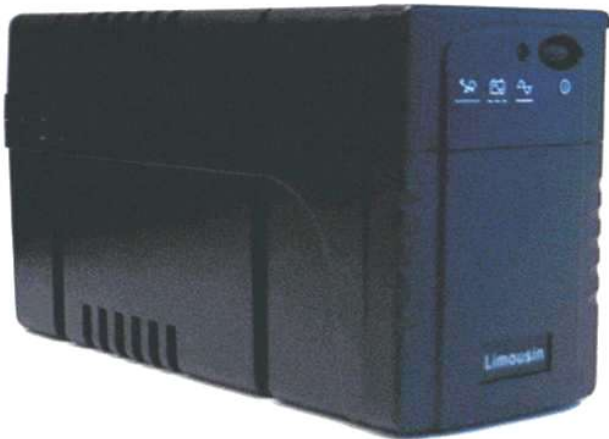


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*Always “On” UPS Systems Inc.*

*Limousin – Single Phase Input, Single Phase  
Output*

*Uninterruptible Power Supply*



*600VA*

**User Manual**

Version 1.3



# *Always “On” UPS Systems Inc.*

## SAVE THESE SAFETY INSTRUCTIONS

1. This manual contains important instructions for the Limousin and should be followed during installation and maintenance of the UPS and batteries.
2. The UPS contains voltages that are potentially hazardous. Please contact our dealers or qualified personnel for service.
3. Only personnel whom are knowledgeable with batteries and the required precautions should perform any servicing on the batteries. Keep unauthorized personnel away from batteries.
4. Replace the batteries with the same model number, type and rating.
5. **CAUTION:** Do not dispose of batteries in a fire. The batteries may explode.
6. **CAUTION:** Do not open or mutilate the batteries. Contents of the batteries are toxic and especially harmful to the skin and eyes.
7. **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 sources prior to connecting or disconnecting battery terminals.
  - Make sure batteries are not 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 ground faults are removed during installation and maintenance (applicable to a UPS and a remote battery supply not having a grounded supply circuit).
8. **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.
9. 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.
10. The DC voltage provided from the internal battery is 12VDC.
11. Isolated Ground Wire refers to the wire connecting electrical equipment to ground. The isolated ground wire (green or green with yellow stripe) must meet national wire requirements.
12. The utility plug (wall plug) for the UPS must be equipped with a ground prong.
13. To avoid explosions, keep open flame and other heat emitting sources away from batteries.
14. The battery has the potential to generate high voltages and currents that are dangerous. To maintain secure operation and performance of the UPS, the user must exercise regular basic maintenance. Please follow the precautions below:
  1. Do not remove the UPS cover unless authorized by the 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 penetrate inside the UPS.
  5. Allow for air circulation through the UPS. A minimum clearance of 10cm is required on all sides.
  6. Do not overload 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.

# *Always “On” UPS Systems Inc.*

2. In a high ambient temperature environment, recharge the UPS batteries every 3 months for no less than 8 hours at a time

# *Always “On” UPS Systems Inc.*

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# *Always “On” UPS Systems Inc.*

## **1. INTRODUCTION**

The Limousin is an economical UPS solution that provides ultimate protection for your home and office equipment from destructive problems that plague the utility.

With the Limousin, you can expect brownout and surge protection with the AVR function using on-line voltage boost-up & buck-down. This allows for a wide input voltage range of 90 to 150VAC.

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. It will maintain power to the load until the battery reaches an exhausted state. Also included, with our UPS systems, is a cyclic self-testing function to verify both the operation of the UPS and the condition of the battery.

The Limousin provides two single-phase 120VAC outlets for ease of connection to you equipment. Overload protection is also a feature of this unit.

The Limousin utilizes state-of-the-art microprocessor technologies to incorporate all these features into such a compact and convenient package.

### **Interference to Radio/TV**

The Limousin may cause interference to radios and TVs in close proximity. If you notice interference to radio or television reception, try turning the UPS off and on to see if the interference goes away. If so, the user is encouraged to try to correct the interference by one or more of following measures:

1. Move the Limousin and connected equipment to a different outlet. Check to make sure the new outlet is on a different power circuit than that of the radio/TV receiver.
2. Increase the separation distance between the Limousin and connected equipment, and the radio/TV receiver.
3. Re-orientate the receiving antenna.

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## 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 2 seconds when the UPS is supplying battery power to the loads, and will flash rapidly when the battery needs 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.

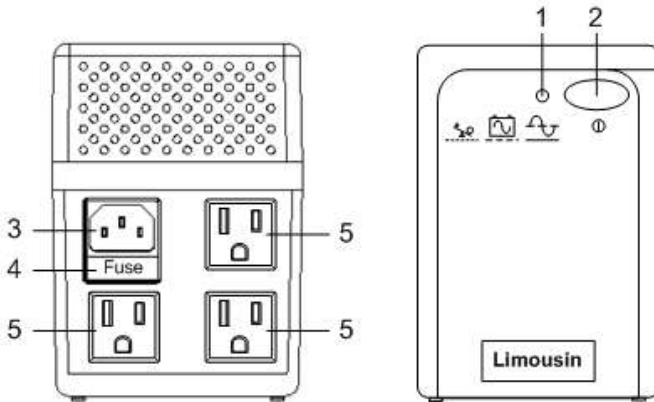


Figure 2.1  
Limousin Front & Rear Panel

### 2.2. Rear Panel

3. AC Input Power Receptacle
4. AC Input Fuse Holder
5. Output Power Receptacles



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## **3. INSTALLATION**

### **3.1. Unpacking and Inspection**

Examine the Limousin UPS 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 Limousin UPS in a protected area with adequate airflow, free of excessive dust and other airborne particles. Allow for air circulation through the Limousin UPS. A minimum clearance of 10cm is required on all sides. Do not operate the Limousin UPS where the temperature and humidity is outside the specified limits.

### **3.3. Connect to Utility**

Connect the included AC input power connector to utility power and the UPS system.

### **3.4. Charging the Battery**

The UPS charges its battery whenever the UPS is in “LINE” mode.

*NOTE: For best results, initially charge the battery for 4 hours before connecting a load.*

### **3.5. Connecting the Load**

Plug the load into the power outlets on the rear of the Limousin UPS. To use the UPS as a master on/off switch, make sure all of the loads connected to the UPS are switched on.

#### **CAUTION:**

*Never connect a laser printer or plotter to the UPS with other computer equipment.*



*A laser printer or plotter draws significantly more power when starting up than when idling. The laser printer or plotter will overload the UPS on start up. Thus, the UPS needs to be increased in size to accommodate the inrush of power if a laser printer or plotter requires protection against blackouts, brownouts and over-voltage.*

### **3.6. Storage Conditions**

Store the UPS upright, covered and in a cool, dry location, with its battery fully charged. Before storing, charge the UPS for at least eight (8) hours.

### **3.7. Extended Storage**

To store the Limousin UPS for extended periods, these instructions should be followed:

1. In environments where the ambient temperature is -15 to +30°C (+5 to +86°F), charge the UPS battery every 6 months.
2. In environments where the ambient temperature is +30 to +45°C (+86 to +113°F), charge the UPS battery every 3 months.

# *Always “On” UPS Systems Inc.*

## **4. OPERATION**

### **4.1. Switching “On” the UPS**

Make sure the Limousin UPS is plugged in and the utility power is present. Press and hold the “On/Off/Test/Silence” Button for more than 3 seconds or until the LED is lit. This switches the Limousin UPS “On”. 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.

### **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 provides power to the load from the batteries. The LED shall flash every 2 seconds during this test. If the UPS passes the self-test, it returns to on-line operation.*

**NOTE:** *On completion of the test, the LED stops flashing and remains on. If the UPS fails the self-test, it immediately returns to on-line operation. If a failure occurred, recharge the battery overnight and perform the self-test again. If the UPS still fails the self-test, ask our nearest dealer to replace the battery. The loads are unaffected when performing a self-test.*

### **4.4. Silence the Alarm**

In Back Up mode, push the “On/Off/Test/Silence” Button for less than 1 second to silence the audible alarm. Note that, this 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 battery. Press the “On/Off/Test/Silence” button until the UPS beeps. Please refer to Front Panel section for location of the indicator.

### **4.6. Green Function**

In order to conserve battery power, the UPS will automatically shutdown when in back-up mode, after 5 minutes, if the connected loads are operating at less than 20 watts.

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.

# *Always “On” UPS Systems Inc.*

## **5. AUDIBLE ALARM**

### **5.1. 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.

### **5.2. Low Battery (Rapid Alarm)**

In back-up mode, when the battery energy runs low, the UPS beeps rapidly, twice every second, until the UPS shuts down from battery exhaustion or returns to line normal operation. This alarm cannot be muted.

### **5.3. Overload (Continuous Alarm)**

The UPS is overloaded when 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, this will eliminate the overload.

### **5.4. 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.

# Always “On” UPS Systems Inc.

## 6. 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. Using a Philips screwdriver, unscrew the four (4) screws holding the top of the unit to the bottom. Put screws in a safe place for reassembly.
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.



**CAUTION:**

*Be careful not to touch any inner components of the Limousin UPS when changing the battery. Electrical shock hazards may be present.*

9. Remove the two (2) connecting wires from the battery.
10. You can now easily remove the battery from the unit



**CAUTION:**

*Do not dispose of battery in a fire. Do not attempt to open the battery.*



**CAUTION:**

*When replacing the battery, only use tools with insulated handles and remove metal jewelry like watches, rings, etc., to avoid risk of electrical shock and burns.*

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.

# *Always “On” UPS Systems Inc.*

## **7. 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.

### **7.1. General Problems**

<b>Problems</b>	<b>Possible causes</b>	<b>Solution</b>
UPS has no reaction while AC power from utility is connected	Fuse at back panel open No AC input UPS fault Battery failure	Replace Fuse Check Utility AC power Call for service Call service center to replace batteries
UPS has no reaction while AC power is connected, yet starts after pushing power on/off switch	Fuse at back panel burnt No AC input UPS AC detecting circuit fail Check power cord	Replace fuse Check Utility AC power Call for service
UPS goes into back-up mode while connected to AC power	Utility voltage or frequency abnormal UPS AC detecting circuit failure	Check AC power Call for service
Battery can not provide normal back-up power in the event of a blackout	Battery deteriorated Batteries not fully charged Battery charger damaged	Charge batteries and reset If that doesn't work call for service
After AC connected to UPS, alarm sounds short and fast beeps and UPS shuts down	Abnormal utility power	Check input power

# Always “On” UPS Systems Inc.

## 8. SPECIFICATIONS

MODEL		Limousin
INPUT	Capacity	600VA
	Voltage	120V, 220V +/-25%
	Frequency	50 or 60Hz +/-5% (auto sensing)
OUTPUT	Voltage (on battery)	Simulated sine wave at Line Input +/-5%
	Frequency (on battery)	50 or 60Hz +/-0.5%
	Voltage Regulation AVR	±13% of nominal (120V)
	Transfer Time	2/4 milliseconds, including detection time
PROTECTION and FILTERING	Spike Protection	480 joules, 2ms
	Overload Protection	UPS automatic shutdown if overload exceeds 110% of nominal for 60 second or 130% for 3 seconds.
	Unit Input	Fuse for overload & short circuit protection
	Short Circuit	UPS output cut off immediately or input fuse protection
BATTERY	Type	Maintenance-free, Sealed Lead Acid
	Typical Recharge Time	4 hours (to 90% of full capacity)
	Protection	Automatic self-test & discharge protection, replace battery indicator
	Back-up Time	10 - 30 minutes (depending on load)
PHYSICAL	Net Weight kg(lbs)	6.2(13.7)
	Shipping Weight kg(lbs)	6.5(14.3)
	Dimensions mm WxDxH (inch WxDxH)	97mm x 320mm x 135mm (3.8" x 12.5" x 5.3")
	Input Inlet	IEC 320 power inlet
ALARM	Battery Back-Up	Slow beeping sound (about 0.47Hz)
	Battery Low	Rapid beeping sound (about 1.824Hz)
	Overload	Continuous beeping sound
CONFORMANCE	Safety	cUL UL1778, CSA C22.2 and FCC Class B
	Surge	IEEE C62.41 CAT. A
ENVIRONMENT	Ambient Opertaion	6,000 meters max. elevation, 0-95% humidity non-condensing 0-40°C
	Audible noise	<40dBA (1 meter from surface)
	Storage Condition	15000 meters max. elevation

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

# *Always “On” UPS Systems Inc.*

## **9. CONTACT INFORMATION**

### **9.1. 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@alwaysonups.com](mailto:sales@alwaysonups.com)  
Website: [www.alwaysonups.com](http://www.alwaysonups.com)

### **9.2. QA / Warranty Questions**

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Bldg 1 – 150 Campion Road,  
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Email: [qa@alwaysonups.com](mailto:qa@alwaysonups.com)  
Website: [www.alwaysonups.com](http://www.alwaysonups.com)

### **9.3. Software Questions**

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