

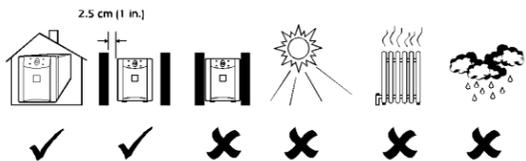
## Initial Start-Up

To obtain warranty coverage, please fill out and return the warranty registration card now.

### Inspection

Inspect the UPS upon receipt. Notify the carrier and dealer if there is damage. The packaging is recyclable; save it for reuse or dispose of it properly.

### Placement



Install the UPS in a protected area that is free of excessive dust and has adequate air flow. Do not operate the UPS where the temperature and humidity is outside the specified limits.

**Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the warranty.**

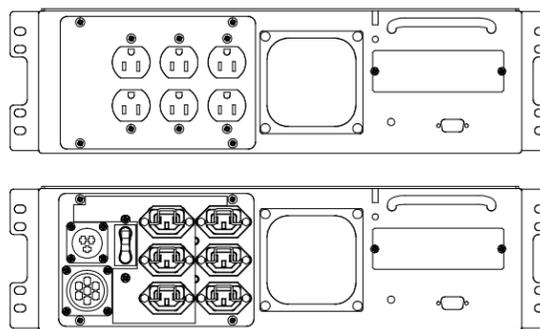
### Installation

To install this UPS, please follow the installation instructions in the *Smart-UPS Quick Reference Guide*. This UPS is equipped with a SmartSlot for accessories. See the APC Website (www.apcc.com) for available accessories.

### Charge the battery

The UPS charges its battery whenever it is connected to utility power. The battery will charge fully during the first 4 hours of normal operation. Do not expect full runtime during this initial charge period.

### Rear View



SU2000R3X155  
SU1500R3X155

SU2000R3X155-1

### Connect Computer Interface Port (Optional)

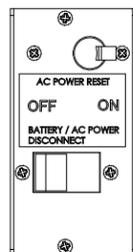
Power management software and interface kits can be used with this UPS. Use only kits supplied or approved by the manufacturer. If used, connect the interface cable to the 9-pin computer interface port on the back panel of the UPS. Secure the connector's screws to complete the connection. The UPS detects line voltage distortions such as spikes, notches, dips, and swells, as well as distortions caused by operation with inexpensive fuel-powered generators. By default, the UPS reacts to distortions by transferring to on-battery operation to protect the loads. Where power quality is poor, the UPS may frequently transfer to on-battery operation. If the loads can operate normally under such conditions, battery capacity and service life may be conserved by reducing the sensitivity of the UPS.

### Low Battery Warning Interval

By default, the low battery warning occurs when there are approximately two minutes of on-battery run time remaining. This may not be enough time to gracefully shut down some protected computer systems.

## Operating Instructions

### Control Switch



#### AC POWER RESET

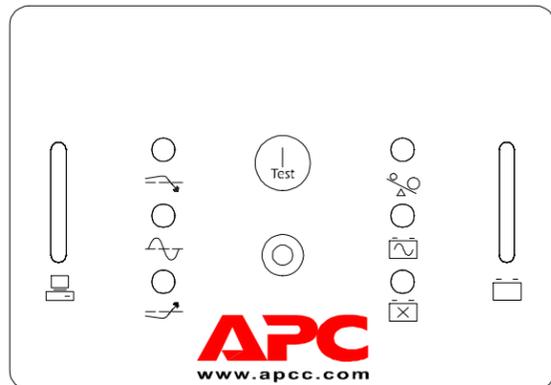
The AC power reset switch/ circuit breaker controls the AC input source and protects the UPS by cutting off the AC input in case of an overload.

#### BATTERY / AC POWER DISCONNECT

The battery / AC power disconnect switch disconnects the battery power and the control logic to the UPS.

If shipment to the factory is necessary, please switch BATTERY / AC POWER DISCONNECT to OFF.

### Control Panel



**On/Off** With the UPS plugged in, press and release the large upper on/test button to supply power to the loads. The loads are immediately powered while the UPS performs a self-test.

**Off** Press and release the small, lower off button to turn off power to the loads. It may be convenient to use the UPS as a master on/off switch for the protected equipment.

**Note: Whenever the UPS is plugged in and utility voltage is present, the charger maintains battery charge.**

**On-line LED** The on-line LED illuminates when the UPS is supplying utility power to the loads.

### Self-test

The UPS performs a self-test automatically when turned on, and every two weeks thereafter (by default). Automatic self-test eases maintenance requirements by eliminating the need for periodic manual self-tests.

During the self-test, the UPS briefly operates the loads on-battery. If the UPS passes the self-test, it returns to on-line operation.

**Replace Battery LED** If the UPS fails the self-test it immediately returns to on-line operation and lights the replace battery LED.

The loads are not affected by a failed test. Recharge the battery overnight and perform the self-test again. If the replace battery LED is still on, replace the battery using the *Replacing the Battery* procedure.

### SmartTrim

The SmartTrim LED comes on to indicate that the UPS is compensating for a high voltage.

### SmartBoost

The SmartBoost LED comes on to indicate that the UPS is compensating for a low voltage.

### On Battery

During on-battery operation, the on-battery LED illuminates and the UPS sounds an audible alarm consisting of four beeps every 30 seconds. The alarm stops when the UPS returns to on-line operation.

### Low Battery

When the UPS is operating on-battery and the energy reserve of the battery runs low, the UPS beeps continuously until the UPS shuts down from battery exhaustion or returns to on-line operation.

### Battery Charge Bar Graph

The 5-LED display on the right of the front panel shows the present charge of the UPS's battery as a percentage of the battery's capacity. When all five LEDs light, the battery is fully charged. The top LED goes out whenever the battery is not 100% charged. When the LEDs are flashing, the battery can supply less than the "low battery warning interval" time for the load.

### Shutdown Mode

If there is no utility power present, a host system connected to the computer interface port can command the UPS to shut down. This is normally done to preserve battery capacity after a controlled shutdown of the protected system. In shutdown mode the UPS stops supplying power to the load, waiting for the return of utility power.

The UPS scrolls the front panel indicators sequentially in shutdown mode. If the UPS has shutdown due to a low battery, the UPS lights the Battery Charge Bar Graph only. When line power is restored, the UPS returns to on-line operation.

### Replace Battery

If the battery fails a self-test, the UPS emits short beeps for one minute and the replace battery LED illuminates. The UPS repeats the alarm every five hours. Perform the self-test procedure to confirm replace battery conditions. The alarm stops when the battery passes the self-test.

### Load Bar Graph

The 5-LED display on the left of the front panel shows the power drawn from the UPS by the load. The display indicates the percentage of the UPS's rated capacity. For example, if three LEDs are lit, the load is drawing between 50% and 67% of the UPS's capacity. If all five LEDs light, thoroughly test your complete system to make sure that the UPS will not become overloaded.

### Overload

When loads exceed the UPS's capacity, the overload LED illuminates, the UPS emits a sustained tone, and the input circuit breaker may trip (the resettable center plunger of the circuit breaker pops out). The alarm remains on until the overload is removed. Disconnect nonessential load equipment from the UPS to eliminate the overload. If there is AC power and the circuit breaker does not trip during overload, the loads are still powered. If the circuit breaker trips and the UPS attempts to go on-battery, the output AC will shut down.

### Cold Start

When the UPS is off and there is no utility power, it is possible to cold start the UPS to power the loads from the UPS's battery.

**Note: Cold start is not a normal condition.**

**Test**

- Press and hold the on/test button until the UPS begins beeping.
- Release the on/test button during the beeping to start the UPS.

### Utility Voltage Bar Graph

This UPS has a diagnostic feature that displays the utility voltage. With the UPS plugged into the normal utility power, press and hold the on/test button to see the utility voltage bar graph display. After approximately four seconds the 5-LED display on the right of the front panel shows the utility input voltage. Refer to the figure below for the voltage reading.

**132** The display indicates that the voltage is between the displayed value from the list and the next higher value.

**123** For example, with three LEDs lit, the input voltage is between 115 and 123 VAC.

**115**

**107** If no LEDs come on and the UPS is plugged into a working AC power outlet, the line voltage is extremely low.

**98** If all five LEDs come on, the line voltage is extremely high and should be checked by an electrician.

**Note: The UPS starts a self-test as part of this procedure. The self-test does not affect the voltage display.**

## Storage

### 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 4 hours. Disconnect any cables connected to the computer interface port to avoid unnecessarily draining the battery.

### Extended storage

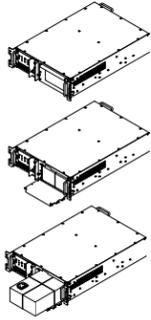
- At -15 to +30 °C (+5 to +86 °F), charge the UPS's battery every 6 months.
- At +30 to +50 °C (+86 to +113 °F), charge the UPS's battery every 3 months.

## Replacing the Battery

This UPS has an easy to replace hot-swappable battery. Battery replacement is a safe procedure, isolated from electrical hazards. See your dealer or call the number in this manual for information on replacement battery kits.

**Note: Please read the cautions in the APC Safety Guide.  
Once the battery is disconnected, the loads are not protected from power outages.**

### Battery Replacement Procedure - 1500 - 2000 VA Models



1. Unscrew the five (5) screws that hold on the battery door .with a Phillips blade screwdriver.
2. Remove the battery door and set it aside.
3. Pull the white cord on the battery connector to disconnect the batteries.
4. Grip and pull the clear battery recycling and **pull** firmly to start removing the batteries from the UPS.
5. Pull the batteries out approximately six inches (6").
6. Grab the batteries from the sides using two (2) hands and pull to remove them from the UPS.

**Note: Be careful removing the batteries - they are heavy.**

7. Slide the new batteries into the unit.
8. Reconnect connector.

**Note: Small sparks at the battery connectors are normal during connection.**

9. Put the battery door in place and reinstall the screws.
10. Dispose of the old battery properly at an appropriate recycling facility or return it to the supplier in the packing material for the new battery. See the new battery instructions for more information.



## User Configuration Items

**Note: Setting these items requires optional software or hardware.**

Function	Factory Default	User Selectable Choices	Description
Automatic Self-Test	Every 14 days (336 hours)	Every 7 days (168 hours), On Startup Only, No Self-Test	Sets the interval at which the UPS will execute a self-test.
UPS ID	UPS_IDEN	Up to eight characters to define the UPS.	Use this field to uniquely identify the UPS for network management purposes.
Date of Last Battery Replacement	Manufacture Date	Date of Battery Replacement	Reset this date on battery replacement.
Minimum Capacity Before Return from Shutdown	0 percent	15, 50, 90 percent	The UPS will charge its batteries to the specified percentage before return from a shutdown.
Sensitivity	Normal	Reduced, Low	Set lower than normal sensitivity to avoid lowered battery capacity and service life in situations where the load can tolerate minor power disturbances.
Duration of Low Battery Warning	2 minutes	5, 7, 10 minutes	Sets the time before shutdown at which the UPS issues a low battery warning. Set higher than the default only if the OS needs the time for graceful shutdown.
Alarm Delay After Line Fail	5 second delay	30 second delay, At Low Battery Condition, No Alarm	To avoid alarms for minor power glitches, set the alarm delay.
Shutdown Delay	20 seconds	180, 300, 600 seconds	Sets the interval between when the UPS receives a shutdown command and when shutdown occurs.
Synchronized Turn-on Delay	0 seconds	60, 180, 300 seconds	To avoid branch circuit overload, the UPS will wait the specified time after the return of utility power before turn-on.
High Transfer Point	132 VAC	135, 138, 129 VAC	To avoid unnecessary battery usage, set the High Transfer Point higher if the utility voltage is chronically high and the load is known to work well under this condition.
Low Transfer Point	103 VAC	100, 97, 106 VAC	Set the Low Transfer Point lower if the utility voltage is chronically low and the load can tolerate this condition.

**For Computer Interface Port Specifications, see the APC Website (www.apcc.com).**

## Service

### If the UPS requires service do not return it to the dealer!

Follow these steps:

1. Use the **Troubleshooting** section of the **Quick Reference Guide** to eliminate common problems.
2. Verify that no circuit breakers are tripped. A tripped circuit breaker is the most common UPS problem!
3. If the problem persists, call customer service or visit the APC Internet Website (www.apcc.com).
  - Note the model number of the UPS, the serial number, and the date purchased. A technician will ask you to describe the problem and try to solve it over the phone, if possible. If this is not possible the technician will issue a Return Merchandise Authorization Number (RMA#).
  - If the UPS is under warranty, repairs are free. If not, there is a repair charge.
4. Pack the UPS in its original packaging. If the original packing is not available, ask customer service about obtaining a new set.
  - Pack the UPS properly to avoid damage in transit. Never use Styrofoam beads for packaging. Damage sustained in transit is not covered under warranty.
  - Include a letter with your name, RMA#, address, copy of the sales receipt, description of the trouble, your daytime phone number, and a check (if necessary).
5. Mark the RMA# on the outside of the package.
6. Return the UPS by insured, prepaid carrier to the address given to you by Customer Service.

<b>North America</b> APC 132 Fairgrounds Road West Kingston, Rhode Island 02892 USA 1-800-800-4APC/1-401-789-5735	<b>Internet</b> <a href="http://www.apcc.com">http://www.apcc.com</a> <b>E-Mail</b> <a href="mailto:apctech@apcc.com">apctech@apcc.com</a>
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## Specifications

	1500 VA	2000 VA
Acceptable input voltage	0 - 160 VAC	
Output voltage	98-132 VAC (by default)	
Input Protection	Resettable circuit breaker	
Frequency limits (on-line operation)	50 or 60 Hz, ±5%	
Transfer time	2 ms typical, 4 ms maximum	
Maximum load	1500 VA 1050 W	2000 VA 1400 W
On-battery output voltage	115 VAC	
On-battery frequency	50 or 60 Hz, ±0.1 Hz; unless synchronized to utility during brownout.	
On-battery waveshape	Low-distortion sine wave	
Protection	Overcurrent and short-circuit protected, latching shutdown on overload.	
Noise Filter	Normal and common mode EMI/RFI suppression, 100 kHz to 10 MHz	
Battery type	Spill proof, maintenance free, sealed lead-acid	
Typical battery life	3 to 6 years, depending on number of discharge cycles and ambient temperature	
Typical recharge time	2 to 5 hours from total discharge	
Operating temperature	0 to +50 °C (+32 to +104 °F)	
Storage temperature	-15 to +45 °C (+5 to +113 °F)	
Operating & storage relative humidity	0 to 95%, non-condensing	
Operating elevation	0 to +3,000 m (0 to +10,000 ft)	
Storage elevation	0 to +15,000 m (0 to +50,000 ft)	
Electromagnetic immunity	IEC 801-2, 801-3, 801-4	
Audible noise in dBA at 1 m (3 ft)	<53	
Size (H x W x D)	5.25 X 17 X 24 inches	5.25 X 17 X 28 inches
Weight - net (shipping)	100 lbs	135lbs
Safety approvals	Listed to UL 1778, certified (pending)	
EMC verification	FCC/DOC Class A (pending)	
Shock	MIL-S-901	
Vibration	MIL-STD-167	
Isolation	3000Vac input to output	