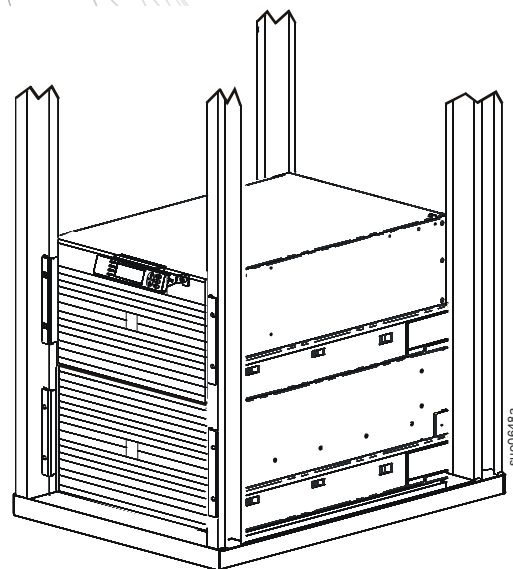
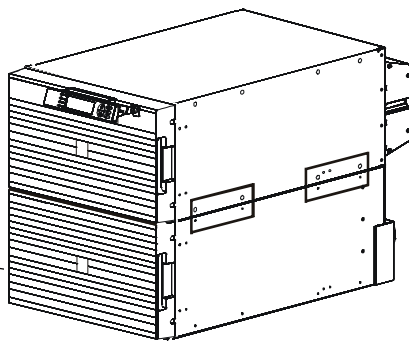


# Installation and Operation

## Smart-UPS<sup>®</sup>

**SURT15k/20k**  
**230 VAC**  
**Stack/Rack-Mount 6U**





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This manual and the safety guide are available in English on the enclosed CD and the APC Web site, [www.apc.com](http://www.apc.com).

Uživatelská příručka a bezpečnostní pokyny jsou k dispozici v češtině na příloženém CD a na webových stránkách APC - [www.apc.com](http://www.apc.com).

Denne vejledning og sikkerhedsvejledningen er tilgængelige på dansk på den vedlagte CD og på APC's websted, [www.apc.com](http://www.apc.com).

Dieses Handbuch sowie die Sicherheitsrichtlinien sind in deutscher Sprache auf der beiliegenden CD und auf der Website von APC unter [www.apc.com](http://www.apc.com) verfügbar.

Este manual y la guía de seguridad están disponibles en español en el CD adjunto y en el sitio Web de APC, [www.apc.com](http://www.apc.com).

Ce manuel et le guide de sécurité sont disponibles en français sur le CD-ROM ci-inclus et sur le site Web d'APC, [www.apc.com](http://www.apc.com).

A használati utasítás és a biztonsági útmutató megtalálható magyarul a csatolt CD-n és az APC honlapján: [www.apc.com](http://www.apc.com).

Il presente manuale e la corrispondente Guida per la sicurezza sono disponibili in italiano sul CD-ROM allegato e sul sito Web di APC all'indirizzo [www.apc.com](http://www.apc.com).

Deze handleiding en het veiligheidshandboek staan in het Nederlands op de bijgevoegde cd en op de APC-website: [www.apc.com](http://www.apc.com).

En norsk versjon av denne håndboken og sikkerhetsveiledningen finnes på den vedlagte CD-en og på APCs webområde [www.apc.com](http://www.apc.com).

Este manual e o guia de segurança estão disponíveis em português no CD incluso e no website da APC, [www.apc.com](http://www.apc.com).

Instrukcja obsługi oraz przewodnik bezpieczeństwa w języku polskim dostępne są na załączonej płycie CD i na stronie internetowej APC, [www.apc.com](http://www.apc.com).

Denna manual och säkerhetsguide finns tillgänglig på svenska på medföljande CD och på APC:s webbsida, [www.apc.com](http://www.apc.com).

Bu kılavuzun ve güvenli kılavuzunun Türkçe versiyonu ürünle birlikte verilen CD'de ve [www.apc.com](http://www.apc.com) adresindeki APC web sitesinde bulunmaktadır.

Panduan dan petunjuk keselamatan ini tersedia dalam Bahasa Inggris pada CD terlampir dan pada Situs APC, [www.apc.com](http://www.apc.com).

本書及び安全ガイドの日本語版は、同梱のCD及びAPCのWebサイト ([www.apc.com](http://www.apc.com)) からご覧いただけます。

이 매뉴얼과 안전 가이드는 동봉된 CD와 APC 웹사이트 [www.apc.com](http://www.apc.com) 에서 한글로 이용할 수 있습니다 .

Англоязычный вариант данного руководства и руководства по технике безопасности имеется на прилагаемом компакт-диске, а также на сайте компании APC: [www.apc.com](http://www.apc.com).

คำแนะนำด้านความปลอดภัยและคู่มือนี้ที่เป็นภาษาไทย สามารถดูได้ในซีดีที่ให้มาและเว็บไซต์ของ APC, [www.apc.com](http://www.apc.com)

您可以从随附的 CD 与 APC 网站 ([www.apc.com](http://www.apc.com)) 上获得本手册与安全指南的中文版本。

您可以從隨附的 CD 與 APC 網站 ([www.apc.com](http://www.apc.com)) 上獲得本手冊與安全指南的中文版本。

Το εγχειρίδιο αυτό και ο οδηγός ασφάλειας είναι διαθέσιμα στα ελληνικά στο CD που εσωκλείεται και στην ιστοσελίδα της APC, [www.apc.com](http://www.apc.com).

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# Overview

The APC® by Schneider Electric Smart-UPS® SURT15k/20k Stack/Rack-Mount 6U 230 VAC is a high performance uninterruptible power supply (UPS). It provides protection for electronic equipment from utility power blackouts, brownouts, sags, and surges; small utility fluctuations and large disturbances. The UPS also provides battery backup power until utility power returns to safe levels or the batteries are fully discharged.

The UPS and the external battery pack (XLBP) are packaged separately.

## Inventory

**Read the Safety Guide before installing the UPS.**

Inspect the UPS upon receipt. Notify the carrier and dealer if there is damage.


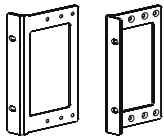

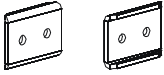


The packaging is recyclable; save it for reuse or dispose of it properly.

Check the package contents:

- |  |   |   |
|--|---|---|
| <ul style="list-style-type: none"> <li>• UPS</li> <li>• Input wiring tray</li> <li>• Output wiring tray</li> <li>• PowerView display module</li> <li>• Front bezel</li> <li>• DB9 serial cable</li> <li>• Ethernet jumper cable for rear panel network access</li> </ul> | <ul style="list-style-type: none"> <li>• Literature kit containing:               <ul style="list-style-type: none"> <li>– Product documentation</li> <li>– Smart-UPS® RT User Manuals CD</li> <li>– Network Management Card Utility CD</li> <li>– Network Management Card documentation</li> <li>– Safety information</li> <li>– Warranty information</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• <b>Rack-mount models also include:</b> <ul style="list-style-type: none"> <li>– Rail Kit</li> <li>– Four ornamental screws</li> <li>– Two cage nuts</li> <li>– Two rail cleats</li> <li>– Four pan head screws</li> <li>– Two rack-mount brackets</li> <li>– Eight flat head screws</li> </ul> </li> </ul> |
|--|---|---|

NOTE: 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.

## Hardware

8		Flat head screws for securing rack-mount or tie brackets to the UPS and XLBP
2		rack-mount or tie brackets
4		Rack-mount units: pan head screws for securing rail cleats to the UPS
2		rail cleats
2		Rack-mount units: cage nuts for rack-mount installation
4		Rack-mount units: ornamental screws for securing the UPS to the rack


# Specifications

## Environmental Specifications

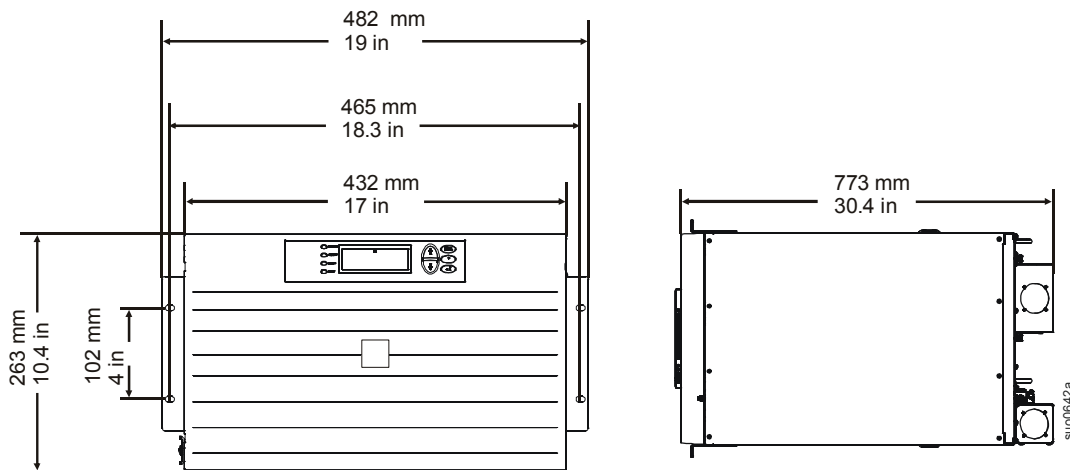
<b>Temperature</b> Operating Storage	0° to 40° C (32° to 104° F)	This unit is intended for indoor use only. Select a location sturdy enough to handle the weight.  Do not operate the UPS where there is excessive dust or the temperature or humidity are outside the specified limits.
	-15° to 45° C (5° to 113° F) charge the UPS battery every six months	
<b>Maximum Elevation</b> Operating Storage	3,000 m (10,000 ft)	This unit has front to rear airflow. Allow adequate space for proper ventilation.  Environmental factors impact battery life. High temperatures, poor utility power, and frequent, short duration discharges will shorten battery life.
	15,240 m (50,000 ft)	
<b>Humidity</b>	0 to 95% relative humidity, non-condensing	

## Physical Specifications

### Weight

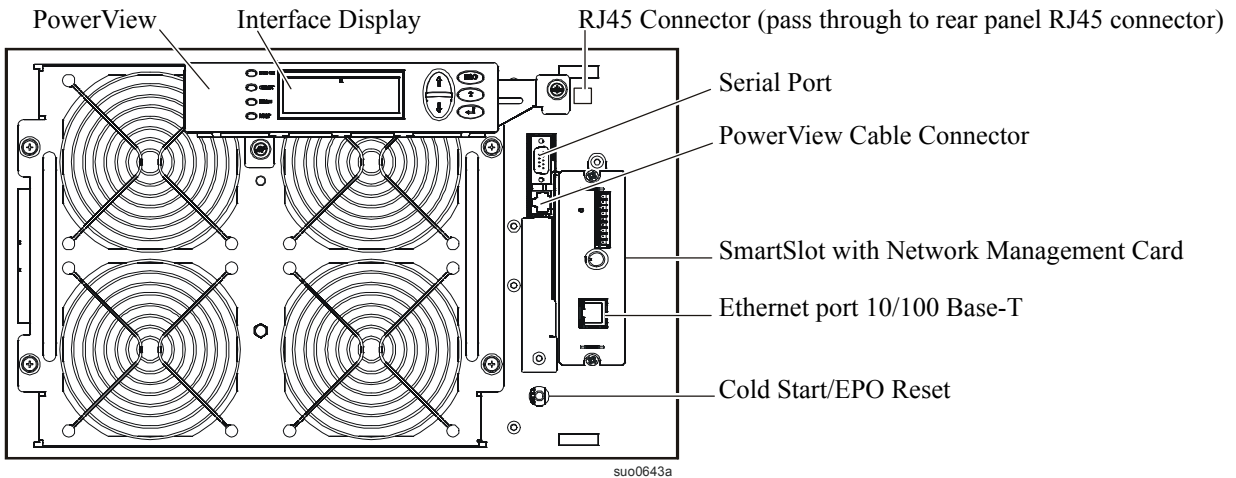
<b>Combined shipping weight UPS and one XL battery pack</b>		314.09 kg (691 lb)
<b>Combined weight (no packing material) UPS and one XL battery pack</b>		247.73 kg (545 lb)
<b>UPS (no packing material)</b>	66 kg (145 lb)	
<b>XL Battery Pack (no packing material) with eight battery modules</b>	181 kg (400 lb)	

### Dimensions



# Installation

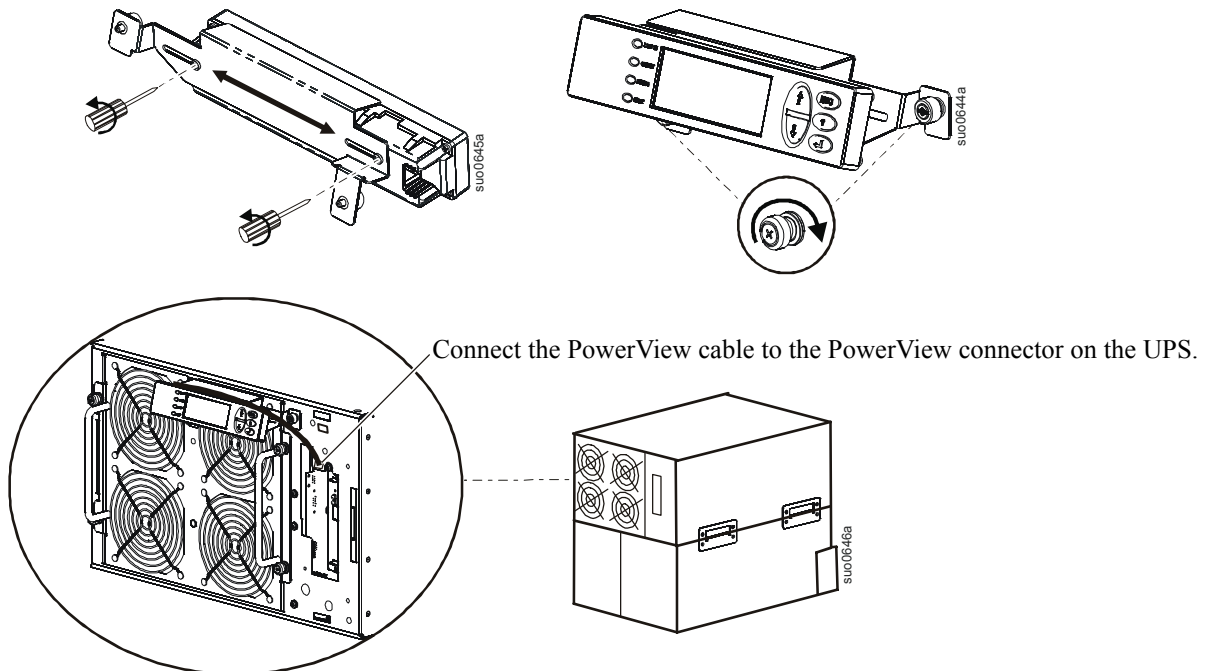
## Stack or rack-mount front panel



## PowerView installation for stack or rack-mount configurations

Prior to attaching the PowerView 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 to the UPS using the two thumb screws attached to the PowerView.



## Stack configuration

The UPS and the XLBPs must be connected with ground wires. Refer to the XLBP user manual for details.

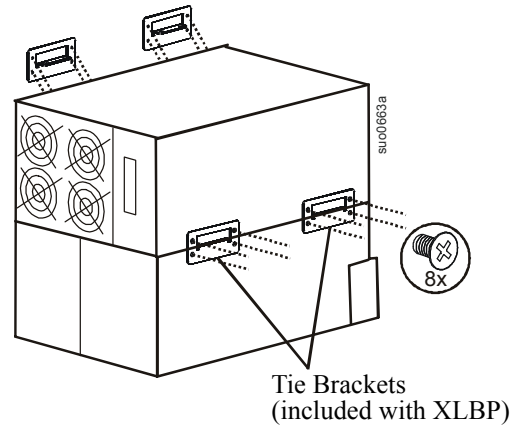
Always place the UPS above the XLBP(s) in a stack configuration.

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, the battery doors, refer to the *Rack-mount configuration* section of this manual.

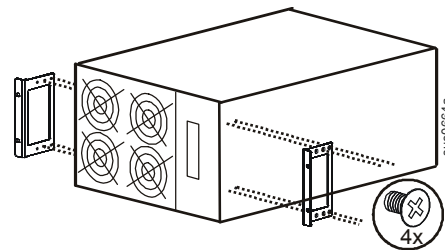
Refer to the *Rack-mount configuration* section in this manual for cable routing and bezel installation details.



## Rack-mount configuration

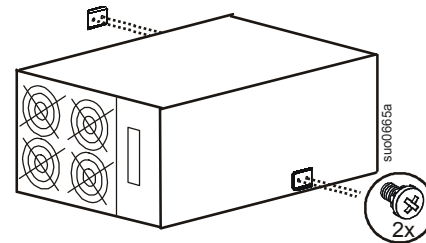
### Install rack-mount brackets

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

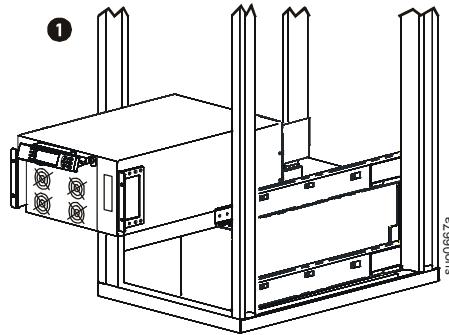
For details on rail installation refer to the instructions included in the rail kit package.



## Mount units in rack

The UPS and XLBP should be installed at or near the bottom of the rack. Always place the UPS above the XLBP(s). Batteries must be removed from the XLBP(s) prior to installing the unit(s) in a rack. Refer to the instructions on the packaging for details on removing the batteries from the XLBP.

### Install units in rack

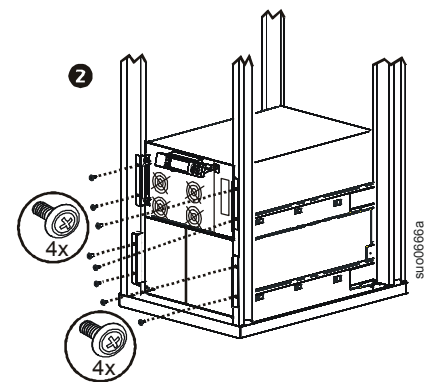
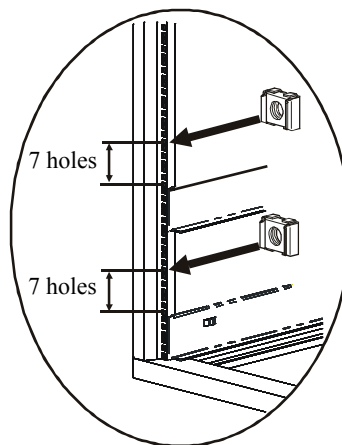


Secure the UPS and the XLBP in the rack using the cage nuts and ornamental screws included in the package.

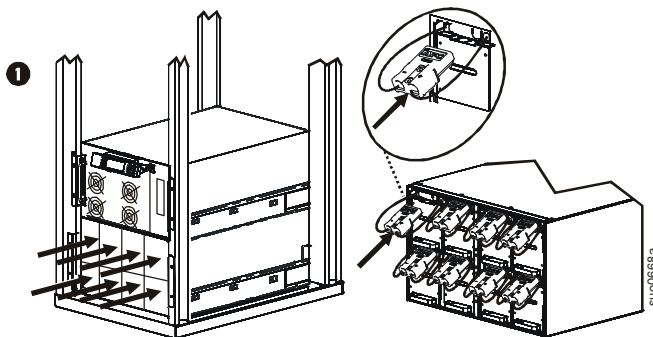
Four ornamental screws and two cage nuts must be used to secure each unit.

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.



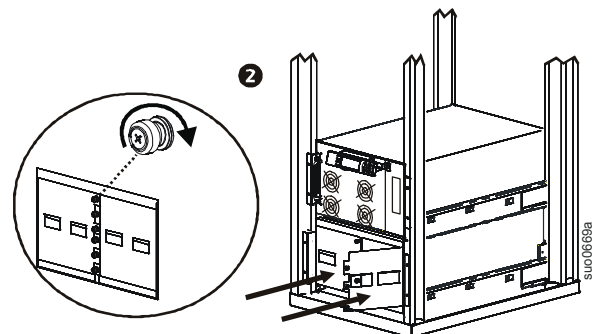
### Install and connect battery modules



**Connect all eight battery modules. Failure to do so may cause equipment damage.**

Replace the battery doors.

Tighten the screws to secure the battery doors.



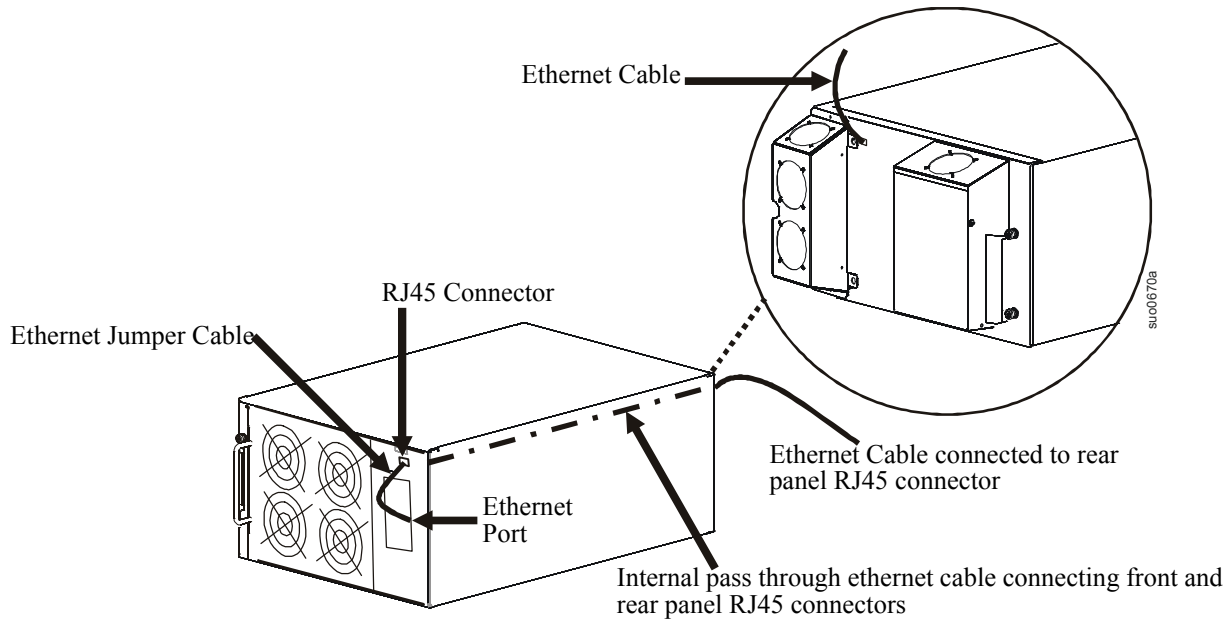
## Route ethernet cable

### Ethernet cable wiring rear panel access

Locate the RJ45 connector and the ethernet port on the front panel of the UPS. Connect the ethernet jumper cable (included), to the RJ45 connector and the ethernet port.

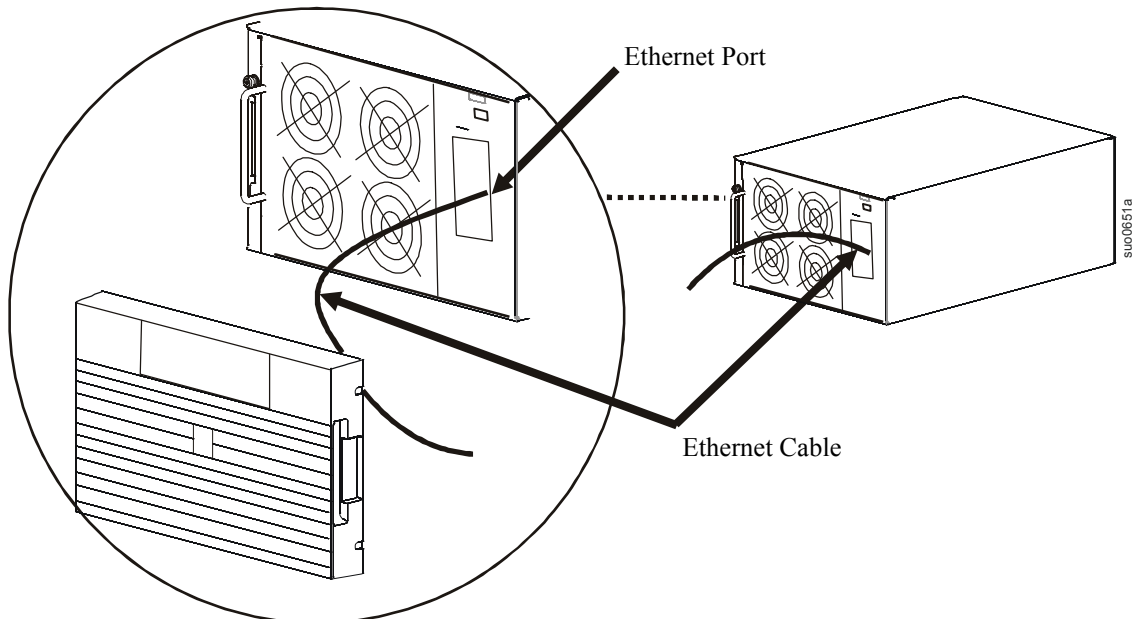
Connect a network cable (not included), to the RJ45 connector on the rear panel of the UPS.

There is an internal ethernet cable that connects the front and rear panel RJ45 connectors.



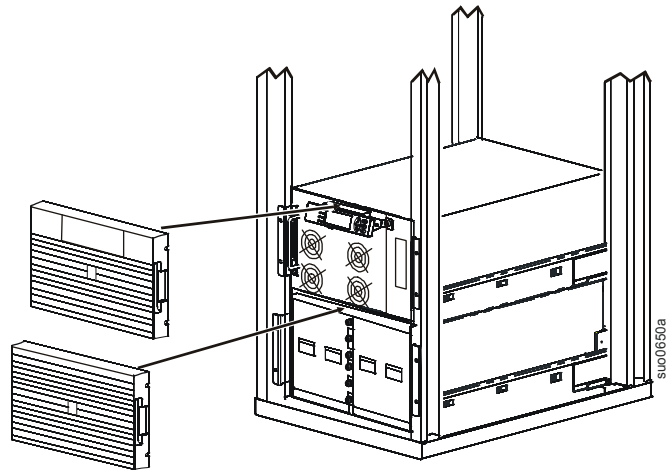
### Ethernet cable wiring front panel

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



## Install bezels

Install a bezel on the UPS and XLBP(s).



## Accessories

Install accessories prior to connecting power to the UPS.

- Refer to the APC Web site, [www.apc.com](http://www.apc.com) for available accessories.
- User documentation for the Network Management Card installed on this UPS is available on the Utility CD included with this unit.

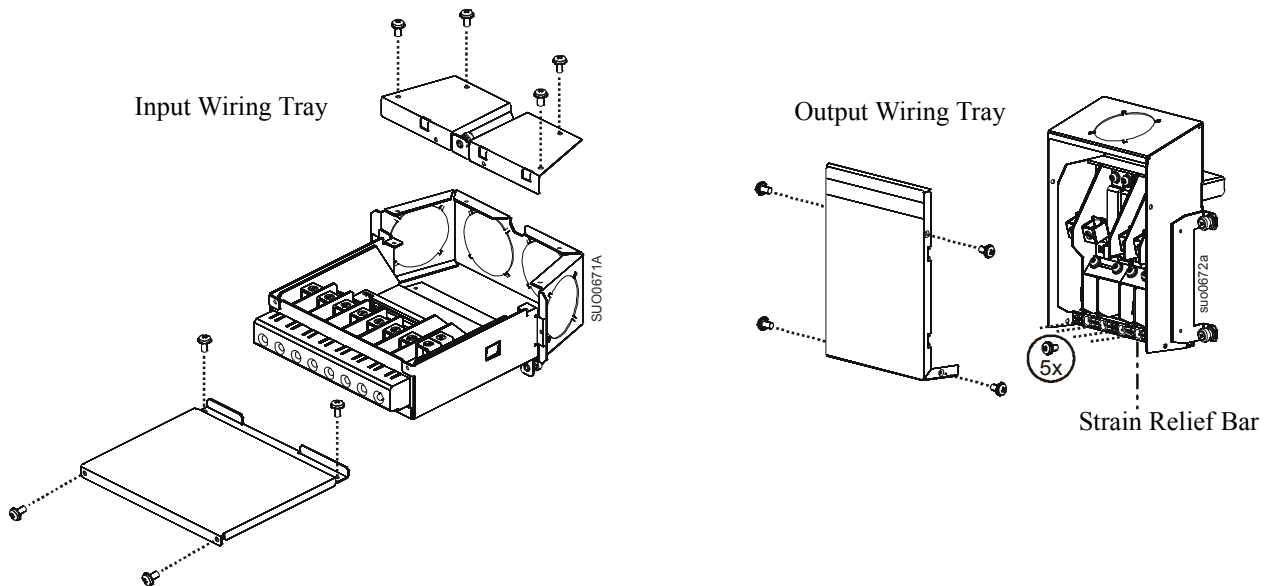
## Optional accessories

- Maintenance bypass
- SURT192RMXLBP2
- Equipment cart

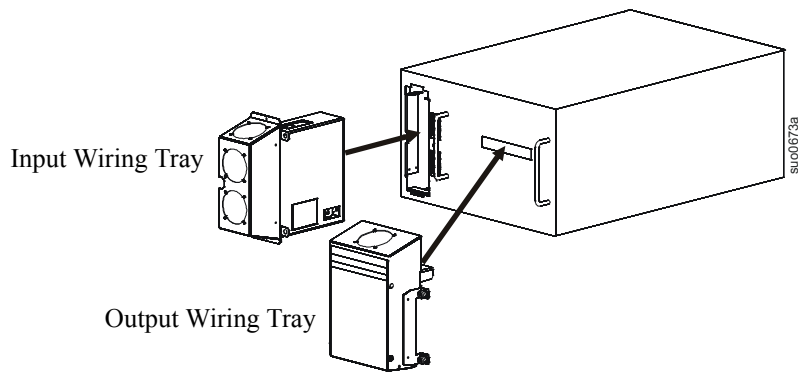
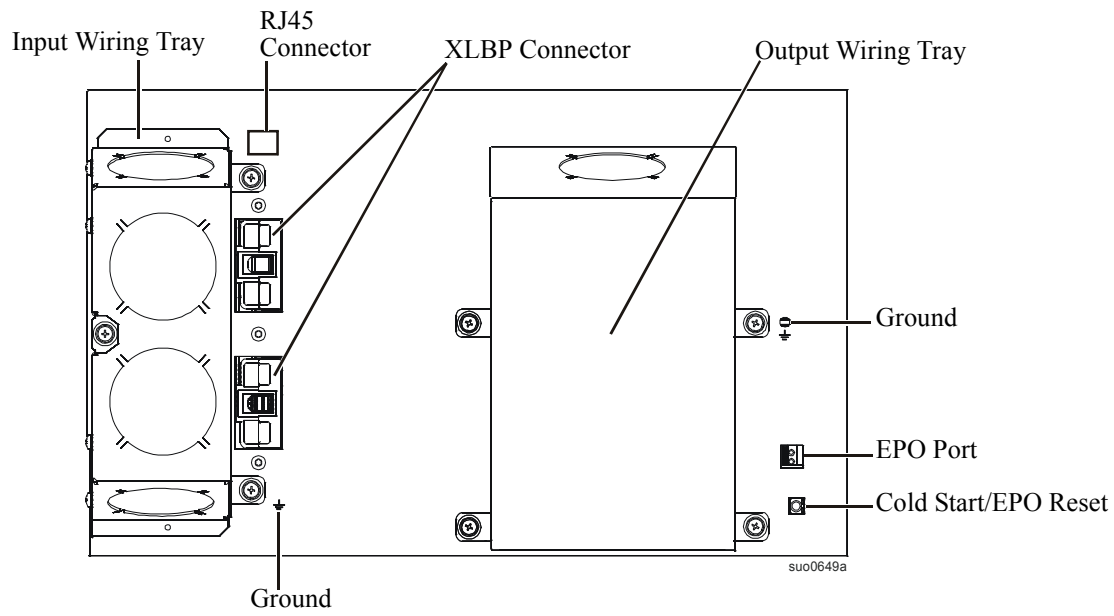
# Hardwire the UPS

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

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 appropriate circular knockouts from the input and output wiring trays.
4. Remove the screws that secure the covers and take the covers off of the 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 10 in this manual).
7. Insert the cables through the knockout holes to the terminal blocks. Connect the ground terminal first, (refer to “Wiring Specifications” on page 10 in the this manual).
8. Use an appropriate strain-relief (not supplied), on the hardwired input and output power cables.
9. Replace the wiring tray covers. Failure to do so may result in personal injury or equipment damage.
10. Install the wiring trays, (refer to graphics below).










# Install input and output wiring trays in UPS rear panel



## Wiring Specifications

Adhere to national and local electrical codes when wiring.

Input Connections	Output Connections
<b>Main Input</b> Single-Phase: Wire to L1, N, and  Three-Phase: Wire to L1, L2, L3, N, and 	<b>Hardwire</b> Single-Phase: Wire to L1, N, and  Three-Phase: Wire to L1, L2, L3, N, and 
<b>Bypass Input (optional)</b> Single-Phase: Wire to B1, N, and  Three-Phase: Wire to B1, B2, B3, N, and 	<b>Single-phase PDU</b> XL battery pack PDU to UPS: Wire L1, N, 

## Single Feed

Wiring	Number of Phases	Voltage	Current Full Load*** (maximum)	External Input Circuit Breaker (typical)	Wire Size (typical)*
--------	------------------	---------	--------------------------------	--	----------------------

### SURT15K XLI/XLICH/XLI-CC

Input	1	220/230/240 VAC	83 A	100 A each phase	35 mm <sup>2</sup>
Output	1	220/230/240 VAC	66 A	not required	25 mm <sup>2</sup>
Input	3	380/400/415 VAC	28 A each phase	100 A each phase**	35 mm <sup>2**</sup>
Output	1	220/230/240 VAC	66 A	not required	25 mm <sup>2</sup>
Input	3	380/400/415 VAC	28 A each phase	35 A or 40 A each phase	6 mm <sup>2</sup>
Output	3	380/400/415 VAC	22 A each phase	not required	6 mm <sup>2</sup>

### SURT20K XLI/XLICH/XLI-CC

Input	1	220/230/240 VAC	105 A	125 A each phase	50 mm <sup>2</sup>
Output	1	220/230/240 VAC	87 A	not required	35 mm <sup>2</sup>
Input	3	380/400/415 VAC	35 A each phase	125 A each phase**	50 mm <sup>2**</sup>
Output	1	220/230/240 VAC	87 A	not required	35 mm <sup>2</sup>
Input	3	380/400/415 VAC	35 A each phase	50 A each phase	10 mm <sup>2</sup>
Output	3	380/400/415 VAC	29 A each phase	not required	10 mm <sup>2</sup>

\*Terminal screw tightening torque: 4.5 Nm (40 lb-in) minimum

\*\*Use cables and input circuit breakers rated for specifications listed in these tables.

**NOTE:** Units configured for three phase input and single phase output operation, the entire load connected to the UPS will transfer to L1 and Neutral of the three phase input when the UPS is operating in Bypass mode.

\*\*\*The current is specified at nominal input voltage.

The acceptable input frequency range is 40 Hz to 70 Hz.

The output frequency is user selectable. Refer to the PowerView display menu screens for available options.

## Dual Feed

Wiring	Number of Phases	Voltage	Current Full Load*** (maximum)	External Input Circuit Breaker Mains (typical)	External Input Circuit Breaker Bypass (typical)	Wire Size Mains* (typical)	Wire Size Bypass* (typical)
--------	------------------	---------	--------------------------------	--	---	----------------------------	-----------------------------

### SURT15K XLI/XLICH/XLI-CC

Input	1	220/230/240 VAC	83 A	100 A each phase	100 A each phase	35 mm <sup>2</sup>	35 mm <sup>2</sup>
Output	1	220/230/240 VAC	66 A	not required	not required	25 mm <sup>2</sup>	25 mm <sup>2</sup>
Input	3	380/400/415 VAC	28 A each phase	35 A or 40 A each phase	100 A each phase**	6 mm <sup>2</sup>	35 mm <sup>2**</sup>
Output	1	220/230/240 VAC	66 A	not required	not required	25 mm <sup>2</sup>	25 mm <sup>2</sup>
Input	3	380/400/415 VAC	28 A each phase	35 A or 40 A each phase	35 A or 40 A each phase	6 mm <sup>2</sup>	6 mm <sup>2</sup>
Output	3	380/400/415 VAC	22 A each phase	not required	not required	6 mm <sup>2</sup>	6 mm <sup>2</sup>

### SURT20K XLI/XLICH/XLI-CC

Input	1	220/230/240 VAC	105 A	125 A each phase	125 A each phase	50 mm <sup>2</sup>	50 mm <sup>2</sup>
Output	1	220/230/240 VAC	87 A	not required	not required	35 mm <sup>2</sup>	35 mm <sup>2</sup>
Input	3	380/400/415 VAC	35 A each phase	50 A each phase	125 A each phase**	10 mm <sup>2</sup>	50 mm <sup>2**</sup>
Output	1	220/230/240 VAC	87 A	not required	not required	35 mm <sup>2</sup>	35 mm <sup>2</sup>
Input	3	380/400/415 VAC	35 A each phase	50 A each phase	50 A each phase	10 mm <sup>2</sup>	10 mm <sup>2</sup>
Output	3	380/400/415 VAC	29 A each phase	not required	not required	10 mm <sup>2</sup>	10 mm <sup>2</sup>

\*Terminal screw tightening torque: 4.5 Nm (40 lb-in) minimum

\*\*Use cables and input circuit breakers rated for specifications listed in these tables.

**NOTE:** Units configured for three phase input and single phase output operation, the entire load connected to the UPS will transfer to L1 and Neutral of the three phase input when the UPS is operating in Bypass mode.

\*\*\*The current is specified at nominal input voltage.

The acceptable input frequency range is 40 Hz to 70 Hz.

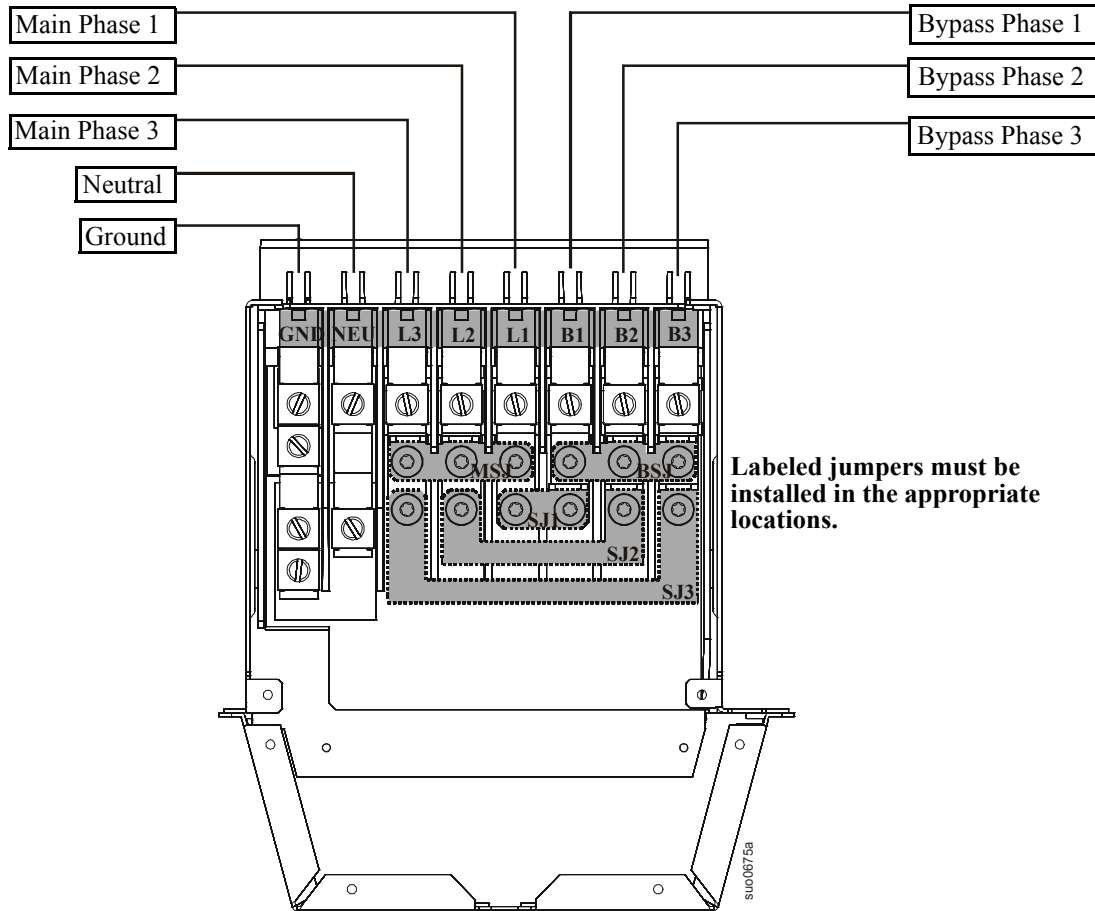
The output frequency is user selectable. Refer to the PowerView display menu screens for available options

## Input wiring options

Input wiring overview: Refer to the diagrams on the following pages for input wiring options.

### Main Input Power Single and Three

### Bypass Input Power Single and Three



Input/Output Jumper Configurations		Input Jumpers					Output Jumpers
Power I/O Configuration Input:Output	Separate Bypass Feed	SJ1	SJ2	SJ3	MSJ	BSJ	OSJ
1:1**	No	✓	✓*	✓*	✓	✓	✓
1:1	Yes				✓	✓	✓
3:1	No	✓				✓	✓
3:1	Yes					✓	✓
3:3	No	✓	✓	✓			
3:3	Yes						

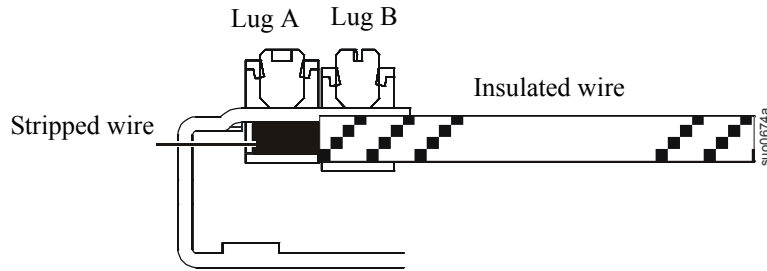
\* Optional

\*\* Factory Default

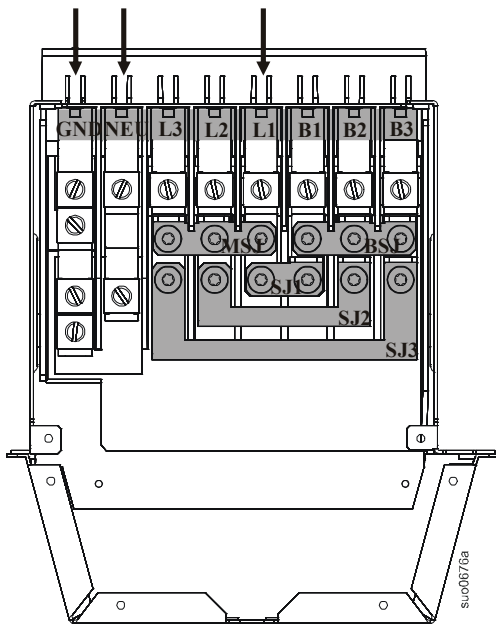


Ensure ground wire conductor and insulator are securely fastened. To connect the ground wire:

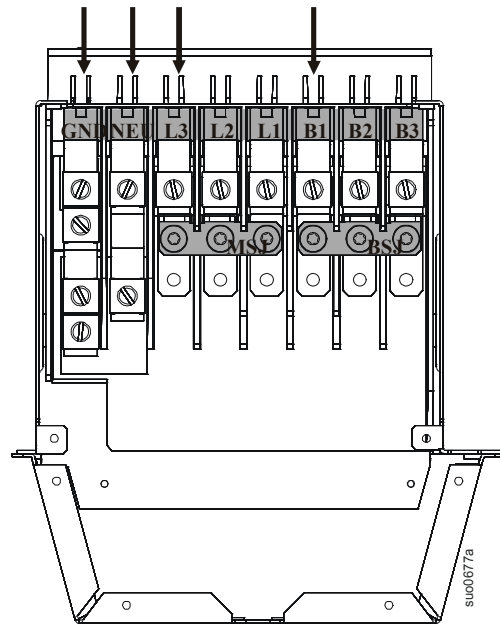
1. Strip the cable of insulation, exposing the wire. Secure the exposed wire with lug “A”.
2. Secure the insulated portion of the cable with lug “B”.



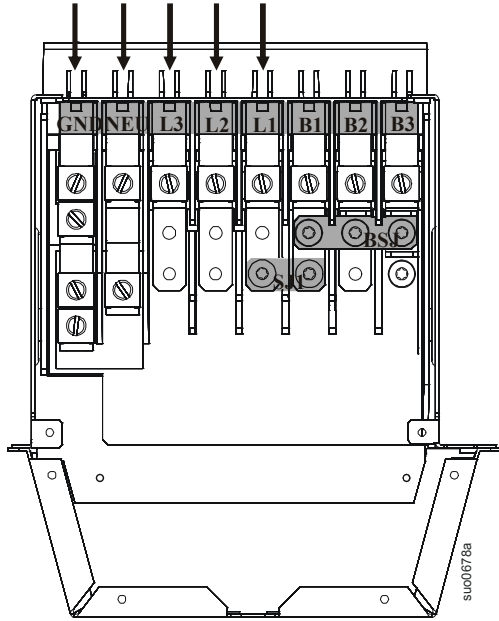
**Input wiring option 1 Factory Default**  
Single phase input, single phase output, single feed



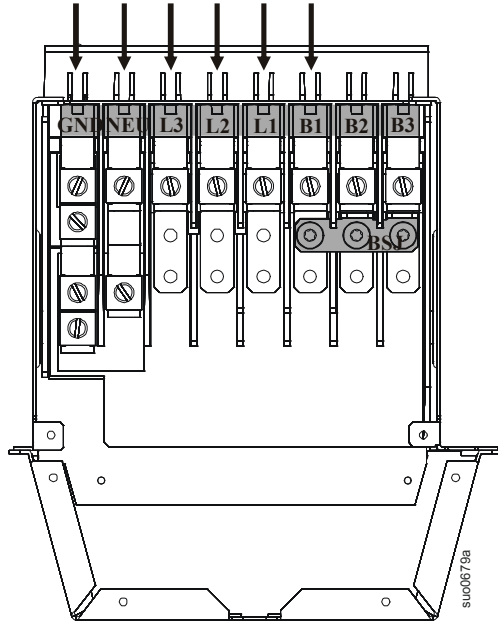
**Input wiring option 2**  
Single phase input, single phase output, dual feed



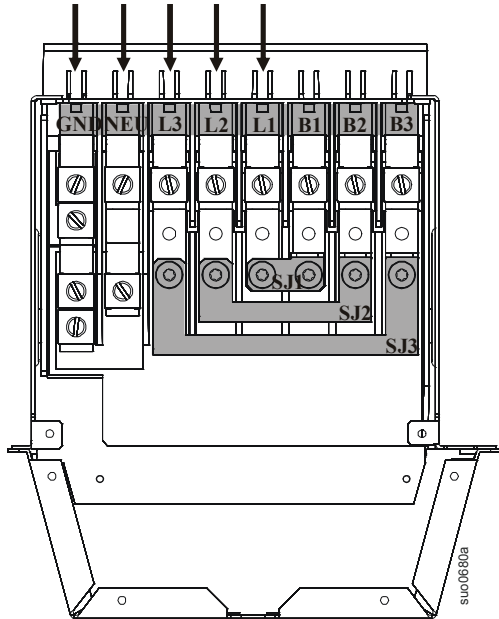
Input wiring option 3  
**Three phase input, single phase output,  
 single feed**



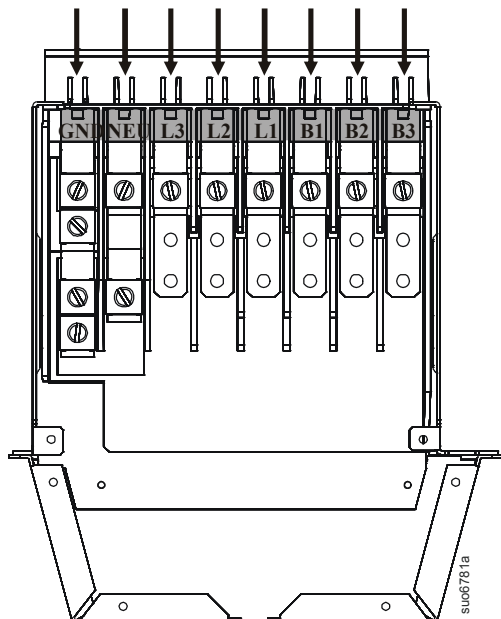
Input wiring option 4  
**Three phase input, single phase output,  
 dual feed**



Input wiring option 5  
**Three phase input, three phase output,  
 single feed**



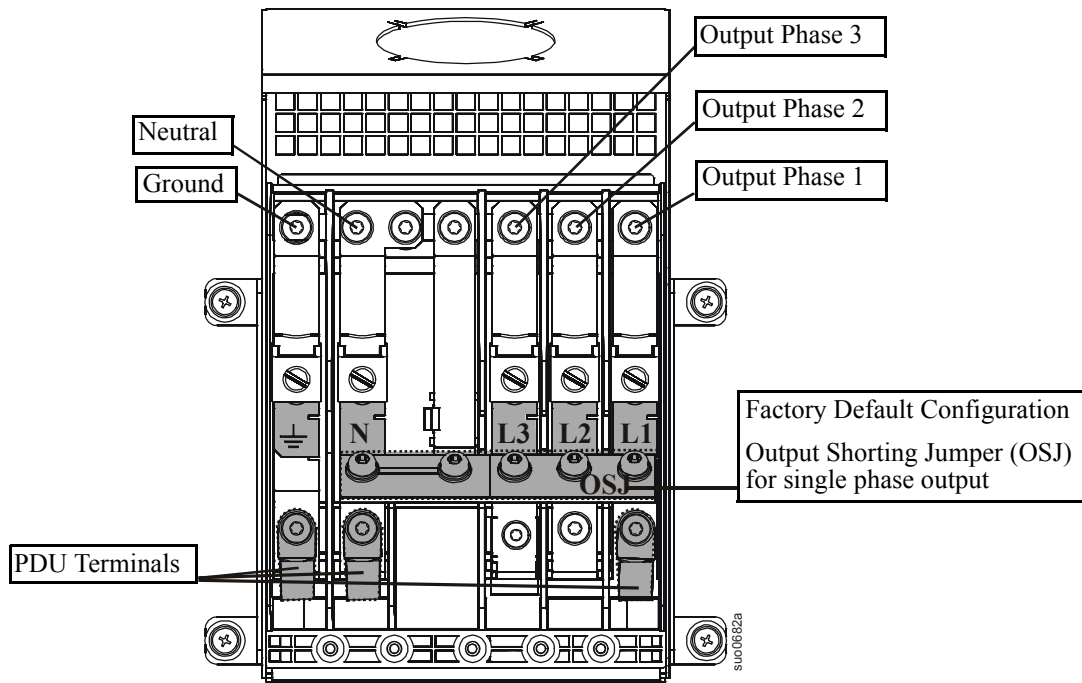
Input wiring option 6  
**Three phase input, three phase output, dual feed**



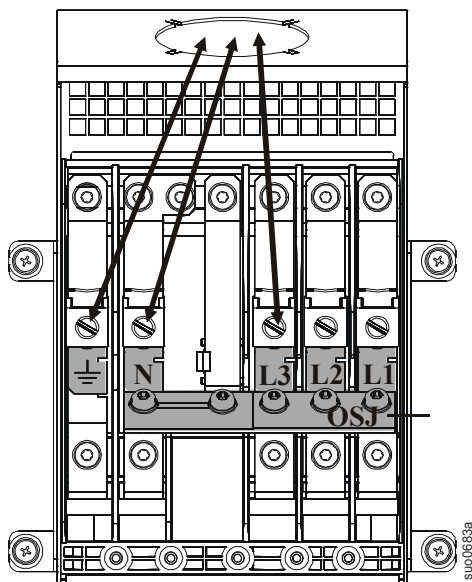
## Output wiring options


Output wiring overview. Refer to the diagrams on the following pages for output wiring options.

Labeled jumpers and connectors must be installed in the appropriate locations.

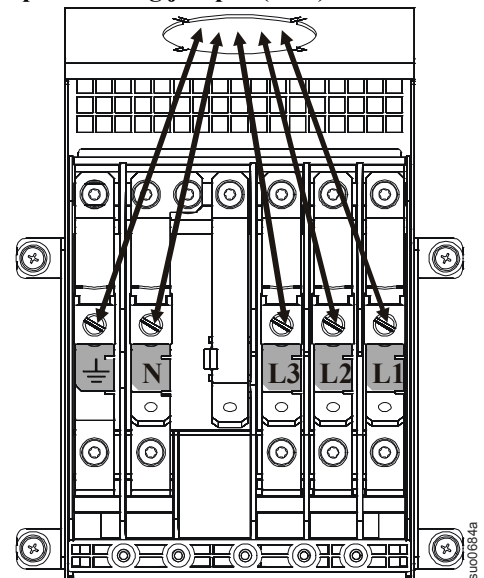


Output hardwire option 1  
Single phase hardwire output  
connection

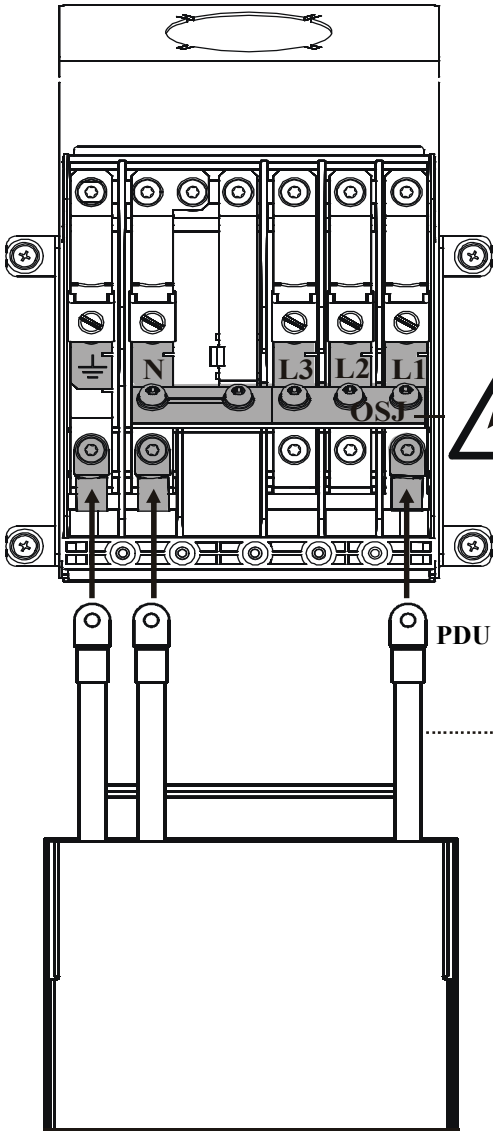


 Ensure the OSJ is secured to the output wiring tray using the five screws provided.

Output hardwire option 2  
Three phase hardwire output connection  
XLBP PDU not connected  
Output shorting jumper (OSJ) removed

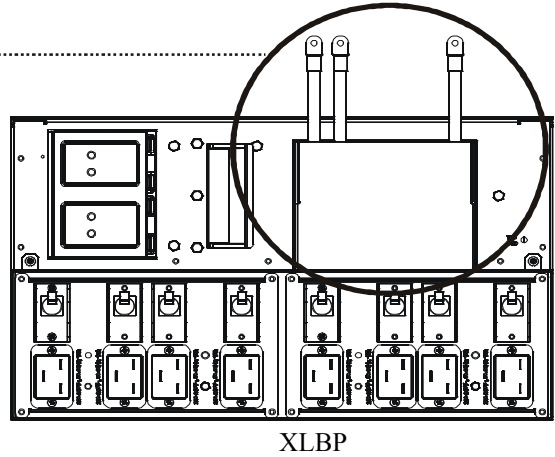


Output PDU option  
Single phase output connection to battery pack PDU



Ensure the OSJ is secured to the output wiring tray using the five screws provided.

PDU connectors



# 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 supply of utility power fails or 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 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.

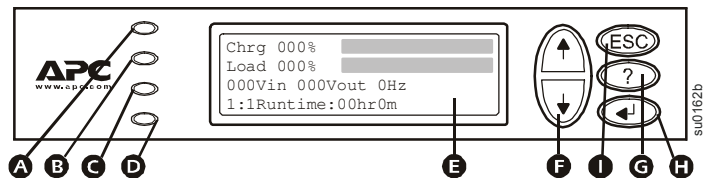
On start-up the XLBP LED may illuminate and blink within the first minute. The LED should then extinguish.

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

## PowerView Interface Display

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.




<b>A</b>	LOAD ON	When LED illuminates green, the UPS supplies power to the load
<b>B</b>	ON BATT	When LED illuminates yellow, power to load flows from the batteries to the power module
<b>C</b>	BYPASS	When LED illuminates yellow, power to the load is supplied through bypass
<b>D</b>	FAULT	When LED illuminates red, a fault condition exists
<b>E</b>	LCD Screen	Displays menu screens for alarms, status data, instructional help, and configuration items
<b>F</b>	UP and DOWN navigation keys	Used to scroll through and select menu items
<b>G</b>	HELP key	Opens context-sensitive help
<b>H</b>	ENTER key	Opens menu items and saves changes to system parameters
<b>I</b>	ESC key	Returns to previous screen displayed

## Navigating menu screens

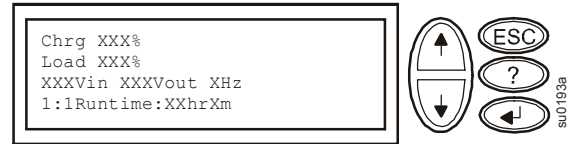
Use the ESC key to navigate between menu screens.

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

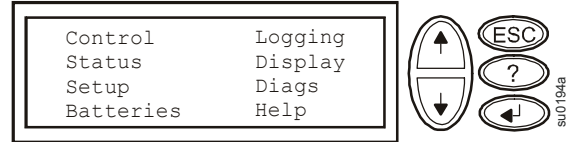
➔ arrow indicates that there are sub menus containing user selectable commands.

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.

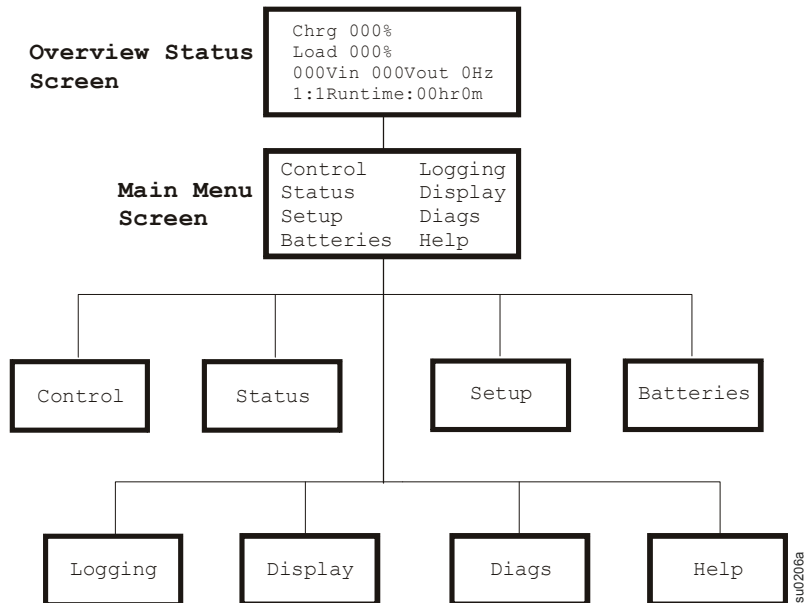
### Navigating sub menu screens

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

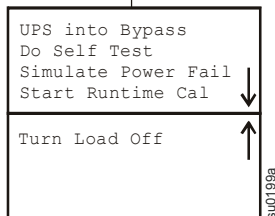
A ↓ after the last entry on a sub menu, indicates a continuation of the function/command list.

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

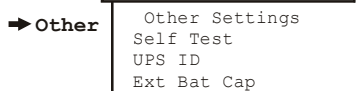
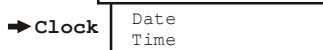
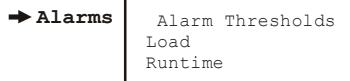
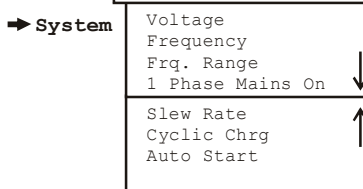
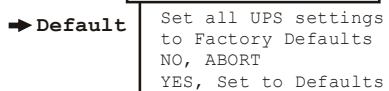
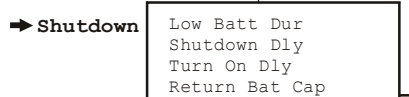
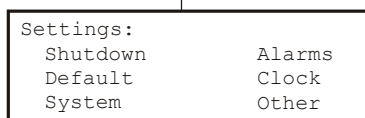
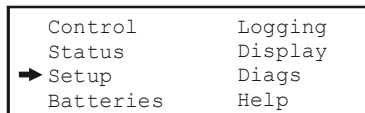
Use the ENTER key to select a command and move to sub menus associated with that function/command.



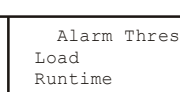
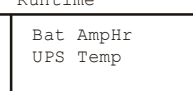
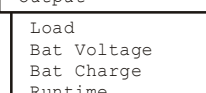
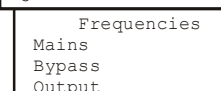
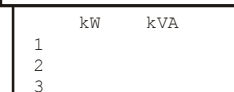
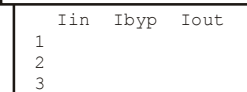
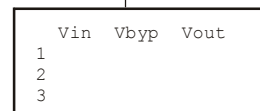
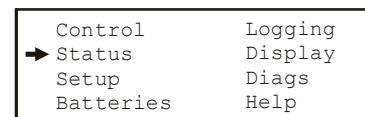
## Sub menu screens



su0199a



su0201a






su0200a

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

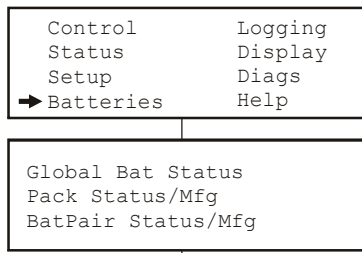
50 Hz frequency range: 50±3 Hz; 50±0.1 Hz

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

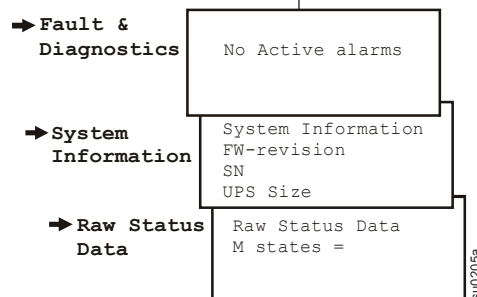
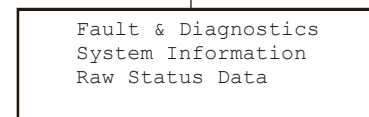
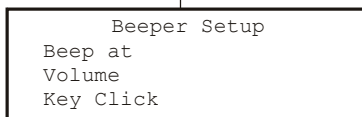
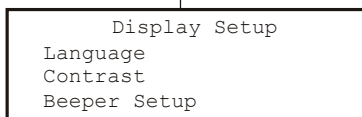
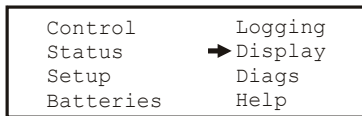
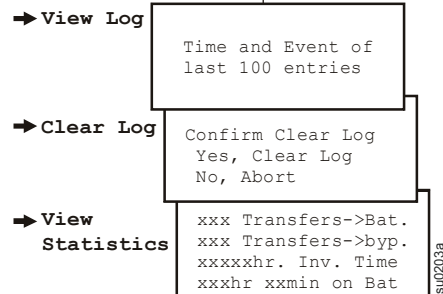
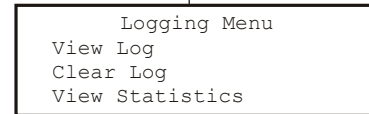
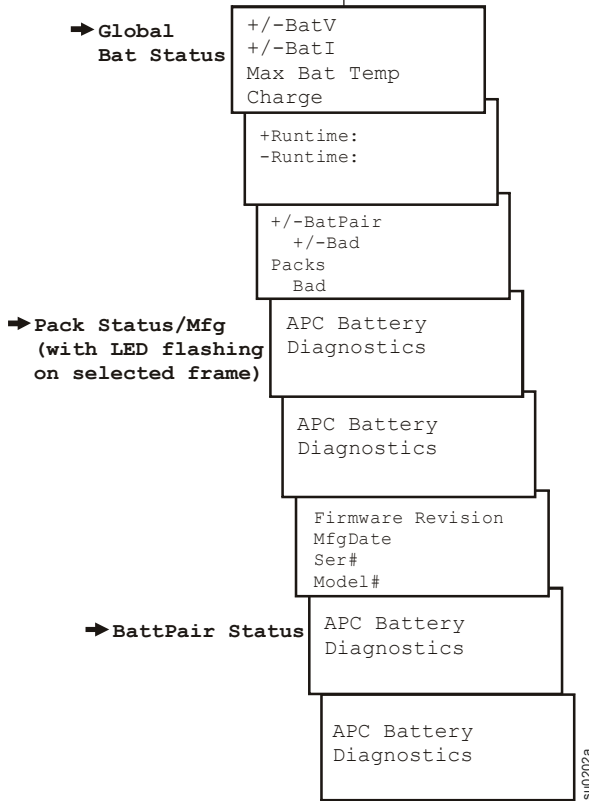
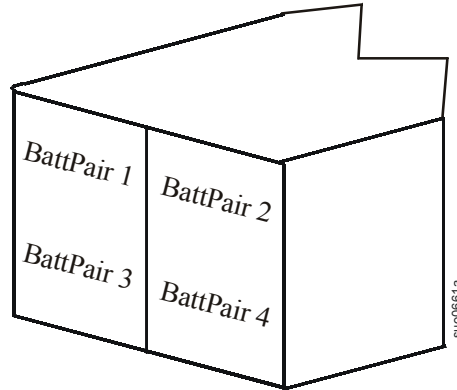
**Clock:** The date and time functions are used to time-stamp events in the event log. To avoid inaccuracies, change the time setting to reflect day light saving time where applicable.

**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.

The PowerView will reference XLBP configuration in the following manner.



External Battery Pack			
BattPair_1		BattPair_2	
Module_1	Module_2	Module_3	Module_4
BattPair_3		BattPair_4	
Module_5	Module_6	Module_7	Module_8





# Start-Up

## Connect load to UPS

1. The UPS features chassis ground connection screws located on the rear panel, for connecting the ground leads on transient voltage devices.  
**Prior to connecting the grounding cable, ensure that the UPS is NOT connected to utility or battery power.**
2. Connect equipment to the UPS.  
NOTE: This UPS is equipped with an external battery connector on the rear panel of the unit.
3. 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.
4. Refer to the APC Web site, [www.apc.com](http://www.apc.com) for battery runtimes.
5. Where appropriate use an APC extension battery cable. For ordering details contact your dealer or APC through the Web site [www.apc.com](http://www.apc.com).
6. Add optional accessories to the SmartSlot located on the front panel.

For optimal computer system security, install PowerChute Smart-UPS monitoring software.

## Connect power to UPS and load

1. Connect input power to the UPS.
2. Check the PowerView interface display for messages.
3. Turn on the load using the interface display menu.

## Communication port

Serial Port **Use only the supplied cable to connect to the serial port. A standard serial interface cable is incompatible with the UPS.**



The serial port can be used to configure that Network Management Card.

# Emergency Power Off (EPO)

The output power can be disabled in an emergency by closing a switch connected to the EPO.

## Adhere to national and local electrical codes when wiring.

The switch should be connected in a normally open switch contact. External voltage is not required; the switch is driven by 12 V internal supply. In closed condition, 2 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 PORT

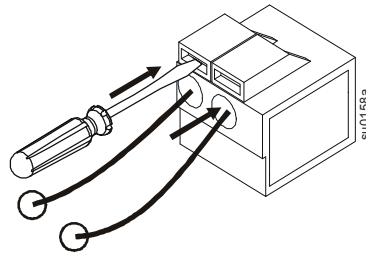
(located on rear panel)



## EPO Connector

Strip the insulation from one end of each wire to be used for connecting the EPO.

Insert a screwdriver into the slot above the terminal to be wired. Insert the stripped wire into the terminal. Remove the screwdriver to secure the wire in the 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.

# Troubleshooting Display Messages

Use the table below to solve minor installation and operation problems. Refer to the APC Web site, [www.apc.com](http://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 pre-programmed 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: Start-up diagnostic fault.	Check for other alarms. If the problem persists contact APC Customer Support. Refer to <i>Contact Information</i> 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 <i>Input/Output Jumper Configurations</i> 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 <i>Input/Output Jumper Configurations</i> table in this manual.
	Bypass: Site Wiring Fault		Check bypass jumpers in input wiring tray and output shorting jumper for compatibility. Refer to the <i>Input/Output Jumper Configurations</i> 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 failed and requires replacement.	Refer to battery pair installation in the external battery pack user manual.

<b>Condition</b>	<b>PowerView Display Message</b>	<b>Reason for Message</b>	<b>Corrective Action</b>
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 Fault	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 Customer Support. Refer to <i>Contact Information</i> in this manual.
	Battery Over-Voltage Warning.	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 Frq/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. Internal diagnostic fault. The UPS will continue to operate normally.	Contact APC Customer Support. Refer to <i>Contact Information</i> in this manual.	

Condition	PowerView Display Message	Reason for Message	Corrective Action
General Fault	Fan Fault	A fan has failed.	Contact APC Customer Support. Refer to <i>Contact Information</i> in this manual.
	Static Bypass Switch Fault.	The static bypass switch has failed.	
	System Failure Detected by Surveillance.	The system has detected an internal error.	Check for other alarms. If the problem persists contact APC Customer Support. Refer to <i>Contact Information</i> 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 Customer Support. Refer to <i>Contact Information</i> 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 a fault.	Contact APC Customer Support. Refer to <i>Contact Information</i> 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

This UPS has easy-to-replace, hot-swappable battery modules. Replacement is a safe procedure, isolated from electrical hazards. You may leave the UPS and connected equipment on during the replacement procedure.

#### **Once the batteries are disconnected the connected equipment is not protected from power outages.**

Refer to the appropriate replacement battery user manual for battery module installation instructions. See your dealer or contact APC at [www.apc.com](http://www.apc.com) for information on replacement battery modules.



**Be sure to deliver the spent battery(s) to a recycling facility or ship it to APC 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 Customer Support through the APC 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 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 Web site for country specific instructions.
3. Pack the unit in its original packaging. If this is not available, refer to **www.apc.com** to obtain a new set.
  - a. Pack the unit properly to avoid damage in transit. Never use foam beads for packaging. Damage sustained in transit is not covered under warranty.
  - b. **For the UPS, always DISCONNECT THE BATTERY before shipping in compliance with U.S. Department of Transportation (DOT) and IATA regulations.** The battery may remain in the unit.
  - c. Internal batteries may remain connected in the XLBP during shipment, (if applicable, not all units have XLBPs).
4. Write the RMA# provided by Customer Support on the outside of the package.
5. Return the unit by insured, pre-paid 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.

# Contact Information

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

- Refer to the APC Web site to access documents in the APC Knowledge Base and to submit customer support requests.
  - **www.apc.com** (Corporate Headquarters)  
Connect to localized APC Web sites 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 an APC Customer Support center by telephone (888) 272-2782.  
Local, country-specific centers:  
go to **www.apc.com/support/contact** for information.

Contact the APC representative or other distributor from whom you purchased your APC product for information on how to obtain local customer support

# Two-Year Warranty

The limited warranty provided by American Power Conversion (APC®) in this statement of Limited Factory Warranty applies only to products you purchase for your commercial or industrial use in the ordinary course of your business.

## Terms of warranty

APC warrants its products to be free from defects in materials and workmanship for a period of two years from the date of purchase. The obligation of APC under this warranty is limited to repairing or replacing, at its sole discretion, any such defective products. This warranty does not apply to equipment that has been damaged by accident, negligence or misapplication or has been altered or modified in any way. Repair or replacement of a defective product or part thereof does not extend the original warranty period. Any parts furnished under this warranty may be new or factory-remanufactured.

## Non-transferable warranty

This warranty extends only to the original purchaser who must have properly registered the product. The product may be registered at the APC Web site, [www.apc.com](http://www.apc.com).

## Exclusions

APC 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 or any third person misuse, negligence, improper installation or testing. Further, APC shall not be liable under the warranty for unauthorized attempts to repair or modify wrong or inadequate electrical voltage or connection, inappropriate on-site operation conditions, corrosive atmosphere, repair, installation, start-up by non-APC designated personnel, a change in location or operating use, exposure to the elements, Acts of God, fire, theft, or installation contrary to APC recommendations or specifications or in any event if the APC serial number has been altered, defaced, or removed, or any other cause beyond the range of the intended use.

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## Warranty claims

Customers with warranty claims issues may access the APC customer support network through the Support page of the APC Web site, [www.apc.com](http://www.apc.com). Select your country from the country selection pull-down menu. Open the Support tab at the top of the Web page to obtain contact information for customer support in your region.

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