User Manual

Power Shield ®

Defender
PSD 650/1200/1600
Line Interactive UPS
Uninterruptible Power Supply System

Power Shield ®

NetGuard®

UPS Monitoring Software

IMPORTANT

Download the latest NetGuard Monitoring Software:

www.powershield.com.au/index.php/downloads

Default password is: administrator

1. Introduction

Thank you for purchasing the Defender 650/1200/1600. It is designed to provide safe and reliable power protection to your precious electronics equipment. Before you start using the product, please read this user's manual. It contains instructions relating to safety, installation, operation maintenance and warranty. Please keep this manual in a safe place for future use.

2. Safety instruction

Please read carefully the following safety instructions before using the Defender 650/1200/1600

⚠ ATTENTION ! : ELECTRICAL SAFETY.

- To prevent the risk of fire and electric shock, install the product in a controlled temperature and humidity indoor area where it is free from conductive contaminants.
- To reduce the risk of overheating of the product, do not cover the cooling vent holes and avoid exposing the unit under direct sunlight or installing the unit near heat emitting appliances such as heaters or furnaces.
- Do not connect non-computer related equipment such as medical equipment, life-support system, microwave oven and vaccum cleaners. Also since this unit output is not sinusoidal, please do not connect AC line filters, motors and other inductive / capacitive equipment. This equipment might damage the unit.
- Do not plug the unit input cord to its own output.
- Do not allow liquids or any foreign object to get inside the unit. Do not place any liquid formed materials on the top of the unit or right next to it.
- For safety purpose, proper grounding is necessary during installation of the unit in order to reduce the leakage current below 3.5mA.
- Hazardous due to electric shock. Although, unit is disconnected from the mains, hazardous voltage may still be accessible through supply from the battery. Battery connection should be disconnected when servicing the product.

- Do not attempt to open enclosure for modification and service, there is no serviceable parts inside the unit other than replacing the battery from front panel compartment. Any modification whatsoever applied to this unit will void product warranty.

⚠ CAUTION :   BATTERY SAFETY

- When replacing the batteries, use the same number and type of batteries.
- Do not dispose of batteries in a fire. The battery may explode. Do not open or mutilate the battery. Released electrolyte is harmful to the skin and eyes.
- A battery can present a risk of electric shock and high short circuit current.
- This unit contains no serviceable components other than the battery. Repairing of the product must only be performed by a qualified service personnel.
- Following precautions should be observed before replacing batteries.
  1. Remove watches rings and other metal objects.
  2. Use proper tools with insulated handles.
  3. Do not lay tools or metal parts on the top of batteries.
  4. Disconnect charging source prior to connecting or disconnecting battery terminals.
  5. Make sure that the UPS is turned completely OFF.

3. Package Contents

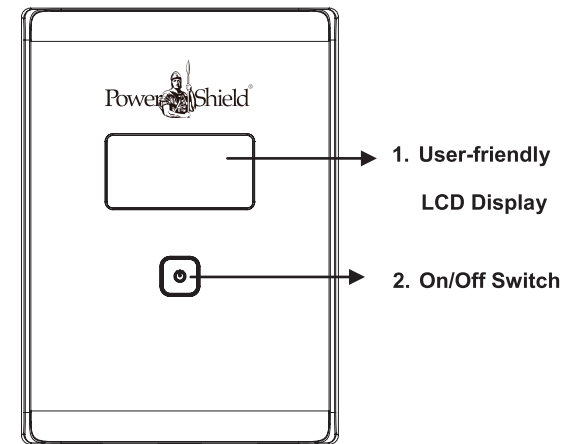You should have received the following items inside of package:

- PowerShield Defender 650/1200/1600VA unit
- PowerShield Defender User's Manual
- USB Communication cable

Note: Before installation, please inspect the unit and make sure that no damages have occurred during transit. If any damage is found, please notify your dealer. Please keep the shipping materials in the event the product must be returned to a repair centre for service.
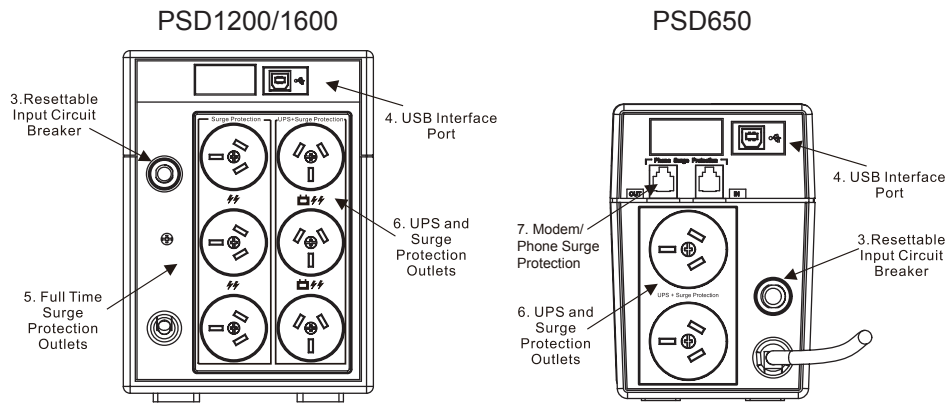
4. Product Overview

PowerShield Defender will protect your computer, telephone system and other electronic devices from various power disturbances including black and brown out. This product features a user friendly LCD that displays the status of the product.

Front View :

1. User-friendly LCD Display

2. On/Off Switch

Rear View :

PSD1200/1600

3.Resettable Input Circuit Breaker

4. USB Interface Port

6. UPS and Surge Protection Outlets

5. Full Time Surge Protection Outlets

PSD650

7. Modem/ Phone Surge Protection

4. USB Interface Port

3.Resettable Input Circuit Breaker

6. UPS and Surge Protection Outlets

1. **User Friendly LCD Display**

   See 6. "Understanding Display section for details ."

2. **On/Off Switch**

   Turn on and off unit with and without utility.

3. **Resettable Input Circuit Breaker**

   Breaker will trip when there is overload / short occurs at output of the unit.
   Circuit breaker for 1200/1600 is rated at 10Amp and for 650 is rated at 5Amp.

4. **USB Interface Port**

   Connect USB cable and computer. Install NetGuard UPS monitoring software for advanced power monitoring.

5. **Full Time Surge Protection Outlets**

   These outlets do not provide battery backup when mains has failed. The outlets provide continuous protection for surges and spikes. Connect peripherals that do **NOT** need battery backup.
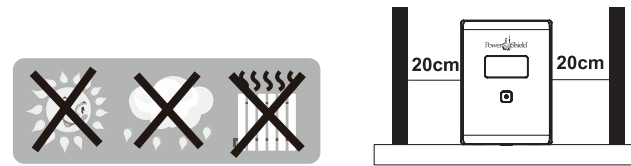
6. **UPS and Surge Protection Outlets**

   These outlets provide battery backup power when mains fail and unit is turned on. Connect peripherals that need battery backup protection. Do not connect Laser printers.
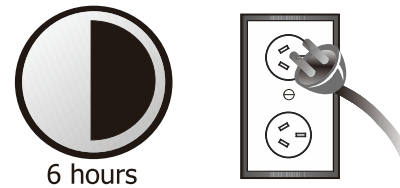
7. **Modem / Phone Surge Protection**

   Connect a single modem/phone line into surge-protected "IN" outlet on the back panel of the UPS unit. Connect from "OUT" outlet to the computer with phone line cable.
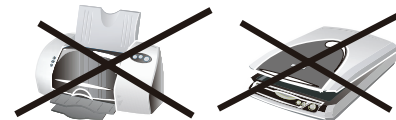
5. Installation & Start up

Install the unit in the controlled environment area that is free from dust and has adequate air.
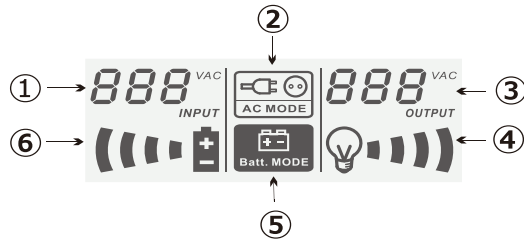
20cm   20cm

Plug the AC input cord into the wall outlet and the unit will automatically start charging the battery. Please allow 6 hours to recharge the battery.

6 hours

NEVER Connect a laser printer / scanner to the UPS outlets. This may cause damage to the unit. The, following type of equipment may cause some problems because the battery output mode of this unit is not sinusoidal;
-Inverter, Transformer, AC line filters and PFC power supplies.

6. Understanding LCD display

① Input Voltage meter ② On line mode Icon

③ Output voltage meter ④ Load level indicator

⑤ On battery mode Icon ⑥ Battery level indicator

Status	LCD	Status
On line Operation		Utility is stable and the unit is supplying its power from utility. No beep
AVR operation		The unit is boosting / bucking input voltage. On line mode icon flashes every 1 sec. No Beep
On battery Operation		There is a power disturbances / black out. The unit is supplying power from battery. Beeps 2 beeps every 30 sec
Low battery status		Battery capacity becomes low. The unit will shut its output down. On battery mode icon flashes. Rapid beep one sec interval
Overload status		Total output power has exceeded the maximum power rating of the unit. Load level indicator flashes. Constant Beeping
Fault mode		Please call for assistance when this indicator appears.
Standby Mode		On/Off button does not turn on. The unit is connected to utility. Battery are being recharged. No Beep.

7. Software Installation

1. Please download the latest NetGuard Monitoring software from www.powershield.com.au/index.php/downloads

2. When the installation is completed, NetGuard agent icon will appear on the Task bar

3. Once installation is completed, click the plug icon found on the Task bar to start the program

8. Battery replacement

Defender 650/1200/1600's have a user replaceable battery feature. Please read warning on the front page about battery safety and follow the steps carefully shown below. Please use only PowerShield approved battery pack to maximize the performance of the unit.

1. Shutdown all connected equipment and turn the UPS off by pressing on / off button.
2. Remove input cord from mains and remove all output cords from the UPS.
3. Flip the UPS upside down.
   For Defender 1200/1600, locate the Philips head screw on the bottom of the front panel. Remove the screw using a Philips screw driver.

   For Defender 650, locate the two slots on the bottom of the front panel. Insert a flat head screw driver in one of the two slots. Press gently down towards front while also gently levering the screw driver towards front. Repeat for the second slot to unclip front panel.
4. Remove the front panel by grabbing the bottom edge of the front panel and pull forward. Please be careful not to apply excess force to the panel as it may cause damage to the LCD cable attached to it.
5. Remove the metal plate holding the battery pack in the enclosure by sliding it upwards and then pull out.
6. Pull tag of the battery pack and remove the battery from the unit
7. Remove Red (Positive) and Black (Negative) battery wires from the battery pack.
8. Prepare new battery pack. Connect Black (Negative) wire to the new battery black terminal and connect Red (Positive) battery wire to the red battery terminal. Note:You will see a small spark when you connect red wire to the battery. This is normal as the unit charges some components. Please check polarity of battery terminals.
9. Insert the battery back into the unit and put the metal plate back in to the front of the enclosure. Replace the front panel. For Defender 1200/1600, fasten the Philips screw.
10. Please recharge the unit for 6 hours before you turn the unit on.

9. Trouble Shooting

Please follow the trouble shooting section below. If the problem cannot be resolved, please check PowerShield FAQ web page or call our customer support for further assistance.

Problem	Probable Causes	Solution
LCD display not lit	Low battery	Recharge the unit for at least 6 hours and try to start it again.
	Battery maybe faulty	Replace the battery with Powershield battery kit.
	Input circuit breaker tripped	Check circuit breaker at rear panel and reset if it is tripped.
Continuous beeping while Input utility power is normal	The unit maybe overloaded	Remove some equipment that is connected to UPS outlets and check load level indicator on LCD display.
Continuous beeping while UPS operating	The battery is low / faulty	Replace the battery with PowerShield battery kit.
Back up time is short / none when power fails.	Equipment maybe connected to Surge protection outlets	The surge protection does not have battery back up function. Connect your equipment to UPS outlet if it is required for battery back up.
	The unit maybe overloaded	Remove some equipment that is connected to UPS outlets and check load level indicator on LCD display.
	Low battery	Recharge the unit for at least 6 hours and try to start it again.
	Battery maybe fault	Replace the battery with PowerShield battery kit.
The unit stays on battery when the utility is normal	Input circuit breaker tripped	Check circuit breaker at rear panel and reset if it is tripped.
	Input power cord maybe loose	Reconnect the power cord to wall outlet properly.

10. Warranty and Service.

<u>Warranty Condition :</u>

The standard warranty is TWO (2) years from the date of purchase. The standard PowerShield procedure is to replace the original unit with a factory refurbished unit. PowerShield will ship the replacement unit once the defective unit has been received by the service department, or cross ship upon the receipt of a valid credit card number. The customer pays for shipping the defective unit to PowerShield. PowerShield pays ground freight transportation costs to ship the replacement to the customer within Australian capital cities metro areas only.

<u>WARRANTY SEVICE PROCESS :</u>

1. Review the problems discussed in the troubleshoot section of this manual to eliminate common problems.
2. Verify that no input/output circuit breaker is tripped. A tripped circuit breaker is the most common problem.
3. If the problem still persists, please call **1300-305-393** for technical support or fill in the form in PowerShield web page for on line technical support. Following details are needed for warranty claims.
   - Model number
   - Serial number
   - The date of purchase
4. Be prepare to troubleshoot the problem over the phone with PowerShield technical support.
5. If technical support found that the product is defective, then the technical support will issue a Return Material Authorization Number (RMA #)
6. If the unit is under warranty, repair is free. If not there is a repair charge.
7. Pack the unit in its original packaging. Pack properly to avoid damage during transit. Damage sustained in transit is not covered under warranty.
8. Mark the RMA # on the outside of the package.
9. Return the defective unit by insured, prepaid carrier to the address given to you by Technical support.

11. Storage and Maintenance

<u>Operation</u>

Defenders contain no user-serviceable parts other than battery pack. If the battery service life (3~5 years at 25°C ambient temperature) has been exceeded, the batteries must be replaced.

Please contact your dealer or visit the Power Shield website. www.powershield.com.au/support.

> Be sure to deliver the spent battery to a recycling facility or ship it to your dealer in the replacement battery packing material.

<u>Storage</u>

Before storing, charge the UPS 6 hours. Store the UPS covered and upright in a cool, dry location. During storage, recharge the battery in accordance with the following table:

Storage Temperature	Recharge Frequency	Charging Duration
-25°C - 40°C	Every 3 months	1-2 hours
40°C - 45°C	Every 2 months	1-2 hours

12. Product Specification

Product Specification			
Model #	PSD650	PSD1200	PSD1600
Capacity	650VA/390W	1200VA/720W	1600VA/960W
INPUT			
Voltage (Nominal)	240Vac		
Voltage Range	177-290Vac		
Frequency Range	50/60Hz ± 5Hz		
OUTPUT			
Output Voltage	240 Vac		
Output Voltage Regulation	240Vac ± 10%		
Frequency	AC mode tracks utility		
Frequency Range (Batt. Mode)	50Hz or 60Hz ± 1Hz		
Transfer Time	Typical 2-6ms, 10ms max		
Waveform (Batt. Mode)	Simulated Sine Wave		
UPS & Surge Protection	2	3	
Surge Protection	0	3	
BATTERY			
Battery Type & Number	12V 9AH (x1)	12V 7AH (x2)	12V 9AH (x2)
Backup Time (One PC Load @ 120W)	25min	40min	45min
Typical Recharge Time	4-6 Hours recover to 90% capacity		
PROTECTION			
Full Protection	Overload, discharge and overcharge protection		
Surge Protection	312Joules/6500Amps	936Joules/19500Amps	
Safety	A-tick, EN62040-1-1 2003, IEC60950-1:2001		
EMC	EN62040-2 2006		
OPERATING ENVIRONMENT			
Humidity	0-90% RH @ 0-40°C (non-condensing)		
Noise Level	<5dB (no fan)		
PHYSICAL			
Dimensions (D x W x H)	(328 x 100 x 145)mm	(397 x 146 x 205)mm	
Net Weight	5.2kg	11.1kg	11.5kg