



Network Pro Series Tower and Rack-Mount Convertible UPS User Manual

1000/1500/2200/3000

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1 Introduction

The Network Pro UPS features a rack/tower convertible design, single AVR boost and single buck, pure sine wave output, user-friendly LCD display, built-in customer option slot, hot swappable battery, and USB/RS232 communications interface. The Network Pro provides a flexible rack/tower form factor for use with critical file servers, minicomputers, network switches, hubs, and other business critical equipment.

- Sine wave output provides clean output power to connected equipment.
- User-friendly LCD panel displays system status including load level, battery level, AVR-Boost/Buck and fault status for easy monitoring and service.
- 90% high efficiency design when used in Normal mode meets high efficiency energy saving standards and reduces noise and heat.
- User-replaceable hot-swappable battery design saves time and money by allowing quick battery changes without downtime.
- Cold start function enables UPS to power up without connecting to incoming utility power.
- Optional Communication Software allows not only the control of the UPS and graceful shutdown when the Utility Fails, but also allows the user to remotely test the major operating functions of the UPS, communicate via SNMP/web/network optional card, access UPS functions via the web and alert users via SMS messages against specific events.
- User-friendly design can easily be installed by end user.
- Plug-and-play USB/RS232 interface conveniently offers a USB or RS232 port for connecting to a computer or other hardware.

2 IMPORTANT SAFETY INSTRUCTION

2.1 *An Important Notice*

1. The UPS has its own internal energy source (battery). If the UPS is switched on when no AC power is available, there could be voltage at the output receptacles.
2. Make sure that the AC Utility outlet is correctly grounded.
3. Do not open the case, as there are no serviceable parts inside. Your warranty will be voided if the case is opened.
4. Do not try to repair the unit yourself; contact your local supplier or Orion Power Systems Technical support if the unit needs repair.
5. Please make sure that the input voltage of the UPS matches the supply voltage.
6. To eliminate any overheating of the UPS, keep all ventilation openings free from obstruction.
7. Make sure the UPS is installed within the proper environment as specified. (0-40°C and 30-90% non-condensing humidity)
8. Do not install the UPS in direct sunlight.
9. The UPS is designed for indoor installation only. Do not install the UPS outdoors or in an environment that is not climate controlled.
10. Dusty, corrosive and salty environments can damage the UPS.
11. Install the UPS away from objects that give off excessive heat and areas that are excessively wet.
12. If liquids are spilled onto the UPS or foreign objects are dropped into the unit, the warranty will be void.
13. The battery will discharge if the system is disconnected from AC power for long periods (>3 months). If left uncharged, the battery may require replacement for the UPS to provide battery backup.

14. The battery should be recharged every 2-3 months if the UPS is not in service. This can be done by plugging in the UPS for a minimum of 8 hours every 2-3 months. If this is not done, the batteries will need to be replaced – this is not covered under the warranty. When the UPS is installed and in use, the batteries will be automatically recharged and kept in top condition.

15. This UPS supports electronic equipment in offices, telecommunications, process control, and non life-support medical and security applications. The UPS should not be installed in the following areas:

- a. Medical equipment directly related to human life support
- b. Elevator, Metro (Subway) system or any other equipment related to human safety.
- c. Nuclear power plants.

16. Do not install the UPS in an environment with flammable gases.

17. Make sure the UPS is completely powered off before moving. There is a risk of electrical shock if the UPS is moved while in use.

18. **SAVE THESE INSTRUCTIONS** – This Manual Contains Important Instructions that should be followed during Installation and Maintenance of the UPS.

19. Symbol for ON/Off is displayed and defined.

20. Intended for installation in a temperature-controlled, indoor area free of conductive contaminants.

21. Maximum ambient temperature 40°C (or 0~40°C for ambient Operating).

22. For Model 3000 - "CAUTION - To reduce the risk of fire, connect only to a circuit provided with 30 amperes maximum branch circuit overcurrent protection in accordance with the National Electric Code, ANSI/NFPA 70"

23. For Models 2200, 1500, 1000 and 750 - "CAUTION - To reduce the risk of fire, connect only to a circuit provided with 20 amperes maximum branch circuit overcurrent protection in accordance with the National Electric Code, ANSI/NFPA 70".

24. **CAUTION - RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.**

25. Replacement of batteries located in a **SERVICE ACCESS AREA**

A) Servicing of batteries should be performed or supervised by personnel knowledgeable about batteries and the required precautions.

B) When replacing batteries, replace with the same type and number of batteries or battery packs.

C) **CAUTION** - Do not dispose of batteries in a fire. The batteries may explode.

D) **CAUTION** – Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

E) **CAUTION** – A battery can present a risk of electrical shock and high short circuit current. The following precautions should be observed when working on batteries:

a) Remove watches, rings, or other metal objects.

b) Use tools with insulated handles.

c) Wear rubber gloves and boots.

d) Do not lay tools or metal parts on top of batteries.

e) Disconnect charging source prior to connecting or disconnecting battery terminals.

f) Determine if battery is inadvertently grounded. If inadvertently grounded, remove source from ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance (applicable to equipment and remote battery supplies not having a grounded supply circuit).

26. **CAUTION:** Lead acid batteries may cause chemical hazard.

2.2 **Storage Instruction**

For extended storage, the batteries should be charged for 12 hours every 3 months by plugging the UPS power cord into the wall receptacle and turning on the input breaker on the front panel. Repeat this procedure every 2 months if the UPS is stored in a high temperature environment.

3 SET UP

3.1 Inspection

Inspect the UPS upon receipt. Notify the carrier and dealer if there is damage to the shipping carton or the UPS. If shipping damage is present, please keep all packaging materials until the shipping claim has been resolved. The package is recyclable; save it for reuse or dispose of it properly.

3.2 Storage and Operation of UPS

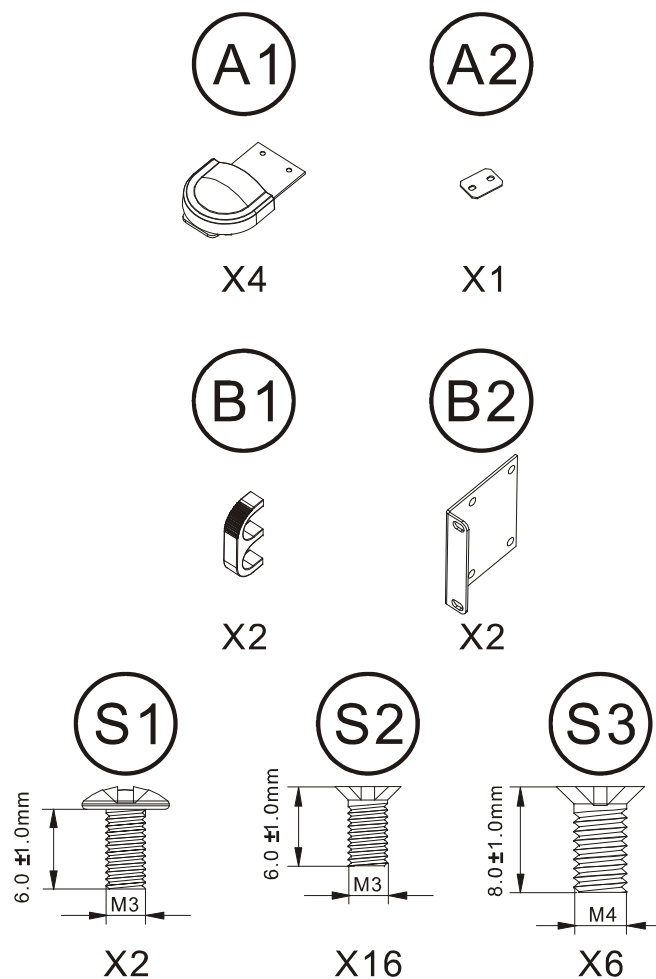
The UPS should be stored and operated in a well-ventilated and climate-controlled low-humidity environment.



3.3 Unpacking

1. Take the UPS out of the packing foam.
2. Remove the packing materials.
3. Standard Package includes:
 - a. User Manual
 - b. 1pc x AC Input Power Cord (Not available for hard wiring connection models)
 - c. For 230v International models with IEC connectors, the UPS should include 1pc (for 1k/1.5kVA) or 2pcs (for 2.2k/3kVA) IEC output cables.
 - d. 1set x UPS communication kit (optional)

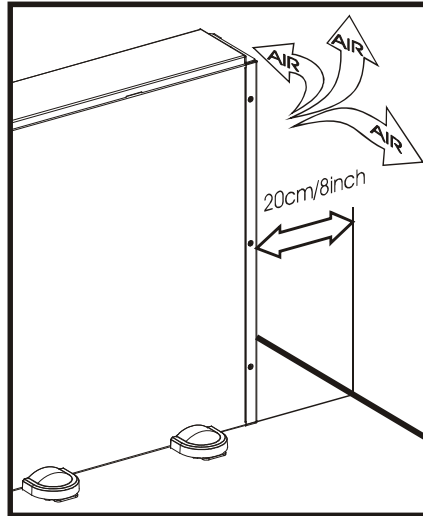
Accessories for Tower and Rack Mount



3.4 Selecting Installation Position

In order to minimize the possibility of damage to the UPS and extend the life of the UPS, it is necessary to select a proper environment to install the unit. Please follow the instructions below:

1. Keep at least 20cm(8 inches) clearance from the rear panel of the UPS from the wall or other obstructions.
2. Do not block air-flow to the ventilation openings on the front and rear of the unit.
3. Please ensure the installation site environmental conditions meet the UPS specifications to avoid overheating and excessive moisture and to prolong battery life.
4. Do not place the UPS in a dusty or corrosive environment or near any flammable objects.
5. This UPS is not designed for outdoor use.

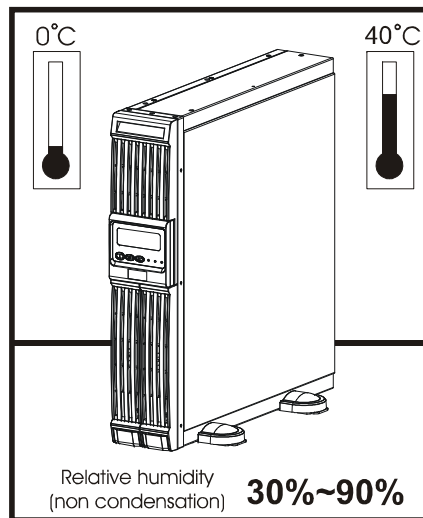


3.5 UPS Setup

The UPS offers a flexible form factor enabling integration into a wide variety of environments.

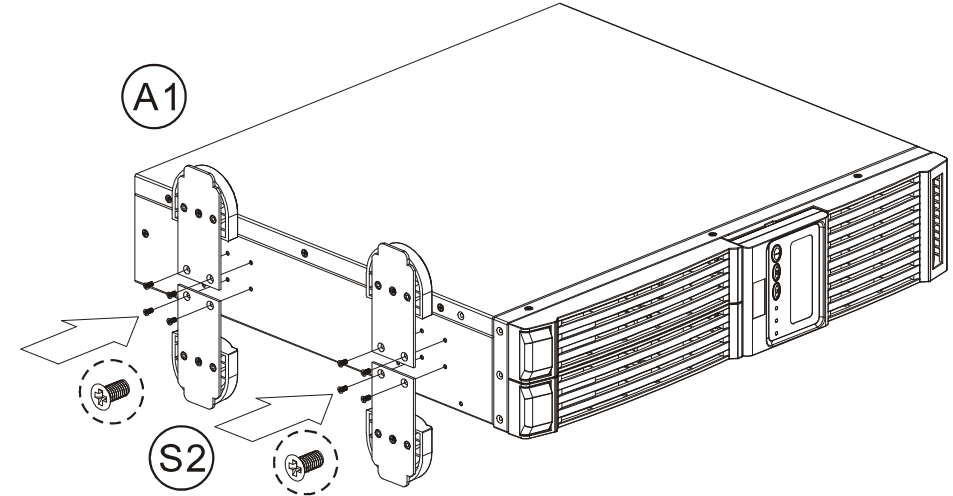
The UPS uses a 2U rack/tower convertible design for 1KVA to 3KVA systems.

If you are installing the UPS in a tower, continue to the following section, "Tower setup" otherwise; continue to "Rack-Mount setup".



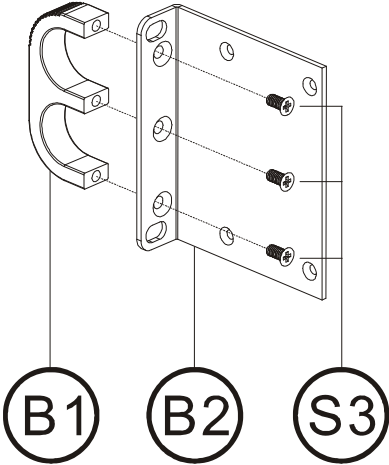
3.6 Tower Setup

Stand alone unit

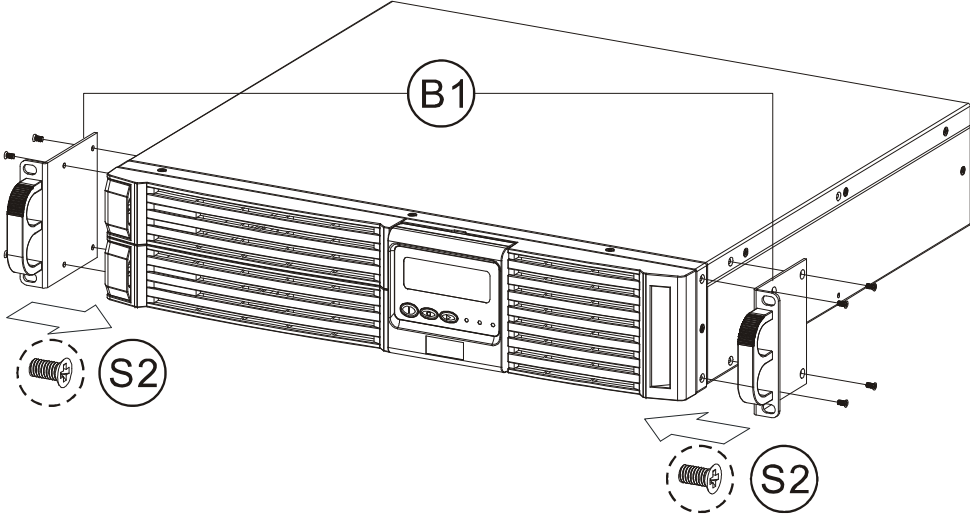


3.7 Rack-Mount Setup

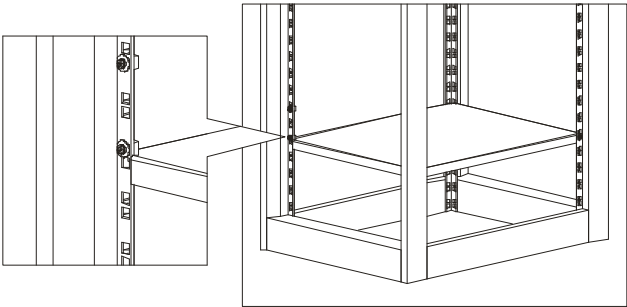
Step1



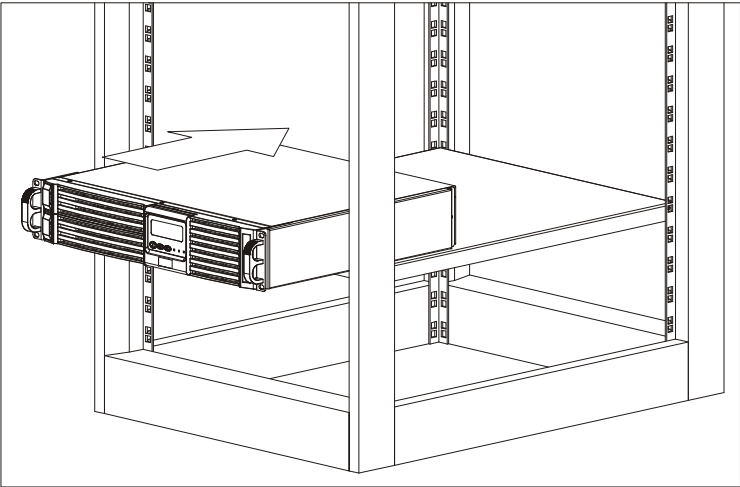
Step2



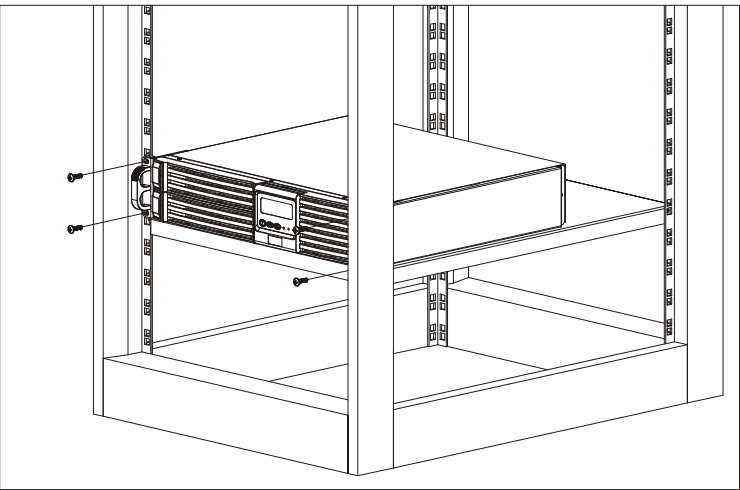
Step3



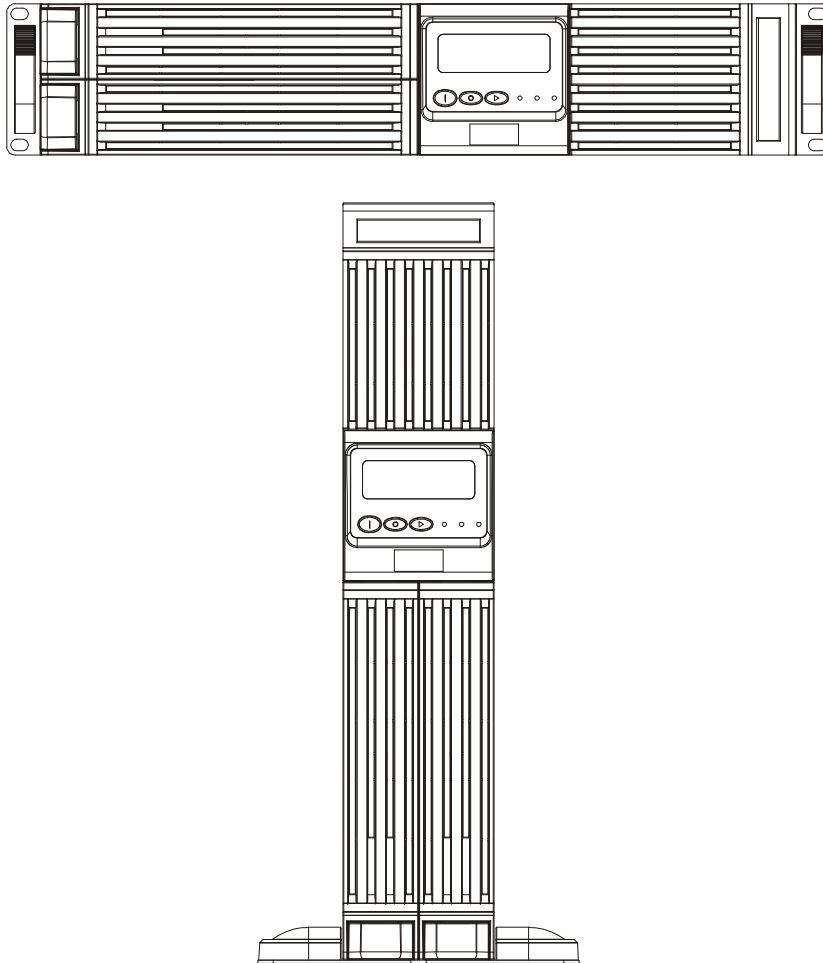
Step4



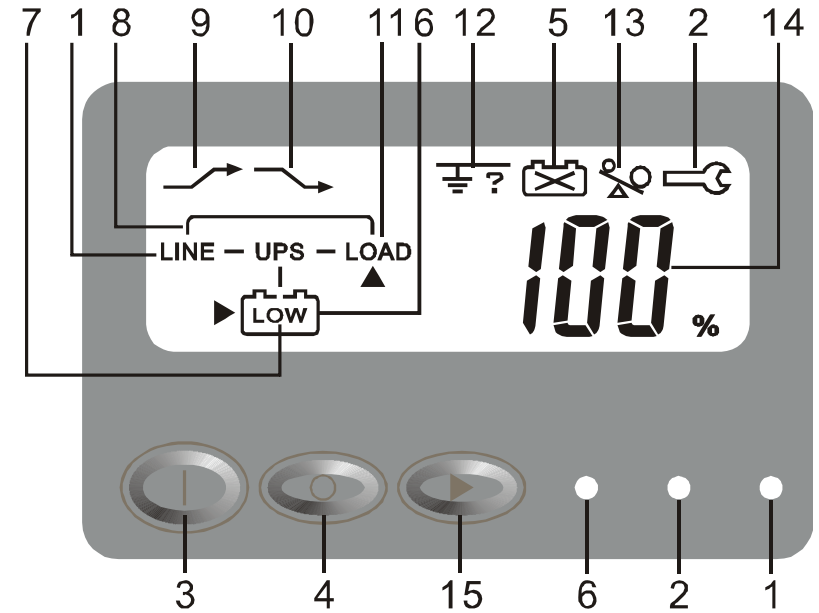
Step5



3.8 UPS Front Panel



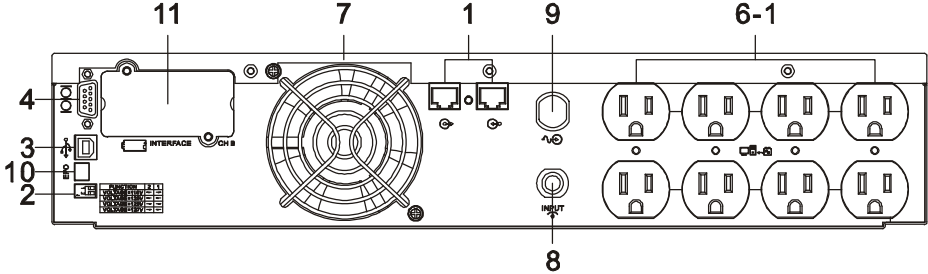
3.9 LCD Display Panel



1. Utility LED LINE
2. Fault LED
3. On Switch
4. Off Switch
5. Battery Replacement
6. Battery Backup LED
7. Battery Low
8. Bypass
9. Utility Low, UPS Boost
10. Utility High, UPS Buck
11. UPS Output Indicator
12. Polarity Error or Ground Fault
13. Overload
14. Load/Battery Level (%)
15. Load/Battery Level Indication Control Button

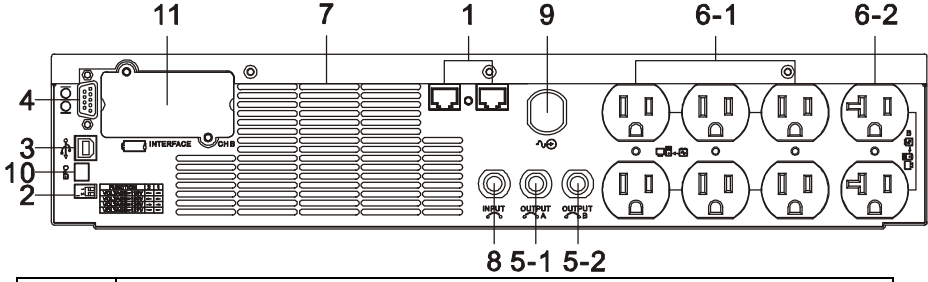
3.10 **UPS Rear Panel**

750 / 1000 / 1500VA 120V



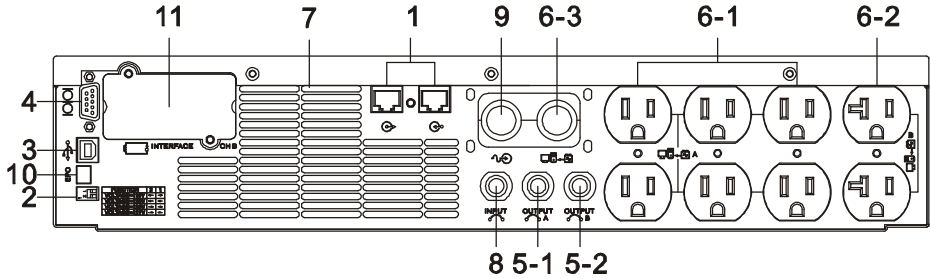
Item	Description
1	Data Line Connectors
2	Voltage Configuration Switch
3	USB Port
4	RS232 (DB-9) Port
6-1	NEMA 5-15R Output Receptacles
7	Cooling Fan
8	12A Input Circuit Breaker (750 and 1000 model only) 15A Input Circuit Breaker (1500 model only)
9	NEMA 5-15P Input Power Core
10	REPO
11	Intellislot Port

2200VA 120V(1920VA/1920W for UL)



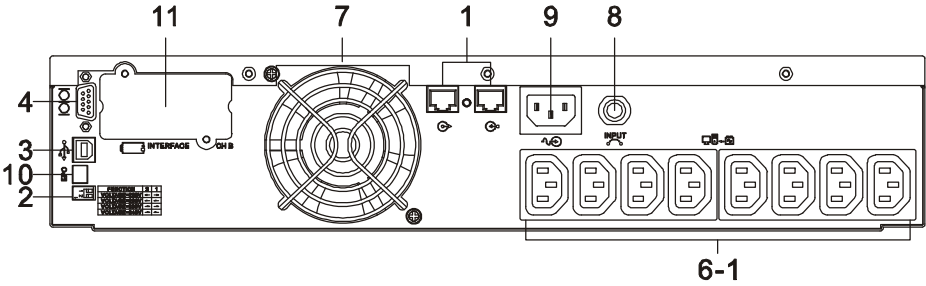
Item	Description
1	Data Line Connectors
2	Voltage Configuration Switch
3	USB Port
4	RS232 (DB-9) Port
5-1	15A Output Circuit Breaker for 6-1
5-2	20A Output Circuit Breaker for 6-2
6-1	NEMA 5-15R Output Receptacles
6-2	NEMA 5-20R Output Receptacles
7	Cooling Vents
8	30A Input Circuit Breaker
9	NEMA 5-20P Input Power Core
10	REPO
11	Intellislot Port

3000VA 120V



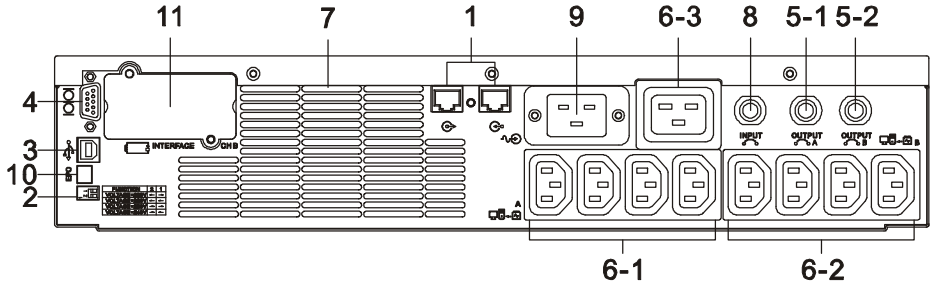
Item	Description
1	Data Line Connectors
2	Voltage Configuration Switch
3	USB Port
4	RS232 (DB-9) Port
5-1	15A Output Circuit Breaker for 6-1
5-2	20A Output Circuit Breaker for 6-2
6-1	NEMA 5-15R Output Receptacles
6-2	NEMA 5-20R Output Receptacles
6-3	NEMA 5-30R Output Receptacles
7	Cooling Vents
8	30A Input Circuit Breaker
9	NEMA L5-30P Input Power Core
10	REPO
11	Intellislot Port

750/ 1000/ 1500VA 230V



Item	Description
1	Data Line Connectors
2	Voltage Configuration Switch
3	USB Port
4	RS232 (DB-9) Port
6	IEC-320-C13 Output Receptacles
7	Cooling Fan
8	7A Input Circuit Breaker (750 model only) 8A Input Circuit Breaker (1000 model only) 10A Input Circuit Breaker (1500 model only)
9	IEC-320-C14 Input Socket
10	REPO
11	Intellislot Port

2200/ 3000VA 230V

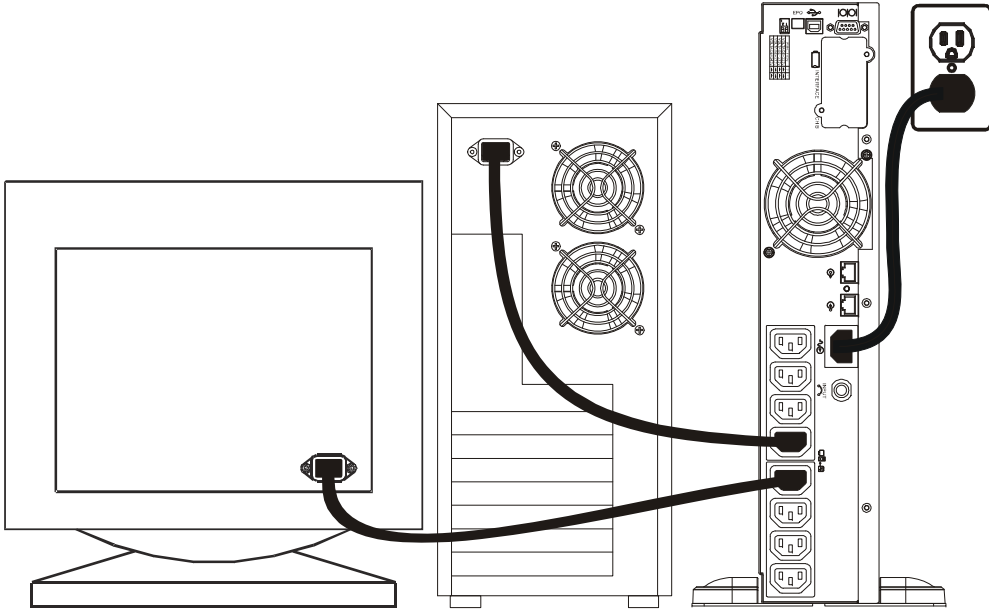


Item	Description
1	Data Line Connectors
2	Voltage Configuration Switch
3	USB Port
4	RS232 (DB-9) Port
5-1	10A Output Circuit Breaker for 6-1
5-2	10A Output Circuit Breaker for 6-2
6-1	IEC-320-C13 Output Receptacles
6-2	IEC-320-C13 Output Receptacles
6-3	IEC-320-C19 Output Receptacles
7	Cooling Vents
8	15A Input Circuit Breaker(2200 model only) 20A Input Circuit Breaker(3000 model only)
9	IEC-320-C20 Input Socket
10	REPO
11	Intellislot Port

4 INSTALLATION

4.1 Connect Utility and Load

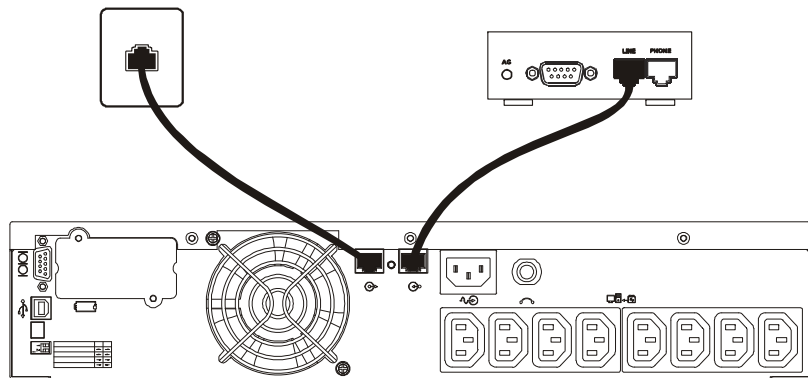
First, connect the UPS with utility power, then plug the loads into the outlets on the rear of the UPS. To use the UPS as a master “On/Off” switch, make sure that all of the loads are switched “on”. These UPS outlets provide battery backup and surge protection to the equipment when utility voltage is out of specification.



Caution---
Do not connect a laser printer to the UPS outlets!

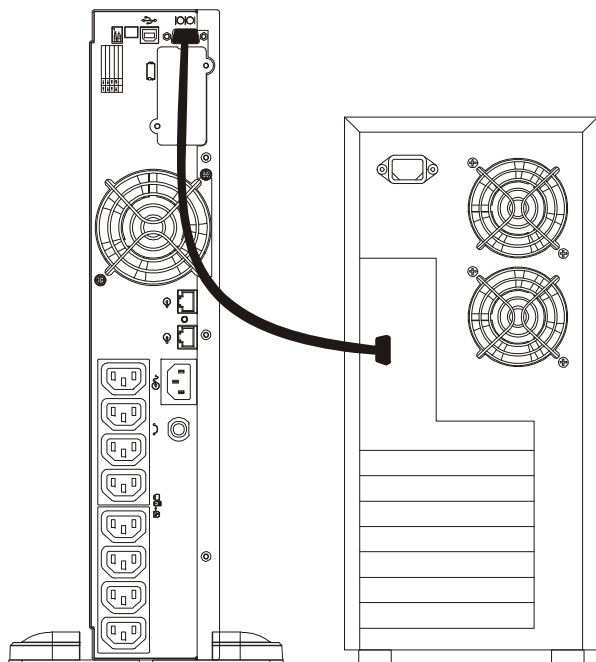
4.2 Connect Network Surge protection

Connect a 10 base-T / 100 base-T network cable to the RJ-45 network surge protection “IN” jack on the rear of the UPS. Connect from the “OUT” jack with network cabling to network equipment.



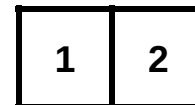
4.3 Connect Computer Interface Port

Connect the supplied interface cable (RS-232 or USB, Optional) between the interface port on the rear of the UPS and the computer interface port. See software installation guide in the CD-ROM (Optional) for installation purpose.



4.4 REPO Switch

The UPS is equipped with an Emergency Power Off (EPO) switch. The user must supply a means of interfacing with the EPO circuit to allow disconnecting the UPS input feeder breaker to interrupt all sources of power to the UPS and connected equipment to comply with national and local wiring codes and regulations.



1 = REPO+
2 = Ground
Short Pin 1 and Pin 2 to enable the REPO function

5 OPERATION

5.1 *Turn on the UPS*

1. Connect the UPS to the wall receptacle. LCD will display "OFF", when Utility is normal. If there is nothing on the LCD, go to step 3.
2. Press the "On" Switch on the front panel for approximately 3 seconds until the audible alarm beep sounds, then release the "On" Switch to start the UPS. Both the LCD and Utility LED (Green) are lit. The start-up procedure is completed and the connected devices are protected by the UPS.
3. To cold start the UPS, press the "On" Switch on the front panel for approximately 3 seconds until the LCD lights up and audible alarm beep sounds, then release the "On" Switch. The UPS starts operating and the Battery Backup LED (Amber) lights up. The cold start-up procedure is completed and the loads are supplied by the UPS.
4. The UPS will run under Backup mode with the audible alarm beep sounding every 2 seconds in case of blackout or over/under voltage. Once normal utility power is restored, the UPS will run under Utility mode and the audible alarm will be silenced.

5.2 *Turn Off the UPS*

1. Press the "Off" Switch for at least 3 seconds to turn off the UPS. If you press the "Off" Switch less than 3 seconds, the UPS will not execute the shutdown command. The UPS will automatically shut off the output and beep for 5 seconds then completely shut itself down.
2. The UPS will automatically shut itself down in case of overload, short-circuited output, or a low battery condition when in Battery Backup mode.

5.3 *Plug-in Charge*

1. If the Input Power Cord is connected to the wall receptacle properly and the utility is normal, the UPS will start charging the battery automatically. The UPS does not have to be powered on to charge the battery.

2. If the UPS is not in active use, charge the battery for at least 8-12 hours every 3 months to keep the batteries in good working condition.

5.4 **Auto-Restart**

After an extended power outage, if the Input Power Cord is properly connected to the wall receptacle and Utility power is normal, the UPS will automatically restart and restore power to the connected devices and begin recharging the battery.

5.5 **Alarm Silence**

1. The audible alarm beep can be silenced by pressing the “On” Switch for approximately 1 second while the UPS is in “Backup” mode.
2. Unless any other warning or fault condition occurs, the audible alarm will remain silenced once turned off.

5.6 **Self Test**

1. Under Utility Normal condition, press the “On” Switch for 3 seconds to execute the Battery Self-test function.
2. If the battery is normal, the UPS will enter into Battery Backup Mode for 10 seconds then return to Utility Mode.
3. If the battery voltage is detected lower than set limit, the Battery Replacement LCD  will blink for 5 seconds. The self-test procedure will not be completed. If the battery is detected as weak or dead, the Battery Replacement LCD  will be illuminated. Please contact Orion Power Systems Technical Support for battery replacement information.

⚠Caution---

The UPS will not provide power to the outlets if the if the start-up operation is not completed properly.

ⓘ Important Notice---

Plug the UPS onto the wall receptacle to charge the UPS for at least 8 hours after initial installation.

ⓘ Storage ---

Store at -15 to +30 °C (+5 to +86 °F), charge the UPS battery every three months.

Store at +30 to +45 °C (+86 to +113 °F), charge the UPS battery every two months

6 **UPS MAINTENANCE**

6.1 **Battery Replacement**

When the UPS is started up or a self-test is executed, the Battery Replacement LED may be illuminated due to a weak or dead internal battery.

1. When the Battery-Replacement (RED LED) is illuminated, leave the UPS to re-charge the battery for at least 8 ~ 10 hours. Run the self-test procedure again to re-test the battery.
2. If the Battery Replacement (RED) LED remains illuminated, the internal batteries should be replaced. Replace batteries following the procedure in Section 6.2, then push the “On” Switch to reset the UPS and turn off the Battery Replacement light.

⚠Caution---

The UPS will not provide power to the outlets if the if the start-up operation is not completed properly.

⚠Caution---

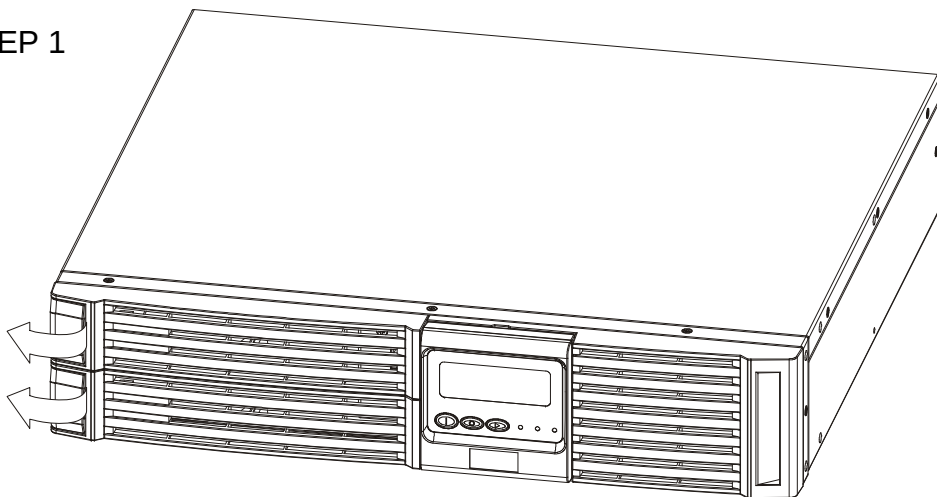
The battery is heavy, pull the battery out onto flat, stable surface.

⚠Caution---

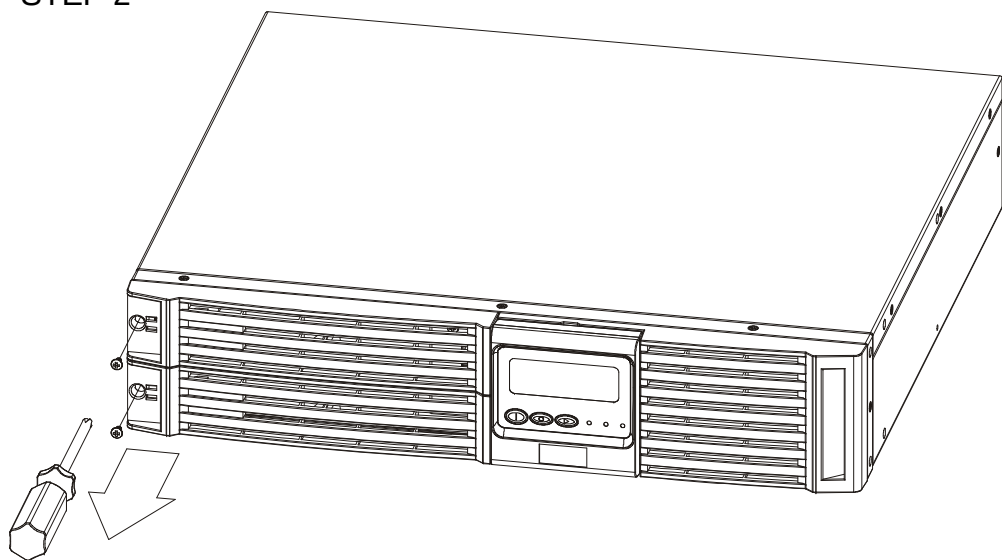
DO NOT DISCONNECT the batteries while the UPS is operating in Backup mode.

6.2 How to Replace Battery

STEP 1



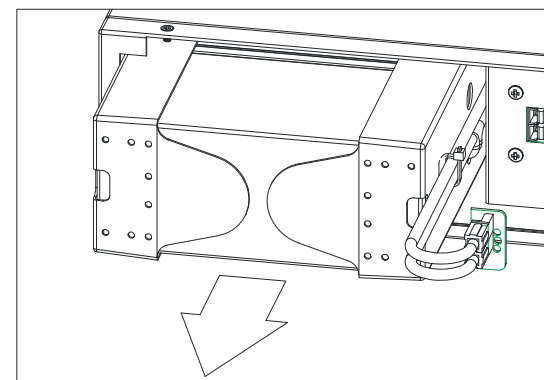
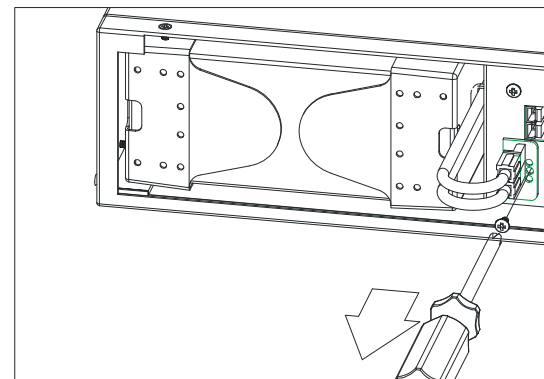
STEP 2

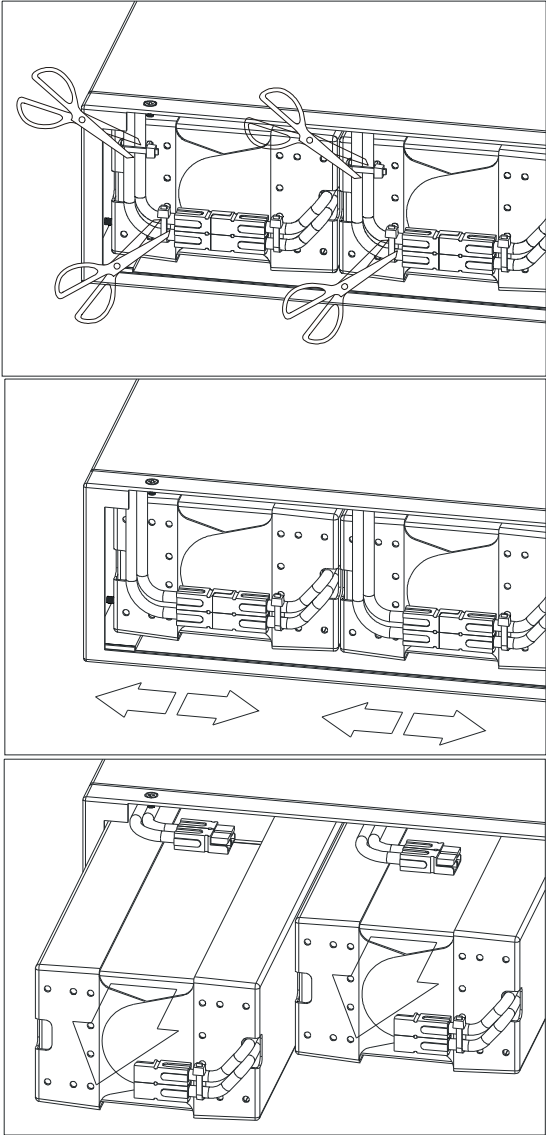


STEP 3



STEP 4
750/ 1000/ 1500VA





6.3 Recycling the Used battery



Contact your local recycling or hazardous waste center for information on proper disposal of the used battery.

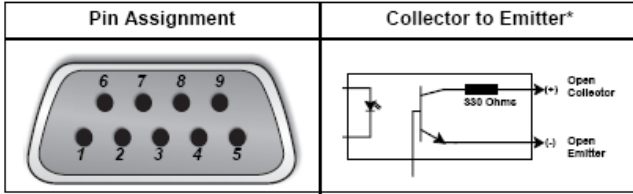
7 Communication

7.1 DB-9 Connector

The UPS has a DB-9 (9 pin female) connector on the rear to allow UPS status communications with a computer running UPS software. The connection provides serial communication, On Battery and Low Battery signals.

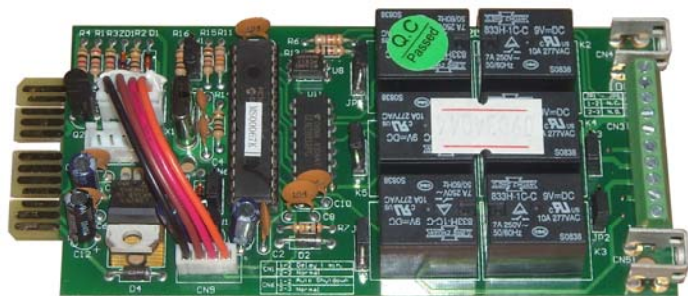
Table 4 DB-9 pin assignment

DB-9 Pin	Assignment Description
1	Low Battery (open collector)
2	UPS TxD
3	UPS RxD
4	N.C.
5	Common
6	N.C.
7	Low Battery (open emitter)
8	Utility Fail (open emitter)
9	Utility Fail (open collector)



8 Optional Communication Cards

8.1 DCE (Dry Contact) card



8.1.1 The pin assignments of 10-Pin Terminal :

1	2	3	4	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

- 1 → N/A
- 2 → Utility Abnormal
- 3 → Utility Normal
- 4 → AVR On
- 5 → Battery Low
- 6 → N/A
- 7 → N/A
- 8 → Common
- 9 → Shutdown UPS positive(+) signal
- 10 → Shutdown UPS Negative(-) signal

- 8.1.2 The shutdown function will be activated, after a +6~+25Vdc is put between pin 9 and pin 10 for 5 seconds.
- 8.1.3 The capacity of each relay contact is 40Vdc/25mA.
- 8.1.4 Installation Position : Optional Slot.
- 8.1.5 Flexible signal output for N.C.(Normal Close) or N.O.(Normal Open) contact by shorting pin1-2 or pin2-3 form JP1-5.
- 8.1.6 The shutdown function will be enabled in 1 minute after blackout occurs if the pin1-2 of both CN1 and CN6 are shorted by cap. Or, the shutdown function can only be enabled by pin9-10 of CN3 if the pin2-3 of both CN1 and CN6 are shorted by cap.

8.2 SNMP Web Card - Ethernet



- 8.2.1. For installation, please refer to the user's manual attached with the card.
- 8.2.2. Installation Position : Optional Slot

9 SPECIFICATIONS

9.1 120V

Model number	750/1000VA	1500VA	2200VA	3000VA
Power Rating, VA/W	750VA/750W 1000VA/900W	1500VA/1350W	1920VA/1920W	3000VA/2700W
Dimensions, W x D x H, in				
Unit	3.5"(2U) H x 18"W x 17"D	3.5"(2U) H x 18"W x 17"D	3.5"(2U) H x 18"W x 26"D	3.5"(2U) H x 18"W x 26"D
Weight, lbs				
Unit	45	48	77	85
Input AC Parameters				
Surge Protection	570J			
Voltage Range Without Battery Operation	83~159, configurable			
Frequency Range	45~65Hz, (±0.5Hz)			
Input Power Cord	10ft(3m) attached, w/ NEMA 5-15P	10ft(3m) attached, w/ NEMA 5-15P	10ft(3m) attached, w/ NEMA 5-20P	10ft(3m) attached, w/ NEMA L5-30P
Output Receptacles	(8) NEMA 5-15R	(8) NEMA 5-15R	(6) NEMA 5-15R (2) NEMA 5-20R	(6) NEMA 5-15R (2) NEMA 5-20R (1) NEMA L5-30R
Voltage (Normal mode)	110 / 120 / 127 VAC (configurable) ±10%			
Voltage (Battery Mode)	110 / 120 / 127 VAC (configurable); ±5% before low battery warning			
Transfer Time	4-6 ms typical			
Waveform	Sinewave			
Frequency (Normal Mode)	45~65Hz, (±0.5Hz)			
Frequency (Battery Mode)	50/60Hz, (±0.5Hz), auto sensing			
Overload Warning				
Normal Mode	>100% - 109%	Continuous Overload Alarm and power to the load		
	>110% - 120%	Shutdown after 10 minutes		
	>120%	Shutdown UPS immediately		
Battery Mode	>100% - 119%	Continuous Overload Alarm till end of battery discharged		
	>120% - 130%	Shutdown after 10 seconds		
	>130%	Shutdown UPS immediately		
Battery Parameters				
Type	Valve-regulated, nonspillable, lead acid			

Backup Time *				
	1000VA	1500VA	2200VA	3000VA
Full Load	7m	5m	5m	5m
Half Load	19m	16m	16m	16m
Recharge Time	5 hours to 90% of rated capacity, after full discharge into resistive load			
Environmental				
Operating Temperature	+32°F to + 104°F (0°C to + 40°C)			
Storage Temperature	+5°F to + 104°F (-15°C to + 40°C)			
Relative Humidity	0% to 95%, non-condensing			
Operating Altitude	Up to 10,000 ft. (3000m) at 95°F (35°C) without derating			
Audible Noise	<40 dBA, internal fan(s) Off		<40 dBA, internal fan(s) Off	
	<45 dBA, internal fan(s) On		<45 dBA, internal fan(s) On	
Agency				
Safety	UL 1778, c-UL Listed			
Surge	ANSI C62.41 CatA Lev3 (surges) IEC61000-4-5			
ESD	IEC61000-4-2			
Susceptibility	IEC61000-4-3			
Electrical Fast Transient	IEC61000-4-4			
Emissions	FCC Part 15, Class A			
Conducted Immunity	EN61000-4-6			
Harmonics	EN61000-3-2			
Network surge	UL 497 B			
Transportation	ISTA Procedure 1A Certification			

* Runtimes reflect .7 power factor and are approximate. Run times may vary depending on battery age, temperature, etc.

Orion Power Systems Service and Technical Support

If you have any problems or questions with the UPS, call your local distributor or Orion Power Systems technical support at the following telephone number :

In the United States: **1-877-385-1654**

Please have the following information ready when you call:

- Model number and Serial number
- Description of failure or problem
- Date of failure or problem
- Customer contact information and return address

If repair is necessary, you will be given a Returned Material Authorization (RMA) number. The RMA number must appear on the outside of the box and on the Bill Of Lading. Original packaging should be used if available. Systems that get damaged in transit as a result of improper packaging are not covered under warranty. A replacement or repair unit will be shipped, freight prepaid for all units under warranty.

NOTE: *For critical applications, immediate replacement may be available.*