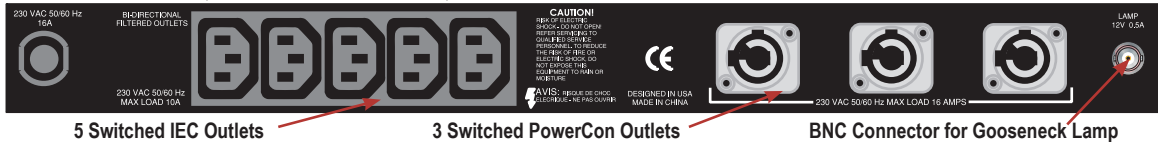
## PL-PRO E II, PL-PRO DE II, PM-PRO E II



10 Switched IEC Outlets

BNC Connector for Gooseneck Lamp

## PL-PRO PE II, PL-PRO PDE II, PM-PRO PE II



5 Switched IEC Outlets

3 Switched PowerCon Outlets

BNC Connector for Gooseneck Lamp

# SERIES II 16 AMP POWER CONDITIONERS

## OPERATION

### Retractable Rack Lights, Rear Panel Lamp and Dimmer Control:

The PL-PRO E II, PL-PRO PE II, PL-PRO DE II and PL-PRO PDE II include a dimmer control for the two retractable front panel light tubes. Turn it clockwise to increase brightness of both light fixtures, or counterclockwise to decrease brightness. Turning the dimmer fully counterclockwise when the lights are not in use, will maximize the life of the LEDs: however, this is not absolutely necessary. Whether the light tubes are extended or flush with the front panel, our high-efficiency, full-spectrum LEDs generate no appreciable heat.

All Series II units feature a rear BNC socket which will accept any 12 VAC 0.5A gooseneck lamp assembly, (such as the Furman GN-LED or GN-I). Simply slide the BNC plug over the socket and rotate clockwise until the connector snaps into the locked position. The rear rack

lamp can be powered on or off with the rear light power switch located on the far left of the front panel.

Series II front panel LED lamps must be replaced by qualified Furman service personnel.

### Multi-Segment LED voltmeter: (PL-PRO E II and PL-PRO PE II)

This three-color, 20-LED bar graph is an accurate, self checking AC voltmeter that continually measures normal voltages. The meter reads from 180 to 256 volts in 4 volt increments. Voltages within the normal range are indicated in green, with moderate and extremely high or low voltages in yellow and red respectively. The voltmeter warns of abnormal conditions by flashing the LEDs in one of three special patterns.

1. If only the single leftmost LED (beneath the 180V mark) flashes, the input voltage is marginally low.

### Multi-Segment LED Voltmeter Readings

Mains Vltg.	Voltage Status	Voltmeter Reading	Outlets
166-179	Low Marginal	The LED beneath the 180V mark flashes	ON
180-211	Low	Meter Reads in Low Red	ON
212-219	Medium Low	Meter Reads in Low Yellow	ON
220-240	Normal	Meter Reads in Green	ON
241-248	Medium High	Meter Reads in High Yellow	ON
249-256	High	Meter Reads in High Red	ON
257-265	High Marginal	All Meter LEDs Flash	ON
Above 280	Extreme (Shutdown)	Meter off—Extreme Voltage LED illuminates	OFF

*Note: UK version Shutdown threshold is 260 V*

# SERIES II 16 AMP POWER CONDITIONERS

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2. If all of the LED's on the voltmeter flash, the input voltage is marginally high. The PL-PRO's outlets will remain powered unless the incoming voltage rises above the Extreme Voltage Shutdown cutoff voltage of 270 – 280 volts (UK version: 255 – 260 V).
3. If none of the LED's on the voltmeter are lit, and the Extreme Voltages LED indicator is illuminated, then the PL-PRO Series II has shut down power to its outlets because the input voltage is in excess of 280 volts (UK version: 260 V).

## **Digital Voltmeter:**

### **(PL-PRO DE II, PL-PRO PDE II, PM-PRO E II and PM-PRO PE II)**

Furman's laboratory-precision AC digital voltmeter continually measures incoming voltages, with a typical tolerance of +/-1.5VAC. It should be noted that the voltage is read at the AC mains input. No adjustment should be necessary on these units.

## **Digital Current Meter:**

### **(PM-PRO E II and PM-PRO PE II)**

Furman's laboratory-precision AC digital current meter continually measures the total circuit AC load, with a typical tolerance of  $\pm 0.5$  amp. Because these meters feature true RMS technology, the current readings are accurate regardless of load conditions (capacitive, inductive or resistive).

**NOTE:** Your Series II Power Conditioner does not compensate for high or low line voltage. If you frequently move your rack to different locations, derive power from generators, use long extension cords, travel internationally, or are in an area prone to brownouts, you may benefit from the use of one of Furman's AC Line Voltage Regulators.

## **On/Off Circuit Breaker:**

This 16 amp capacity magnetic circuit breaker switch is specifically designed to stand up to the enormous high inrush current demands of many power amplifiers. Additionally, the switch is shielded from accidental power disconnection with a hinged cover.

## **Extreme Voltage Shutdown Indicator:**

This LED is normally off. It monitors a hazard common in the entertainment industry: wiring faults – for example, accidental connection to 380 VAC where 240VAC is expected. The Series II 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 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 280V, it will shut off power to the outlet and the Extreme Voltage LED will light.



# SERIES II 16 AMP POWER CONDITIONERS

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## **Protection OK Indicator:**

Although the Furman SMP+ circuit assures virtually impregnable protection against transient voltage spikes and surges, Nature occasionally creates electrical forces that are beyond the capacity of *any* TVSS device to absorb without incurring some degree of damage. In the rare instance that this occurs, the green "Protection OK" LED indicator located on your front panel will dim. Some level of protection from voltage surges will remain, but the clamping voltage rating will be compromised. The unit must be returned to Furman Sound or to 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 until the operator manually turns the unit off, then on again. Before turning the unit back on, always check the source of the problem, and change the AC source if necessary.

## **TROUBLE SHOOTING GUIDE**

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**1.) Symptom:** No power to the AC outlets.

**Possible Cause:** Circuit breaker switch has tripped to the off position, due to excessive load.

**Action Needed:** Remove one piece of equipment from the Series II unit, open the hinged switch / breaker cover, and reset the switch to the on position.

**2.) Symptom:** No power to the AC outlets, "Protection OK" indicator is not lit.

**Possible Cause:** Either the AC outlet to which your Series II device is connected has no AC voltage present, or the unit has been subjected to a *sustained* voltage in excess of 400 Volts.

**Action Needed:** Plug the Series II unit into an AC receptacle where AC voltage is present. If the problem persists, the protection circuit may be damaged, and require factory service.

**3.) Symptom:** Extreme Voltage indicator lit.

**Possible Cause:** Input voltage is above 270 – 280 volts, causing power to the unit's outlets to be shut down. Additionally, at turn on, the unit will not allow AC voltage to reach the outlets.

**Action Needed:** Correct the line voltage, then; turn the unit on. Consider installing a Furman voltage regulator.

## DEFINITIONS

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**SPIKE:** A pulse of energy on the power line. Spikes can have voltages as high as 6000 volts. Though they are usually of very short duration, their energy can be considerable, enough to damage sensitive solid-state components in audio and computer equipment. Spikes can also foul switch contacts and degrade wiring insulation. They are an unavoidable component of electric power. They are caused unpredictably by electric motors (on the premises or outside) switching on or off, or by utility company maintenance operations, lightning strikes and other factors. Spikes (also called surges or transients) are absorbed by special components in the SMP+ circuitry to maintain safe voltage levels and protect your equipment.

**RFI/EMI INTERFERENCE:** Noise from RFI (Radio Frequency Interference) or EMI (Electro Magnetic Interference) involves lower voltages and less energy than is found in spikes, but it is continuous rather than transient in nature. It is not likely to cause damage, but it can certainly be annoying, producing static in audio circuits, "snow" on video screens, or garbled data in computers. Noise can be introduced into AC lines by nearby radio transmitters, certain kinds of lighting, electric motors, and other sources. Because noise occurs at higher frequencies than the 50 or 60 Hz AC line, it can be effectively reduced by low-pass filters.

## THREE YEAR LIMITED WARRANTY

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Furman Sound, Inc., having its principal place of business at 1997 South McDowell Blvd., Petaluma, CA 94954 ("Manufacturer") warrants its 16 amp Series II Power Conditioners (the "Product") as follows:

Manufacturer warrants to the original Purchaser of the Product that the Product sold hereunder 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 Product does not conform to this Limited Warranty during the warranty period (as herein above specified), Purchaser shall notify Manufacturer in writing of the claimed defects. If the defects are of such type and nature as to be covered by this warranty, Manufacturer shall authorize 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 via the mailed in warranty card or on-line website registration. Shipping charges to the Furman factory or to an authorized repair location must be prepaid by the Purchaser of the product.

## SERIES II 16 AMP POWER CONDITIONERS

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Manufacturer shall, at its own expense, furnish a replacement Product or, at Manufacturer's option, repair the defective Product. Return shipping charges back to Purchaser will be paid by Manufacturer.

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. Manufacturer does not warrant against damages or defects arising out of improper or abnormal use of handling of the Product; against defects or damages arising from improper installation, against defects in products or components not manufactured by Manufacturer, or against damages resulting from such non-Manufacturer-made products or components. This warranty shall be cancellable by Manufacturer at its sole discretion if the product is modified in any way without written authorization from Furman Sound. 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 Manufacturer.

THIS WARRANTY IS EXCLUSIVE. The sole and exclusive obligation of Manufacturer shall be to repair or replace the defective Product in the manner and for the period provided above. Manufacturer shall not have any other

obligation with respect to the Products 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 Manufacturer be liable for incidental, special, or consequential damages. Manufacturer'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 Manufacturer 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.

## S E R V I C E

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Before returning any equipment for repair, please be sure that it is adequately packed and cushioned against damage in shipment, and that it is insured. We suggest that you save the original packaging and use it to ship the product for servicing. Also, please enclose a note giving your name, address, phone number and a description of the problem. NOTE: All equipment being returned for repair must have a Return Authorization (RA) Number. To get an RA Number, please call the Furman Service Department: +1 (707) 763-1010, ext. 121. Please display your RA Number prominently on the front of all packages.

## SPECIFICATIONS

Current rating:  
16 amps

Operating Voltage:  
180 to 280 VAC (UK version, 260 VAC)

Over Voltage Shutdown:  
280 VAC typically (UK version, 260 VAC)

Voltmeter Accuracy:  
PL-PRO E II / PE II:  $\pm 4$  VAC, calibrated with internal  
trimpot adjustments  
PL-PRO DE II / PDE II & PM-PRO E II / PE II:  $\pm 1.5$  VAC

Current Meter Accuracy:  
PM-PRO E II / PE II:  $\pm 0.5$  amp

Spike Protection Modes:  
Line to neutral, zero ground leakage

Spike Clamping Voltage:  
376 Vpk (266 VAC RMS)

Response time:  
1 nanosecond

Maximum surge current:  
6,500 amps

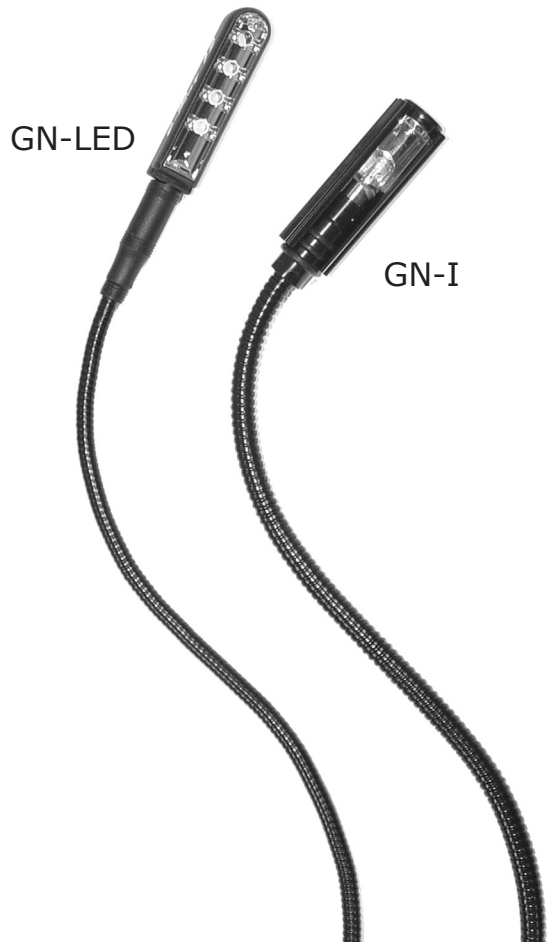
Noise attenuation:  
10 dB @ 10 kHz  
40 dB @ 100 kHz  
100 dB @ 10 MHz  
Linear attenuation curve from 0.05 - 100 ohms  
line impedance

Mechanical:  
Dimensions: 1.75" H x 19" W x 10.5" D.  
Weight: 11 lbs (5 kg).  
Construction: Steel chassis, .125" brushed and black anod-  
ized aluminum front panel; glass epoxy printed circuit boards

Power Consumption:  
12 watts

Safety Agency Listings:  
CE

**Make sure to pick up one of Furman's goose-neck lights – the perfect accessory for your Series II Power Conditioner.**



# FURMAN

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