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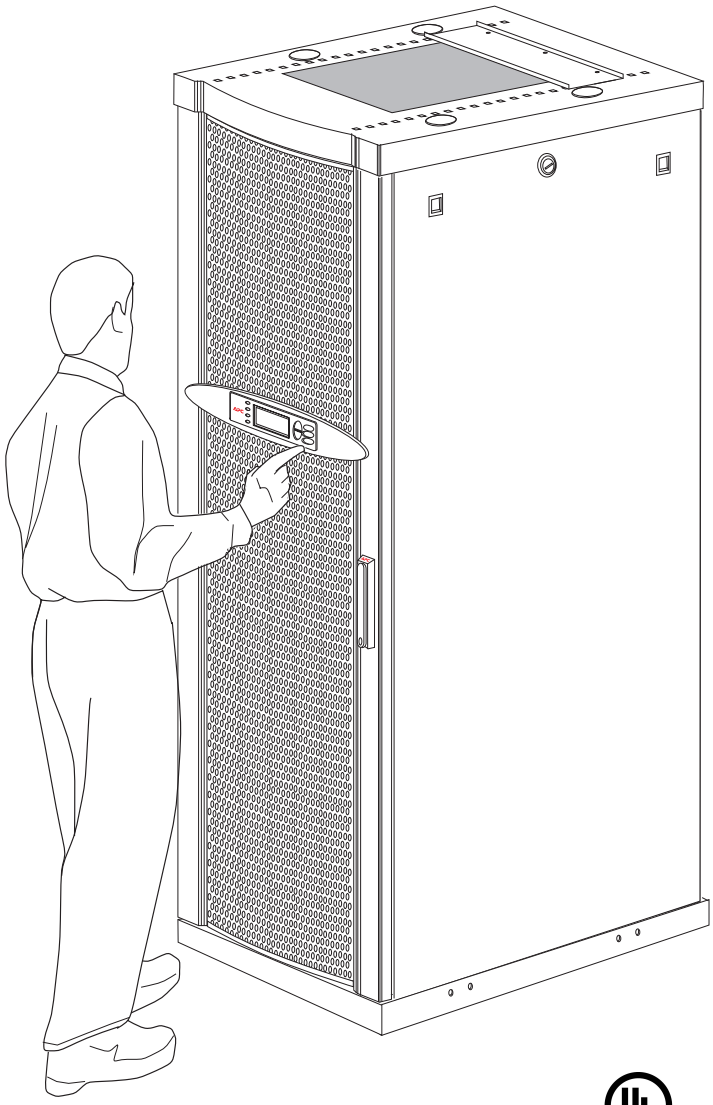
Symmetra PX UPS

10-80 kW
208 V

Operation and Maintenance Manual

Symmetra® PX
10-80 kW, 208V

Operation and Maintenance Manual



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IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

This guide contains important instructions for the Symmetra PX that should be followed when handling the UPS, Battery Enclosures, and Batteries.

Symbols used in this guide

WARNING!
Risk of Electric Shock.

CAUTION!
Read this information.

Indicates important information.

Indicates a heavy load that should not be lifted without assistance.

Indicates that more information is available on this subject in a different section of this manual.

Indicates that more information is available on the same subject in a different manual.

Heavy				
Do not lift heavy loads without assistance.	<40 lb	40 - 70 lb.	70 - 120 lb	>120 lb

WARNING!
Hazardous electrically-charged parts inside the UPS are energized from the battery supply even when the AC power is disconnected. Follow Total Power Off Procedure to completely de-energize the system.

CAUTION!
For configurations including customer-supplied external batteries, refer to manufacturer's battery installation and maintenance instructions.

ON, OFF & STAND-BY Switch Positions

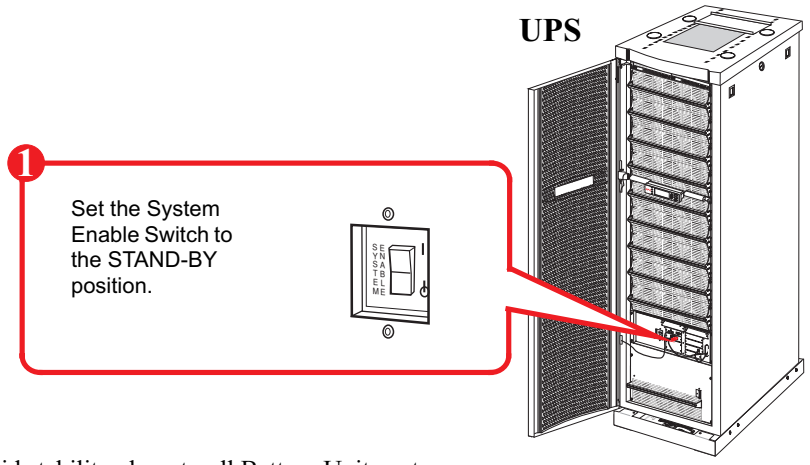
Indicates that a switch or current protection device is in the ON position.

Indicates the OFF position for a switch or a breaker

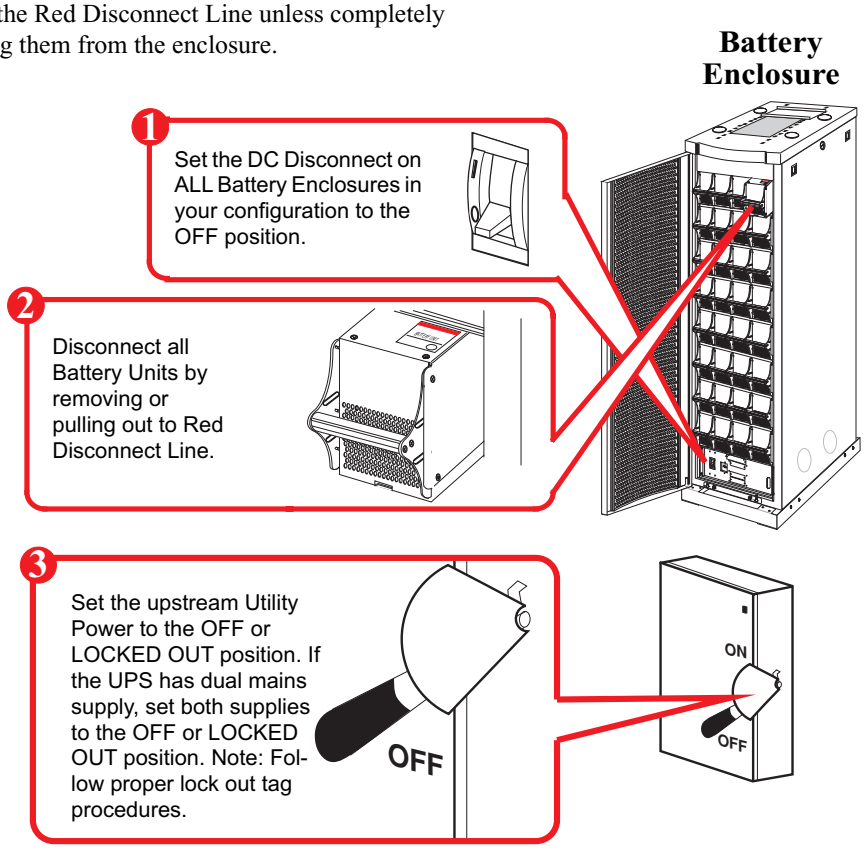
Indicates that a switch is in the STAND-BY position

Total Power OFF Procedure

WARNING!
Before electrical installation begins, verify that the UPS is in the Total Power Off mode by following this procedure.



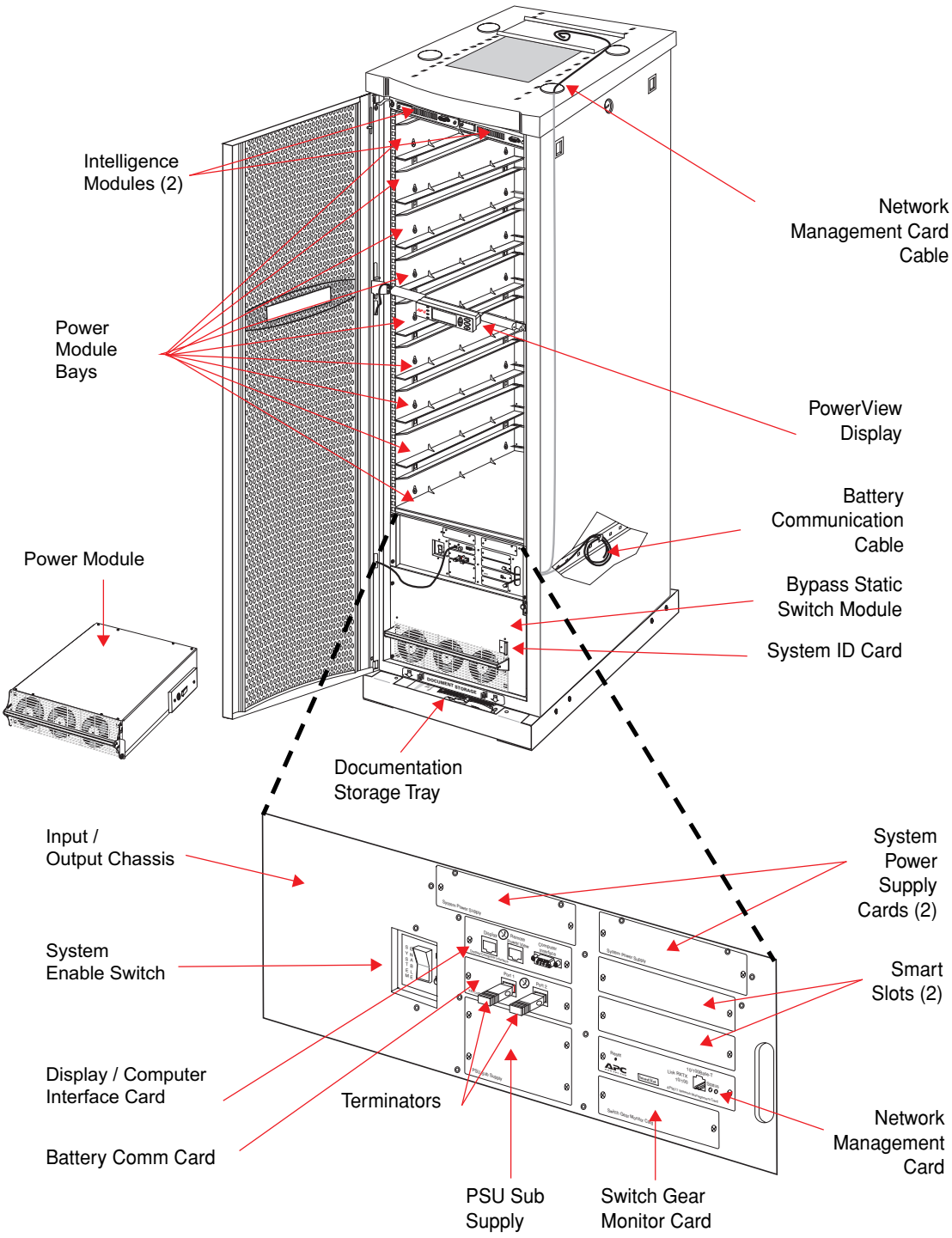
CAUTION!
To ensure solid stability, do not pull Battery Units out beyond the Red Disconnect Line unless completely removing them from the enclosure.



Introduction

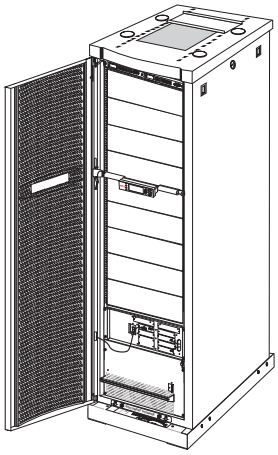
After the UPS has been wired electrically, it is ready for start-up. This guide will allow you to quickly start up the UPS. It contains information on Safety, System Components, Securing the UPS, Module Installation, Network Cable Installation, Start-Up Procedure, and Basic Troubleshooting.

Overview of System Components

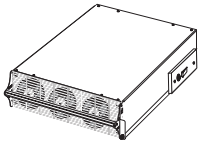


Weights

UPS (empty)
600 lb. (275 kg)

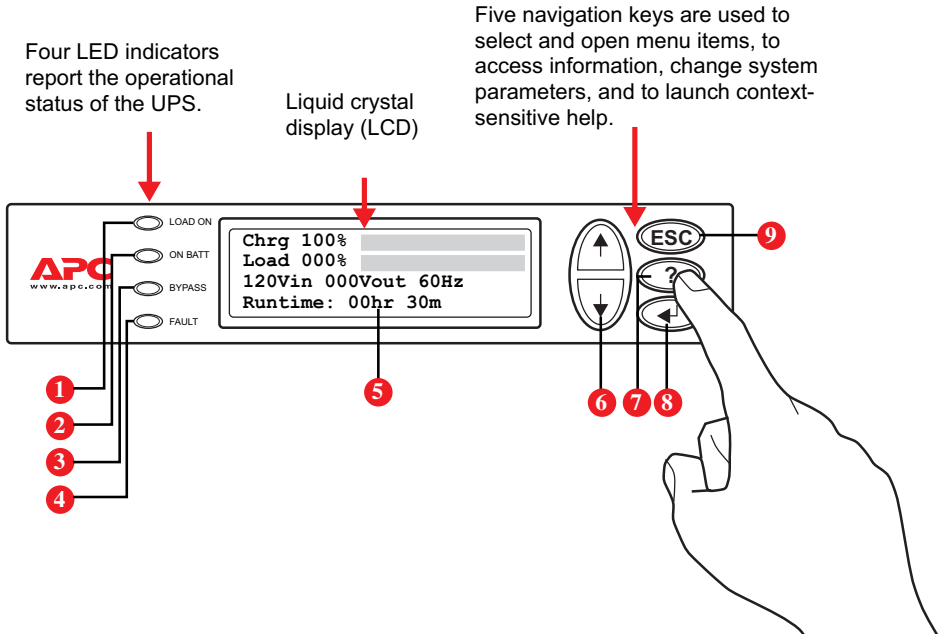


Power Module
60 lb. (26 kg)



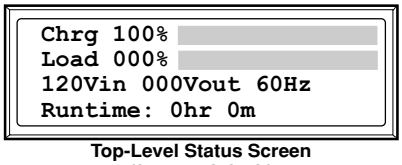
Operation

The PowerView is the user control interface used to configure the functionality, monitor the system, set alarm thresholds, and to provide audible and visual alarms.



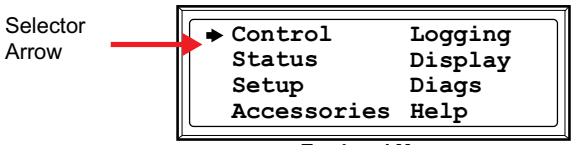
1	LOAD ON LED	When green, the Symmetra PX UPS is providing power to the load equipment.
2	ON BATT LED	When yellow, power is flowing from the batteries to the Power Modules.
3	BYPASS LED	When yellow, power to the load is being supplied through the Static Bypass Switch.
4	FAULT LED	When red, an fault condition exists.
5	LCD	Displays alarms, status data, instructional help, and configuration items.
6	UP and DOWN navigation keys	Selects menu items and accesses information.
7	ENTER key	Opens menu items and input changes to system parameters.
8	HELP key	Launches context-sensitive help.
9	ESC key	Returns to previous screen displayed.

Press **ESC** (ESC) until you get to the **Top-Level Status Screen**, which provides you with basic system status information.



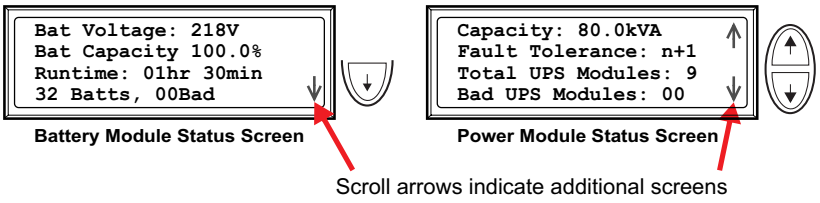
Top-Level Status Screen (factory default)

Press **Enter** (↵) to open the **Top-Level Menu** screen. This screen is the **launching pad** to command, configure, and monitor the system.



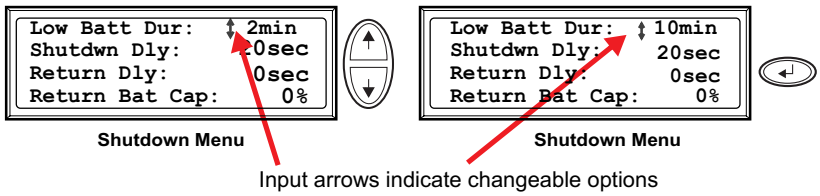
Top-Level Menu

Press **Up and Down** (↓) (↑) to navigate the selector arrow and view all sub-menu screens.



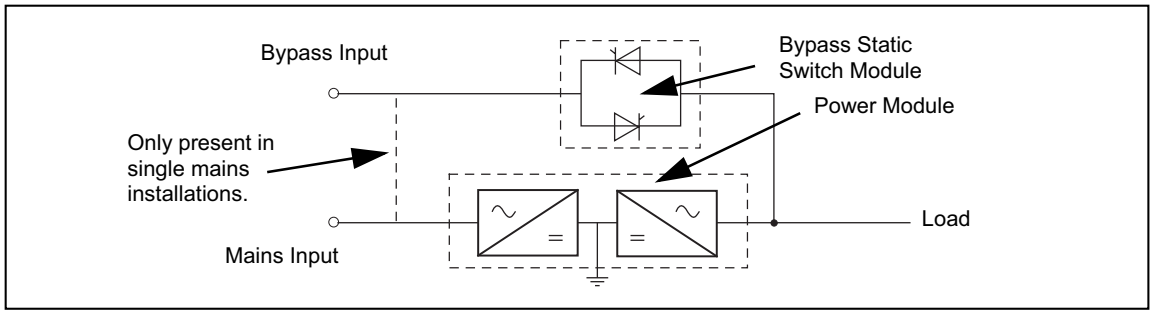
Battery Module Status Screen **Power Module Status Screen**

Press **Up, Down** (↓) (↑) and **Enter** (↵) to move input arrow to select and enter information.



Shutdown Menu **Shutdown Menu**

Functional Schematic Dual Mains / Single Mains



Control Functions

Turn load on/off:

Control Sub-Menu **Load Off Screen**

Turn into/out of bypass:

Control Menu **Bypassed Screen**

Control Screen

From the Control screen, you can select the following items:

UPS into Bypass	Place into or return from maintenance bypass operation
Do Self Test	Initiate a system of self-tests and diagnostics.
Simulate Power Fail	Simulate a power failure
Graceful Reboot	Turn off and start load equipment in an ordinary manner.
Graceful Turn Off	Shut down load equipment in an orderly manner.
Start Runtime Cal	Begin runtime calibration of the UPS.
Turn Load On/Off	Apply power to or shut down the Symmetra PX UPS

Status Functions

Verify general module status:

Top-Level Menu **Sub-Sub-Sub-Sub-Sub Status Screen**

Verify voltage on all phases:

Top-Level Menu **Status Screen**

Verify battery voltage/capacity:

Top-Level Menu **Sub-Sub-Sub-Sub Status Screen**

Status screens

The status screen display information regarding load, battery, power module voltage, and current.

Status Screen 1.

Vin **Vout** **Iout**	The input voltage (V), output voltage (V), and output current (A) for each phase (1-3).

Status Screen 2.

%load assuming no redundancy	Percentage of the load in relation to the total capacity of all power modules.

Status Screen 3.

%load allowing for n+ redundancy	Percentage of the load, allowing for the redundancy in your system.

Status Screen 4.

Frequencies	The input and output frequency in hertz (Hz).

Status Screen 5.

Batt Voltage	Actual voltage of the DC bus (volts).
Batt Capacity	Percentage of battery capacity available
Runtime	The available runtime for battery operation in hours and minutes
#Batts	The number of installed battery modules.
#Bad	The number of failed battery modules.

Status Screen 6.

Capacity: kVA	The system load capacity.
Fault Tolerance	The configured redundancy for your UPS (n+0, n+1, n+2...).
Total Pwr Modules	The number of power modules installed
Bad Pwr Modules	The number of failed power modules installed

Status Screen 7.

Alarm Thresholds	Settings configured for the thresholds that trigger alarms.
Fault Tolerance n+0	The alarm threshold for reduced redundancy.
Runtime hr min	The alarm threshold for reduced runtime.
load: kVA	Alarm indication of the load exceeding the configured redundancy

Status Screen 8.

Self Test	Status of the last self-test
Lst Xfr	Information on the last transfer to battery operation.
Status	General UPS status.
IM	Status of the main intelligence module.
RIM	Status of the redundant intelligence module.

Set-up Functions

Display parameters are set to factory defaults.

Changing factory default settings:

Top-Level Menu

Settings Menu

Setup screens

From the Setup screen, you can select the following items:

Shutdown

Configure the following system shutdown conditions:

Low Batt Dur: Low battery duration is the time from low battery signal to the shutdown of the load. This signal is sent to the server using shutdown software (PC + PCNS).

Shutdwn Dly: Shutdown delay is the time from when the UPS receives a shutdown command (usually sent by a server) to the shutdown of UPS power to the load equipment. This delay allows load equipment time to finish shutdown processes.

Return Dly: Return delay is the amount of time the UPS wants to turn on after a power outage has ended.

Return Bat Cap: Return battery capacity is the minimum percentage of battery capacity required for the UPS to turn the load on.

Defaults

Return all UPS settings to their default values.

Output Frequency

Set the desired output frequency

Alarms

Redundancy: The state of redundancy that will trigger an alarm. Choices are:

- N+0 – an alarm will occur only when there is more load than all functioning power modules can support;
- N+1 – an alarm will occur when there are no spare power modules in good condition;
- N+2 – an alarm will occur when there is only one functioning power module.

Load: When the load is greater than this threshold, an alarm will sound.

Runtime: When the time the UPS can power the load is less than this threshold, an alarm will sound. This alarm is the result of an increase in load or a decrease in battery capacity.

Bypass

Set the conditions in which the UPS will automatically go into bypass operation.

Copy

Copy the UPS settings.

Other

Self Test: Set the UPS to perform a self-test automatically at periodic intervals.

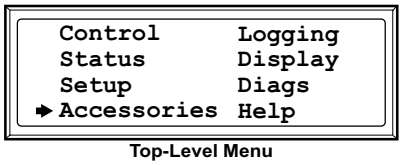
USP ID: Provide a unique name for the UPS.

Vout Reporting: Set the reporting to the number of the tap to which the most significant load is wired on the output transformer.

Output: Set the UPS output voltage.

BatFrAmpHour: Set the Ampere-Hour rating of external battery enclosures that are not APC Symmetra PX Battery Enclosures.

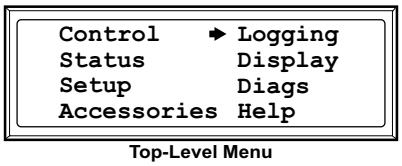
Accessories screen



Top-Level Menu

From the **Accessories** screen, you can view the status of APC accessories connected to the UPS.

Logging Screen

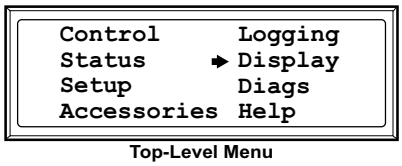


Top-Level Menu

The Logging screen allows you to customize the UPS log. The following items are accessible from this screen:

View Log	Point to an entry in the log and press the Enter key to view a description of the event. The display logs the most recent 64 events.
View Statistics	View statistics of the events logged.
Configure Logging	Set the type of events that are recorded in the log. To log a type of event, choose **On**.
List Event Groups	• View the list of event types. • Power Events • UPS Control Events • User Activities • UPS Fault Events • Measure UPS Events For each group, press the Enter key to display each event listed under the group.
Clear Log	Clear all events currently stored in the log.

Display screens



Top-Level Menu

The Display screens allow you to customize the UPS display interface. The following items are accessible from this screen:

Date:	Set the correct date (day:month:year) and time (hour:minute).
Password	Protect the password against unauthorized configuration changes.
Information	View the model number, serial number, date of manufacture, and revision number of the display interface.
Beeper	Configure the audible alarm interface.: At UPS At Disp Vol Click
Contrast	Set the contrast on the LCD.
Config	Personalize the Top-Level Status screen. Choose each line you want displayed from a list of options. To change a line, move the selection arrow to the line you want to change and press the ENTER key. Scroll up or down the list to find the data you want displayed and press the ENTER key to save you changes. Press the ESC key to discard your changes.

Diag screens

Top-Level Menu

The Diagnostic screens provide information for use in troubleshooting. The following items are accessible from this screen:

Fault & Diagnostics Lists any failures found.

If any status except ON or OK is displayed, a module or card must be replaced. The Faults and diagnostics screen will describe the location of the failed module/ card. If you do not have a redundant intelligence module installed, you must place the UPS in bypass operation before you remove an intelligence module.

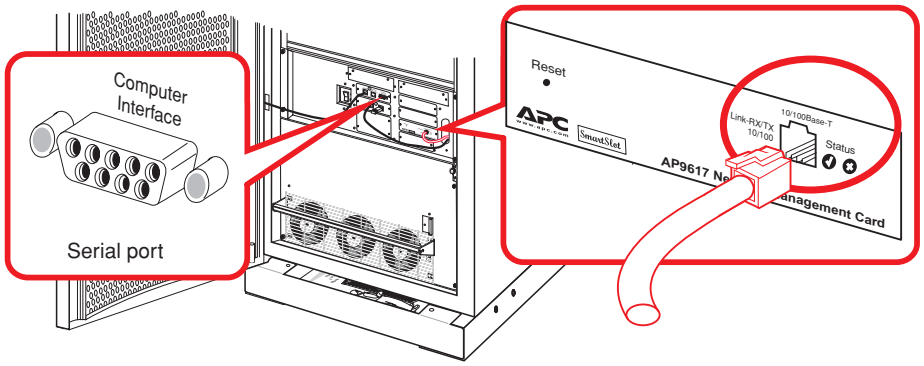
Lists external device status.

If any status except ON or OK is displayed, a module, card or battery must be replaced. If you do not have a redundant intelligence module installed, you must place the UPS in bypass operation before you remove an intelligence module.

Help screens

To access the display interface context-sensitive help screens, press the ? key.

Network Connection/APC Web Management Card



Note

20-foot Network Cable supplied with the UPS.

Quick Configuration

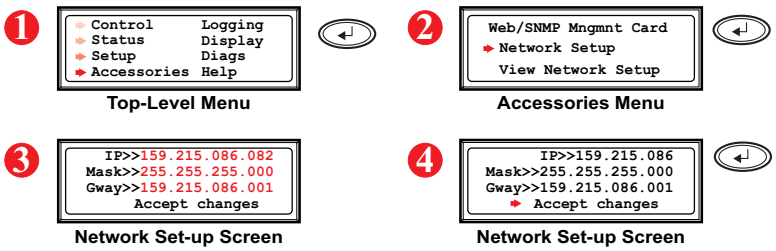
Note

Disregard the procedures in this section if you have an APC InfrastruXure Manager as part of your system. See the InfraStruXure Manager's documentation for more information.

You must configure three TCP/IP settings before the Management Card can operate on a network:

- IP address
- Subnet mask
- Default Gateway

From the PowerView Display:



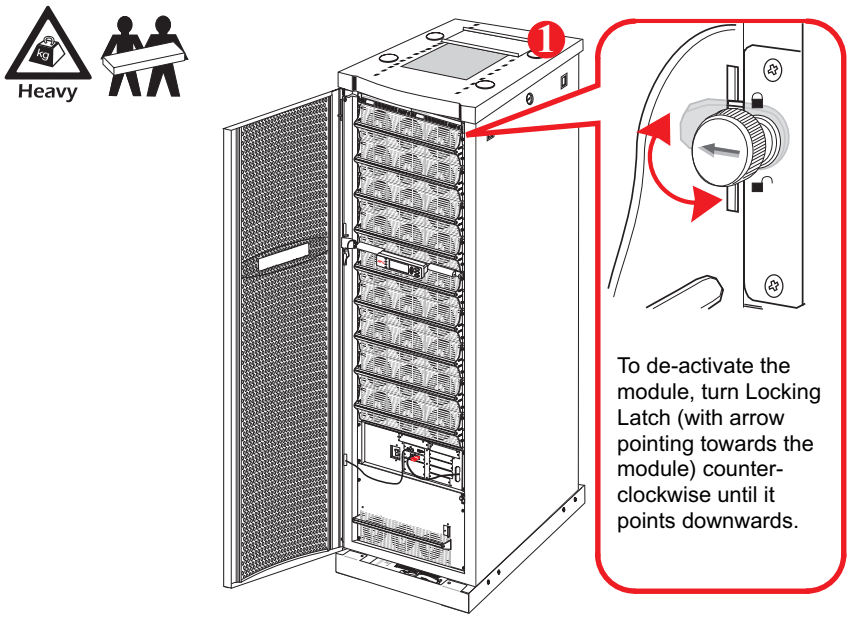
Note

If a Default Gateway is unavailable, use the IP address of a computer located on the same subnet as the Management Card that is usually running. The Management Card uses the Default Gateway to test the network when traffic is very light. See "Watchdog Features" in the "Introduction" of the *Network Management Card User's Guide CD* (*.\doc\usrguide.pdf*) for more information about the watchdog role of the Default Gateway. The Management Card User's Guide CD is located in the documentation storage tray.

Module and Card Replacement

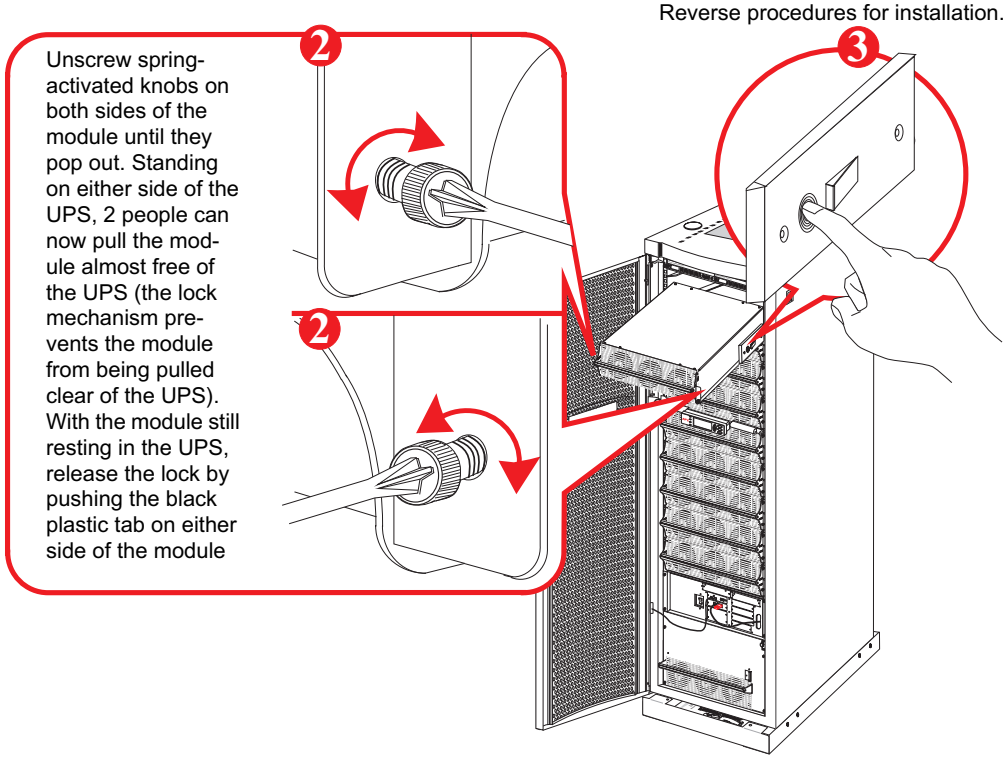
WARNING!
Only trained persons familiar with the construction and operation of the equipment and the electrical and mechanical hazards involved, may install and remove system components.

How to replace Power Modules



Pull out the module. Display shows message saying it has decreased the number of power modules. Reverse procedures for installation.

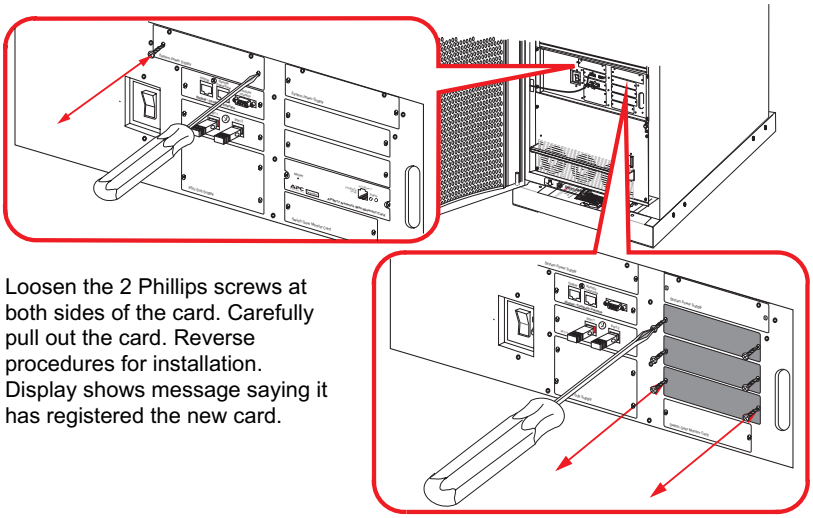
Unscrew spring-activated knobs on both sides of the module until they pop out. Standing on either side of the UPS, 2 people can now pull the module almost free of the UPS (the lock mechanism prevents the module from being pulled clear of the UPS). With the module still resting in the UPS, release the lock by pushing the black plastic tab on either side of the module



Note

Power Module will not start unless Locking Latch is engaged.

How to Replace Cards



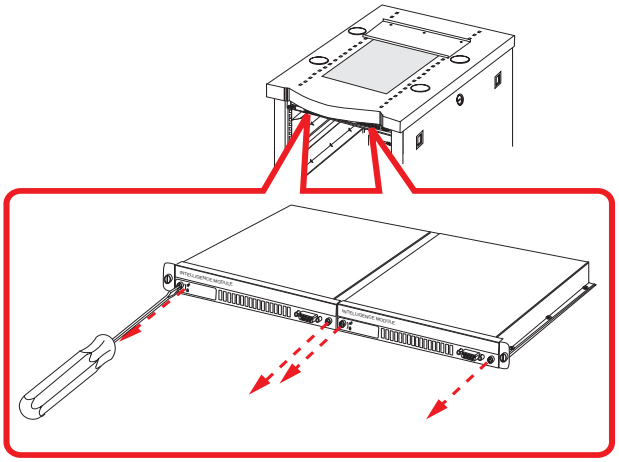
Loosen the 2 Phillips screws at both sides of the card. Carefully pull out the card. Reverse procedures for installation. Display shows message saying it has registered the new card.

How to replace Intelligence Modules

Note

One intelligence module can be replaced without interrupting power to the connected equipment provided another functioning intelligence module is installed.

Loosen the 2 Phillips screws at both sides of the module (top of module). As soon as the left side screw is loose, the module will be deactivated. Display shows message saying it has decreased the number of cards. Reverse procedures for installation.



How to obtain replacement modules

To obtain a replacement module, contact APC Customer Support at 1 (800) 800 4272.

1. In the event of a module failure, the display interface may display additional “fault list” screens. Press any key to scroll through these fault lists, record the information, and relay it to the representative.
2. If possible, call APC Customer Support from a telephone that is within reach of the Symmetra PX UPS display interface so that you can gather and report additional information to the representative.
3. Be prepared to provide a detailed description of the problem. A representative will help you solve the problem over the telephone, if possible, or will give you a return material authorization (RMA) number. If a module is returned to APC, this RMA number must be clearly printed on the outside of the package.
4. If the Symmetra PX UPS is within the warranty period, repairs will be performed free of charge. If it is not within the warranty period, there will be a charge for repair. Review APC ‘s warranty policy.

See section on Warranty for more information

5. If the Symmetra PX UPS is covered by an APC service contract, have that information available and give ti to the representative.

Replacement Parts and Numbers

Part	**No**
80kW Enclosure Only	SYCF80KF
10kW Power Module	SYPM10KF
Intelligence Module	SYMIM4
Symmetra 3-Phase 80 kVA Bypass Static Switch Module	SYSW80KF
System Power Supply Card	SYCSPS
PSU Supply Board	SYCSS
Display and Computer Interface Card	SYCDCI
Switch Gear Monitoring Card	SYCSGMON
System ID Card	SYCSYSID
Battery Communication Card	SYCXRCOM
Web Card, SNMP	AP9617 Web/ Management Slot Card
Battery Enclosure only	SYCF8BF

WARNING!
Only trained persons familiar with the construction and operation of the equipment, and the electrical and mechanical hazards involved, may install and remove system components.

Troubleshooting

This section lists all of the alarm and status messages that are displayed on the UPS display interface. A suggested corrective action is listed with each message to help you troubleshoot problems.

Note

If a problem is reported, ensure that the system component in question is correctly installed (refer to section on Modular & Card Replacement.

General Status

Display Message	Meaning	Corrective Action
Input Freq outside configured range	The input frequency to the UPS is outside the configured range. The output frequency will not synchronize with the input frequency. Normal bypass is not available.	**Option 1**: Improve the frequency of the incoming voltage. **Option 2**: Widen range of acceptable incoming frequency using the display interface. Select Start-UP, Setup, OUtput, Freq Select). **Option 3**: Proceed with startup. Normal bypass is not available.
AC adequate for UPS but not for bypass	The Symmetra PX UPS will function online with the input voltage, but in the event that bypass is required, the input voltage is not adequate to power the load equipment.	**Option #1**: Improve the incoming voltage. **Option #2**: Proceed with startup. Normal bypass is not available.
Low/No AC input, startup on battery	Input voltage is not adequate to start the Symmetra PX UPS. If start-up proceeds, the Symmetra PX UPS will function in battery operation.	**Option 1:** Cancel start-up until acceptable input voltage is present.
Intelligence Module inserted	An Intelligence Module has been installed into the Symmetra PX UPS.	No corrective action necessary.
Intelligence Module removed	An Intelligence Module has been removed from the Symmetra PX UPS.	Check that the intelligence modules are properly inserted and that the fastening screw is tight.
Redundant Intelligence Module inserted	An intelligence Module has been installed into the Symmetra PX UPS.	No corrective action necessary.
Redundant Intelligence Module removed	An Intelligence Module has been removed from the Symmetra PX UPS.	Check that the intelligence modules are properly inserted and that the fastening screw is tight.

Display Message	Meaning	Corrective Action
# of batteries changed since last ON	At least one battery module has been added or removed from the UPS since the last time the Power ON command was used.	Check that all battery units are installed correctly.
# of Pwr modules 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 used.	Check that all power modules are properly inserted, the two fastening screws are tight, and the locking latch is engaged.
# of batteries increased	At least on battery module has been added to the system.	No corrective action necessary.
# of batteries decreased	At least one battery module has been removed from the system.	Ensure that all battery units are properly inserted.
# of Pwr Modules increased	At least one power module has been added to the system	No corrective action necessary.
# of Pwr Modules decreased	At least one power module has been removed from the system.	Check that all power modules are properly inserted, the two fastening screws are tight, and the locking latch is engaged.
# of External Battery Cabinets increased	At least one external battery cabinet has been connected to the Symmetra PX UPS	No corrective action necessary.
# of External Battery 0Cabinets decreased	At least one external battery cabinet has been disconnected from the Symmetra PX UPS	Ensure that all Battery Enclosure's communication cables are properly connected and that the LEDs are illuminated on the Battery communication cards.
Redundancy Restored	A loss of power module redundancy occurred and the redundancy has been restored. Either additional modules have been installed or the load has been reduced.	No corrective action necessary.

General Fault

Display Message	Meaning	Corrective Action
Need Bat Replacement	One or more battery modules are in need of replacement	Refer to Module Replacement Section for procedures.
The Redundant Intelligence Module is in control	The Main Intelligence Module has failed, and the redundant intelligence module is functioning as the primary intelligence module.	Replace the Main Intelligence Module.Refer to Module Replacement Section for procedures.
UPS Fault	A fault has occurred in a power module. This will always occur with a power module failure message.	Contact APC Technical Support at (1) (800) 800-4272.
On Battery	The Symmetra PX UPS has transferred to battery operation due to the input going out of acceptable range. At this time the batteries will discharge until the input is restored to an acceptable range.	No corrective action necessary. **Note:** Runtime is limited in duration. Prepare to shut down the Symmetra PX UPS and the load equipment or restore incoming voltage.
Shutdown or unable to transfer to batt due to overload	The Symmetra PX UPS has shut down because an overload occurred and bypass is not available.	**Option 1:** Reduce the load to eliminate overload. **Option 2:** If possible, add power modules to eliminate overload. **Option 3:** Replace failed power modules to eliminate overload.
Load Shutdown from Bypass. Input Freq/Volts outside limits	The Symmetra PX UPS has transferred to battery operation because the input is out of acceptable range.	Correct the input voltage problem.
Fault, Battery Charger Failure	The battery charger in one or more of the power modules failed	Refer to Module Replacement Section for procedures.
Fault, Internal Temp exceeded normal limits	The temperature of one or more battery units has exceeded system specifications.	Ensure that the ambient temperature meets the specifications of the system.
Input circuit breaker tripped open	The input circuit breaker on the Symmetra PX UPS is open. Input voltage is disconnected to the Symmetra PX UPS.	**Option 1:** If this occurs with an overload condition, decrease the load and reset the breaker. **Option 2:** If no overload condition exists, reset the breaker. If it trips open again, contact APC Technical Support at (1) (800) 800-4272.
System level fan failed	A cooling fan in the Symmetra PX UPS failed.	Contact APC Technical Support at (1) (800) 800-4272.

Module failure

Display Message	Meaning	Corrective Action
Bad Battery Module	A battery module has failed and requires replacement.	Refer to Module Replacement Section for procedures.
Bad Power Module	A power module has failed and requires replacement.	Refer to Module Replacement Section for procedures.
Intelligence Module is installed and failed	The Main Intelligence Module has failed and requires replacement.	Replace the Main Intelligence Module. Refer to Module Replacement Section for procedures.
Redundant Intelligence Module is installed and failed	The Redundant Intelligence Module has failed and requires replacement.	Replace the Redundant Intelligence Module. Refer to Module Replacement Section for procedures.

Threshold Alarm

Display Message	Meaning	Corrective Action
Redundancy has been lost	The Symmetra no longer detects redundant power modules. Either power module(s) have failed, or the load has increased.	**Option 1:** If possible, install additional power modules. **Option 2:** Replace failed modules. Refer to Module Replacement Section for procedures.
Runtime is below alarm threshold	Actual power module redundancy has fallen below user-specified redundancy alarm threshold. Either power module(s) failed or the load increased.	**Option 1:** If possible, install additional power modules. **Option 2:** Replace failed modules. Refer to Module Replacement Section for procedures. **Option 3:** Decrease load or reconfigure threshold.
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 battery modules to recharge. **Option 2:** If possible, increase the number of battery modules. **Option 3:** Reduce load or re-configure threshold.
Load is above kW alarm threshold	The load has exceeded the user specified load alarm threshold	Reduce load or re-configure threshold.

Display Message	Meaning	Corrective Action
Load is No Longer above Alarm Threshold	The load exceeded the load alarm threshold and the situation has been corrected either because the load decreased or the threshold was increased.	No corrective action necessary
Min Runtime Restored	The system runtime dropped below the configured minimum and has been restored. Additional battery modules were installed, the existing battery modules were recharged, the load was reduced, or the threshold was raised.	No corrective action necessary

Bypass

Display Message	Meaning	Corrective Action
Bypass is not in range (either freq or voltage)	The frequency and/or voltage is out of acceptable range for bypass. This message occurs when the Symmetra is online, and indicates that the bypass mode may not be available if required.	**Option** 1: Correct the input voltage to provide acceptable voltage and/or frequency. **Option 2:** Decrease the sensitivity to input frequency. (Select **Startup, Setup, OutputFreq**, and select a value).
Backfeed contactor stuck in OFF position	The Symmetra PX UPS is stuck in the bypass position and cannot go on-line.	Contact APC Technical Support. at (1) (800) 800-4272.
Backfeed contactor stuck in ON position	The Symmetra PX UPS is stuck in the on-line position and cannot go to bypass.	Contact APC Technical Support. at (1) (800) 800-4272.
UPS in bypass due to internal fault	The Symmetra PX UPS has transferred to bypass mode because a fault has occurred	Contact APC Technical Support. at (1) (800) 800-4272.
UPS in bypass due to overload	The load exceeded the system power capacity. The Symmetra PX UPS has switched to bypass mode	**Option 1:** Decrease the load. **Option 2:** If possible, add a power module to the system.
System is in Maintenance bypass	The Symmetra PX UPS is in bypass because it has been commanded into bypass or due to an internal fault.	No corrective action necessary. If other alarms exist, troubleshoot base on other alarms.
Fault, Bypass Relay Malfunction	The bypass relay has malfunctioned.	Contact APC Technical Support. at (1) (800) 800-4272.

If the system works in bypass, ensure the presence of AC mains supply input.

If a problem persists, note UPS model #, serial #, and date purchased before calling Tech Support at: 1 (800) 800 4272.

System Start-Up (if applicable)

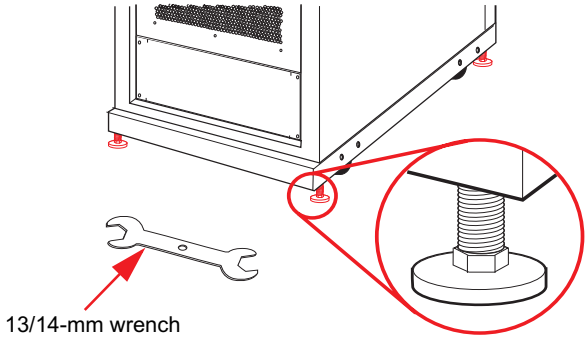
System start-up is included with your system. If you have to move your system to a new location and need a new start-up, remove all power modules and follow the Total Power Off Procedure. Raise the stabilizing feet.

Secure the UPS by Setting the Stabilizing Feet

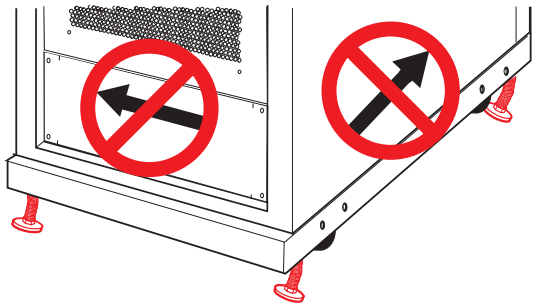
After the electrical wiring has been completed, secure the UPS in its final operating position. Use a 13/14-mm wrench (shipped with UPS) to adjust all 4 stabilizing feet until pads make solid contact with the floor.

Level the UPS (Recommended)

Adjust stabilizing feet to level from front to back and left to right.



CAUTION!
Do not move the UPS after the stabilizing feet have been lowered, or equipment damage may occur.



Power Module Installation

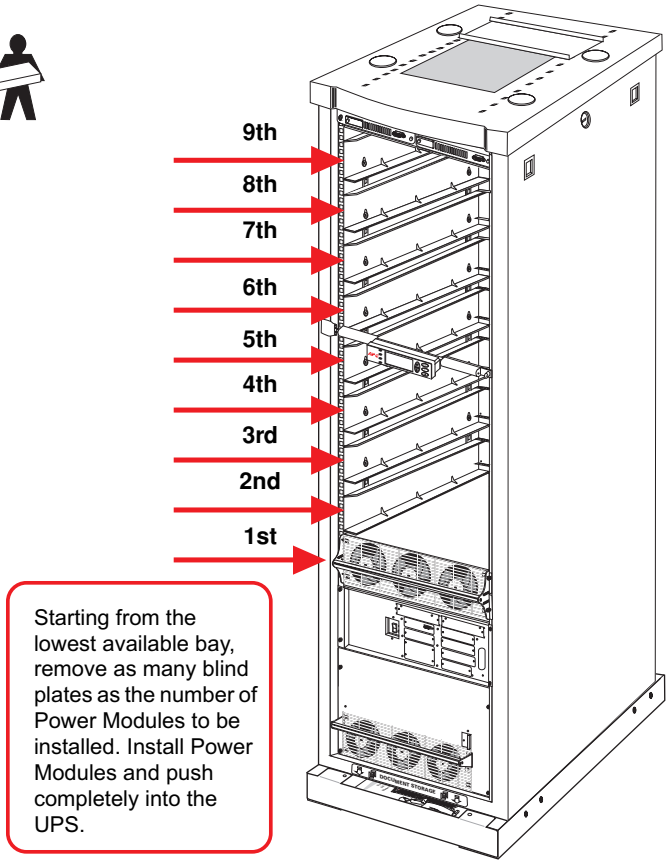
WARNING!
Only APC-trained personnel familiar with the construction and operation of the equipment, and the electrical and mechanical hazards involved, may install and remove system components.

CAUTION!
Before installing any modules in the UPS, ensure that the System Enable Switch is left in the STAND-BY position (if not, see section on Total Power Off.

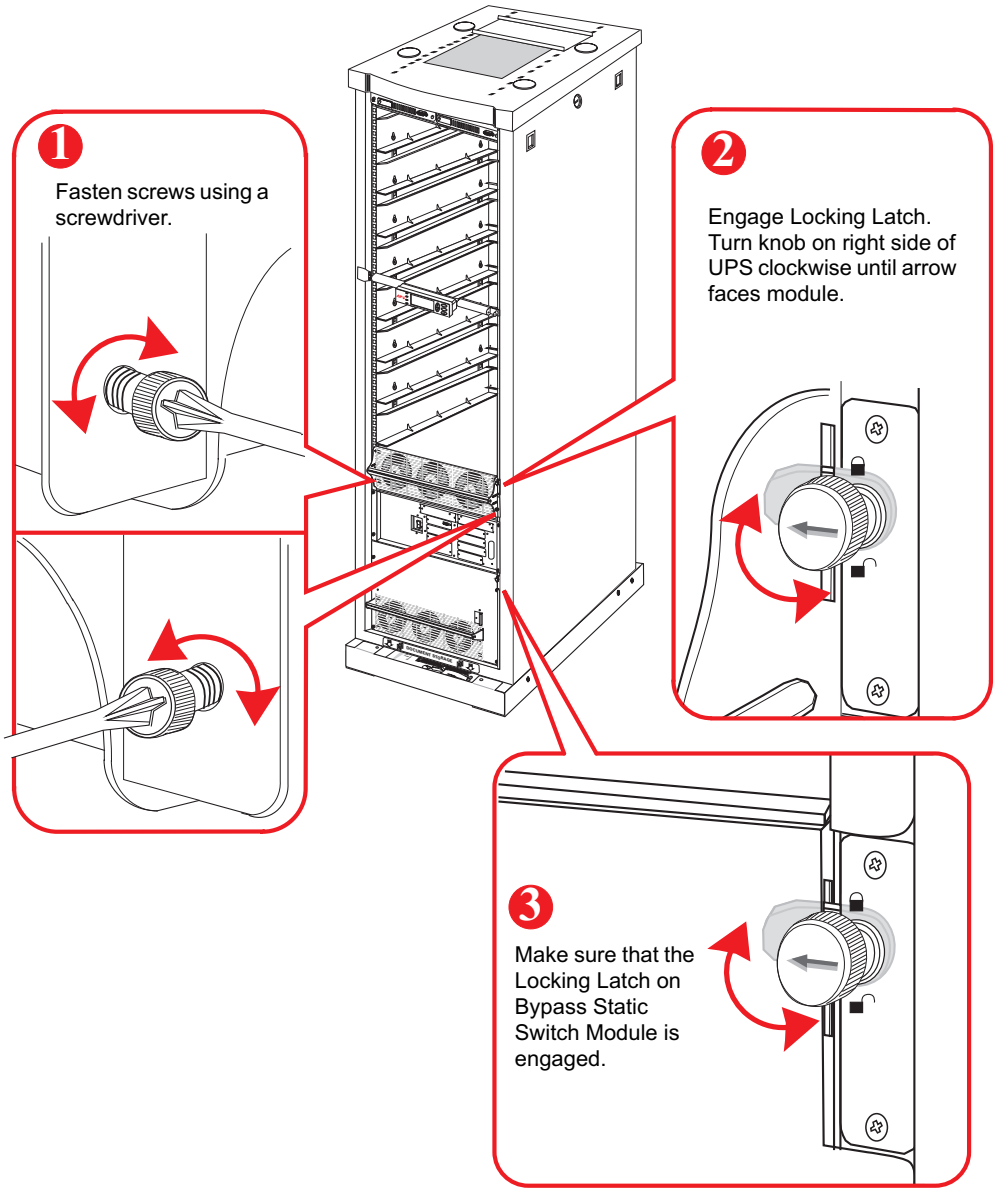
Note

At least 1 Battery Module (4 Battery Units) is required in the battery enclosure and the DC breaker to be on to start up the system. If using value line battery cabinets, battery configuration will need to be entered manually through display,

Installing



Securing



Note

The Power Module will not start unless the Locking Latch is engaged.

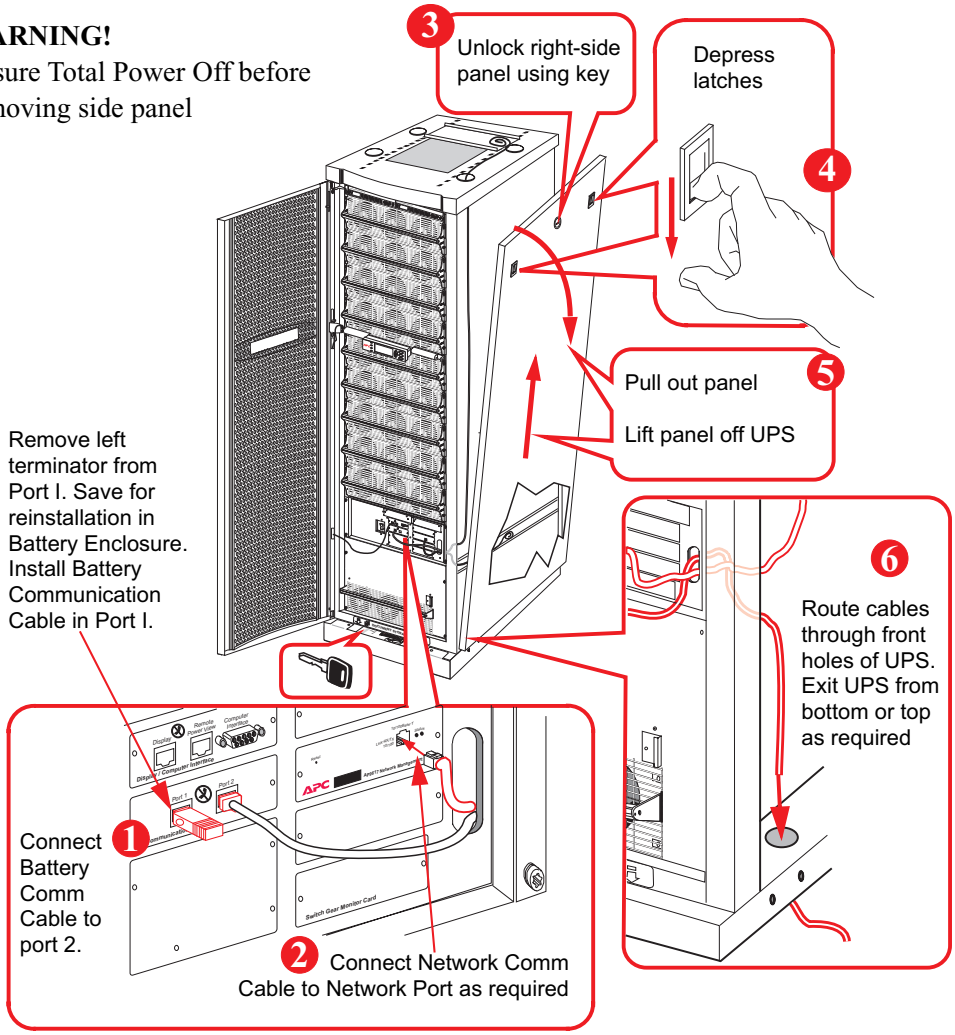
After the installation and securing of the Power Modules, make sure that the locking latch on the Bypass Static Switch Module is engaged

Network Cable Installation (if required)

Note

Use 20-ft. standard Cat 5 Data cable (supplied).

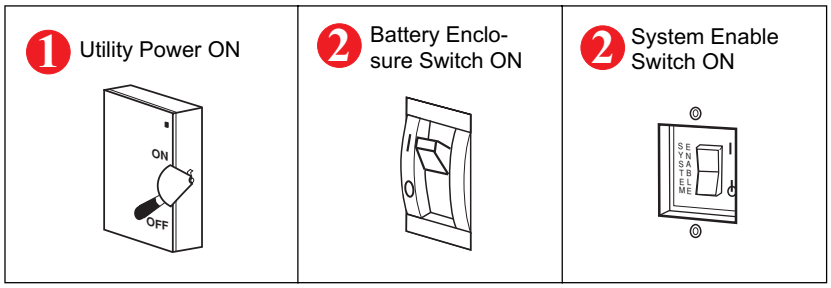
WARNING!
Ensure Total Power Off before removing side panel



Note

If your UPS has been installed in-between devices and side panels cannot be removed the Bypass Static Switch Module can be removed to gain access.

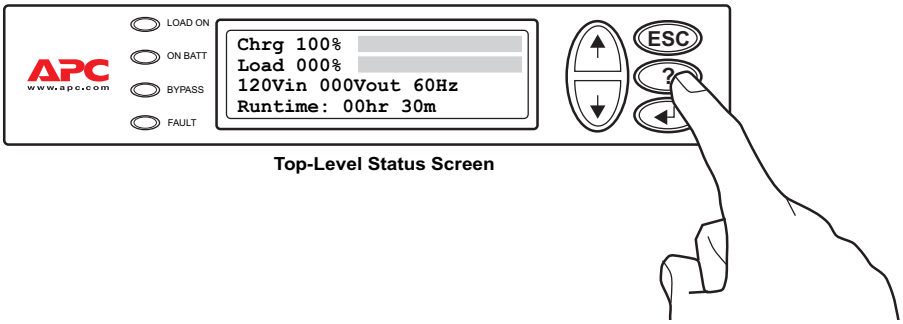
System Start-Up Procedure



Note

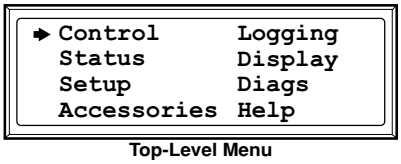
Wait approximately 30 seconds for system to boot up. Display will show a fault if Power Module Locking Latch is not engaged.

Press ESC until you get to the **Top-Level Status Screen**, which provides you with basic system status information



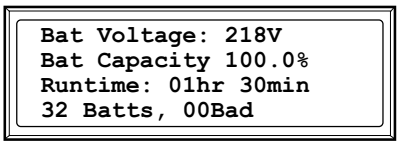
Top-Level Status Screen

Press **Enter** to open the **Top-Level Menu** screen. This screen is the **launching pad** to command, configure, and monitor the system.



Top-Level Menu

Press the down key and then the enter key to select Status. Verify that all power, battery and intelligence modules are detected by the system and are functioning correctly by scrolling down and reviewing all status screens. Please note that the intelligence modules are monitored under the "Miscellaneous" Status Screen (submenu under Status).

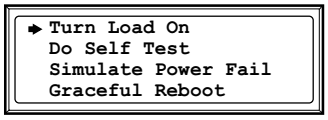


Typical Status Screen

Note

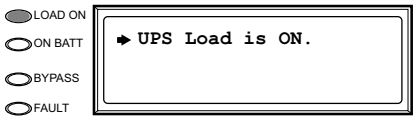
If a problem is reported, ensure that the system component in question is correctly installed. If the problem persists, refer to Basic Troubleshooting.

From the Control Menu, choose **Turn Load On.**



Control Menu Screen

Load On LED should now be lit.



Confirm Menu Screen

Note

The UPS is now ready to support the load equipment.

For further operation, PowerView features, and configuration, see Basic Operation Guide and Product Manual CD (shipped with unit) and visit our website: www.apc.com.

If you are using a network connection, please refer to the enclosed Product Manual CD.

Life Support Policy/Warranty

Life Support Policy

American Power Conversion Corporation, its affiliates and subsidiaries world-wide, ("APC") do not recommend the use of any of their products in life support applications where failure or malfunction of the APC product can be reasonably expected to cause failure of the life support device or to significantly affect its safety or effectiveness. APC does not permit the use of any of its products in direct patient care. APC will not knowingly sell its products for use in such applications unless the life support system or direct patient care device is part of a whole facility/building into which the UPS is integrated and unless APC receives in writing assurances satisfactory to APC that: (a) the UPS system will be configured in a manner that will provide N+1 power redundancy to the critical load (b) the end-user assumes all risks and signs the APC System Configurations and Use Form, and (c) the customer and operators of the APC UPS system agree to idemnify and hold APC and its affiliates and subsidiaries harmless for any and all claims arising out of the systems use in such applications.

Examples of devices considered to be life support devices include, but are not limited to, neonatal oxygen analysers, nerve stimulators (whether used for anaesthesia, pain relief, or other purposes), autotransfusion devices, blood pumps, defibrillators, arrhythmia detectors and alarms, pacemakers, hemodialysis systems, peritoneal dialysis systems, neonatal ventilator incubators, ventilators for both adults and infants, anaesthesia ventilators, infusion pumps, and any other device designated as "critical" by the U.S.F.D.A.

Hospital grade wiring devices and leakage current may be ordered as options on many APC UPS systems. APC does not claim that units with this modification are certified or listed as Hospital Grade by APC or any other organization. Therefore these units do not meet the requirements for use in direct patient care.

Factory Warranty

APC warrants that the unit, when properly installed and commissioned by APC or APC authorized service personnel, shall be free from defects in materials and workmanship for a period of (1) year from the date of installation or maximum 18 months after manufacturing. In the event that the unit fails to meet the foregoing warranty, APC shall for a period of one (1) year repair or replace any defective parts, without charge for on-site labor and travel if trained & authorized APC personnel has conducted start-up of the unit.

An APC Start-Up Service must be performed/completed by APC or by service personnel authorized by APC. If not, the on-site factory warranty will be voided and replacement of defective parts only will be covered. APC shall have no liability and no obligation to repair the installed unit if non-authorized APC personnel performed the start-up and such start-up caused the unit to be defective.

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 PURCHASER'S OR ANY THIRD PERSON'S MISUSE, NEGLIGENCE, IMPROPER INSTALLATION OR TESTING, UNAUTHORIZED ATTEMPTS TO REPAIR OR MODIFY, OR ANY OTHER CAUSE BEYOND THE RANGE OF THE INTENDED USE, OR BY ACCIDENT, FIRE, LIGHTNING OR OTHER HAZARD.

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- Visit the APC Web site to find answers to frequently asked questions (FAQs), 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 with FAQs, knowledge base, and e-support.
- Contact an APC Customer Support center by telephone or e-mail.
  - Regional centers:

APC headquarters U.S., Canada	(1) (800) 800-4272 (toll free)
Latin America	(1) (401) 789-5735 (USA)
Europe, Middle East, Africa	(353) (91) 702020 (Ireland)
Japan	(0) 3 5434-2021

  - Local, country-specific centers: go to www.apc.com/support/contact for contact information.

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

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