P.O.S. Pro-Series – Single Phase Input, Single Phase Output

Uninterruptible Power Supply

P.O.S. Pro 600VA

Line Interactive UPS (PWM): 600VA with Integrated DC Power Supply

User’s Manual

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SAVE THESE INSTRUCTIONS

- This manual contains important instructions for the P.O.S. Pro 600va UPS, and should be followed during installation and maintenance of the UPS and batteries.
- The UPS contains voltages that are potentially hazardous. Please contact our dealers or qualified personnel for service.
- Servicing of the batteries should be performed or supervised by personnel knowledgeable with batteries and the required precautions. Keep unauthorized personnel away from batteries.
- When replacing batteries, replace with the same model number, type and rating.
- **CAUTION:** Do not dispose of battery or batteries in a fire. The batteries may explode.
- **CAUTION:** Do not open or mutilate the battery or batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.
- **CAUTION:** A battery can present a risk of electrical shock and high short circuit current. The following precautions should be observed when working on or with the batteries.
  - Remove watches, rings, or other metal objects.
  - Use tools with insulated handles.
  - Wear rubber gloves and boots.
  - Do not lay tools or metal parts on top of batteries.
  - Disconnect charging source prior to connecting or disconnecting battery terminals.
  - Determine if the battery is inadvertently grounded. If inadvertently grounded, remove source of ground. Contact with any part of a grounded battery can result in electric shock. The likelihood of a shock will be reduced if grounds are removed during installation and maintenance (applicable to a UPS and a remote battery supply not having a grounded supply circuit).
- **CAUTION:** To ensure the safety and performance of the UPS, never load the UPS with a hair dryer, heater, laser printer or other types of inductive loads.
SAFETY INSTRUCTIONS

1. The UPS has its own internal energy source (battery), therefore the output receptacles may have electricity present even though the UPS is disconnected from the utility power.
2. The DC voltage provided from the internal battery is 12VDC.
3. Isolated Ground Wire refers to the bare wire connecting electrical equipment to ground. The isolated ground wire (green or green with yellow stripe) must meet national wire requirements.
4. The power plug to connect with the UPS has to be equipped with a ground plug.
5. Battery must be replaced or serviced by qualified, knowledgeable personnel.
6. Replacement battery must be the type, quantity and configured the same as the original(s).
7. To avoid explosions, keep open flame and other heat emitting sources away from battery.
8. Do not disassemble or damage the battery. The electrolyte is toxic and especially harmful to the eyes and skin.
9. The battery contains high voltages and currents that are dangerous. To maintain secure operation and performance of the UPS, the user must exercise basic and regular maintenance. Please follow the precautions below:
   1. Do not remove the UPS cover unless authorized by factory. Removing the cover will void the warranty.
   2. The UPS can only be connected to a 2-pole/3-wire plug.
   3. Do not install the UPS in an environment with excessive humidity.
   4. Do not allow liquids or foreign objects to get inside the UPS.
   5. Allow for air circulation through the UPS. A minimum clearance of 10cm is required on all sides.
   6. Do not load the UPS with appliances such as a hair dryer, heater, vacuum, kettle, etc.
   7. Keep the UPS away from direct sunlight and heat-emitting sources.
   8. Install the UPS as close as possible to the load for maximum protection.
10. Storage Requirements
   1. Recharge the UPS batteries every 6 months for no less than 8 hours at a time.
   2. Under a high ambient temperature environment, recharge the UPS batteries every 3 months for no less than 8 hours at a time
11. High Voltage Risk:
   1. High voltages might exist between the battery terminal and the grounding system, if the battery circuit has not been disconnected from the UPS circuit. Please check this voltage before connecting.
   2. Disconnect the battery wires before proceeding with maintenance. High voltages may be present between the UPS internal components and battery even after the input power is disconnected.
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1. **INTRODUCTION**

The P.O.S. Pro-Series is a Line Interactive UPS system that includes the newest and latest technology enhancements. The Line Interactive technology with AVR function (on-line voltage boost-up & buck-down) allows for a wide input voltage range of 90 to 150VAC. The P.O.S. Pro-Series UPS is ideal protection for modern Point of Sale equipment. After the UPS has been turned “On” it will protect the load from transients, spikes and other power aberrations. In the event of a blackout (or severe brownout) the UPS will automatically switch to back-up mode and maintain power to the load until the battery reaches a low voltage state. Also included with our UPS system is a cyclic self-testing function to verify both the operation of the UPS and the condition of the battery.

The integrated DC power supply and multiple outlet configuration allows for complete versatility for today’s Point of Sale equipment. The adapter cord included with every P.O.S. Pro is designed to plug directly into the printer and provide back-up power in the event of utility loss.

**Interference to Radio/TV**

If this UPS causes interference to radio or television reception (this may be determined by turning the UPS off and on), try to correct the interference by one or more of the following measures:

1. Connect the equipment to an outlet on a different circuit from which the receiver is connected.
2. Increase the separation between the equipment and the receiver.
3. Re-orientate the receiving antenna.
2. **PRESENTATION**

2.1 **Front Panel**

1. Multi purpose LED  
   This LED will be solid green when the UPS is under normal conditions. It will flash every two seconds when the UPS is supplying battery power to the loads, and flash rapidly when the battery requires replacement.

2. **“ON/OFF/TEST/SILENCE” button**  
   Press and hold the button for more than 3 seconds to turn the UPS “ON” or “OFF”, press and hold the button less than 1 second to activate a self-test, or silence the back up alarm.

2.2 **Rear Panel**

3. DC printer cable
4. AC input power cord
5. Input breaker
6. Surge protected - output power receptacles
7. Backed Up - output power receptacles
3. **INSTALLATION**

3.1. **Unpacking and Inspection**
Examine the packaging for damage. Inform the carrier immediately if and/or when damage is noticed. Retain the packaging for future use.

3.2. **Placement**
Install the UPS in a protected area with adequate airflow and free of excessive dust. Do not operate the UPS where the temperature and humidity is outside the specified limits.

3.3. **Connect to Utility**
Connect the AC input power connector (Included) to utility power.

3.4. **Charging the Battery**
The UPS charges its battery whenever the UPS is in LINE mode. For best results, charge the battery for 4 hours initially before connecting the load.

3.5. **Connecting the Loads**
Plug the loads into the output connectors on the rear of the UPS. To use the UPS as a master on/off switch, make sure all of the loads plugged into the UPS are switched on.

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**Caution:**

Never connect a laser printer or plotter to the UPS with other computer equipment. A laser printer or plotter draws significantly more power on start-up than when idle, and will overload the UPS. If a laser printer or plotter requires protection against blackouts, brownouts and over-voltage the UPS needs to be increased in size to accommodate the inrush of power.
Caution:  
_The line current limiting feature could be rendered inoperable if improperly installed. Make sure that the line from the wall is plugged into the connector marked “IN”, and the device to be protected (telephone, modem, etc.) is plugged into the connector marked “OUT”. This surge protection device is for indoor use only; never install wiring during a lightning storm._

3.6. **Storage Conditions**
Store the UPS covered and upright in a cool, dry location, with its battery fully charged. Before storing, charge the UPS for at least eight (8) hours. Remove any accessories in the accessory slot and disconnect any cables connected to the computer interface port to avoid the unnecessary draining of the battery.

3.7. **Extended Storage**
During extended storage periods in environments where the ambient temperature is -15 to +30°C (+5 to +86°F), charge the UPS’s battery every 6 months.
During extended storage in environments where the ambient temperature is +30 to +45°C (+86 to +113°F), charge the UPS’s battery every 3 months.
4. **OPERATION**

4.1. **Switching “On” the UPS**
With the UPS plugged in and utility power present, press and hold the On/Off/Test/Silence Button more than 3 seconds or until the LED is lit. The UPS will perform self-testing each time it is switched “On”.

4.2. **Switching “Off” the UPS**
Press and hold the On/Off/Test/Silence Button for more than 3 seconds, or until the Line Normal or Back-Up LED turns off.

**ATTENTION**: In backup mode, the UPS can be automatically turned off if none of the connected loads are operating. (Green mode; No Load shut down function) Once the utility power returns to normal, the unit will restart.

4.3. **Self-Test**
Use the self-test to verify both the operation of the UPS and the condition of the battery. When normal utility power is present, push the On/Off/Test/Silence Button for less than 1 second and the UPS will perform a self-test function. During the self-test, the UPS operates in back-up mode.

During the self-test, the UPS briefly operates the loads with battery power (the LED flashes every 2 seconds). If the UPS passes the self-test, it returns to on-line operation. The LED stops flashing and the LED remains on. If the UPS fails the self-test it immediately returns to on-line operation. The loads are unaffected when performing a self-test. Recharge the battery overnight and perform the self-test again. If the UPS still fails a self-test, ask our nearest dealer to replace the battery.

4.4. **Silence the Alarm**
In Back Up mode, push On/Off/Test/Silence Button for less than 1 second to silence the audible alarm. (The function is void when under condition of "LOW BATTERY" or "OVERLOAD")

4.5. **Cold Start**
When the UPS is off and there is no utility power, use the cold start feature to apply power to the loads from the UPS's battery. Press the ON/TEST button (see Front Panel section for location of the indicator) until the UPS beeps.

4.6. **Shutdown Mode**
In shutdown mode the UPS stops supplying power to the load and waits for the return of utility power.
4.7. **Green Function**
If the connected loads are drawing less than 20 watts, the UPS will automatically shutdown after 5 minutes in back-up mode in order to conserve battery power.

To disable “GREEN FUNCTION” press and hold the “On” button during initial start-up for at least 3 seconds, until a beep-beep sound is heard.

**AUDIBLE ALARM**

4.8. **Back-Up (Slow Alarm)**
When in back-up mode, the LED flashes every 2 seconds and the UPS sounds an audible alarm. The alarm stops when the UPS returns to line normal operation. Press the On/Off/Test/Silence Button during back-up mode to silence the beeping.

4.9. **Low Battery (Rapid Alarm)**
In back-up mode, when the battery energy runs low, the UPS beeps rapidly until the UPS shuts down from battery exhaustion or returns to line normal operation.

4.10. **Overload (Continuous Alarm)**
When the UPS is overloaded (the connected load exceeds the maximum rated capacity of the UPS) the UPS sounds a continuous alarm to warn of an overload condition. Disconnect non-essential loads until the UPS stops the alarm.

4.11. **Replace Battery (Continuous Alarm)**
The UPS emits a continuous beep if the battery fails the self-test. See replace battery section for battery replacement or call your dealer for services.
5. **BATTERY REPLACEMENT**

1. Your battery should run anywhere from 3-5 years before it needs to be replaced.
2. Please follow the instructions below for easy, trouble free, battery replacement.
3. Turn the UPS off (follow procedure previously mentioned)
4. Unplug the UPS from utility power source and disconnect all connected loads.
5. Disconnect AC power cord from unit.
6. Turn unit upside down and using a Phillips screwdriver, unscrew the four (4) screws holding the top of the unit to the bottom. Put screws in a safe place for reconnection.
7. Holding the top together firmly with the bottom, turn the entire unit right side up.
8. Carefully lift top cover off and place it to the side. The connecting wires and electronics will be exposed. **Be careful not to touch any inner components when changing the battery.**
9. Remove the two (2) connecting wires from the battery.
10. You can now easily remove the battery from the unit
11. Place your new battery in the same position, direction and reconnect the wires. The red wire to the positive (+) pole and black wire to the negative (-) pole.
12. Reverse steps 5, 4 and 3 (in that order) to reassemble the unit.
13. Follow start-up instructions in order to properly reconnect your equipment.

**Caution:**

*Do not dispose of battery in a fire. Do not attempt to open the battery.*
*When replacing the battery use tools with insulated handles and remove watches, rings, etc…*
6. **TROUBLESHOOTING**

Please follow the guidelines below for common problems:

- Check UPS input plug and wiring.
- Check UPS input voltage.

Please prepare the information as follows for service personnel:

- UPS model number and serial number
- Description of problem(s) in detail.

### 6.1. General Problems

<table>
<thead>
<tr>
<th>Problems</th>
<th>Possible causes</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPS has no reaction while AC power is connected</td>
<td>Breaker at back panel open</td>
<td>Replace Fuse/Switch breaker on AC input</td>
</tr>
<tr>
<td></td>
<td>UPS fault</td>
<td>Call service center to replace batteries</td>
</tr>
<tr>
<td></td>
<td>Battery failure</td>
<td>Check AC power</td>
</tr>
<tr>
<td></td>
<td>No AC input</td>
<td>Call for service</td>
</tr>
<tr>
<td></td>
<td>UPS AC detecting circuit fail</td>
<td></td>
</tr>
<tr>
<td>UPS has no reaction while AC power is connected, yet starts after pushing power on/off switch</td>
<td>Breaker at back panel open</td>
<td>Switch breaker</td>
</tr>
<tr>
<td></td>
<td>UPS AC detecting circuit fail</td>
<td>Check AC power</td>
</tr>
<tr>
<td></td>
<td>No AC input</td>
<td>Call for service</td>
</tr>
<tr>
<td></td>
<td>UPS AC detecting circuit fail</td>
<td></td>
</tr>
<tr>
<td>UPS goes into back-up mode while connected to AC power</td>
<td>Utility voltage or frequency abnormal</td>
<td>Check AC power</td>
</tr>
<tr>
<td></td>
<td>UPS AC detecting circuit failure</td>
<td>Call for service</td>
</tr>
<tr>
<td>Battery can not provide normal back-up power in the event of a blackout</td>
<td>Battery deteriorated</td>
<td>Charge batteries and reset</td>
</tr>
<tr>
<td></td>
<td>Batteries not fully charged</td>
<td>If that doesn’t work call for service</td>
</tr>
<tr>
<td></td>
<td>Battery charger damaged</td>
<td></td>
</tr>
<tr>
<td>Fault LED lit</td>
<td>Inverter fault</td>
<td>Call for service</td>
</tr>
<tr>
<td></td>
<td>Battery over voltage</td>
<td>Check load status</td>
</tr>
<tr>
<td></td>
<td>DC bus fault</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overload fault</td>
<td></td>
</tr>
<tr>
<td>After AC connected to UPS, alarm sounds short and fast beeps and UPS shuts down</td>
<td>Abnormal utility power</td>
<td>Check input power</td>
</tr>
</tbody>
</table>
### 7. Specifications

<table>
<thead>
<tr>
<th>MODEL</th>
<th>P.O.S. Pro 600</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INPUT</strong></td>
<td></td>
</tr>
<tr>
<td>Capacity</td>
<td>600VA</td>
</tr>
<tr>
<td>Voltage</td>
<td>120V, 220V +/-25%</td>
</tr>
<tr>
<td>Frequency</td>
<td>50 or 60Hz +/-10% (auto sensing)</td>
</tr>
<tr>
<td><strong>OUTPUT</strong></td>
<td></td>
</tr>
<tr>
<td>Voltage (on battery)</td>
<td>Simulated sine wave at Line Input +/-5%</td>
</tr>
<tr>
<td>Frequency (on battery)</td>
<td>50 or 60Hz +/- 1Hz</td>
</tr>
<tr>
<td>DC Output</td>
<td>24V/1.5A (24VDC Printer cord)</td>
</tr>
<tr>
<td>Auto Voltage Regulation AVR</td>
<td>±13% of nominal (120V)</td>
</tr>
<tr>
<td>Transfer Time</td>
<td>2/4 milliseconds, including detection time</td>
</tr>
<tr>
<td><strong>PROTECTION and FILTERING</strong></td>
<td></td>
</tr>
<tr>
<td>Spike Protection</td>
<td>480 joules, 2ms</td>
</tr>
<tr>
<td>Overload Protection</td>
<td>UPS automatic shutdown if overload exceeds 110% of nominal for 60 second or 130% for 3 seconds.</td>
</tr>
<tr>
<td>Unit Input</td>
<td>Fuse or circuit breaker for overload &amp; short circuit protection</td>
</tr>
<tr>
<td>Short Circuit</td>
<td>UPS output cut off immediately or input fuse protection</td>
</tr>
<tr>
<td><strong>BATTERY</strong></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Maintenance-free, Sealed Lead Acid</td>
</tr>
<tr>
<td>Typical Recharge Time</td>
<td>6 hours (to 90% of full capacity)</td>
</tr>
<tr>
<td>Protection</td>
<td>Automatic self-test &amp; discharge protection, replace battery indicator</td>
</tr>
<tr>
<td>Back-up Time</td>
<td>20 - 30 minutes (depending on load)</td>
</tr>
<tr>
<td><strong>PHYSICAL</strong></td>
<td></td>
</tr>
<tr>
<td>Net Weight kg(lbs)</td>
<td>6.8 (15 lbs.)</td>
</tr>
<tr>
<td>Shipping Weight kg(lbs)</td>
<td>7.3 (16 lbs.)</td>
</tr>
<tr>
<td>Dimension (mm)WxDxH</td>
<td>97x320x135 (3.8” X 12.5” X 5.3”)</td>
</tr>
<tr>
<td>Input Inlet</td>
<td>Nema 5-15P power inlet</td>
</tr>
<tr>
<td>Output</td>
<td>5 X Nema 5-15R (3 output power, 2 surge protection only) +1 DC printer power connector</td>
</tr>
<tr>
<td><strong>ALARM</strong></td>
<td></td>
</tr>
<tr>
<td>Battery Back-Up</td>
<td>Slow beeping sound (about 0.47Hz)</td>
</tr>
<tr>
<td>Battery Low</td>
<td>Rapid beeping sound (about 1.824Hz)</td>
</tr>
<tr>
<td>Overload</td>
<td>Continuous beeping sound</td>
</tr>
<tr>
<td><strong>CONFORMANCE</strong></td>
<td></td>
</tr>
<tr>
<td>Safety</td>
<td>cUL UL1778, CSA C22.2 and FCC Class B</td>
</tr>
<tr>
<td>Surge</td>
<td>IEEE C62.41 CAT. A</td>
</tr>
<tr>
<td><strong>ENVIRONMENT</strong></td>
<td></td>
</tr>
<tr>
<td>Ambient Operation</td>
<td>6,000 meters max. elevation, 0-95% humidity non-condensing 0-40°C</td>
</tr>
<tr>
<td>Audible noise</td>
<td>&lt;40dBA (1 meter from surface)</td>
</tr>
</tbody>
</table>
### Storage Condition

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>15000 meters max. elevation</td>
<td></td>
</tr>
</tbody>
</table>

Specifications subject to change without prior notice to reflect upgrades and improvements in technology.

#### 7.1. DC Power Supply Specifications:

- **Output Voltage:** 24VDC
- **Regulation:** +/- 1%
- **Ripple and Noise:** <150mV
- **Rated Current:** 1.5A Continuous, 2A Surge
- **Capacity:** 58 Watts
- **Protection:** Overload, Over Voltage, Short Circuit

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### 1. DC POWER CONNECTOR CONFIGURATION

![DC Power Connector Configuration Diagram]
8. CONTACT INFORMATION

8.1. Additional Purchases or Upgrades

Always On UPS Systems Inc.
Bldg 1 – 150 Campion Road,
Kelowna, BC, Canada, V1X 7S8
Phone: (250) 491-9777 Ext 451
Fax: (250) 491-9775
Email: sales@alwayson.com
Website: www.alwayson.com

8.2. QA / Warranty Questions

Always On UPS Systems Inc.
Bldg 1 – 150 Campion Road,
Kelowna, BC, Canada, V1X 7S8
Phone: (250) 491-9777 Ext 209
Fax: (250) 491-9775
Email: qa@alwayson.com
Website: www.alwayson.com

8.3. Software Questions

Always On UPS Systems Inc.
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Phone: (250) 491-9777 Ext 204
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Email: webmaster@alwayson.com
Website: www.alwayson.com