

Symmetra™ PX

48, 96, and 160 kW 400 V
100 kW 208 V

Operation

3/2019



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Important Safety Instructions — SAVE THESE INSTRUCTIONS

This manual contains important safety instructions for Symmetra PX 48 kW UPS, Symmetra PX 100 kW UPS, SYCFXR9, SYCFXR48 Battery Cabinet, and Symmetra PX PDPM100 that should be followed during installation and maintenance of the UPS and batteries.

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

Symbols in This Manual



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



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

DANGER

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

Failure to follow these instructions will result in death or serious injury.

WARNING

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

Failure to follow these instructions can result in death, serious injury, or equipment damage.

CAUTION

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

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

NOTICE

NOTICE is used to address practices not related to physical injury. The safety alert symbol shall not be used with this type of safety message.

Failure to follow these instructions can result in equipment damage.

Please Note

Electrical equipment should only be installed, operated, serviced, and maintained by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

Electromagnetic Compatibility

NOTICE

RISK OF ELECTROMAGNETIC DISTURBANCE

This is a product category C2 UPS product. In a residential environment, this product may cause radio interference, in which case the user may be required to take additional measures.

Failure to follow these instructions can result in equipment damage.

FCC Statement

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Safety Precautions

DANGER

HAZARD OF ELECTRICAL SHOCK, EXPLOSION OR ARC FLASH

All safety instructions in this document must be read, understood and followed.

Failure to follow these instructions will result in death or serious injury.

DANGER

HAZARD OF ELECTRICAL SHOCK, EXPLOSION OR ARC FLASH

After the UPS system has been electrically wired, do not start up the system. Start-up must only be performed by Schneider Electric.

Failure to follow these instructions will result in death or serious injury.

Overview

User Interface

A	Load Powered LED	When this LED is green, power to the load is on. When this LED is yellow, the load is supplied through the batteries. When this LED is flashing yellow, the unit is in bypass.
B	Check Log LED	When this LED is green, a new event has been added to the event log.
C	Warning LED	When this LED is yellow, there are one or more warning alarms in the system.
D	Critical LED	When this LED is red, there are one or more critical alarms in the system.
E	LCD screen	Displays alarms, status data, instructional help, and configuration items.
F	Arrow keys	Scrolls through and select menu items.
G	Enter key	Opens menu items and confirms changes to the system parameters.
H	Help key	Opens context-sensitive help.
I	ESC key	Returns to the previous screen displayed.

Display Interface

Overview Screens

The overview screen is the main entrance to the user functions of the display interface. The arrow keys take you from one screen to another. When the system is running, the display will scroll through screens showing information about the system and any active alarms.

NOTE: The data values shown are for example only.

```
No Active Alarms
System Date/Time:
28-Mar-2010 10:37:01
```

```
Volts In      Volts Out
L1: xxx      L1: xxx
L2: xxx      L2: xxx
L3: xxx      L3: xxx
```

```
Out kVAmps      kW
k1x  xx.xxx.x
k2x  xx.xxx.x
k3x  xx.xxx.x
```

```
Symmetra PX 160 kW
Runtime: xxhr xxmin
Capacity xxx.x%
UPS Load: xxx%
```

```

System Bypass State:
UPS Operation
UPS State:
On Line
    
```

NOTE: Press the enter key to go from any overview screen to the main menu screen.

Menu Tree

The menu tree provides a quick overview of the functions and views you may access.

Main Menu Screen	UPS	UPS Power Control UPS Status UPS Tests & Diags UPS Configuration
	Power Dist	Total Loading Modular Loading
	Switchgear	Volt-Meter Subfeeds
	Environment	Status Factory
	Alarms	Input Contacts Output Relays Alarm Relay Map Env Monitoring Card
	Log	All Active Alarms Active by Severity Active by Type View New Log Items
	Admin	View Entire Log Clear Entire Log Network Setup Local Interface
	Help	Date/Time Device ID Manufacturer Data Factory Defaults Firmware Upgrade Life cycle Monitor
		On any screen and any line, press ? for context sensitive help. Try it now...

NOTE: The display provides access to more functions than described in this manual. Those functions should not be accessed without the assistance of Schneider Electric Customer Support in order to avoid unwanted load impacts. If you by accident go beyond the functions described, press the **ESC** key to return to previous screens.

Operation

Operation Modes

The UPS has three operation modes: normal operation, battery operation and static bypass operation. If the UPS system includes a PDU, a PDU with modular batteries, or an external maintenance bypass enclosure, the mode maintenance bypass operation also becomes available.

Normal Operation

During normal operation, the UPS converts the utility/mains supply to conditioned power for the connected load.

Battery Operation

During battery operation, the UPS provides conditioned power to the connected load from its batteries for a finite period. The UPS transfers to battery operation if the utility/mains power supply becomes unavailable or is outside the predefined limits.

Static Bypass Operation

Static bypass operation is a feature that keeps the load supplied directly from the utility/mains supply during different scenarios on the UPS or downstream from the UPS. In static bypass operation, the utility/mains is supplying power to the connected load directly, bypassing all internal UPS functions.

Maintenance Bypass Operation (Optional)

The UPS can be connected to a PDU, a PDU with modular batteries, or an external maintenance bypass enclosure that enables the user to bypass the UPS completely for maintenance purposes that might even include replacement of the entire UPS. In this situation, the connected load will then be fed directly from the utility/mains supply, and there will be no conditioning of the supply or battery backup of the load.

Operation Procedures

Breakers/Switches in the System

Q1	UPS input
Q2	UPS output
Q3	Maintenance bypass
Q5	Static bypass input (only in dual utility/mains systems)

NOTE: If the system does not contain a PDU or PDU with modular batteries, the Q1, Q2, and Q3 switches and the Q5 breaker (if present) should be located in an optional external maintenance bypass enclosure. See the documentation included with the maintenance bypass enclosure for additional information.

Perform a Total Power Off

NOTICE

RISK OF LOAD DROP

This procedure will disconnect the load.

Failure to follow these instructions can result in equipment damage.

NOTE: If shutdown via the display is disabled, then you cannot perform this procedure and the message: **Command not allowed, UPS configured to never shutdown** appears. If you want to enable shutdown via the display, this is done by a Schneider Electric field service engineer.

1. Select **UPS > UPS Power Control > Turn UPS Off** and press the enter key.

```

-> Turn UPS Off
Reboot UPS
UPS into Bypass
UPS to Sleep
    
```

2. Select **No, Don't Notify** to shut down without delay and press the enter key.

NOTE: This action will cut all power to the load without shutting it down first. If you want to shut down the servers first, then choose **Yes, Notify Servers**. Note that this function is only available for servers with PowerChute.

```

Notify PowerChute ?
Cancel
Yes, Notify Servers
-> No, Don't Notify
    
```

3. Confirm **YES, Turn UPS Off** and press the enter key.

```

Turn UPS off
Without Server
Notification?
> NO, ABORT
-> YES, Turn UPS Off
    
```

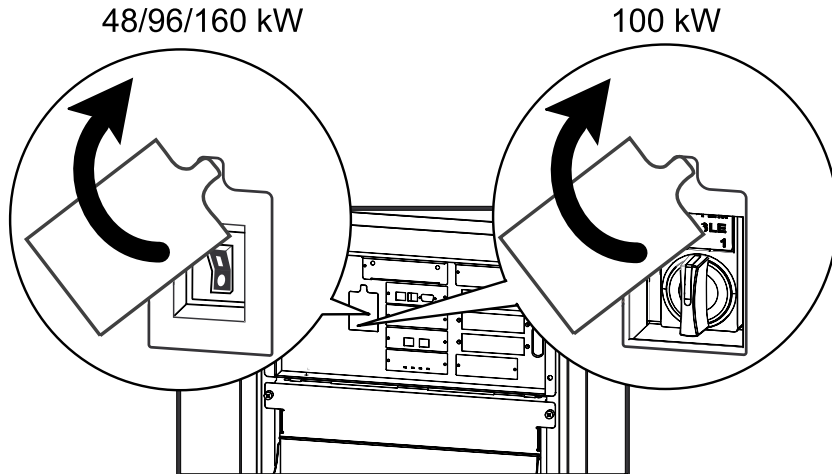
4. Wait for the UPS to turn off.

```

Turning UPS off,
please wait...
    
```

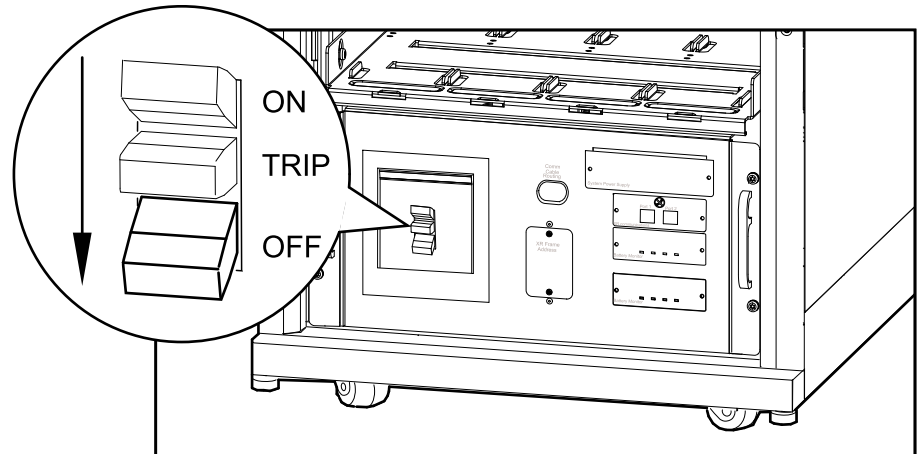
5. Set the UPS **SYSTEM ENABLE** switch to the OFF position.

Front View of the UPS

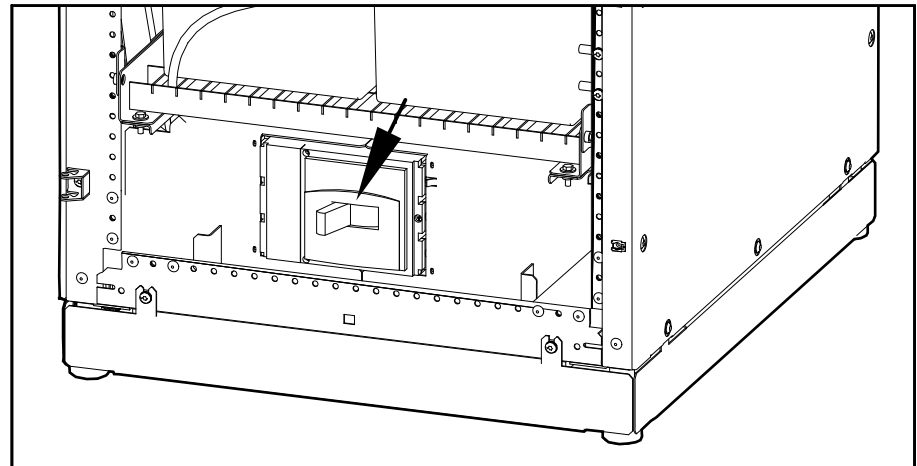


6. Set the Q2 switch to the OFF position.
7. Set the Q1 switch to the OFF position.
8. Set the Q5 breaker to the OFF position (if applicable).
9. Verify that the maintenance bypass switch (Q3) is in the OFF position.
10. Set the **DC DISCONNECT** switch to the OFF position on all battery cabinets and the PDU with modular batteries (if applicable) and on the UPS (only for Symmetra PX 48 kW) .

Modular Battery Cabinets/PDU with Modular Batteries



Classic Battery Cabinet



11. Disconnect all battery units by removing them (all battery types) or pulling them out to the disconnect line (modular batteries only).

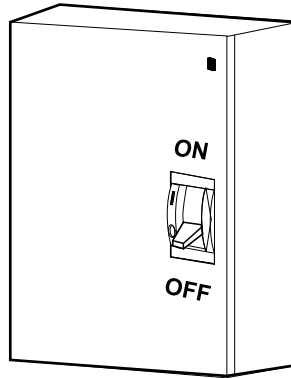
NOTICE

RISK OF TILTING AND MODULAR BATTERY DAMAGE

To ensure that the UPS cabinet and the modular battery cabinet does not tip, do not pull out the modular battery units beyond the red disconnect line. If you intend to completely remove the modular battery units, remove them from the UPS cabinet and modular battery cabinets one at a time. If you don't pull the modular battery units out to the red disconnect line, this could cause deep discharge/damage to the modular batteries.

Failure to follow these instructions can result in equipment damage.

12. Set the upstream utility/mains power to the OFF or LOCKED OUT position. If the UPS has a dual utility/mains supply, set both supplies to the OFF or LOCKED OUT position.



13. Measure bypass/output DC and utility/mains to ensure that the system is completely powered off.

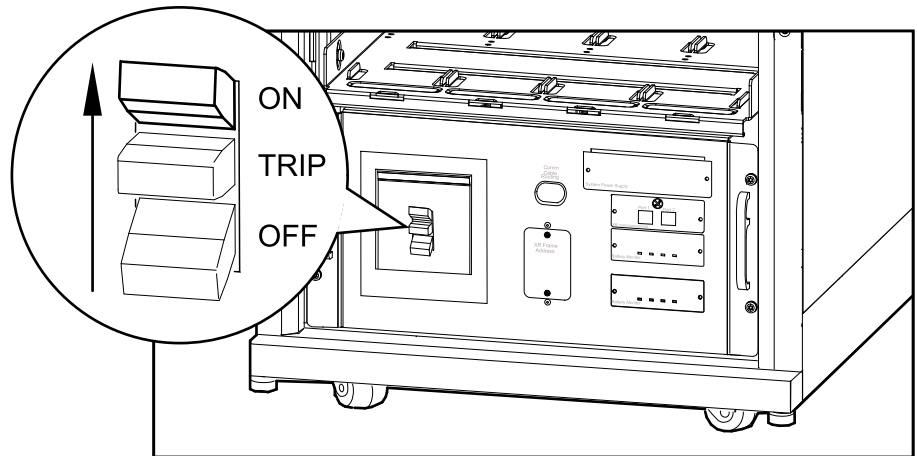
Start the System after Total Power Off

NOTE: If batteries/battery units have been removed or disconnected for the total power off, reinsert and reconnect them before starting up the system.

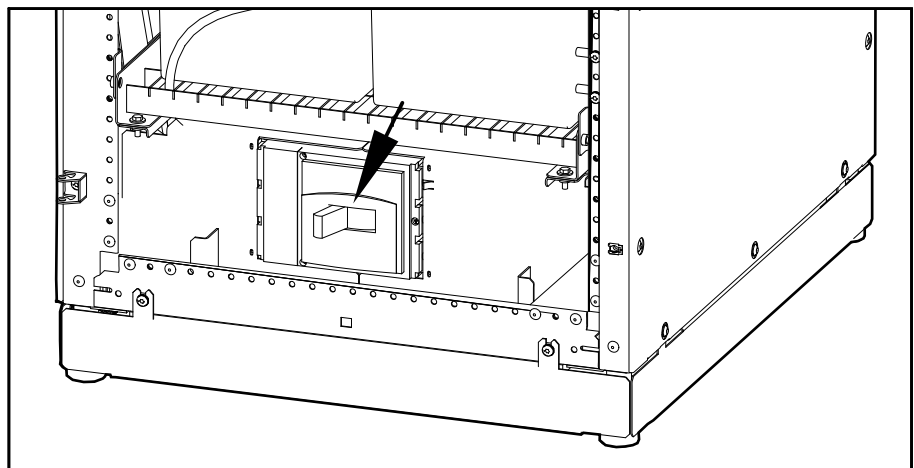
1. Set the upstream utility/mains power to the ON or LOCKED IN position. If the UPS has a dual utility/mains supply, set both supplies to the ON or LOCKED IN position.

- Set the **DC DISCONNECT** switch to the ON position on all modular battery cabinets and the PDU with modular batteries (if applicable) and on the UPS (only for Symmetra PX 48 kW).

Modular Battery Cabinets/PDU with Modular Batteries

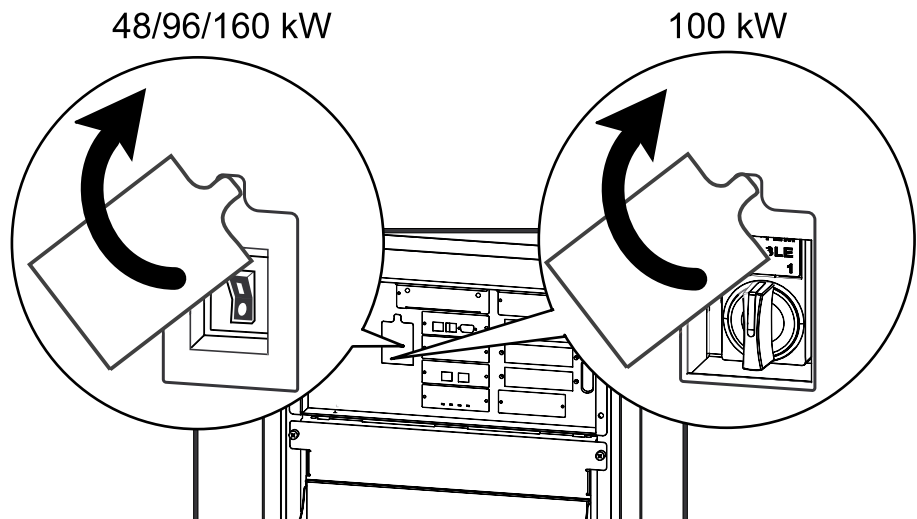


Classic Battery Cabinet



- Set the Q1 switch to the ON position.
- Set the **SYSTEM ENABLE** switch on the UPS to the ON position.

Front View of UPS



NOTE: Wait approximately two minutes for the system to start.

- Set the Q5 breaker to the ON position (if applicable).

NOTE: The H2 LED next to the Q2 switch will turn on, indicating that the Q2 switch can be operated.

- Set the Q2 switch on the PDU, PDU with modular batteries, or the external maintenance bypass to the ON position.
- Select **UPS > UPS Power Control > Turn UPS On** and press the enter key.

```
→ Turn UPS On
UPS On Into Bypass
```

- Confirm by selecting **Yes, Turn UPS On** and press the enter key.

```
Confirm:
Turn UPS On ?
>NO, ABORT
→ >Yes, Turn UPS On
```

- Wait for the UPS to turn on.

```
Turning UPS on,
Please wait...
```

Turn the UPS Load Off

NOTE: If shutdown via the display is disabled, then you cannot perform this procedure and the message: **Command not allowed, UPS configured to never shutdown** appears. If you want to enable shutdown via the display, this is done by a Schneider Electric field service engineer.

- Select **UPS > UPS Power Control > Turn UPS Off** and press the enter key.

```
→ Turn UPS Off
Reboot UPS
UPS Into Bypass
UPS To Sleep
```

- Select **No, Don't Notify** and press the enter key.

NOTE: This action will cut all power to the load without shutting it off first. If you want to shut down the servers first, then choose **Yes, Notify Servers**. Note that this function is only available for servers with PowerChute.

```
Notify PowerChute?
Cancel
Yes, Notify Servers
→ No, Don't Notify
```

- Confirm **YES, Turn UPS Off** and press the enter key.

```
Turn UPS Off Without
Server Notification?
>NO, ABORT
→ YES, Turn UPS Off
```

- Wait for the UPS to turn off.

```
Turning UPS off,
please wait...
```

Turn the UPS Load On

1. Select **UPS > UPS Power Control > Turn UPS On** and press the enter key.

```
→ Turn UPS On
UPS On Into Bypass
```

2. Confirm by selecting **Yes, Turn UPS On** and press the enter key.

```
Confirm:
Turn UPS On?
>NO, ABORT
→ >YES, Turn UPS On
```

3. Wait for the UPS to turn the load on.

```
Turning UPS on,
please wait...
```

Transfer the UPS into Maintenance Bypass Operation

NOTE: If shutdown via the display is disabled, then you cannot perform this procedure and the message: **Command not allowed, UPS configured to never shutdown** appears. If you want to enable shutdown via the display, this is done by a Schneider Electric field service engineer.

1. Select **UPS > UPS Power Control > UPS into Bypass** and press the enter key.

```
Turn UPS Off
Reboot UPS
→ UPS into Bypass
UPS to Sleep
```

2. Select **Yes, Into Bypass** and press the enter key.

```
Confirm:
UPS into Bypass?
NO, ABORT
→ YES, Into Bypass
```

3. Wait for the transfer to complete.

```
Putting UPS into
Bypass, please
wait....
```

4. Confirm that the transfer to bypass is complete.

NOTE: The H3 LED next to the Q3 switch will turn on, indicating that the Q3 switch can be operated.

```
UPS is now in
Bypass.
Press any key....
```

5. Set the Q3 switch to the ON position.

NOTE: The H2 LED beside the Q2 switch will turn on, indicating that the Q2 switch can be operated.

6. Set the Q2 switch to the OFF position.

- 7. Select **UPS > UPS Power Control > Turn UPS Off** and press the enter key.

```
→ Turn UPS Off  
Reboot UPS  
UPS into Bypass  
UPS to Sleep
```

- 8. Select **No, Don't Notify** and press the enter key.

```
Notify PowerChute ?  
Cancel  
Yes, Notify Servers  
→ No, Don't Notify
```

- 9. Confirm by selecting **YES, Turn UPS Off** and press the enter key.

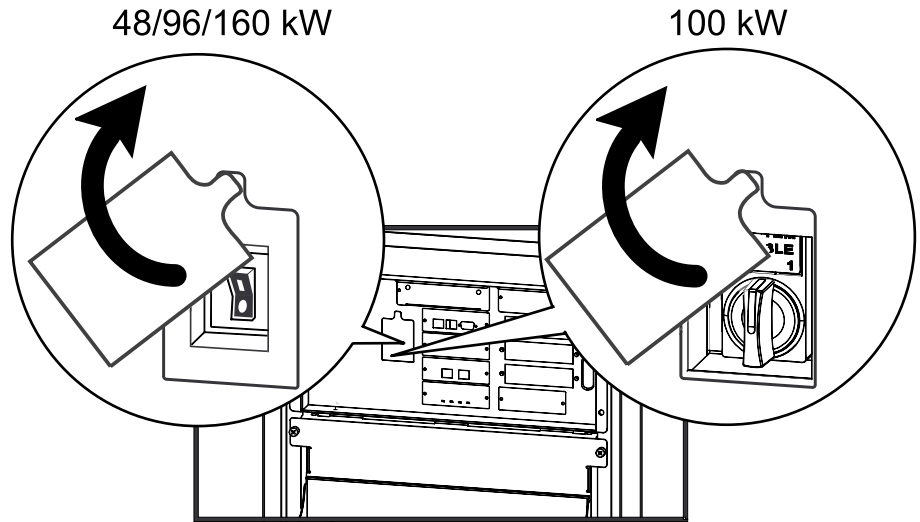
```
Turn UPS Off Without  
Server Notification?  
>NO, ABORT  
→ >YES, Turn UPS Off
```

- 10. Wait for the UPS to turn off.

```
Turning UPS off,  
please wait....
```

- 11. Set the UPS **SYSTEM ENABLE** switch to the OFF position.

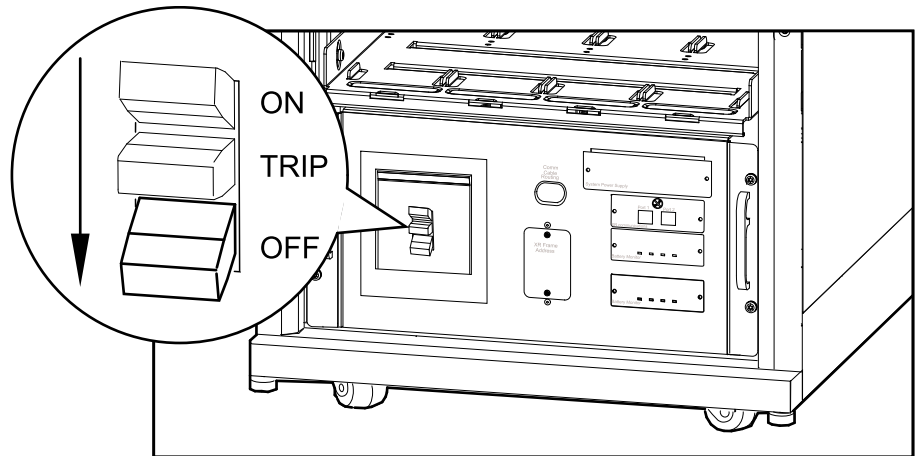
Front View of UPS



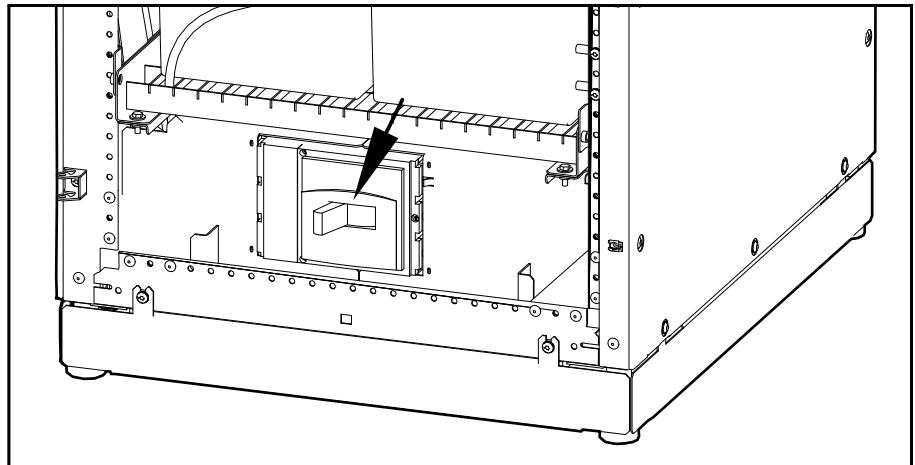
- 12. Set the Q1 switch to the OFF position.
- 13. Set the Q5 breaker to the OFF position (if applicable).

14. Set the **DC DISCONNECT** switch to the OFF position on all modular battery cabinets and the PDU with modular batteries (if applicable) and on the UPS (only for Symmetra PX 48 kW).

Modular Battery Cabinets/PDU with Modular Batteries



Classic Battery Cabinet

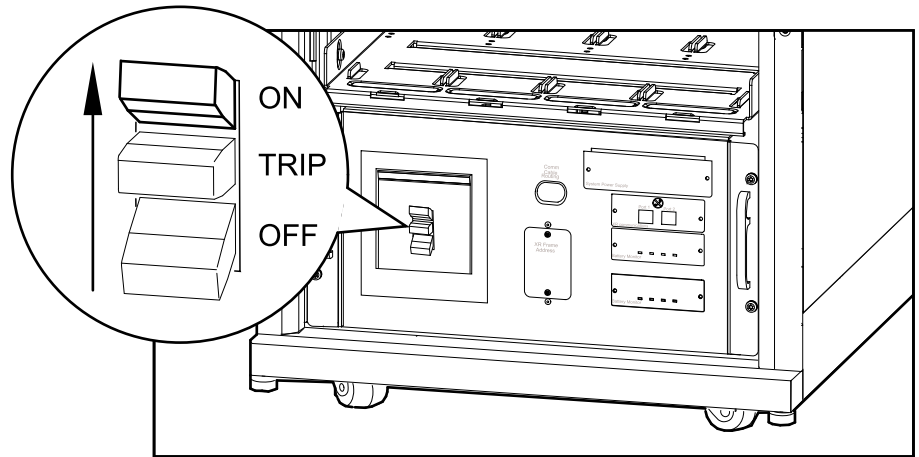


Return to Normal Operation from Maintenance Bypass Operation

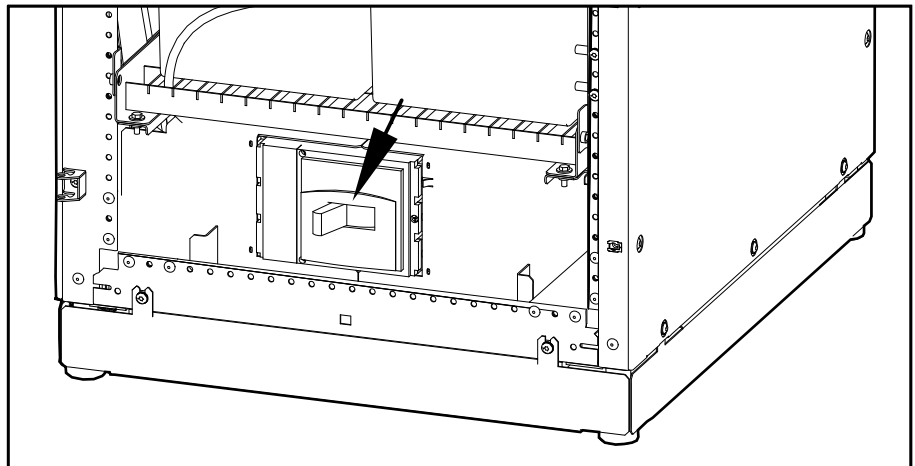
1. Set the **DC DISCONNECT** switch to the ON position on all modular battery cabinets and the PDU with modular batteries (if applicable) and on the UPS (only for Symmetra PX 48 kW).

2. Set the Q1 switch to the ON position.

Modular Battery Cabinet/PDU with Modular Batteries



Classic Battery Cabinet

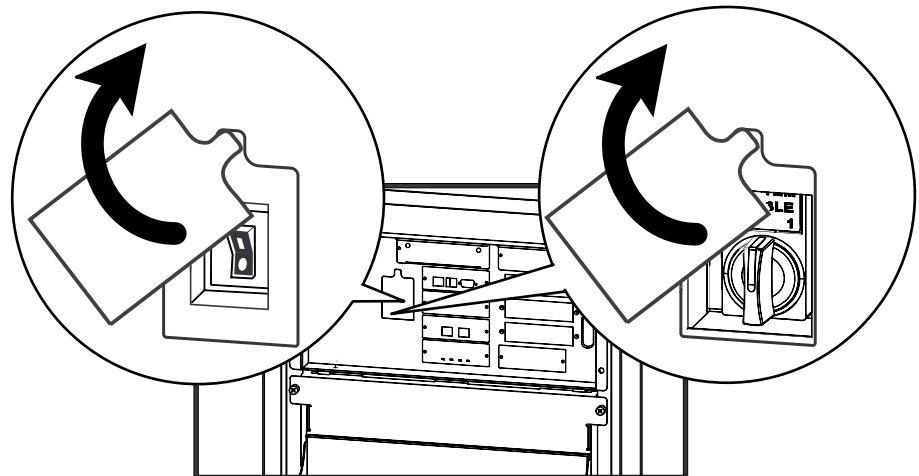


3. Set the **SYSTEM ENABLE** switch on the UPS to the ON position.
NOTE: Wait approximately two minutes for the system to start.

Front View of UPS

48/96/160 kW

100 kW



4. Set the Q5 breaker to the ON position (if applicable).

5. Select **UPS > UPS Power Control > UPS On into Bypass** and press the enter key.

```
Turn UPS On
→ UPS On into Bypass
```

6. Select **Continue Turn On** and press the enter key.

```
Battery back-up not
available in bypass!
>Cancel
→ >Continue Turn On
```

7. Confirm by selecting **Yes, On Into Bypass** and press the enter key.

```
Confirm:
UPS on Into Bypass
>NO, ABORT
→ >Yes, On Into Bypass
```

8. Wait for the UPS to turn the load on.

```
Turning UPS on Into
Bypass.
Please wait...
```

9. The UPS is now ON.

NOTE: The H2 LED next to the Q2 switch will turn on, indicating that the Q2 switch can be operated.

```
UPS's output is now
in bypass
Press any key...
```

10. Set the Q2 switch on the PDU, PDU with modular batteries or the external maintenance bypass enclosure to the ON position.

NOTE: The H3 LED next to the Q3 switch will turn on, indicating that the Q3 switch can be operated.

11. Set the Q3 switch to the OFF position.
12. Use the display interface to transfer the UPS out of bypass:
13. Select **UPS > UPS Power Control > UPS out of Bypass** and press the enter key.

```
Turn UPS Off
Reboot UPS
→ UPS out of Bypass
UPS to Sleep
```

14. Confirm by selecting **Yes, Out of Bypass** and press the enter key.

```
Confirm:
UPS out of Bypass?
>NO, ABORT
→ >YES, Out of Bypass
```

15. Wait for the UPS to transfer out of bypass.

```
Putting UPS out of
Bypass, please
wait....
```

16. The UPS is now out of bypass and is in normal operation.

```
UPS is now out of  
bypass  
Press any key....
```

View the Status Screens

1. Select **UPS > UPS Status** and press the enter key.

```
UPS Power Control  
→ UPS Status  
UPS Tests & Diags  
UPS Configuration
```

2. Use the arrow keys to navigate through the status screens.

```
Symmetra PX 160 kW  
Status: On Line  
No UPS Alarms
```

View the Log Screen

1. Select **Log** and press the enter key.
2. Select **View New Log Items** to see new log items when the **Check Log** LED is green and press the enter key. To see historical events select the **View Entire Log** and press the enter key.

```
→ View New Log Items  
View Entire Log  
Clear Entire Log
```

3. Use the arrow keys to navigate through the log screens.

```
Log Item ≥ 1 of 2  
03/14/07 10:37:02  
<Description>
```

Configuration

System Settings

Set Up the Network

1. Select **Admin > Network Setup > Mode** and press the enter key.

```
Stat:
→ Mode:
IP:
SM:
```

2. Select **Fixed IP Addr** to give a specific IP address to the UPS system or select one of the other two methods to obtain an IP address. In this example **Fixed IP Addr** mode is selected.

```
→ Fixed IP Addr
DHCP Only
BOOTP Only
```

3. Select **IP (Internet Protocol)**, **SM (Subnet Mask)**, and **GW (GateWay)** and change the settings using the arrow keys. Press the enter key to confirm the changes.

```
→ IP:
→ SM:
→ GW:
```

Change the Display Interface Settings

1. Select **Admin > Local Interface > Display Behaviour** and press the enter key.

```
Local Password
→ Display Behaviour
Alarm Beeper
```

2. Select **Contrast**, **Key Click**, **Beeper Volume**, or **Check Log Light** and change the settings using the arrow keys. Press the enter key to save the changes.

```
→ Contrast ≥ 4
Key Click ≥ On
Beeper Volume > High
Check Log Light
```

Change the Date and Time

1. Select **Admin > Date/Time** and press the enter key.

```
Network Setup
Local Interface
→ Date/Time
Device ID
```

2. Select **Date** or **Time** and change the settings by using the arrow keys. Press the enter key to save the changes.

```
Mode: Manual
Format: mm/dd/yyyy
Date: xx/xx/xxxx
Time: xx:xx:xx
```

Set Up Capacity Parameters for Classic Battery

NOTE: It is necessary to set up the capacity parameters for UPSs with classic batteries. This is not necessary for UPSs with modular batteries.

1. Select **UPS > UPS Configuration > Other** and press the enter key.

```
UPS Configuration
Shutdown      Output
Alarms        Bypass
Default       → Other
```

2. Select **BatFrmAmpHour** and input the battery capacity **C₁₀Ah** and press the enter key to confirm.

```
Self Test: xx days
UPS ID: XXXXX
→ BatFrmAmpHour: C10AH
Charger Rate: xxx
```

Configure Input Contacts

1. Select **Environment > Input Contacts** and press the enter key.

```
→ Input Contacts
Output Relays
Alarm Relay Map
```

2. Select desired input contact, 1 through 4, select **Configuration**, and press the enter key.

```
Input Contact:xof4
<contact name>
Status: Normal
→ Configuration
```

3. Change the settings for **Name/Location, Alarms, Severity, and Normal state**.

```
Name/Location x
Alarms: Enabled
Severity: Critical
Normal: Open
```

Configure Output Relays

1. Select **Environment > Output Relays** and press the enter key.

```
Input Contacts
→ Output Relays
Alarm Relay Map
```

2. Select desired output relay, 1 through 4, select **Configuration**, and press the enter key.

```
Output Relay:xof4
<relay name>
Status: Closed
→ Configuration
```

3. Change the settings for **Name** and **Normal** position for the selected output relay.

```
Relay x Name
<output relay>
Normal: Closed
```

Maintenance

Life Cycle Monitoring (LCM)

The Life Cycle Monitoring (LCM) function provides UPS preventive maintenance advice. It is currently only supported on Symmetra PX 100 kW UPSs.

The display shows the following three messages:

Display Message	Description – corrective action
Contact Schneider Electric for Secure Start-Up	Start-up check is recommended. Please call the Schneider Electric support center.
Warranty Expiring Soon	The end of the contractual legal warranty. Please call the Schneider Electric support center.
Technical Check Recommended	Regular maintenance requirements and the end of service life consumable components. Please call the Schneider Electric support center.

In addition to these messages, the **Warning** LED lights up and the buzzer sounds. These messages can be disabled by choosing **Admin > Life Cycle Monitor > Settings > Yes**. This will cause the **Warning** LED to go out, the buzzer to stop and remove any Life Cycle Monitoring messages.

Parts Replacement

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices for all part replacement procedures.

Failure to follow these instructions will result in death or serious injury.

Determine if you need a Replacement Part

To determine if you need a replacement part, contact Schneider Electric and follow the procedure below so that the representative can assist you promptly:

1. In the event of an alarm condition, scroll through the alarm lists, record the information, and provide it to the representative.
2. Write down the serial number of the unit so that you will have it easily accessible when you contact Schneider Electric.
3. If possible, call Schneider Electric from a telephone that is within reach of the display so that you can gather and report additional information to the representative.
4. 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 assign a return material authorization (RMA) number to you. If a module is returned to Schneider Electric, this RMA number must be clearly printed on the outside of the package.
5. If the unit is within the warranty period and has been started up by Schneider Electric, repairs or replacements will be performed free of charge. If it is not within the warranty period, there will be a charge.
6. If the unit is covered by a Schneider Electric service contract, have the contract available to provide information to the representative.

Return Parts to Schneider Electric

To return an inoperable part to Schneider Electric, contact Schneider Electric customer support to obtain an RMA number.

Pack the part in the original shipping materials, and return it by insured, prepaid carrier. The customer support representative will provide the destination address. If you no longer have the original shipping materials, ask the representative about obtaining a new set.

- Pack the part properly to avoid damage in transit. Never use styrofoam beads or other loose packaging materials when shipping a part. The part may settle in transit and become damaged.
- Enclose a letter in the package with your name, RMA number, address, a copy of the sales receipt, description of the problem, a phone number, and a confirmation for payment (if necessary).

NOTE: Damages sustained in transit are not covered under warranty.

Replacement Parts

⚠ DANGER

HAZARD OF ELECTRICAL SHOCK, EXPLOSION OR ARC FLASH

All safety instructions in this document must be read, understood and followed.

Failure to follow these instructions will result in death or serious injury.

⚠ DANGER

HAZARD OF ELECTRICAL SHOCK, EXPLOSION OR ARC FLASH

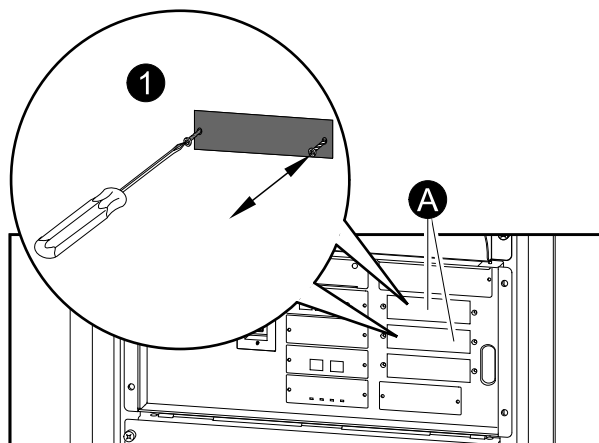
Only trained personal familiar with the construction and operation of the equipment, as well as the electrical and mechanical hazards involved, may install and remove system components.

Failure to follow these instructions will result in death or serious injury.

NOTE: A maximum of two smart slots can be used.

Part	Part number
16 kW power module for 48, 96 and 160 kW 400 V	SYPM10K16H
10 kW power module for 100 kW 208V, high efficiency	SYPM10KF2
Modular battery string (four battery units)	SYBT9-B4
Modular battery unit	SYBTU2-PLP
SmartSlot relay I/O module (option)	AP9613
Modbus/Jbus interface card (option)	AP9622
Network management card (option)	Go to www.apc.com for a list of network management cards
Power distribution module	Go to www.apc.com for a complete list of breakers

Replace a Smart Slot Card



A. Only the cards in these two locations can be replaced.

1. Loosen the two screws on the sides of the card and carefully pull it out of the cabinet.
2. Install the new card and fasten it with the two screws.

NOTE: The UPS has an embedded network management card.

Replace a Power Module

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Electrical equipment must be installed, operated, serviced, and maintained only by qualified personnel.

Failure to follow these instructions will result in death or serious injury.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

If power modules are removed, blanking panels must be installed to restrict access to live parts. Blanking panels can be obtained from Schneider Electric.

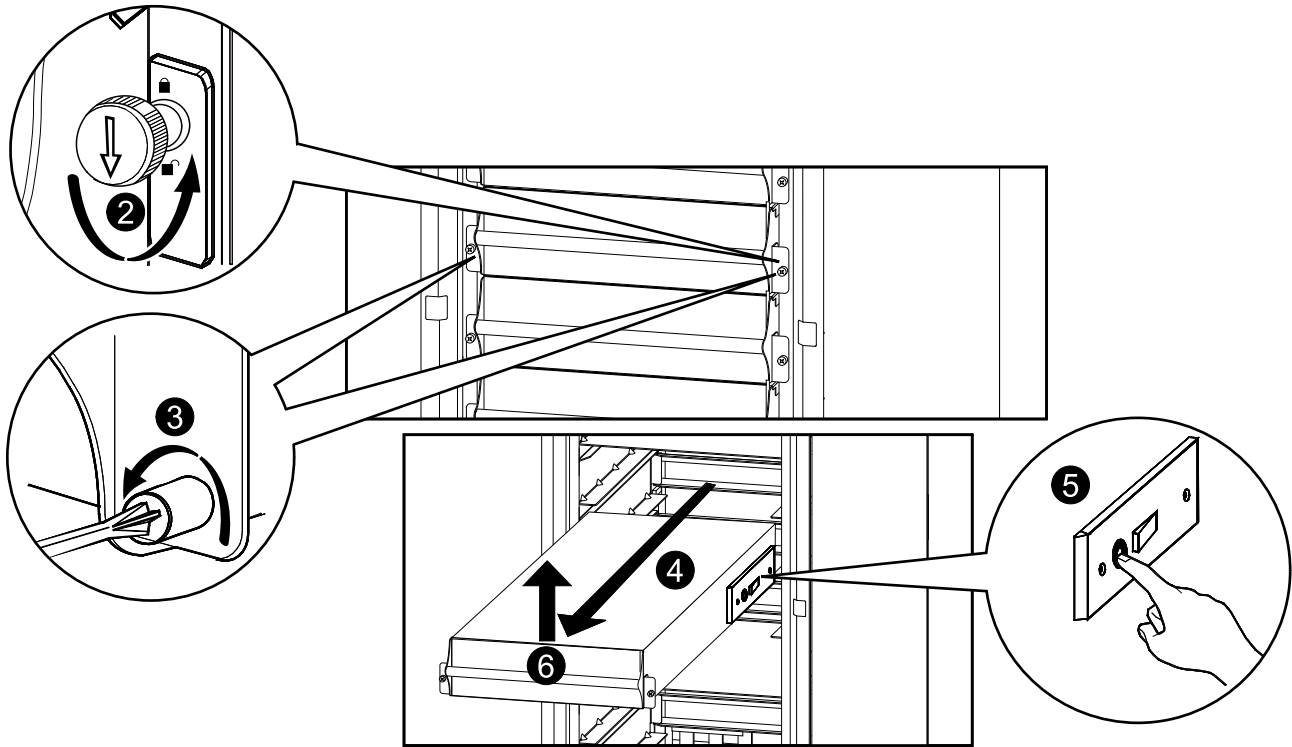
Failure to follow these instructions will result in death or serious injury.

⚠ CAUTION

HAZARD OF PERSONAL INJURY

Two persons are required for lifting a power module.

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



1. Turn the UPS into maintenance bypass operation following the procedure *Transfer the UPS into Maintenance Bypass Operation, page 15*.
2. Turn the enable switch to the unlocked position on the power module.
3. Unscrew the spring-activated knobs on both sides of the power module.
4. Pull the power module up and out of the cabinet as far as the lock mechanism allows.
5. Release the lock by pressing the black plastic tab on both sides of the module.
6. Pull the module out of the cabinet.
7. Carefully guide the new power module completely into the cabinet.

▲ CAUTION

HAZARD OF EQUIPMENT DAMAGE

Do not attempt to insert the power module using excessive force, but make sure that it is in place before continuing.

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

8. Tighten the spring-activated knobs on both sides of the power module to ensure proper contact.
9. Turn the enable switch to the locked position on the power module.

▲ CAUTION

HAZARD OF EQUIPMENT DAMAGE

Tighten the spring-activated knobs before turning the enable switch to ensure that the module makes proper contact within the unit. The power module will not operate unless the enable switch is engaged. If it has not engaged, take out the power module and insert it again.

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

10. Return to normal operation by following the procedure *Return to Normal Operation from Maintenance Bypass Operation*, page 17.

Replace a Battery

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Battery circuit breakers must be installed according to the specifications and requirements as defined by Schneider Electric.
- Servicing of batteries must only be performed or supervised by qualified personnel knowledgeable of batteries and the required precautions. Keep unqualified personnel away from batteries.
- Do not dispose of batteries in a fire as they can explode.
- Do not open, alter, or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

Failure to follow these instructions will result in death or serious injury.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Batteries can present a risk of electric shock and high short-circuit current. The following precautions must be observed when working on batteries

- Remove watches, rings, or other metal objects.
- Use tools with insulated handles.
- Wear protective glasses, gloves and boots.
- Do not lay tools or metal parts on top of batteries.

Failure to follow these instructions will result in death or serious injury.




⚠ WARNING

RISK OF EQUIPMENT DAMAGE

- When replacing batteries, always replace with the same type and number of batteries or battery packs.
- Wait until the system is ready to be powered up before installing batteries in the system. The time duration from battery installation until the UPS system is powered up must not exceed 72 hours or 3 days.
- Batteries must not be stored more than six months due to the requirement of recharging. If the UPS system remains de-energized for a long period, we recommend that you energize the UPS system for a period of 24 hours at least once every month. This charges the batteries, thus avoiding irreversible damage.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Storage of Battery Units

		
<p>Ambient temperature: -15 to 40 °C (5 to 104 °F)</p>	<p>Relative humidity: 25-85% Non-condensing</p>	<p>The battery units must be stored with their protective packaging still in place. The battery units must be stored indoors in a place free from:</p> <ul style="list-style-type: none"> • vibration • dust • direct sunlight • moisture

NOTE: Stored battery units must be recharged at regular intervals depending on the storage temperature:

Storage temperature	Recharge interval
-15 to 20 °C (5 to 68 °F)	9 months
20 to 30 °C (68 to 86 °F)	6 months
30 to 40 °C (86 to 104 °F)	3 months

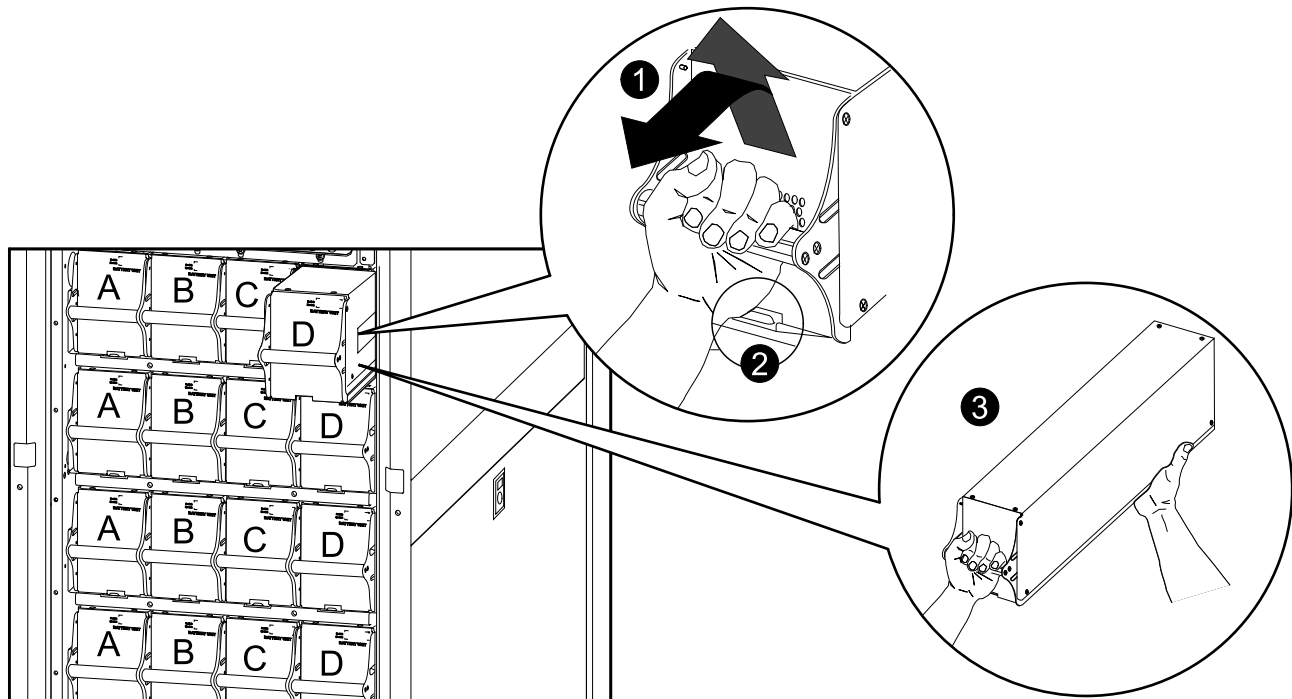
NOTE: Do not store batteries for more than 12 months.

⚠ CAUTION

HAZARD OF PERSONAL INJURY

Two persons are required for lifting a battery unit.

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



1. Perform one of the following:
 - **For systems with one battery cabinet:** Turn the UPS into maintenance bypass operation following the procedure *Transfer the UPS into Maintenance Bypass Operation*, page 15. This is recommended during battery unit replacement.
 - **For systems with redundant battery cabinets:** Go to step 2.
2. Open the battery breaker(s) on the battery cabinet (or UPS) where the replacement battery unit will be installed.
3. Holding the handle, gently lift the battery unit and pull it halfway out. A locking mechanism prevents the battery unit from being pulled all the way out.
4. Release the locking mechanism by lifting the battery unit. Pull the battery unit completely out while supporting it.
5. Push the replacement battery unit into the system.

NOTE: When replacing battery units, always replace both battery units A +B or C+D (see illustration below) as they are connected in pairs.

For four battery units in a row it is recommended to replace all four at the same time to ensure optimal runtime (Example 1). The battery units can also be replaced in twos, but always A+B (Example 2) or C+D (Example 3).

Four battery units in a row				
	Column A	Column B	Column C	Column D
Example 1 – Recommended	New	New	New	New
Example 2 – Minimum requirement	New	New	Old	Old
Example 3 – Minimum requirement	Old	Old	New	New

NOTE: Allow battery units a 24-hour recharging period after system startup/battery unit replacement for battery unit monitoring data to become fully reliable.

6. If the UPS was transferred to maintenance bypass operation in step 1, return to normal operation by following the procedure *Return to Normal Operation from Maintenance Bypass Operation*, page 17.
7. Close the battery breaker(s).

Replace a Power Distribution Module

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Electrical equipment must be installed, operated, serviced, and maintained only by qualified personnel.

Failure to follow these instructions will result in death or serious injury.

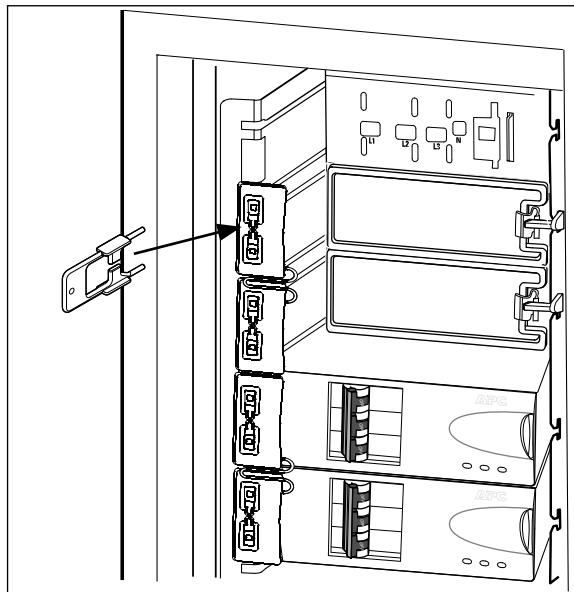
▲ CAUTION

RISK OF INJURY OR EQUIPMENT DAMAGE

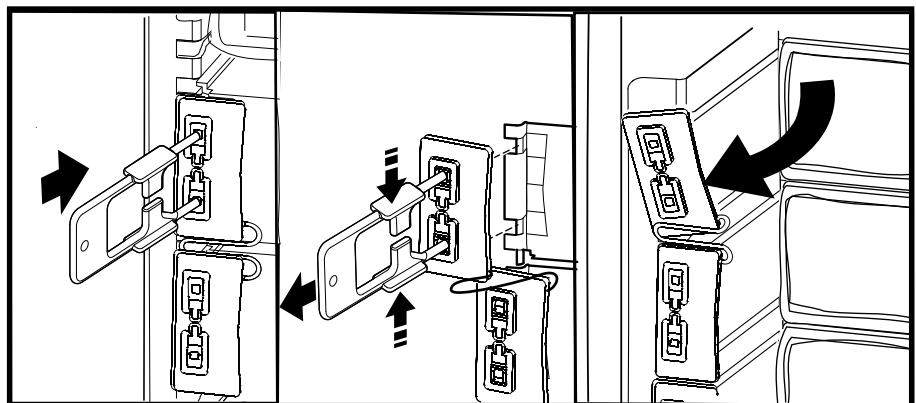
- Install only Schneider Electric power distribution modules with matching output voltage.
- Install power distribution modules starting from the bottom of the panel to avoid cable congestion.
- Save filler plates for future reuse. If a power distribution module is removed, a filler plate must be installed to cover the open busbar.
- Slot locks (attached together in pairs) must always be installed on all power distribution module positions in the panel whether filled by a power distribution module or a filler plate.
- Make sure all breakers on the power distribution modules being installed are in the OFF (open) position.

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

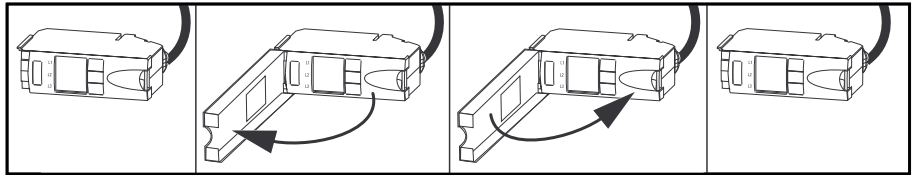
1. Shut down the system by following the procedure *Perform a Total Power Off*, page 10.
2. Set all breakers on the power distribution module in OFF position.
3. Disconnect the power cable from the power distribution module's extension cable or rack-mount PDU.
4. Insert the slot key in the slot lock.



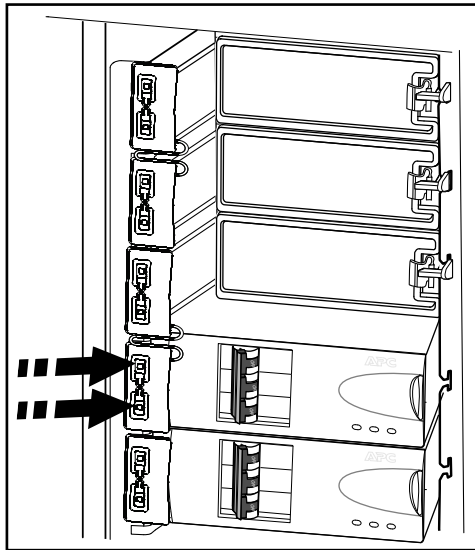
5. Squeeze the sides of the key inwards to grasp the slot lock firmly.
6. Pull the slot key out while squeezing to extract the slot lock from the slot.



7. Open the enable switch on the module and gently pull the module out of the cabinet.
8. Take the replacement power distribution module and open the enable switch. Route the power cable through the top of the cabinet and slide the power distribution module into place.
9. Fasten the latch to lock the module.



10. Install the slot lock by pressing it into the slots.



11. Connect the power distribution module cable to the appropriate equipment.
12. Switch the breakers to the ON position.
13. Start up the system by following the procedure *Start the System after Total Power Off*, page 12.

Troubleshooting

⚠ DANGER

HAZARD OF ELECTRICAL SHOCK, EXPLOSION OR ARC FLASH

Only trained personnel familiar with the construction and operation of the equipment, as well as the electrical and mechanical hazards involved, may install and remove system components.

Failure to follow these instructions will result in death or serious injury.

Status and Alarm Messages

This section lists the status and alarm messages that the UPS might display. The messages are listed in alphabetical order, and a suggested corrective action is listed with each alarm message to help you troubleshoot problems.

NOTE: Contact Schneider Electric Customer Support if you see alarm or status messages that are not listed here.

NOTE: If a problem is reported, ensure that the system component in question is correctly installed.

Display Messages

Display Message	Meaning	Corrective Action
Battery Alarm	A battery module has become inoperable and requires replacement.	Replace battery. See <i>Replace a Battery</i> , page 27 or contact Schneider Electric Customer Support for replacement of a classic battery.
Battery Charger Alarm	The battery charger is not functioning properly.	Contact Schneider Electric Customer Support.
Battery High Temperature Alarm	The temperature of one or more battery units has exceeded system specifications.	Ensure that the ambient temperature meets the specifications of the system. If the ambient temperature is below 40 °C (104 ° F), then initiate a self-test to detect any damaged battery units. Replace any damaged battery units.
Battery High Voltage Alarm	The battery voltage is too high and the charger has been deactivated.	Contact Schneider Electric Customer Support.
Battery Monitor Card Alarm	The battery monitor card has become inoperable.	Contact Schneider Electric Customer Support.
Battery Monitor Card Removed	The battery monitor card has been removed.	Contact Schneider Electric Customer Support.
Contact Schneider Electric For Secure Start-Up	The UPS has been running 5 days. Start-up check by a Schneider Electric Field Service Engineer (FSE) is recommended.	Contact Schneider Electric Customer Support.
Discharged Battery	The UPS is online and the battery charge is low.	No corrective action necessary. Note: If the input voltage becomes unavailable, runtime will be limited.
Extended Run Frame Alarm	One of the battery cabinets has become inoperable.	Contact Schneider Electric Customer Support.
External DC Disconnect Switch Open	The external DC DISCONNECT switch tripped. Battery power is not available or the runtime is lower than expected.	Close the external DC DISCONNECT switch. If the problem continues, call Schneider Electric Customer Support.
External Switch Gear Communication Card Alarm	The external switch gear communication card has become inoperable.	Contact Schneider Electric Customer Support.
External Switch Gear Communication Card Removed	The system no longer detects an external switch gear communication card.	Option 1: Ensure the external switch gear communication card is installed properly.

Display Message	Meaning	Corrective Action
		Option 2: Contact Schneider Electric Customer Support.
Graceful Shutdown Initiated	A graceful shutdown or reboot has been initiated from the display interface or other accessory.	No corrective action necessary.
In Bypass: Hardware Not Fully Functional	The system has transferred into bypass because an event has occurred.	Contact Schneider Electric Customer Support.
In Bypass: Overload	The system has transferred into bypass because the load has exceeded the power capacity of the system.	Option 1: Decrease the load. Option 2: Add a power module to the system.
In Bypass: User-Initiated	The system has been transferred into bypass due to user action.	Check for any abnormalities with the system. Transfer the system to normal operation.
Internal Communication Bus Alarm	One of the buses used for communication between the UPS modules has become inoperable.	Contact Schneider Electric Customer Support.
Input Voltage or Frequency Cannot Support Bypass	The frequency or voltage is out of acceptable range for bypass. This message occurs when the UPS is online, and indicates that bypass mode may not be available if required.	Correct the input voltage to provide acceptable voltage or frequency.
Inverter Not Synchronized To AC Input	System cannot synchronize to AC line and bypass mode may not be available.	Option 1: Decrease the sensitivity to input frequency. Option 2: Correct the input voltage to provide acceptable voltage/frequency.
Load (kVA) Alarm	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.
Local Management-To-UPS Communication Lost	Internal communications in the system is no longer available.	Contact Schneider Electric Customer Support.
Loss Of Battery Capacity (Lower Than 50%)	The battery capacity is estimated to be below 50% of the expected.	Replace battery. See <i>Replace a Battery, page 27</i> or contact Schneider Electric Customer Support for replacement of a classic battery.
Loss Of Battery Capacity (Lower Than 75%)	The battery capacity is estimated to be below 75% of the expected.	Replace battery. See <i>Replace a Battery, page 27</i> or contact Schneider Electric Customer Support for replacement of a classic battery.
Low Battery	The UPS is in battery operation and the battery charge is low.	Runtime is limited. Shut down the system and the load equipment or restore the input voltage.
Main Intelligence Module Alarm	The main intelligence module has become inoperable and requires replacement.	Contact Schneider Electric Customer Support.
No Batteries Detected	No battery power is available.	Option 1: Ensure the batteries are installed properly. Option 2: Check to see whether the DC Breaker has been tripped. Option 3: Contact Schneider Electric Customer Support.
No Power Modules Detected	No power modules are available.	Option 1: Ensure that the power modules are properly installed, the two fastening screws are tight, and the enable switch is engaged. Option 2: Check for other communication alarm messages in the log.
Overload On UPS	The load has exceeded the system power capacity.	Option 1: Decrease the load. Option 2: Add a power module to the system.

Display Message	Meaning	Corrective Action
Power Module Alarm	A power module has become inoperable and requires replacement.	Replace power module. See <i>Replace a Power Module, page 25</i> .
Power Outage	The input voltage is not acceptable for normal operation.	Contact Schneider Electric Customer Support.
Redundancy Alarm	Actual power module redundancy has fallen below user-specified redundancy alarm threshold. At least one power module has become inoperable, or the load has increased.	<p>Option 1: If possible, install additional power modules. See <i>Replace a Power Module, page 25</i>.</p> <p>Option 2: Replace inoperable modules. See <i>Replace a Power Module, page 25</i>.</p> <p>Option 3: Reduce the load.</p> <p>Option 4: Change alarm limit.</p>
Redundancy Lost	The UPS no longer detects redundant power modules. One or more power modules have become inoperable, or the load has increased.	<p>Option 1: If possible, install additional power modules. See <i>Replace a Power Module, page 25</i>.</p> <p>Option 2: Replace inoperable modules. See <i>Replace a Power Module, page 25</i>.</p> <p>Option 3: Reduce the load.</p> <p>Option 4: Change alarm limit.</p>
Redundant Intelligence Module Alarm	The redundant intelligence module has become inoperable and requires replacement.	Contact Schneider Electric Customer Support.
Redundant Intelligence Module in Control	The main intelligence module has become inoperable, and the redundant intelligence module is functioning as the primary intelligence module.	Contact Schneider Electric Customer Support.
Replacement Battery Needed	One or more battery packs have been detected to be inoperable (caused by symmetry event, fuse blown, over-temperature event, or wrong battery type). The UPS display will point out the position of the batteries you have to replace.	<p>Replace battery unit(s). See <i>Replace a Battery, page 27</i></p> <p>or contact Schneider Electric Customer Support for replacement of a classic battery.</p>
Runtime Alarm	The predicted runtime is lower than the user-specified minimum runtime alarm threshold. At least one battery module has become inoperable or the load has increased.	<p>Option 1: Install additional battery modules.</p> <p>Option 2: Replace the inoperable battery modules.</p> <p>See <i>Replace a Battery, page 27</i></p> <p>or contact Schneider Electric Customer Support for replacement of a classic battery.</p> <p>Option 3: Reduce the load.</p> <p>Option 4: Change alarm limit.</p>
Site Wiring Incorrect	There is a problem with the phase rotation or a phase is missing in the input voltage to the UPS, or the neutral is missing.	Contact the certified electrician that installed the system.
Static Bypass Switch Module Not Fully Functional	The static bypass switch module has become inoperable and requires replacement.	Contact Schneider Electric Customer Support.
Static Bypass Switch Module Removed	The system no longer detects a static bypass switch module.	<p>Option 1: Ensure that the static bypass switch module is installed properly.</p> <p>Option 2: Call Schneider Electric Customer Support for replacement of the static bypass switch module.</p>
System in Maintenance Bypass	The system is in maintenance bypass: the Q2 breaker is open and the Q3 breaker is closed.	No corrective action necessary.
System Power Supply Card Alarm	The system power supply card has become inoperable and requires replacement.	Ensure that the power supply card is installed properly. See <i>Replace a Smart Slot Card, page 25</i> .

Display Message	Meaning	Corrective Action
System Start-Up Configuration Incorrect	The system configuration download did not succeed. Unable to determine the system voltage or frame size.	Check for other alarms and contact Schneider Electric Customer Support.
Technical Check Recommended	Regular maintenance requirements and the end of service life consumable components.	Contact Schneider Electric Customer Support.
Warranty Expiring Soon	The end of the contractual legal warranty.	Contact Schneider Electric Customer Support.

Modular Distribution Alarm List

The display interface will identify the number of the power distribution modules that has caused an alarm or warning.

Display Message	Meaning	Corrective Action
High Module Current Alarm	The threshold of the high module current has been exceeded.	Evaluate the threshold setting. If necessary, adjust it for your situation.
High Subfeed Current Alarm	The threshold of the high subfeed current has been exceeded.	Evaluate the threshold setting. If necessary, adjust it for your situation.
Low Module Current Alarm	The threshold of the low module current has been exceeded.	Evaluate the threshold setting. If necessary, adjust it for your situation.
Low Subfeed Current Alarm	The threshold of the low subfeed current has been exceeded.	Evaluate the threshold setting. If necessary, adjust it for your situation.
Max Module Current Alarm	The threshold of the maximum module current has been exceeded.	Evaluate the threshold setting. If necessary, adjust it for your situation.
Max Subfeed Current Alarm	The threshold of the maximum subfeed current has been exceeded.	Evaluate the threshold setting. If necessary, adjust it for your situation.
Min Module Current Alarm	The threshold of the minimum module current has been exceeded.	Evaluate the threshold setting. If necessary, adjust it for your situation.
Min Subfeed Current Alarm	The threshold of the minimum subfeed current has been exceeded.	Evaluate the threshold setting. If necessary, adjust it for your situation.
Communication Lost With Metering Board Alarm	Communication has been lost with the power distribution module.	Check the communication cables to ensure that they are properly connected. Contact Schneider Electric Customer Support (see the back cover).
Module Breaker Open Alarm	A modular circuit breaker is open.	Check the modular circuit breakers to see if one has been over-loaded. Replace if necessary.
Subfeed Breaker Open Alarm	A subfeed circuit breaker is open.	Check the subfeed circuit breakers to see if one has been over-loaded.

PDU Alarm List

Display Message	Meaning	Corrective Action
System In Maintenance Bypass	The system is in maintenance bypass: the Q2 switch is open and the Q3 switch is closed.	No corrective action necessary.
Min Output Voltage Alarm	Phase-to-neutral output voltage for phase <L-N> has dropped below the configured limit.	Evaluate the threshold setting. If necessary, adjust it for your situation.
Max Output Voltage Alarm	Phase-to-neutral output voltage for phase <L-N> exceeded the configured limit.	Evaluate the threshold setting. If necessary, adjust it for your situation.
Max Total Output Current Alarm	Current of output phase <n> exceeded the configured limit.	Evaluate the threshold setting. If necessary, adjust it for your situation.
Min Total Output Current Alarm	Current of output phase <n> dropped below the configured limit.	Evaluate the threshold setting. If necessary, adjust it for your situation.
Output Frequency Alarm	Frequency of the output current is above or below the range that is configured as acceptable.	Evaluate the threshold setting. If necessary, adjust it for your situation.
Critical Input Contact Fault	A user-configured contact connected to the system is reporting an alarm condition.	Determine why the alarm has occurred. This is a user-specific alarm setting.
System Mode Alarm¹	The Q1 switch is open, and the UPS is disconnected from the input voltage.	Close the Q1 switch to reconnect the UPS to utility/mains power.
System Mode Alarm¹	The Q2 & Q3 switches are open, and the system is not supporting the connected equipment.	For safety reasons, ensure that the switches were not closed for maintenance purposes. If the switches are open, close Q2 for UPS operation, and Q3 for maintenance bypass.
System Mode Alarm¹	The alarm will be active in the event Q3 is on at the same time as Q1 and Q5.	Option 1: Resume normal UPS operation. Option 2: Go to maintenance bypass. Option 3: Contact Schneider Electric Customer Support.
Transformer Overheating	The temperature of the transformer has exceeded 180 °C.	Option 1: Resume normal UPS operation. Option 2: Go to maintenance bypass. Option 3: Contact Schneider Electric Customer Support.
Cooling Fan Outage Alarm	One fan is not working or not spinning fast enough, or one pole of the 3-pole circuit breaker has tripped.	Option 1: Make sure all four fans are running. Option 2: Check breaker positions. Option 3: Contact Schneider Electric Customer Support.

1. See the event log for further clarification.

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As standards, specifications, and design change from time to time,
please ask for confirmation of the information given in this publication.