PL-PRO, PL-PRO-E SPECIFICATIONS

Note: Where different, PL-PRO-E specs are in parentheses.

Current rating: 20 Amps, 2400 watts at 120 VAC
(16 Amps, 3600 watts at 230 VAC)

Input Voltage Range: 0 to 280 VAC without damage

Meter Accuracy:
Voltmeter: ± 2 (+4) VAC; Ammeter: ± 2 amperes, calibrated with trimpot adjustments

Spike Protection Modes:
Line to neutral, neutral to ground, line to ground

Clamping Voltage, all modes:
TVSS rating 400V peak, L-N, L-G, N-G, tested to UL 1449 (TVSS rating 400V peak, L-N; 680V peak, L-G, N-G)

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

Dimensions: 1.75” (4.45 cm) H x 19” (48.25 cm) W x 8” (25 cm) D.

Weight: 6 lbs (2.7 kg).

Construction:
Steel chassis, zinc chromate plating;
brushed and black anodized aluminum
front panel; glass epoxy printed circuit boards.

Power consumption: 32 watts

Safety Information:
PL-PRO: UL listed. CUL listed.
PL-PRO-E: CE

Options:
“-G” Suffix (PL-PRO only): provides “super spec”, isolated ground 120V outlets for special applications. Please consult factory before ordering to determine suitability in your application.

The Furman PL-PRO is made in the U.S.A.
**Other Furman Products**

### Power Conditioning & Distribution

- **PL-8, PL-PLUS** Power Conditioner & Light Module, 15A
- **PL-TUNER** Power Conditioner/Instrument Tuner, 15A
- **PLH-1S** Power and Light Center, 15A
- **PM-8** Power Conditioner/Monitor, 15A
- **PM-PRO** Power Conditioner/Monitor, 20A
- **PS-8, PS-8R** Power Conditioner/Sequence, 15A
- **PS-PRO** Power Conditioner/Sequence, 20A
- **PowerLink** Remote AC Power Sequence Controller
- **PowerPort** Remote AC Power Controller
- **MiniPort-15** Power Relay, 15A
- **MiniPort-20** Power Relay, 20A
- **MiniPort-30** Power Relay, 30A
- **MiniPort-15Q** Power Relay for Quad Box Mount, 15A
- **MiniPort-20Q** Power Relay for Quad Box Mount, 20A
- **RS-1** System Control Panel, Maintained Switching
- **AR-1215** AC Line Voltage Regulator, 15A, 120V
- **AR-1230** AC Line Voltage Regulator, 20A, 120V
- **AR-1230** AC Line Voltage Regulator, 30A, 120V
- **AR-1220** AC Line Voltage Regulator, 20A, 120/200V
- **AR-1230** AC Line Voltage Regulator, 30A, 220/230/240V
- **AR-2330** AC Line Voltage Regulator, 30A, 240/230/220V, N. America Use
- **AR-PRO** AC Line Voltage Regulator, 30A, 120V, Worldwide Use
- **BP-1000** On-Line Uninterruptible Power Supply, 1 KVA
- **ACD-100** Power Distro, 100A
- **ASD-120** Sequenced Power Distro, 120A
- **IT-1210** Isolation Transformer, Balanced AC Power, 10A
- **IT-1220** Isolation Transformer, Balanced AC Power, 20A
- **IT-1230** Isolation Transformer, Balanced AC Power, 30A
- **PlugLock™** Locking Outlet Strip
- **PGP-20** PlugLock-PRO Locking Outlet System, 20A
- **PGP-60** PlugLock-PRO Locking Outlet System, 60A
- **PGP-S** Remote Power Switcher, 60A

### Audio Signal Processing

- **PQ-3 Reissue** Parametric Equalizer, Instrument Preamp
- **PQ-4** Parametric Equalizer, 4 band
- **Q-151, Q-152** Dual 15-Band Graphic Equalizer
- **Q-301, Q-302** 30-Band Graphic Equalizer
- **Q-602** Dual 30-Band Graphic Equalizer
- **PUNCH-10** Base Enhancement System
- **X-312** 12 dB Crossover
- **X-324** 2-Way/3-Way 24 dB Crossover
- **X-424** 3-Way/4-Way 24 dB Crossover
- **X-624** 4-Way 24 dB Crossover
- **C-132** Compressor/Limiter
- **LC-6** Stereo Compressor/Gate
- **SP-20A** Stereo Half Rack Power Amp, 20W per channel
- **HA-6A** Headphone/Monitor Amp
- **HR-2** Headphone Passive Remote Box
- **HDS-6** Headphone Distribution System
- **HR-6** Personal Headphone Mixer for use with HDS-6
- **PB-48** 48-Point Patch Bay with TRS Connectors
- **PB-48D** 48-Point Patch Bay with TRS and D-Sub Connectors
  - (Full range of patch cords also available)
- **MM-3** Three Input Mic Mixer
- **MM-4A** 4 x 1 Rack-Mount Mixer
- **MM-8A** 4 x 2 Rack-Mount Mixer
- **SM-3** Stereo Mixer with Ducking
- **IP-8** Iso-Patch, Isolated Patch Bay, 8 channel
- **IP-2, IP-2B** Iso-Patch, Dual Isolator, 2 channel
- **SRM-80** Signal Router/Monitor
- **VU-40** System Monitor (Power/VU Meter)
- **SC-1, 2** Security Covers

Please contact us by phone, fax or e-mail for a free copy of our latest color catalog.
Three Year Limited Warranty

*Important Note:* To be sure of obtaining full protection under the terms of the Limited Warranty in case your ownership documents are lost, please fill out and return the Warranty Registration Card immediately. Please verify that the serial number shown on the Warranty Card matches the serial number on your unit.

The Furman PL-PRO is warranted against failures due to defective parts or faulty workmanship for a period of three years after delivery to the original owner. During this period, Furman will make any necessary repairs without charge for parts or labor. Shipping charges to the factory or repair station must be prepaid by the owner; return shipping charges (via UPS Ground) will be paid by Furman.

This warranty applies only to the original owner and is not transferable. Also, it does not apply to repairs done other than by the Furman factory or Authorized Repair Stations.

This warranty shall be cancellable by Furman at its sole discretion if the PL-PRO unit has been subjected to physical abuse, has been operated without a proper safety ground, or has been modified in any way without written authorization from Furman. Furman's liability under this warranty is limited to repair or replacement of the defective unit.

Furman will not be responsible for incidental or consequential damages resulting from the use or misuse of its products. Some states do not allow the exclusion of incidental or consequential damages, so the above limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Warranty claims should be accompanied by a copy of the original purchase invoice showing the purchase date (if a Warranty Registration Card was mailed in at the time of purchase, this is not necessary). Before returning any equipment for repair, please read the important information on service below.

Service

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: (707) 763-1010, ext. 40. Please display your RA Number prominently on the front of all packages.

Safety Information

To obtain best results from your Furman PL-PRO, please be sure to read this manual carefully before using it.

**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. Other than the light bulbs, there are no user serviceable parts inside. Refer servicing to qualified personnel only.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

Important Safety Instructions

Please read prior to installation

1. Please read and observe all of the safety and operating instructions before the PL-PRO is operated. Retain these instructions for future reference.

2. The PL-PRO should not be used near water — for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, near a swimming pool, etc.

3. The PL-PRO should be situated so that its location and position do not interfere with its proper ventilation. For example, the PL-PRO must not be placed on a rug, bed, sofa, or similar surface which impedes airflow across the chassis.

4. Do not place the PL-PRO near heat sources such as radiators, heat registers, stoves, or other appliances that produce heat.

5. The PL-PRO should only be connected to a 120 VAC, 60 Hz, 20 amp grounded electrical outlet. Outlets wired for 20 amps may be identified by the T-shaped socket opening that accepts the perpendicular blades of the PL-PRO’s power plug. If you don’t have a 20 amp outlet available, have one installed by a qualified electrician. Do not defeat the ground or polarization of the power plug.

6. Route the power cord and other cables so that they are not likely to be walked on, tripped over, or stressed. Pay particular attention to condition of cords and
cables at plugs, and the point where they exit from the PL-PRO. To prevent risk of fire or injury, damaged cords and cables should be replaced immediately.

7. Clean the PL-PRO with a damp cloth only. Do not use solvents or abrasive cleaners. Never pour any liquid on or into the PL-PRO.

8. When left unused for a long period of time, the power cord of the PL-PRO should be unplugged from the outlet.

9. The PL-PRO should be serviced by qualified service personnel when:
   a. The power supply cord or the plug has been frayed, kinked, or cut.
   b. Objects have fallen or liquid has spilled into the unit.
   c. The PL-PRO has been exposed to rain or other moisture.
   d. The PL-PRO does not appear to operate normally or exhibits a marked change in performance.
   e. The PL-PRO has been dropped, or the enclosure damaged.

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

11. Light bulbs are the only user-serviceable parts in the PL-PRO. Instructions for replacing them are on pages 6-7. The light tubes and end caps become quite warm to the touch in normal operation. To avoid burning your fingers, allow the cap to cool completely before unscrewing it. If you find that the heat from the tubes is excessive, try reducing the setting of the dimmer knob.

12. Do not attempt to service the PL-PRO beyond what is described in this manual. All other servicing should be referred to qualified service personnel.

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### Power Status LEDs

The PL-PRO’s status LEDs inform you of abnormal conditions at a glance:

<table>
<thead>
<tr>
<th>Symptom:</th>
<th>PROTECTION OK Indicator not lit.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible Cause:</td>
<td>Protection devices are damaged.</td>
</tr>
<tr>
<td>Action Needed:</td>
<td>Factory service.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Symptom:</th>
<th>GROUND OK Indicator not lit.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible Cause:</td>
<td>No building ground, bad outlet.</td>
</tr>
<tr>
<td>Action Needed:</td>
<td>Locate good ground, run ground wire.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Symptom:</th>
<th>All voltmeter LEDs are flashing.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible Cause:</td>
<td>PL-PRO is receiving 130-140 volts. (If only the LED under the 90V mark is flashing, PL-PRO is receiving 80-90V).</td>
</tr>
<tr>
<td>Action Needed:</td>
<td>Correct the line voltage. Consider installing a Furman voltage regulator.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Symptom:</th>
<th>EXTREME VOLTAGE Indicator flashing.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible Cause:</td>
<td>Input voltage is below 80 or above 140 volts, causing power to the PL-PRO’s outlets to be shut down.</td>
</tr>
<tr>
<td>Action Needed:</td>
<td>Correct the line voltage. Consider installing a Furman voltage regulator.</td>
</tr>
</tbody>
</table>

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### Voltmeter Displays

The PL-PRO informs you of voltage problems at a glance. The following chart summarizes how the PL-PRO’s voltmeter responds to input voltages from extremely low to extremely high.

<table>
<thead>
<tr>
<th>Mains Vltg.</th>
<th>Voltage Status</th>
<th>PL-PRO Voltmeter Reading</th>
<th>Outlets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 80V</td>
<td>Extreme (Shutdown)</td>
<td>Meter off—Extreme Voltage LED flashes</td>
<td>OFF</td>
</tr>
<tr>
<td>80-90</td>
<td>Low Marginal</td>
<td>The LED beneath the 90V mark flashes</td>
<td>ON</td>
</tr>
<tr>
<td>90-104</td>
<td>Low</td>
<td>Meter Reads in Low Red</td>
<td>ON</td>
</tr>
<tr>
<td>106-108</td>
<td>Medium Low</td>
<td>Meter Reads in Low Yellow</td>
<td>ON</td>
</tr>
<tr>
<td>110-120</td>
<td>Normal</td>
<td>Meter Reads in Green</td>
<td>ON</td>
</tr>
<tr>
<td>122-124</td>
<td>Medium High</td>
<td>Meter Reads in High Yellow</td>
<td>ON</td>
</tr>
<tr>
<td>126-128</td>
<td>High</td>
<td>Meter Reads in High Red</td>
<td>ON</td>
</tr>
<tr>
<td>130-140</td>
<td>High Marginal</td>
<td>All Meter LEDs Flash</td>
<td>ON</td>
</tr>
<tr>
<td>Above 140</td>
<td>Extreme (Shutdown)</td>
<td>Meter off—Extreme Voltage LED flashes</td>
<td>OFF</td>
</tr>
</tbody>
</table>
Effects of Lightning

Lightning is a natural phenomenon of overwhelming force that represents the most difficult circumstance faced by a power protection product. The degree of protection a PL-PRO can offer depends on the intensity of the strike. If lightning strikes a distant power line and causes a relatively small disturbance to reach your location, the spike suppressors in the PL-PRO will absorb the excess voltage invisibly and harmlessly. However, if lightning strikes the actual building where the PL-PRO is installed (or somewhere very nearby), some damage may be unavoidable due to the extremely high voltage and current present. If this does occur, most likely damage will be limited to the PL-PRO itself and will affect only certain spike suppression components (called varistors or MOV's.) In this “suicide” mode, the PL-PRO may sustain minor damage but generally will protect all equipment plugged into it from much more serious and costly damage as long as that equipment is properly grounded. Proper grounding requires the use of three-prong AC cords, and that the building's outlets are actually grounded to earth as specified by the National Electrical Code.

Any PL-PRO known to have taken a direct lightning hit should be checked by a qualified technician or the Furman factory to determine whether the MOV's need replacement. (If the PROTECTION OK indicator is not lit, there is definitely some damage. Some spike suppression capability may still be available by MOV Bank #2, but there is no guarantee of this.)

For optimum protection, you should not rely exclusively on the PL-PRO to protect against a direct lightning hit. The first line of defense against lightning should be a lightning arrester installed on your building's electrical service entrance. If your building does not have one, contact your local power company or a contractor to have one installed.
**Front Panel Controls**

**DIMMER:** This knob controls the brightness of both light fixtures. Turn it clockwise to increase brightness; turn it counterclockwise to decrease brightness.

**PROTECTION OK:** This LED is normally on when the power to the PL-PRO’s outlets is switched on. It monitors the integrity of the protection devices and reports if the protection is compromised. If an extremely large spike is encountered that exceeds the PL-PRO’s capacity, the main group of input protectors will blow an internal fuse, causing the indicator to go out. If this LED is not lit when the power switch is on, full protection is not functioning. Spike protection may still exist, but will have a reduced capacity to absorb current. If this LED is not lit, please contact the Furman Service Department.

**GROUND OK:** This LED is normally on when the power to the PL-PRO’s outlets is switched on. It monitors the integrity of the grounding, and reports if the grounding is compromised. It lights if a reasonably good safety ground exists. If this LED is not lit when the power is on, the PL-PRO is not properly grounded. Unplug the PL-PRO and correct the ground. (Not available on PL-PRO-E.)

**EXTREME VOLTAGE SHUTDOWN:** This LED is normally off. It monitors a hazard unfortunately common in the entertainment industry: wiring faults—for example, accidental connection to 220V where 120V is expected. The PL-PRO senses voltages that are so high or low that operation would be impossible and shuts the power down before damage can occur. For the PL-PRO, the cutoff voltages are under 80V or over 140V; for the PL-PRO-E, under 160V or over 280V. Upon initially applying power to the PL-PRO, this LED will be lit if the input voltage is below the low cutoff or above the high cutoff, and power will not be applied to the PL-PRO’s outlets. If the unit has been operating with an acceptable input voltage and then that voltage goes out of the acceptable range, the PL-PRO will shut off power to the outlet and this LED will begin flashing.

**NOTE:** If the mains power is below the low cutoff voltage and has caused the PL-PRO to remove power from its outlets, the PL-PRO will not restore power to the outlets until the mains voltage rises to more than 10V above the cutoff. Similarly, if the mains power is above the high cutoff and has caused a shutdown, the PL-PRO will not restore power to the outlets until the mains voltage falls more than 10 volts below the cutoff. The reason for this is to prevent the power oscillating on and off in marginal conditions.

**LIGHT TUBES:** The PL-PRO has the familiar slide-out rack lights pioneered by Furman. A new feature exclusive to the PL-PRO automatically turns the lights off when either light tube is pushed in. The PL-PRO’s lamps come supplied with seven-watt night light bulbs. Replacements are available at most hardware stores or almost anywhere household light bulbs are sold. Bulbs are easily replaced without removing the unit from the rack. Here’s how: First, pull the light tube(s) all the way out. Unscrew the cap on the end of each tube to get access to the bulb. (Be careful not to push the tubes in after you have removed the caps.) To unscrew the bulb, place your index finger across the hole on the underside of the tube and in contact with the bulb. Use the ball of your finger to rotate the bulb out of its socket. Then remove the bulb from the front of the light tube. Put a new bulb in the tube, rotate it with your finger from the hole in the bottom of the tube and replace the light tube cap(s).

**NOTE:** The caps and light tubes become quite warm to the touch in normal operation. To avoid burning your fingers, allow the cap to cool completely before unscrewing it. If you find that the heat from the tubes is excessive, try reducing the setting of the dimmer knob. As an alternative, you may substitute four-watt bulbs or even colored Christmas tree bulbs.

**LED VOLTMETER:** This three-color, 20-LED bargraph is an accurate, self-checking AC voltmeter that continually measures normal voltages. The meter reads from 90 to 128 volts in 2 volt steps (PL-PRO-E: 180 to 256 volts, in 4 volt steps). The normal range voltages are indicated in green, with moderate and extremely high or low voltages in yellow and red respectively (see chart on page 8). The voltmeter provides three special flashing patterns to indicate abnormal power conditions:

1. If only the single leftmost (beneath the 90V mark) LED flashes, the input voltage is marginally low. Power to the PL-PRO outlets will remain on unless the incoming voltage falls below the Extreme Voltage Shutdown low cutoff.

2. If all of the LEDs on the voltmeter flash, the input voltage is marginally high. Power to the PL-PRO’s outlets will remain on unless the incoming voltage rises above the Extreme Voltage Shutdown high cutoff.

3. If none of the LEDs on the voltmeter are lit, and the Extreme Voltage LED indicator is flashing continuously, then the PL-PRO has shut down power to its switched outlets because the input voltage is in a range considered extreme. The PL-PRO’s voltmeter has a basic accuracy of plus or minus two volts, and extreme cold or heat may cause an additional one volt of error (four volts and two volts for PL-PRO-E). Please note that the voltage reading is advisory only. The PL-PRO 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.