by Schneider Electric

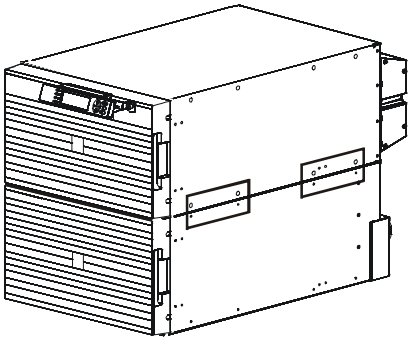
Installation and Operation

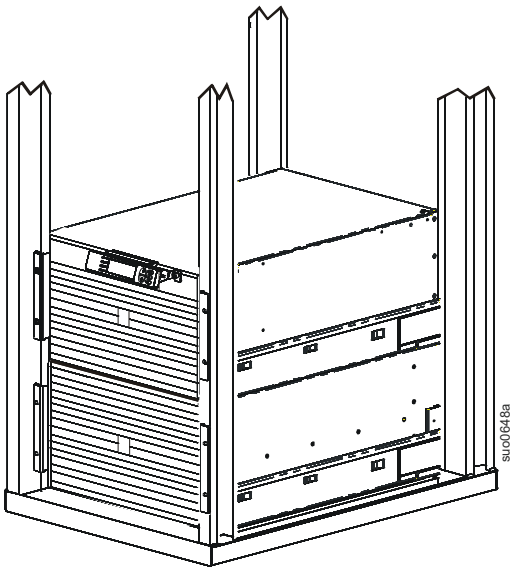
Smart-UPS™
Uninterruptible Power Supply

Stack/Rack-Mount 12U

SURT 15000/20000 VA
208/240 Vac
XLT

SURT 14000/18000 VA
200 Vac
XLJ





Important Safety Instructions

SAVE THESE INSTRUCTIONS - This manual contains important instructions that should be followed during installation and maintenance of the Smart-UPS and batteries.

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

Product Handling Guidelines

<18 kg
<40 lb

18-32 kg
40-70 lb

32-55 kg
70-120 lb

>55 kg
>120 lb

Safety and General Information

Inspect the package contents upon receipt. Notify the carrier and dealer if there is any damage.

Read the Safety Guide supplied with this unit before installing the UPS.

- Adhere to all national and local electrical codes.
- All wiring must be performed by a qualified electrician.
- Changes and modifications to this unit not expressly approved by APC by Schneider Electric could void the warranty.
- This UPS is intended for indoor use only.
- Do not operate this UPS in direct sunlight, in contact with fluids, or where there is excessive dust or humidity.
- Be sure the air vents on the UPS are not blocked. Allow adequate space for proper ventilation.
- Connect the UPS power cable directly to a wall outlet. Do not use surge protectors or extension cords.
- The equipment is heavy. Always practice safe lifting techniques adequate for the weight of the equipment.
- The batteries are heavy. Remove the batteries before installing the UPS and XLBP in rack-mount or stack configurations.
- Always install external battery packs (XLBPs) at the bottom in rack-mount or stack configurations. The UPS must be installed above the XLBPs.
- Always install peripheral equipment above the UPS in rack-mount or stack configurations.

Battery safety

⚠ CAUTION

RISK OF HYDROGEN SULPHIDE GAS AND EXCESSIVE SMOKE

- Replace the battery at least every 5 years or at the end of its service life, whichever is earlier.
- Replace the battery immediately when the UPS indicates battery replacement is necessary.
- Replace batteries with the same number and type of batteries as originally installed in the equipment.
- Replace the battery immediately when the UPS indicates a battery overtemperature condition, or when there is evidence of electrolyte leakage. Power off the UPS, unplug it from the AC input, and disconnect the batteries.
- Do not operate the UPS until the batteries have been replaced.
- *Replace all battery modules (including the modules in External Battery Packs) which are older than one year, when installing additional battery packs or replacing the battery module(s).

Failure to follow these instructions could result in equipment damage and minor or moderate injury.

* Contact APC by Schneider Electric Customer Support to determine the age of the installed battery modules.

- The battery typically lasts for two to five years. Environmental factors impact battery life. Elevated ambient temperatures, poor quality utility power, and frequent short duration discharges will shorten battery life. The battery should be replaced before end of life.
- APC by Schneider Electric uses sealed lead acid batteries. Under normal use and handling, there is no contact with the internal components of the battery. Over charging, over heating or other misuse of batteries can result in a discharge of battery electrolyte. Released electrolyte is harmful to the skin and eyes, and may be toxic.
- Replace the battery immediately when the UPS indicates battery replacement is necessary.
- Before installing or replacing the batteries, remove jewelry such as wristwatches and rings. High short circuit current through conductive materials could cause severe burns.
- The UPS will recognize as many as 10 external battery packs connected to the UPS. **Note: For each XLBP that is added, increased recharge time will be required.**

- Do not dispose of batteries by burning them. The batteries may explode.
- Do not lay tools or metal parts on top of batteries.
- Do not dispose of battery or batteries in a fire. The batteries may explode.
- Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes, and may be toxic.
- Servicing of user replaceable batteries should be performed or supervised by personnel knowledgeable about batteries and required precautions.
- A battery can present a risk of electric shock and burns by high short-circuit current.
- Failed batteries can reach temperatures that exceed the burn thresholds for touchable surfaces

Deenergizing safety

The UPS contains internal batteries and may present a shock hazard even when disconnected from the branch circuit (mains). Before installing or servicing the equipment check that the:

- input circuit breaker is in the **OFF** position.
- internal UPS the batteries are removed.
- XLBP battery modules are disconnected.

Electrical safety

- For models with a hardwired input, the connection to the branch circuit (mains) must be performed by a qualified electrician.
- 230 V models only: In order to maintain compliance with the EMC directive for products sold in Europe, output cords attached to the UPS must not exceed 10 meters in length.
- The protective earth conductor for the UPS carries the leakage current from the load devices (computer equipment).
  An insulated ground conductor must be installed as part of the branch circuit that supplies the UPS. The conductor must have the same size and insulation material as the grounded and ungrounded branch circuit supply conductors. The conductor will be green, with or without a yellow stripe.
- The ground conductor must be grounded to earth at the service equipment, or if supplied by a separately derived system, at the supply transformer or motor generator set.
- Leakage current for a pluggable, Type A UPS may exceed 3.5 mA when a separate ground terminal is used.
- The UPS input ground conductor must be properly bonded to protective earth at the service panel.
- If the UPS input power is supplied by a separately derived system, the ground conductor must be properly bonded at the supply transformer or motor generator set.

Hardwire safety

- Check that all branch circuit (mains) and low voltage (control) circuits are deenergized, and locked out before installing cables or making connections, whether in the junction box or to the UPS.
- Wiring by a qualified electrician is required.
- Check national and local codes before wiring.
- Strain relief is required for all hardwiring (supplied with select products).
  Snap in type strain reliefs are recommended.
- All openings that allow access to UPS hardwire terminals must be covered. Failure to do so may result in personal injury or equipment damage.
- Select wire size and connectors according to national and local codes.

General information

- The model and serial numbers are located on a small, rear panel label. For some models, an additional label is located on the chassis under the front bezel.
- Always recycle used batteries.
- Recycle the package materials or save them for reuse.

Product Description

The APC™ by Schneider Electric Smart-UPS™ is a high performance uninterruptible power supply (UPS). The UPS provides protection for electronic equipment from utility power blackouts, brownouts, sags, and surges, small utility power fluctuations and large disturbances. The UPS also provides battery backup power for connected equipment until utility power returns to acceptable levels or the batteries are fully discharged.

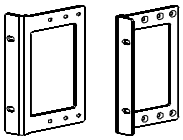
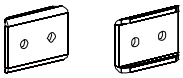
This user manual is available on the enclosed CD and on the APC by Schneider Electric Web site, www.apc.com.

Inventory

Check the package contents

• UPS • Input wiring tray • Output wiring tray • Display module • Front bezel • UPS serial cable • Network Management Card (NMC) serial cable • Ethernet jumper cable for rear panel network access 25 cm (10 in)	– Rail Kit – Four ornamental screws – Two cage nuts – Two rail cleats – Four pan head screws – Two rack-mount brackets – Eight flat head screws – Temperature sensor refer to NMC documentation for installation instructions	• Literature kit containing: – Product documentation – Documentation CD – Network Management Card utility CD – Network Management Card documentation – Safety Guide – Warranty registration card

Hardware

4		Pan head screws for securing rail cleats to unit
8		Flat head screws for securing rack-mount or tie brackets to unit
4		Ornamental screws for securing unit to rack
2		Cage nuts used in rack-mount installation
2		Rack-mount brackets
2		Rail cleats

Specifications

Environmental

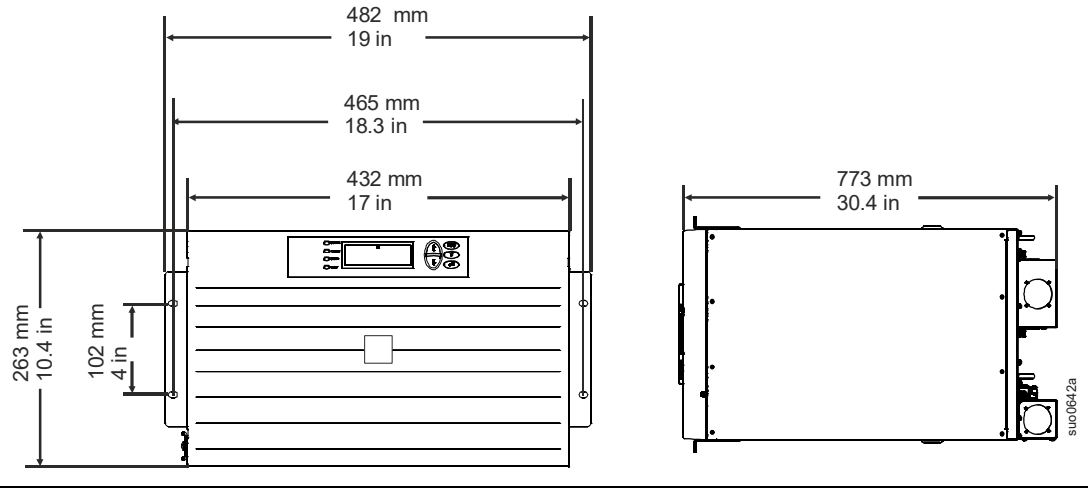
Temperature	**Operating**	0 to 40 °C (32 to 104 °F)
	Storage	-15 to 45 °C (5 to 113 °F)
Maximum Elevation	**Operating**	3,000 m (10,000 ft)
	Storage	15,000 m (50,000 ft)
Humidity		0 to 95% relative humidity, non-condensing

NOTE: Charge UPS battery every three months during storage

Physical

The UPS is heavy. Follow all lifting guidelines.		
UPS		66 kg (145 lbs)
Battery Pack	with eight battery modules	181 kg (400 lbs)
	without battery modules	44 kg (96 lbs)
	each battery module	17 kg (38 lbs)
Maximum number of external battery packs (XLBPs) supported by Smart-UPS RT		10 **Combined weights of UPS, battery pack and all XLBPs installed in a rack must not exceed rack weight limits.**

Dimensions	**UPS**	**XLBP**



Battery

Battery type	Sealed, maintenance-free, Valve Regulated Lead-Acid battery
Replacement battery module This UPS has replaceable battery modules. Refer to the appropriate replacement battery user manual for installation instructions. Contact your dealer or go the APC by Schneider Electric Web site, **www.apc.com** for information on replacement batteries.	APCRBC140
Number of battery modules	4 battery modules
Voltage for each battery module **Total voltage for the UPS** **Ah rating**	96 V ±192 V 5 Ah per battery module
XLBP cable length	approx 350 mm (13.8 in)

Battery module	UPS	XLBP
APCRBC140	SURT15KRMXLx/SURT20KRMXLx/SURT15KUXI/ SURT15KUXICH/SURT20KUXI/SURT20KUXICH	SURT192RMXLBP2
APCRBC140J	SURT14KRMXLJ/SURT18KRMXLJ	SURT192RMXLBP2J

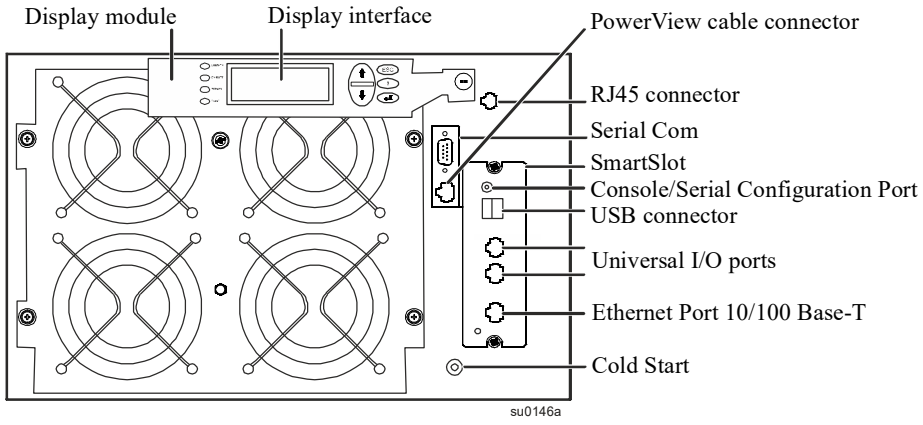
Accessories

Install accessories before connecting power to the UPS.

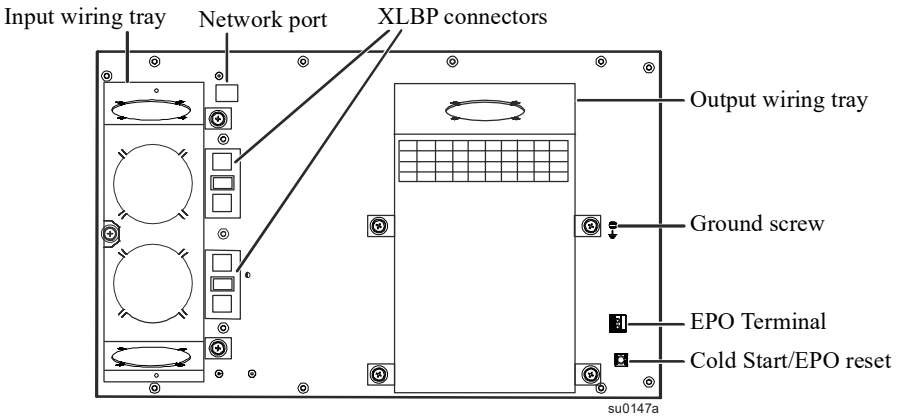
Refer to the APC by Schneider Electric Web site, **www.apc.com** for available accessories.

Front and Rear Panel Features

Front panel



Rear panel



Installation

⚠ CAUTION

RISK OF DAMAGE TO EQUIPMENT OR PERSONNEL

- The equipment is heavy. Always practice safe lifting techniques adequate for the weight of the equipment.
- Remove the batteries from the battery pack and XLBPs before installation in rack-mount or stack configurations.
- When installing a UPS and XLBPs in a rack-mount or stack configuration, always install external battery packs at the bottom of the rack with the UPS above the XLBPs.
- When installing peripheral equipment in a rack-mount or stack configuration, always install the UPS at the bottom of the rack with the peripheral equipment above the UPS.

Failure to follow these instructions can result in equipment damage and minor or moderate injury

Stack Configuration

Total stack configuration height is recommended NOT to exceed 18U. This is the equivalent of two XLBPs and one UPS.

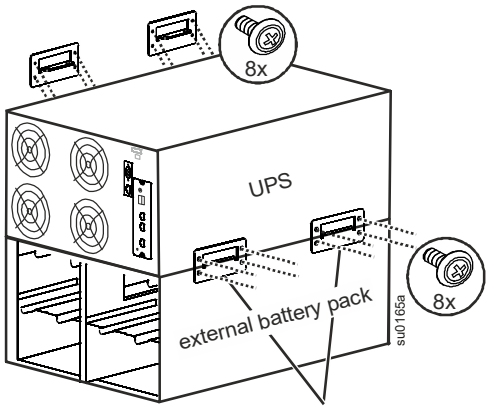
Four screws must be used to secure each tie bracket to the units, (see diagram).

For detailed instructions on installing batteries and the battery compartment doors, “Install units in rack” on this page or the manual.

Refer to the “Install units in rack” on page 8 of the manual for cable routing and bezel installation details.

Install tie brackets

Four ornamental screws, supplied with the battery pack must be used to secure each tie bracket to the units.

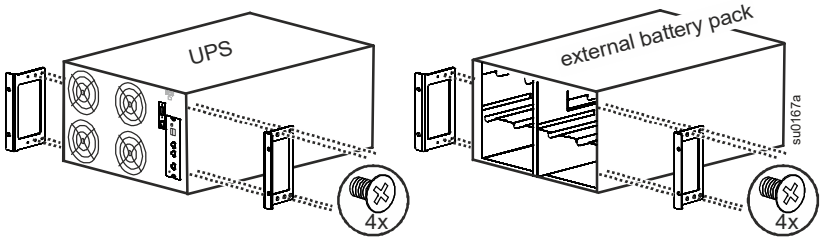


Four tie brackets supplied with each battery pack.

Rack-Mount Configuration

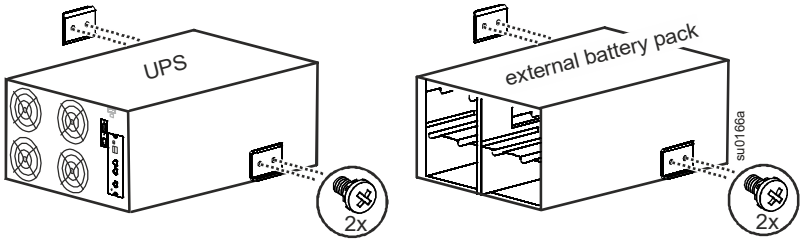
Install rack-mount brackets

Four flat head screws must be used to secure each rack-mount bracket to the unit.



Install rail cleats

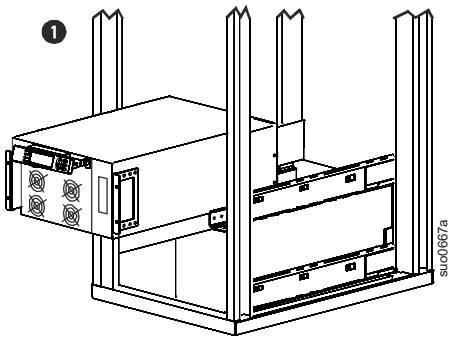
Two pan head screws must be used to secure each rail cleat to the unit.



Install rails in rack

For details on rail installation refer to the instructions included with the rail kit.

Install units in rack

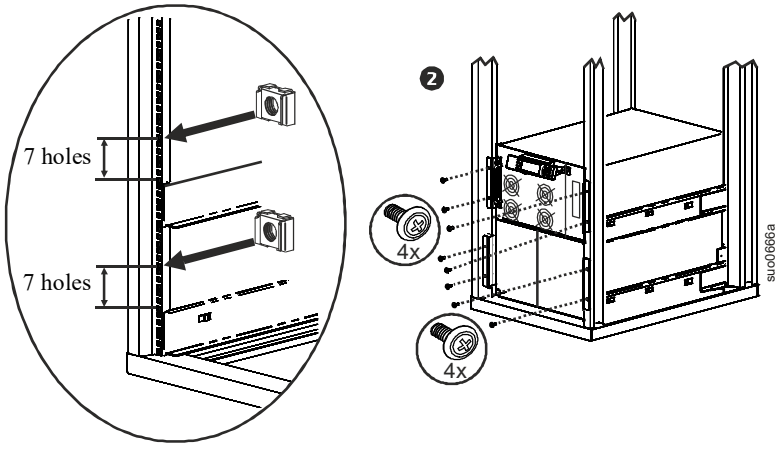


Secure the UPS and the XLBP in the rack using the cage nuts and ornamental screws included in the package.

Four ornamental screws and two cage nuts must be used to secure each unit.

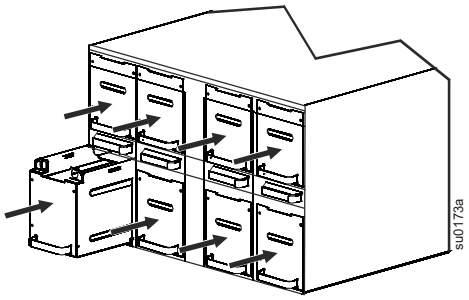
A cage nut must be used in the top hole of each rack-mount bracket when securing the unit in the rack.

The bottom hole of each rack-mount bracket must be secured using an ornamental screw in the threaded hole.

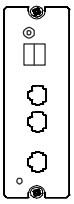


Install battery modules

NOTICE
RISK OF EQUIPMENT DAMAGE Install all eight battery modules. **Failure to follow these instructions can result in equipment damage**



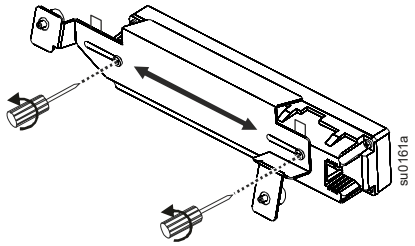
Communication Ports

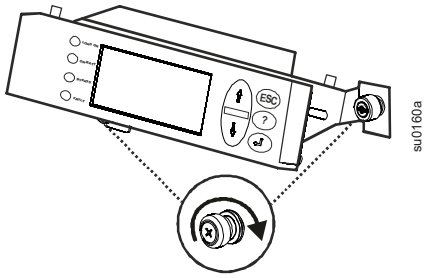
	**Serial Com port and display interface connector**	Use only the supplied cable to connect to the serial port. A standard serial interface cable is incompatible with the UPS.
	**Communication ports on the Network Management Card** **Refer to "Front and Rear Panel Features" on page 6 for port identification.**	Refer to the NMC user manual for local configuration instructions.

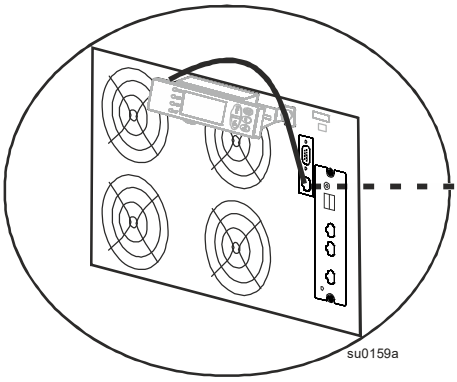
Install PowerView Module

Before attaching the PowerView module to the UPS:

1. Loosen the two bracket screws on the back of the PowerView module.
   a. Slide the bracket to the position that will accommodate the screw holes on the UPS.
   b. Tighten the screws on the bracket.
2. Secure the PowerView module to the UPS using the two thumb screws attached to the module.







Connect the PowerView cable to the PowerView connector on the UPS.

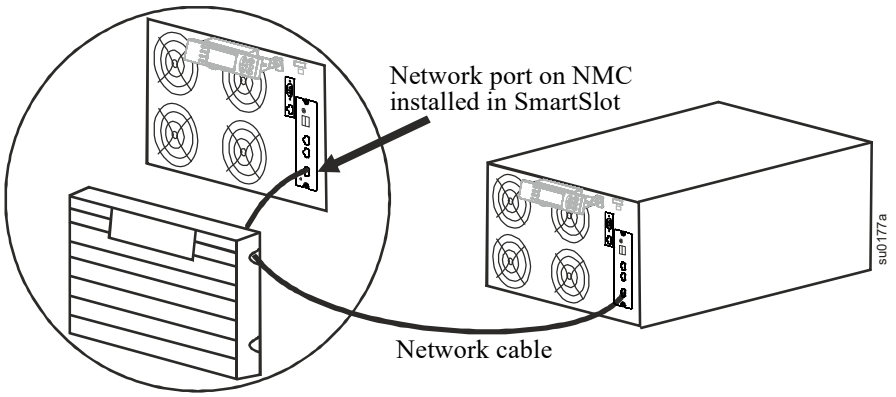
Route Network Cable

Network cable wiring front panel access

The NMC is installed in the SmartSlot located on the front of the UPS.

Connect a network cable (not supplied), to the network port on the NMC.

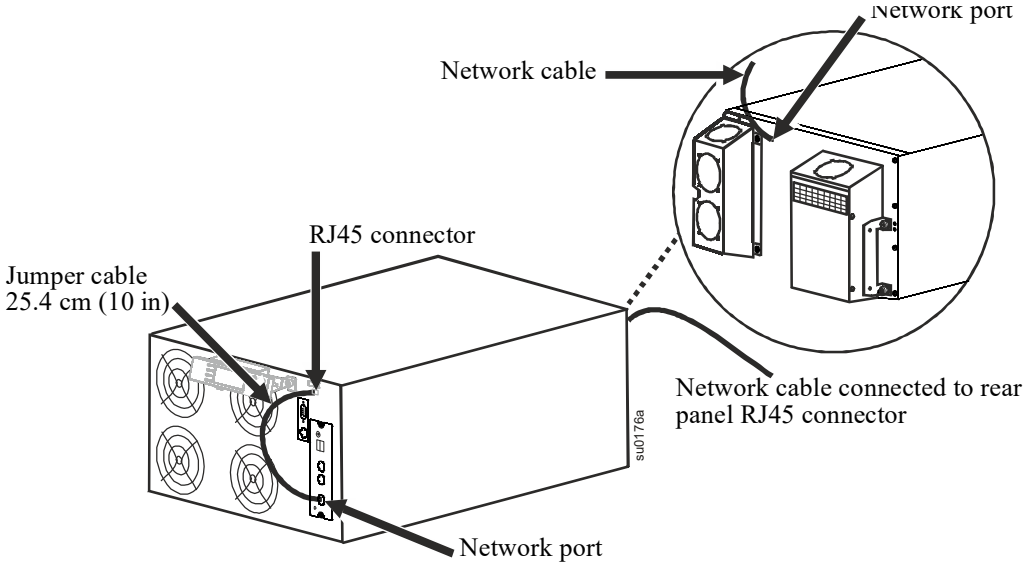
Cables connected to the UPS for front panel access must be routed through one of the notches in bezel.



Network cable wiring rear panel access

Network connection an be accessed from the RJ45 connector located on the rear panel of the UPS.

1. Locate the RJ45 connector on the front panel of the UPS. Connect the jumper cable (supplied), to the NMC RJ45 connector labeled NETWORK.
2. Connect a network cable (not supplied), from a network device to the RJ45 connector on the rear panel of the UPS.



Emergency Power Off

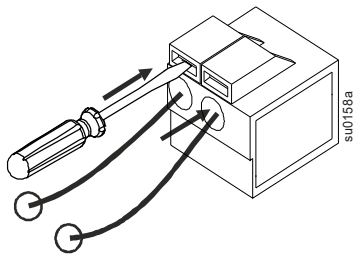
The system power can be disabled in an emergency by closing a switch connected to the emergency power off (EPO) system.

Wiring must be performed by a qualified electrician. Adhere to all local and national electrical codes.

The switch should be connected in a normally open switch contact. External voltage is not required; the switch is driven by 24 V internal supply. In closed condition, 4 mA of current are drawn.

The EPO switch is internally powered by the UPS for use with non-powered switch circuit breakers.

The EPO circuit is considered a Class 2 circuit, (UL, CSA standards) and an SELV circuit (IEC standard).

EPO terminal	located on rear panel	
EPO connector	• Strip insulation from one end of each wire to be used for connecting EPO. • Insert screwdriver into the slot above terminal to be wired. Insert stripped wire into terminal. Remove screwdriver to secure wire in terminal. Repeat for each terminal.	

Both Class 2 and SELV circuits must be isolated from all primary circuitry. Do not connect any circuit to the EPO terminal block unless it can be confirmed that the circuit is Class 2 or SELV. If circuit standard cannot be confirmed, use a contact closure switch.

Use one of the following cable types to connect the UPS to the EPO switch.

- CL2: Class 2 cable for general use.
- CL2P: Plenum cable for use in ducts, plenums, and other spaces used for environmental air.
- CL2R: Riser cable for use in a vertical run in a floor-to-floor shaft.
- CLEX: Limited use cable for use in dwellings and for use in raceways.
- For installation in Canada: Use only CSA certified, type ELC, (extra-low voltage control cable).
- For installation in other countries: Use standard low-voltage cable in accordance with national and local regulations.

Wiring Specifications

⚠ CAUTION

RISK OF ELECTRIC SHOCK

- Adhere to all national and local electrical codes.
- Wiring should be performed by a qualified electrician.
- The UPS must be wired into a branch circuit, equipped with a circuit breaker rated as specified in the tables below.
- Actual wire size must comply with required amp capacity and national and local electrical codes.
- Recommended Terminal screw tightening torque: 40 lb-in (4.5 N-m).

Failure to follow these instructions can result in equipment damage and minor or moderate injury

Wire gauges may vary.

Adhere to national and local electrical codes when wiring this unit.

Input Connections	Output Connections
Utility Input Wire to L1, N/L2, ground	**Hardwire** Wire to L1, N/L2, ground
	PDU XL battery pack PDU to UPS: Wire L1, N/L2, ground

System	Wiring	Voltage	Current Full Load (maximum)	External Input Circuit Breaker (typical)	Wire Size (typical)*
SURT14K	Input	200 Vac	80 A	100 A / 2-pole	25 mm^2 (2 AWG)
	Output	200 Vac	70 A	not required	25 mm^2 (2 AWG)
SURT15K	Input	208/240 Vac	80 A	100 A / 2-pole	25 mm^2 (2 AWG)
	Output	208/240 Vac	72 A	not required	25 mm^2 (2 AWG)
SURT18K	Input	200 Vac	100 A	125 A / 2-pole	35 mm^2 (1 AWG)
	Output	200 Vac	90 A	not required	35 mm^2 (1 AWG)

System	Wiring	Voltage	Current Full Load (maximum)	External Input Circuit Breaker (typical)	Wire Size (typical)*
SURT20K	Input	208/240 Vac	100 A	125 A / 2-pole	35 mm^2 (1 AWG)
	Output	208/240 Vac	96 A	not required	35 mm^2 (1 AWG)

* Terminal screw tightening torque: 40 lb-in (4.5 N-m)

Acceptable input frequency range is 40 to 70 Hz.

Output voltage and frequency are user selectable only when UPS is in **Load Disconnect** mode.

Refer to display interface menu screens for available options.

Hardwire the UPS

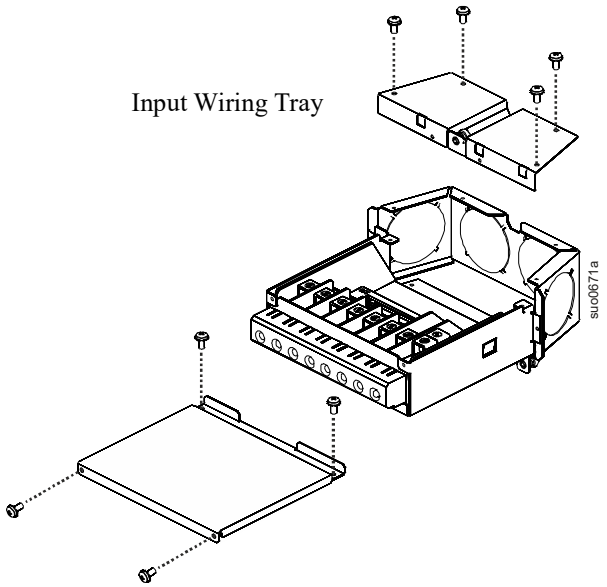
⚠ CAUTION

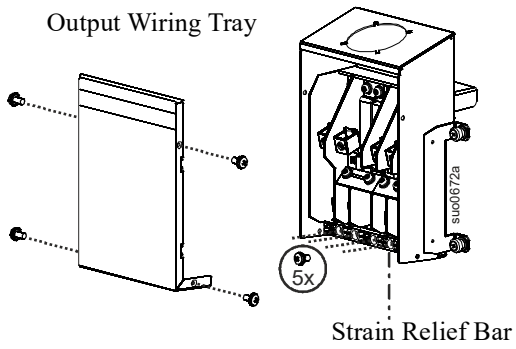
RISK OF ELECTRIC SHOCK

- Adhere to all national and local electrical codes.
- Wiring should be performed by a qualified electrician.
- Always connect the UPS to a grounded outlet.
- Always connect ground wires between the UPS and the external battery packs.
- Refer to the XLBP user manual for details.

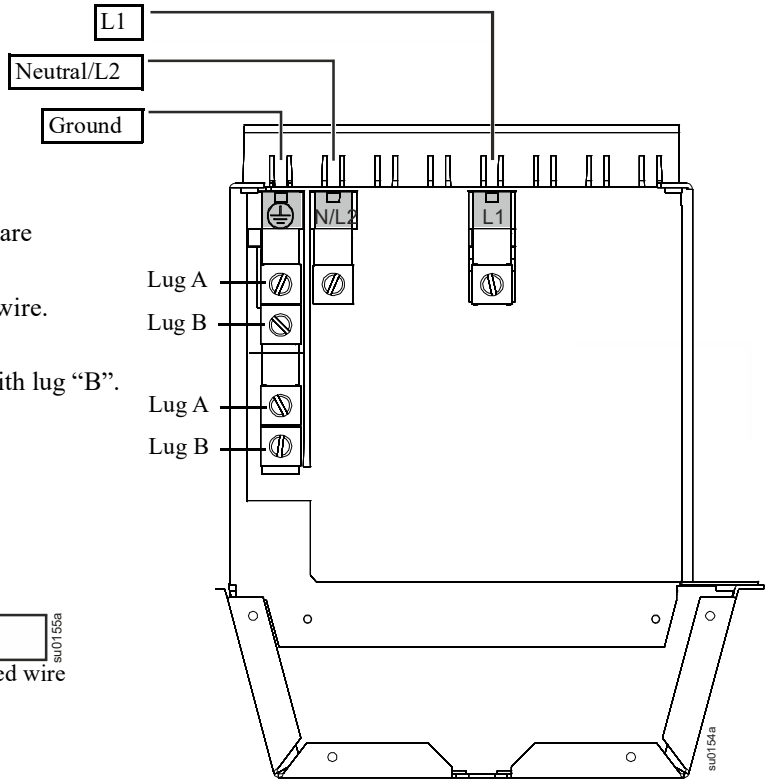
Failure to follow these instructions can result in equipment damage and minor or moderate injury.

1. For input wiring only, install a utility circuit breaker in accordance with local electrical codes.
2. Switch the utility circuit breaker OFF.
3. Remove the screws that secure the covers and take the covers off of the trays.
4. Remove the appropriate circular knockouts from the input and output wiring trays.
5. Remove the five screws that secure the strain relief bar.
6. Remove the appropriate jumpers for input power source compatibility and output wiring options. Refer to “Wiring Specifications” on page 12 in this manual.
7. Insert the cables through the knockout holes to the terminal blocks. Connect the ground terminal before connecting any other terminal.
8. Use an appropriate strain relief (not supplied), on the hardwired input and output power cables.
9. Replace the wiring tray covers.


Input Wiring Tray
suo0671a

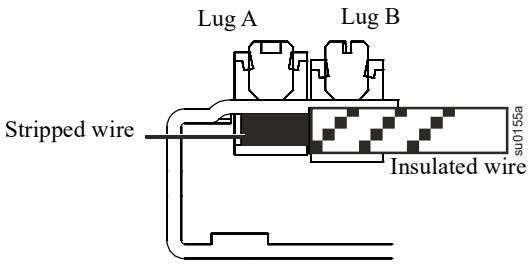

Output Wiring Tray
suo0672a
5x
Strain Relief Bar

Input Hardwire



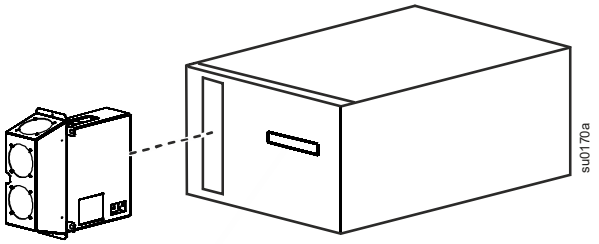
Be sure the ground wire conductor and insulator are securely fastened. To connect ground wire:

1. Strip cable of insulation, exposing wire. Secure exposed wire with lug “A”.
2. Secure insulated portion of cable with lug “B”.



Install input hardwire tray in UPS

Secure input wiring tray to UPS using three screws attached to the tray.



Output Hardwire

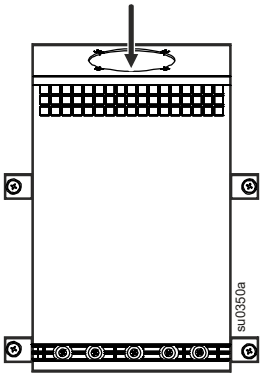
Connect load to UPS

There are two ways to connect equipment to the UPS.

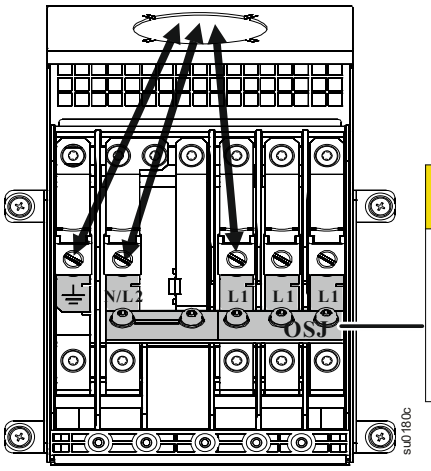
- Hardwire the equipment through the output wiring tray.
- Connect the equipment using the six output receptacles on the external battery pack.

Hardwire the load

1. Remove appropriate circular knockout from output wiring tray.
2. Install appropriate strain relief (not supplied), for hardwire cables.



3. **Connect ground terminal first**. Then connect the remaining wires.
   Route wires through the knockout hole to the terminal blocks. See diagram below. Refer to "Wiring Specifications" on page 12.



⚠ CAUTION

RISK OF DAMAGE TO EQUIPMENT

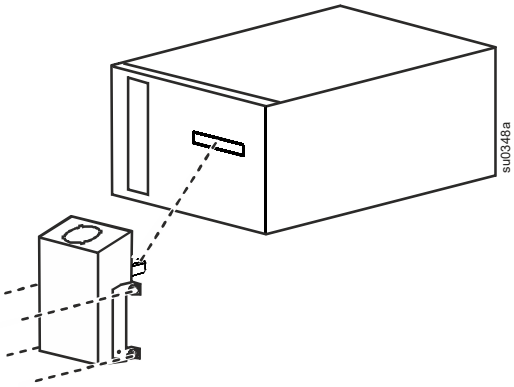
Be sure the **OSJ** is secured to the output wiring tray using the five screws provided.

Failure to follow these instructions can result in equipment damage

Install output hardwire tray in UPS

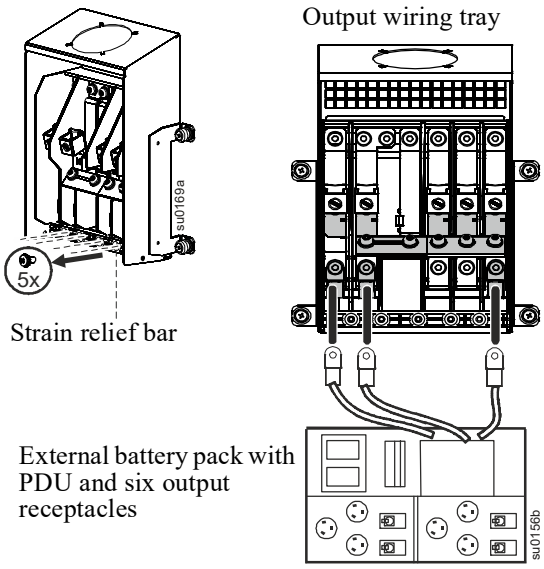
Insert the wiring tray into the appropriate slot on the UPS rear panel.

Tighten the screws to secure the tray to the UPS.



Connect PDU to output hardwire tray

1. Remove the five screws securing the strain relief bar on the output wiring tray.



2. Connect the PDU on the external battery pack to the output wiring tray.
3. Replace the strain relief bar using the five screws removed in *step 1*.
4. Replace the covers using the screws removed preciously.

Connect the load using external battery pack connectors

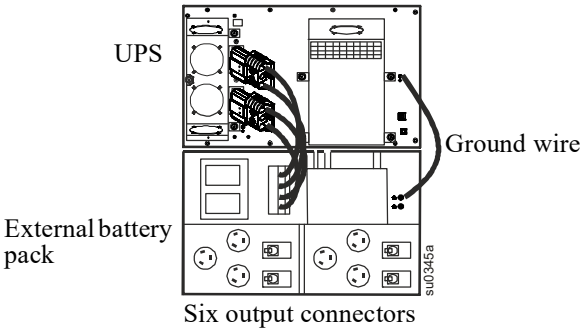
The PDU must be connected to the output wiring tray. Refer to “Connect PDU to output hardwire tray” on page 17.

Connect the load to the UPS using the six output receptacles on the external battery pack. Connect the external battery pack to the UPS.

Connect the ground wire between the UPS and the external battery pack.

Connect the external battery pack to the UPS by plugging the external battery pack connectors into the UPS rear panel connectors.

Refer to the external battery pack user manual for details on removing and securing the battery connector covers.



Start Up

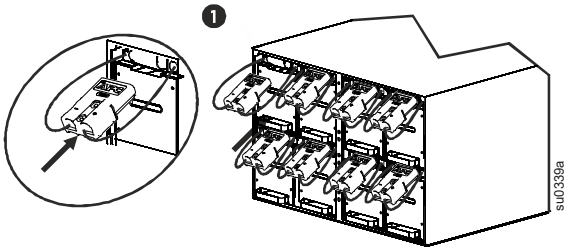
Connect Battery Modules

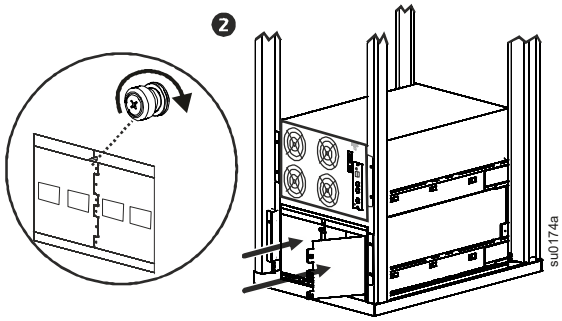
NOTICE

RISK OF EQUIPMENT DAMAGE

- Connect all eight battery modules.
- Replace the battery compartment doors.
- Tighten the screws to secure the battery compartment doors.

Failure to follow these instructions can result in equipment damage

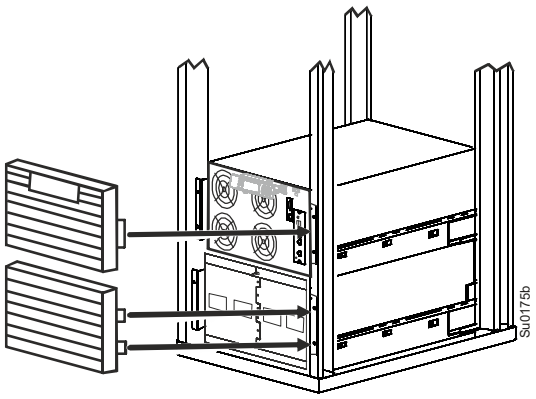




Install Bezels

There is a single latch on either side of the UPS bezel.

There are two latches on either side of the battery pack and XLBP bezels.



Connect Load to UPS

Connect equipment to the UPS. Refer to “Output Hardwire” on page 16.

Each connected load must be switched OFF.

The battery charges to 90% capacity during the first three hours of normal operation. *Do not* expect full battery run capability during this initial charge period.

Refer to the APC by Schneider Electric Web site, www.apc.com for battery runtimes.

Where appropriate use an APC extension battery cable. For ordering details contact a dealer or APC through the Web site www.apc.com.

Connect Power to UPS and Load

1. Connect input power to the UPS.
2. Check the PowerView display interface for messages.
3. Turn on the connected equipment using the PowerView display interface menu option, **Turn Load On** accessed through the **Control** menu screen. Refer to “Menu Tree” on page 21 and “Menu screens map” on page 22.

Operation

The UPS has three operation mode options.

Normal operation

During normal operation, the UPS double converts utility power to conditioned power for the connected load.

Battery operation

During battery operation, the UPS provides power to the connected load from batteries for a finite period of time. The UPS transfers to battery operation if the there is no supply of utility power or the utility power is outside predefined limits.

Bypass operation

Bypass mode is reached either as a user selection or automatically.

- Bypass mode can be selected through the **Control** menu screen on the PowerView display.
- The UPS will automatically switch into bypass mode if:
  - Both normal and battery operation modes are unavailable
  - An output overload condition occurs
  - The UPS has detected an internal fault

During bypass operation the utility power is connected to the load, bypassing the internal converters. If bypass mode becomes unavailable the UPS will automatically switch to mains power. In the event that mains power is unavailable the system will switch to battery power.

Battery LED

The battery LED is located on the front bezel of the XLBP. During normal operation the LED is not illuminated.

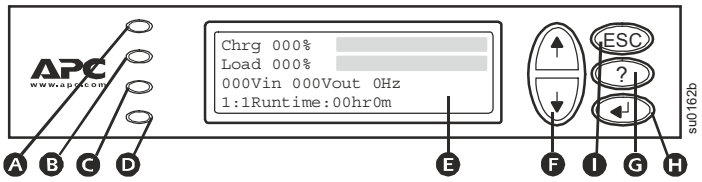
On start up the XLBP LED may illuminate and blink within the first minute. The LED should then extinguishes.

Refer to the XLBP User Manual for details on XLBP operation.

PowerView Display Interface

The four LEDs to the left of the LCD display indicate the operational status of the UPS.

The five navigation keys to the right of the LCD display are used to select and open menu items, to access information, change system parameters, and to access context sensitive help.



A	LOAD ON	When LED illuminates green, the UPS supplies power to the load
B	ON BATT	When LED illuminates yellow, power to load flows from the batteries to the power module
C	BYPASS	When LED illuminates yellow, power to the load is supplied through bypass
D	FAULT	When LED illuminates red, the UPS has detected a fault
E	LCD interface	Displays menu screens for alarms, status data, instructional help, and configuration items

Ⓕ	UP/DOWN arrow keys	Used to scroll through and select menu items
Ⓖ	HELP key	Opens context sensitive help
Ⓗ	ENTER key	Opens menu items and saves changes to system parameters
Ⓘ	ESC key	Returns to previous screen displayed

Navigating Menu Screens

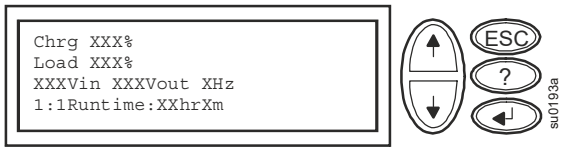
Use the ESC key to navigate between menu screens.

Use the UP/DOWN arrow keys to scroll through the list of sub menus and commands on any screen.

➔ arrow indicates that there are sub menus containing user selectable commands.

Use the ENTER key to navigate to a sub menu and to select user configurable commands.

To access the overview status screen on the LCD press the ESC key.



To access the main menu screen from the overview status screen, press the ENTER key.

Main Menu Screen

From the main menu screen it is possible to command, configure, and monitor the system using the sub menu screens: **Control, Status, Setup, Logging, Display, Diags and Help** (refer to sub menu screens section in this manual).

Use the UP/DOWN arrow keys to select the menu to be accessed.

Press the ENTER key to open a sub menu screen.

Menu Tree

The menu tree provides an overview of the top level menu screens.

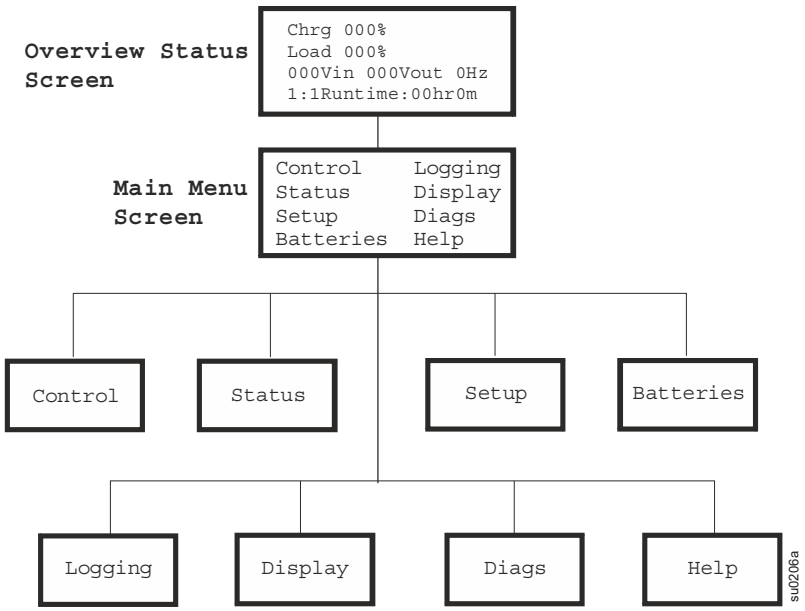
Navigating sub menu screens

Use the UP/DOWN arrow keys to scroll through the list of functions and commands on a sub menu screen.

A ↓ after the last entry on a sub menu, indicates a continuation of the function/ command list.

Use the UP/DOWN arrow keys to view the remaining entries in the list.

Use the ENTER key to select a command and move to sub menus associated with that function/command.



Configuration

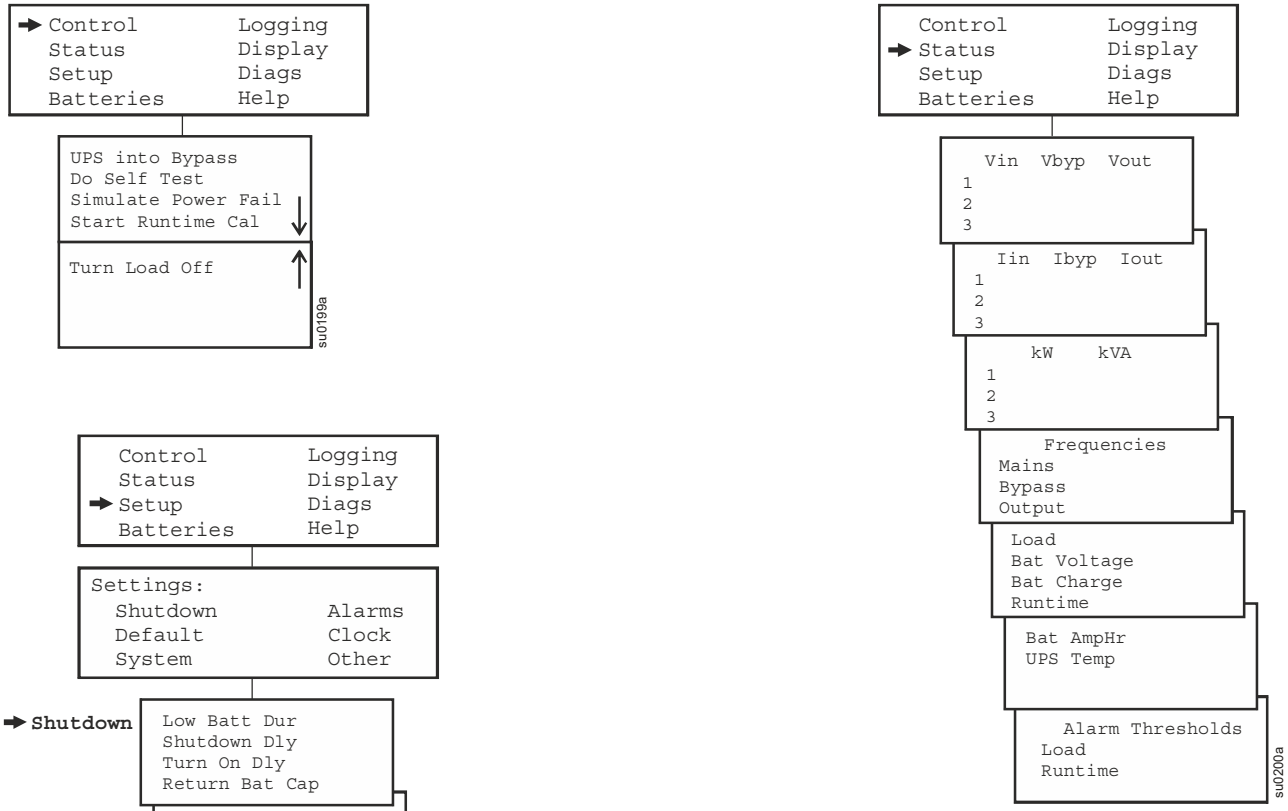
UPS configuration options can be adjusted through the display interface or NMC

Configurables	Factory Default	User Selectable Choices	Description
Setup/Settings/Shutdown			
Low Batt Dur	2 min	2, 5, 7, 10, 15, 18, 20 min	The low battery alert beeps become continuous when two minutes of runtime remains. Change the alert interval to a higher setting if the operating system requires a longer interval for shutdown.
Shutdown Dly	20 sec	20, 180, 300, 600 sec	Set the interval between the time when the UPS receives a shutdown command and the actual shutdown.
Turn On Dly	0 sec	0, 60, 180, 300 sec	Specify the time the UPS will wait after the return of utility power before turn-on (to avoid branch circuit overloads).
Return Bat Cap	0%	0%, 15%, 25%, 35%, 50%, 60%, 75%, 90%	Specify the percentage to which batteries will be charged following a low-battery shutdown before powering connected equipment.
Setup/Settings/Default			
Default	Set all UPS settings to factory defaults		
Setup/Settings/System			
System/Voltage	Output 200 V Output 208 V	200 V 208 V, 240 V	Allows user to select UPS output voltage. This feature is available ONLY when the load is OFF. **Use voltage setting applicable to region.**
System/Frequency	Auto	50 Hz, 60 Hz	Sets allowable UPS output frequency. Whenever possible, output frequency tracks input frequency. This feature is available ONLY when the load is OFF.
System/Frequency/ Range	50±3 Hz, 60±3 Hz	50±3 Hz, 50±0.1 Hz 60±3 Hz, 60±0.1 Hz	
System/Slew Rate	1 Hz/sec	1, .5, .25 Hz/sec	Slew rate limits the rate of change of output frequency. Whenever possible, output frequency tracks input frequency.

Configurables	Factory Default	User Selectable Choices	Description
System/Cyclic Chrg	OFF	OFF, ON	The cyclic charge feature shuts off battery charge power periodically while the UPS is running on utility power, and the batteries are fully charged. The cycles are 10 hours on and 48 hours off. This extends battery life.
System/ Auto Start	ON	ON, OFF	After a low battery shutdown, the UPS will automatically start if utility power is available.
Setup/Settings/Alarms			
Alarm Thresholds/Load			
14 kVA	14 kVA	2, 4, 6, 8, 10, 12, 14 kVA, Never	If the connected load exceeds the load alarm threshold an alarm is activated.
15 kVA	15 kVA	5, 10, 15 kVA, Never	
18 kVA	18 kVA	2, 4, 6, 8, 10, 12, 14, 16, 18 kVA, Never	
20 kVA	20 kVA	5, 10, 15, 20 kVA, Never	
Alarm Thresholds/Runtime			
All models	0	0, 5, 10, 15, 30, 45 min; 1-8 hrs	When remaining battery runtime is at or below the selected runtime threshold, an alarm is activated.
Setup/Settings/Clock			
Date			The date and time functions are used to time-stamp events in the event log. To avoid inaccuracies, change the time setting to reflect day light saving time where applicable.
Time			
Setup/Settings/Other			
Self Test	14 days	7, 14 days, At Pwr On, OFF	Set interval at which UPS will execute a self-test.
User ID			Uniquely identify UPS, (i.e. server name or location) for network management purposes.
Ext Bat Cap	0 Ah	0-200 Ah	Press the ENTER key. Use the UP/DOWN arrow keys to select desired value. Press the ENTER key to move to next digit. Press the ENTER key after selecting final value, to lock in battery capacity setting.
Display			
Display Setup			
Language			Select language desired for viewing menu screens.
Contrast	0	0-7	Adjusts contrast between LCD text and back lighting.
Beeper Setup			
Beep at	PwrFail +30	PwrFail +30, PwrFail, Low Bat, Never	An audible alarm can be set to alert an imminent power disruption, a power disruption that will occur in 30 seconds, or when a low battery condition occurs.
Volume	Low	Off, Low, Medium, High	Sets beeper volume.
Key Click	Off	Off, On	Sets key click volume to On or Off.

Menu screens map

Refer to the Configuration tables on the previous pages for specific system configuration settings.



Output Frequency Options: Auto Sensing; 50 Hz; 60 Hz

50 Hz frequency range: 50±3 Hz; 50±0.1 Hz

60 Hz frequency range: 60±3 Hz; 60±0.1 Hz

Clock: The date and time functions are used to time stamp events in the event log. To avoid inaccuracies, change the time setting to reflect day light saving time where applicable.

Ext Bat Cap: Press ↵ . Use the UP/DOWN arrow keys to select the desired value. Press ↵ to move to the next digit. Press ↵ after selecting the final value, to lock in the battery capacity setting.

Troubleshooting Display Messages

Use the table below to solve minor installation and operation problems. Refer to the APC by Schneider Electric Web site, www.apc.com for assistance with complex UPS problems.The PowerView reports various messages on the display, including alarm status and changes in system configuration. This section lists all the PowerView display messages, the reason for the message, and the appropriate corrective action.

Messages may occur simultaneously. If this happens, be sure to review all of the messages for a better understanding of the system condition.

Condition	PowerView Display Message	Reason for Message	Corrective Action
Start Up	#Batteries changed since last ON.	At least one battery module has been added or removed from the UPS since the last time the Pwr ON command was issued.	No corrective action necessary. Proceed with the start up.
	Automatic Self Test Started.	The UPS has started preprogrammed battery test.	
	Batt capacity less than Return Batt Cap.	The battery capacity of the UPS is less than the user specified minimum battery capacity required to turn on the load.	Option 1) Abort the start up and allow batteries to recharge. Option 2) Continue start up, with less than minimum battery capacity.
	System Start Up Configuration Failed.	System configuration error.	Check for other alarms. If the problem persists contact APC by Schneider Electric Customer Support. Refer to *Contact Information* in this manual.
	Mains: Site Wiring Fault	Input and Output Jumpers are not configured correctly	Check input wiring tray jumpers and output shorting jumper for compatibility. Refer to the *Input/Output Jumper Configurations* table in this manual.
	Bypass Not Available - Wrong Ph Seq		Check bypass jumpers in input wiring tray and output shorting jumper for compatibility. Check bypass phases for positive sequence. Refer to the *Input/ Output Jumper Configurations* table in this manual.
	Bypass: Site Wiring Fault		Check bypass jumpers in input wiring tray and output shorting jumper for compatibility. Refer to the *Input/Output Jumper Configurations* table in this manual.
General Status	# of batteries increased.	At least one battery pair has been added to the system.	No corrective action is necessary.
	# of batteries decreased.	At least one battery pair has been removed from the system.	
	# External Battery Packs increased.	At least one external battery pack has been connected to the UPS.	
	# External Battery Packs decreased.	At least one external battery pack has been disconnected from the UPS.	
Module Failure	Bad Battery Pair.	A battery pair has gone bad and requires replacement.	Refer to battery pair installation in the external battery pack user manual.

Condition	PowerView Display Message	Reason for Message	Corrective Action
Threshold Alarm	Load Power Is Above Alarm Limit.	The load has exceeded the user specified load alarm threshold.	Option 1) Use the display interface to raise the alarm threshold. Option 2) Reduce the load
	Load Is No Longer Above Alarm Threshold.	The load exceeded the alarm threshold. The situation has been corrected. Either because the load decreased or the threshold was increased.	No corrective action is necessary.
	Min Runtime Restored.	The system runtime dropped below the configured minimum and has been restored: 1) Additional battery modules were installed. 2) The existing battery modules were recharged. 3) The load was reduced. 4) The user specified threshold was decreased.	
General Alert	Need Bat Replacement.	One or more battery pairs are in need of replacement.	Refer to battery installation procedure.
	No Batteries Are Connected.	No battery power is available.	Check that batteries are installed and connected properly.
	Discharged Battery.	The UPS is on battery operation and the battery charge is low.	Shut down the system and the load or restore the incoming voltage.
	Low- Battery.	The UPS is on battery operation and the battery charge is low.	
	Weak Batt(s) Detected. Reduced Runtime.	One or more weak battery pairs detected (only applicable for internal battery modules).	Replace the weak battery pairs.
	Batt Temperature Exceeded Upper Limit.	The temperature of one or more battery packs has exceeded system specifications.	Contact APC by Schneider Electric Customer Support. Refer to *Contact Information* in this manual.
	Battery Over-Voltage alert.	The battery voltage is too high and the charger has been deactivated.	
	Runtime Is Below Alarm Threshold.	The predicted runtime is lower than the user specified minimum runtime alarm threshold. Either the battery capacity has decreased, or the load has increased.	Option 1) Allow the batteries to recharge. Option 2) If possible, increase the number of battery modules. Option 3) Reduce the load. Option 4) Decrease the alarm threshold.
	Shutdown Due To Low Battery.	The UPS shutdown while on battery operation.	No corrective action is necessary. Note: Should this situation reoccur, consider increasing battery capacity.
	Bypass Not Available Input Freq/Volt out Of Range.	The frequency or voltage is out of acceptable range for bypass. This message occurs when the UPS is online.	Correct the input voltage to acceptable frequency or voltage.
	Mains Not Available. Input Frq/Volt Out of Range.	The frequency or voltage is out of acceptable range for normal operation.	
	Emergency PSU Fault.	Redundant Emergency Power Supply Unit (PSU) is not working. The UPS has detected an internal diagnostic fault. The UPS will continue to operate normally.	Contact APC by Schneider Electric Customer Support. Refer to *Contact Information* in this manual.

Condition	PowerView Display Message	Reason for Message	Corrective Action
General Fault	Fan Fault	A fan is inoperative	Contact APC by Schneider Electric Customer Support. Refer to *Contact Information* in this manual.
	Static Bypass Switch Fault.	The static bypass switch has is inoperative.	
	System Failure Detected by Surveillance.	The system has detected an internal error.	Check for other alarms. If the problem persists contact APC by Schneider Electric Customer Support. Refer to *Contact Information* in this manual.
	System Not Synchronized to Bypass.	System cannot synchronize to bypass mode.Bypass mode may be unavailable.	Option 1) Decrease input frequency sensitivity. Contact APC by Schneider Electric Customer Support. Refer to *Contact Information* in this manual. Option 2) Correct bypass input voltage to provide acceptable frequency or voltage.
	UPS In Bypass Due To Fault.	The UPS has transferred to bypass mode due to an internal UPS alert or message.	Contact APC by Schneider Electric Customer Support. Refer to *Contact Information* in this manual.
	UPS In Bypass Due To Overload.	The load has exceeded the power capacity.	Decrease the load.
	UPS Is Overloaded.	The load has exceeded the system power capacity.	Option 1) Decrease the load. Option 2) Check the load distribution on the three phases through the PowerView display. If the load is unevenly distributed, adjust the load distribution.

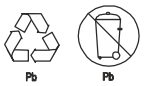
Maintenance

Replace battery modules

An RBC should only be disconnected or removed from the UPS temporarily as a part of the battery replacement procedure. Once the batteries are disconnected the connected equipment is not protected from power outages.

- Disconnect all connected battery modules in the UPS. Slide the RBCs out of the UPS.
- Slide the new RBCs into the UPS and connect the battery modules to
- Securely connect each battery module. Press the battery connector into the UPS till it is firmly connected. A battery that is not fully connected will cause erratic UPS operation, abnormal alert messages and connected equipment may not receive battery power during power outages.
- After installing the RBC, the UPS display interface may prompt the user to verify the status of the replaced battery modules. If the battery module is new, respond *YES*. If the battery modules is not new, respond *NO*.

Refer to the appropriate replacement battery user manual for battery module installation instructions. See your dealer or contact APC by Schneider Electric at **www.apc.com** for information on replacement battery modules..



Be sure to deliver the used battery(s) to a recycling facility or ship it to APC by Schneider Electric in the replacement battery packing material.

Service

If the unit requires service, do not return it to the dealer. Follow these steps:

1. Review the *Troubleshooting* section of the manual to eliminate common problems.
2. If the problem persists, contact APC by Schneider Electric Customer Support through the APC by Schneider Electric Web site, **www.apc.com**.
    a. Note the model number and serial number and the date of purchase. The model and serial numbers are located on the rear panel of the unit and are available through the LCD display on select models.
    b. Call APC by Schneider Electric Customer Support and a technician will attempt to solve the problem over the phone. If this is not possible, the technician will issue a Returned Material Authorization Number (RMA#).
    c. If the unit is under warranty, the repairs are free.
    d. Service procedures and returns may vary internationally. Refer to the APC by Schneider Electric Web site for country specific instructions.
3. Pack the unit in the original packaging whenever possible to avoid damage in transit. Never use foam beads for packaging. Damage sustained in transit is not covered under warranty.
    a. **Always DISCONNECT THE UPS BATTERIES before shipping. The United States Department of Transportation (DOT), and the International Air Transport Association (IATA) regulations require that UPS batteries be disconnected before shipping.** The internal batteries may remain in the UPS.
    b. External Battery Pack products are deenergized when disconnected from the associated UPS product. It is not necessary to disconnect the internal batteries for shipping. Not all units utilize an external battery pack.
4. Write the RMA# provided by Customer Support on the outside of the package.
5. Return the unit by insured, prepaid carrier to the address provided by Customer Support.

Transport the unit

1. Shut down and disconnect all connected equipment.
2. Disconnect the unit from utility power.
3. Disconnect all internal and external batteries (if applicable).
4. Follow the shipping instructions outlined in the *Service* section of this manual.

Two Year Limited Factory Warranty

Schneider Electric IT Corporation (SEIT), warrants its products to be free from defects in materials and workmanship for a period of three (3) years excluding the batteries, which are warranted for two (2) years from the date of purchase. The SEIT obligation under this warranty is limited to repairing or replacing, at its own sole option, any such defective products. Repair or replacement of a defective product or parts thereof does not extend the original warranty period.

This warranty applies only to the original purchaser who must have properly registered the product within 10 days of purchase. Products may be registered online at warranty.apc.com.

SEIT shall not be liable under the warranty if its testing and examination disclose that the alleged defect in the product does not exist or was caused by end user's or any third person's misuse, negligence, improper installation, testing, operation or use of the product contrary to SEIT's recommendations or specifications. Further, SEIT shall not be liable for defects resulting from: 1) unauthorized attempts to repair or modify the product, 2) incorrect or inadequate electrical voltage or connection, 3) inappropriate on site operation conditions, 4) Acts of God, 5) exposure to the elements, or 6) theft. In no event shall SEIT have any liability under this warranty for any product where the serial number has been altered, defaced, or removed.

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To obtain service under warranty you must obtain a Returned Material Authorization (RMA) number from customer support. Customers with warranty claims issues may access the SEIT worldwide customer support network through the SEIT Web site: **www.apc.com**. Select your country from the country selection drop down menu. Open the Support tab at the top of the web page to obtain information for customer support in your region. Products must be returned with transportation charges prepaid and must be accompanied by a brief description of the problem encountered and proof of date and place of purchase.

APC™ by Schneider Electric
Worldwide Customer Support

Customer support for this or any other APC™ by Schneider Electric product is available at no charge in any of the following ways:

- Visit the APC by Schneider Electric web site, www.apc.com to access documents in the APC Knowledge Base and to submit customer support requests.
  - **www.apc.com** (Corporate Headquarters)
    Connect to localized APC by Schneider Electric web site for specific countries, each of which provides customer support information.
  - **www.apc.com/support/**
    Global support searching APC Knowledge Base and using e-support.
- Contact the APC by Schneider Electric Customer Support Center by telephone or e-mail.
  - Local, country specific centers: go to **www.apc.com/support/contact** for contact information.
  - For information on how to obtain local customer support, contact the APC by Schneider Electric representative or other distributor from whom you purchased your APC by Schneider Electric product.

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