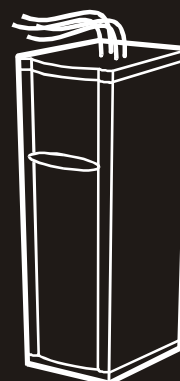


PDU With System Bypass

40kW

208/480/600V

Operation and Maintenance



About this Manual

This manual is intended for end-users of a 40kW PDU with System Bypass. It covers the operation and basic maintenance of the PDU with System Bypass, and includes basic InfraStruXure system operation.

For additional information about the InfraStruXure system, see the following manuals that were included with the PDU:

- *InfraStruXure Type B 40kW Installation and Start-Up* (990-1483) covers the installation and start-up of Type B UPS power distribution to the rack and power distribution within the rack.
- *How to Connect Utility Input Conductors to the 40kW PDU with System Bypass* (990-1177) provides specific instructions for the electrician connecting power to the PDU with System Bypass.

For information about specific components in your InfraStruXure system, see the documentation included with each component. Before installing or operating any component, refer to the safety instructions in the component's manual.

The illustrations of products in this manual may vary slightly from the products in your InfraStruXure system.



Note

You can check for updates to this manual by clicking on the **User Manuals** link on the **Support** page of the APC website (www.apc.com). In the list of InfraStruXure Type B manuals, look for the latest letter revision (A, B, etc.) of the part number on this manual.

Contents

Safety 1

Overview 1

Safety symbols used in this guide 1

Warnings 2

Installation/Maintenance 2

Maintenance performed while the PDU
is receiving input power 2

Total power off procedure 3

DANGER—Risk of Electric Shock! 3

Emergency Power Off (EPO) 4

EMI 4

Overview 5

PDU with System Bypass Components 5

Front view 5

Front view (interior) 6

Rear view (interior) 7

PDU monitoring unit 8

PDU Display Interface 9

Overview 9

Top-level status screens 10

Top-level menu screen 10

Navigating through screens 10

Password-protected screens 11

Load-Meter Screen 12

Volt-Meter Screen 13

Contacts Screen 14

Breakers Screen 15

Alarms Screen	16
View Active Alarms	16
Alarm/Event Log	16
Alarm Setup	17
Alarm Beeper	17
PDU Alarms	18
Panel Screen	19
Branch Ckt Loading	19
Branch Ckt Limits	19
Panel Configuration	20
Global Panel Config	21
Config Screen	22
System/Network	22
Electrical Config	23
Manufacturer Data	24
Product Data	24
Factory Defaults	24
Firmware Updates	24

Operation 25

InfraStruXure System	25
How to transfer the UPS into maintenance bypass operation	25
How to return from maintenance bypass operation	28
How to ensure total power off	31
How to apply power to the system	33

Maintenance 37

Important Safety Instructions	37
PDU Orderable Part List	38
How to Add Breakers and Power Cables	39
Add a breaker on the PDU	39
Add a power cable to the PDU	39
How to Test the EPO Switch	41

Specifications	43
Product Information	47
Warranty	47
Life-Support Policy	48
How to Obtain Service	49

Safety

Overview

Safety symbols used in this guide



Indicates a hazard, which, if not avoided, could result in injury or death.



Indicates a hazard, which, if not avoided, could result in damage to product or other property.



Indicates important information.



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



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



See also

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



Indicates a standby state. When in standby, the unit is not operating, but it may still contain hazardous voltage. It is not safe to service until the equipment is disconnected from all sources of electrical power.

SAVE THESE INSTRUCTIONS. This manual contains important instructions that must be followed during installation, operation, and maintenance of the PDU with System Bypass.

Warnings

Installation/Maintenance

Only a certified electrician can:

- Connect the PDU with System Bypass to utility
- Connect a switch to the EPO interface on the PDU with System Bypass

Only a certified electrician or an APC Field Service Engineer can:

- Connect the PDU with System Bypass to the Symmetra PX UPS
- Perform maintenance of the PDU with System Bypass

When connecting the PDU with System Bypass to utility, a circuit breaker must be installed to protect the PDU with System Bypass against short-circuit current.

Determine the type of circuit breaker that you need to install:

Input Voltage	Circuit Breaker Sizing
208 V	175 A
480 V	80 A
600 V	60 A

Maintenance performed while the PDU is receiving input power

APC does not recommend that you perform maintenance of the PDU while it is receiving input power. However, due to the critical nature of data center loads, this may occur. If you must perform maintenance while the PDU is receiving input power, observe the following precautions to reduce the risk of electric shock:

1. Never work alone.
2. Perform the maintenance only if you are a certified electrician who is trained in the hazards of live electrical installation.
3. Know the procedure for disconnecting electricity to the PDU and the data center in case of an emergency.
4. Wear appropriate personal protective equipment.
5. Use double-insulated tools.
6. Always follow local and site regulations when working on the PDU.

Total power off procedure

1. Set the Symmetra PX UPS **System Enable** switch to **Standby**.
2. Set the Symmetra PX UPS **DC Disconnect** switch to **Off**.
3. Set the PDU with System Bypass **Main Input** breaker (or switch) to **Off**.
4. Set the **DC Disconnect** breaker of each XR Battery Enclosure to **Off**.
5. Set the **utility** circuit breaker to **Off**.
6. Disconnect the batteries in the UPS by pulling them out approximately one inch (25.4 mm) from their normal position.
7. Disconnect the batteries in the XR Battery Enclosure by pulling them out approximately one inch (25.4 mm) from their normal position.

DANGER—Risk of Electric Shock!

Hazardous, live parts inside the Symmetra PX UPS are energized from the battery supply even when the AC power is disconnected.

Hazardous, live parts may exist inside the PDU with System Bypass because of the Symmetra PX UPS inverter even when the AC power is disconnected. Test any electrical parts before touching them.

Emergency Power Off (EPO)

Hazardous voltage from the branch circuit must be isolated from the 24VAC, 24VDC, and contact closure. 24VAC and 24VDC are considered Class 2 circuits as defined in Article 725 of the National Electrical Code (NFPA 70) and Section 16 of the Canadian Electrical Code (C22.1).

A Class 2 circuit is a source having limited voltage and energy capacity as follows:

- a. If an Inherently Limited Power Source, voltage and energy are limited to less than 30VAC, less than 30VDC, and 8A.
- b. If not an Inherently Limited Power Source, voltage and energy are limited to less than 30VAC, less than 60VDC, 250VA, and the current is limited to 1000/V max. The fuse is limited to 5A if less than 20VAC or 20VDC, or 100/V maximum if less than 30VAC or 60VDC.

If you choose to use a 24VAC, 24VDC, or contact closure connection to the EPO, use one of the following UL-listed wire types:

- CL2 Class 2 cable for general purpose use
- CL2P Plenum cable for use in ducts, plenums, and other space used for environmental air
- CL2R Riser cable for use in a vertical run shaft from floor to floor
- CL2X Limited Use cable for use in dwellings and for use in a raceway
- For installation in Canada, the cable should be CSA Certified, type ELC (extra-low-voltage control cable).

If you do not use a CL2 cable, route the EPO wiring in conduit that does not contain any branch circuit wiring.

EMI

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 this user manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference. The user will bear sole responsibility for correcting such interference.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

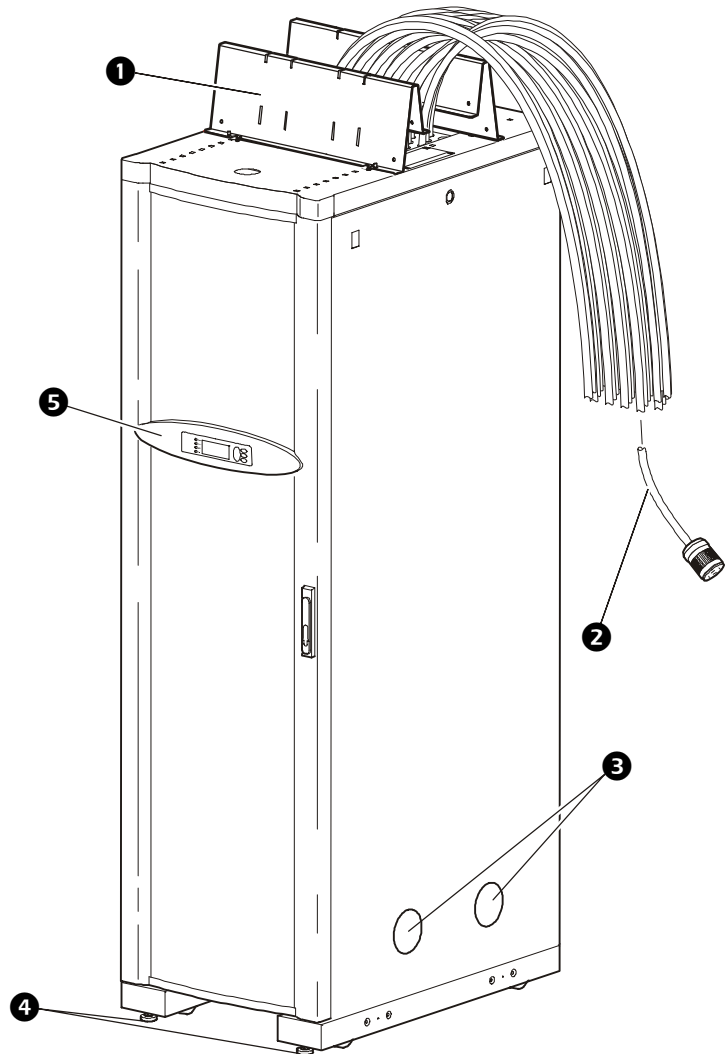
Overview

PDU with System Bypass Components

Front view

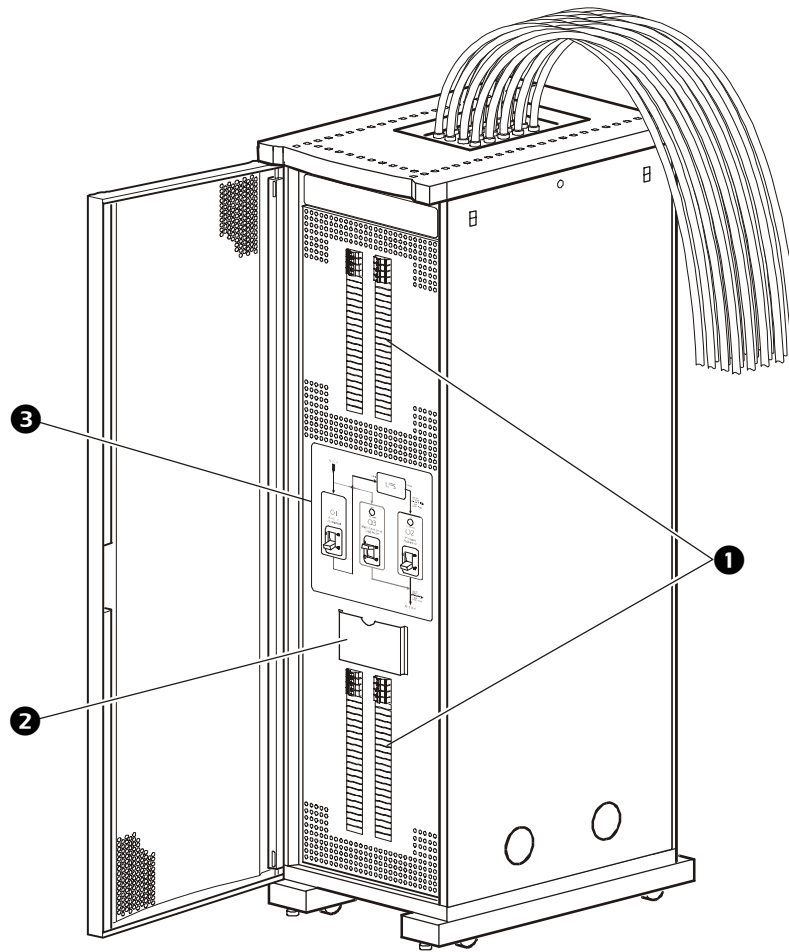
- ❶ The **PDU Shielding Trough** accommodates the power cables exiting the roof of the PDU, and it separates power cables from data cables.
- ❷ The **PDU power cables** supply power to equipment racks; they are fed through knockouts on the top of the PDU. There are the following two options for PDU power cables:
 - Multi-circuit power cable that terminates with an L21-20 outlet (shown)
 - Single-circuit power cable that terminates with an L6-30 outlet

The number of power cables installed in the PDU depends on your system configuration. Each power cable accepts a variety of APC InfraStruXure rack-mount power distribution accessories.



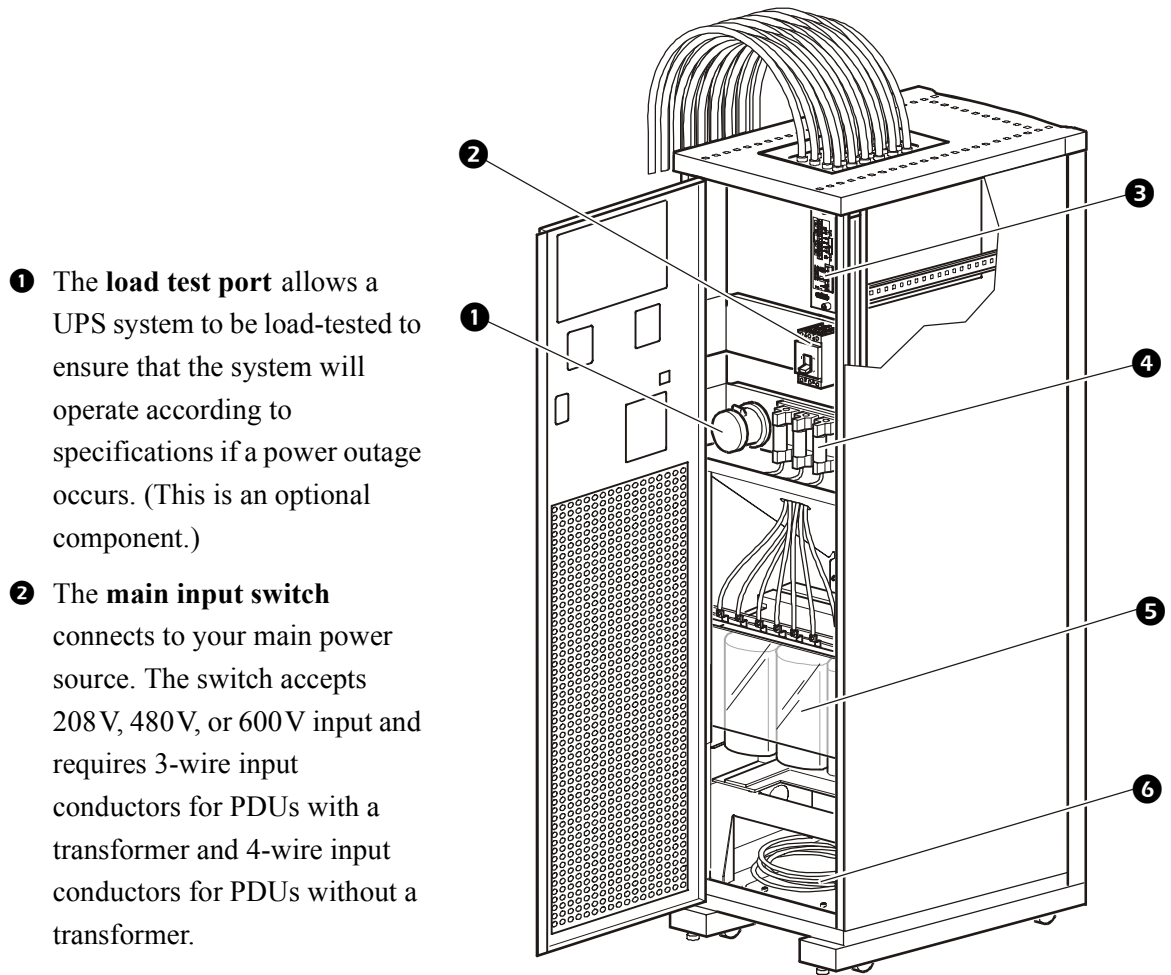
- ❸ **Cable access holes** allow access for Symmetra PX UPS input and output wiring. During installation, the APC Field Service Engineer exchanges side panels between the PDU and the UPS so that the adjacent sides of the two units have panels with cable access holes.
- ❹ **Leveling feet** adjust to level the enclosure. All enclosures must be level before installation of the system begins.
- ❺ The **display interface** provides a local interface for viewing status data. It has an LCD, five-button interface, basic status lights, and a beeper.

Front view (interior)



- ❶ The **42-position circuit breaker panels** provide 84 total pole positions. Each single pole provides power at 120 volts L-N or two single poles provide 208 volts L-L. The amperage each position provides depends on the size of the circuit breaker used.
- ❷ The **document pocket** provides storage of documents relating to the circuit breaker panels, such as the PDU Panel Board Schedules (provided).
- ❸ The **wraparound maintenance bypass panel** holds three circuit breakers that allow the UPS to be electrically isolated from the main power source, while maintaining the power panels. The input circuit breaker is labeled Q1, the output circuit breaker is labeled Q2, and the maintenance bypass circuit breaker is labeled Q3. The label on the maintenance bypass panel of the PDU illustrates the power flow, and the H2 and H3 LEDs indicate when it is safe to operate the Q2 and Q3 circuit breakers.

Rear view (interior)



- ❶ The **load test port** allows a UPS system to be load-tested to ensure that the system will operate according to specifications if a power outage occurs. (This is an optional component.)
- ❷ The **main input switch** connects to your main power source. The switch accepts 208 V, 480 V, or 600 V input and requires 3-wire input conductors for PDUs with a transformer and 4-wire input conductors for PDUs without a transformer.
- ❸ The **PDU monitoring unit** has several current and voltage monitoring boards that report to a central board assembly located in the PDU monitoring unit. The PDU monitoring unit has one 10BaseT (CAT-5) connection to the Information Controller hub (or switch), four contact closure connections for user-definable contacts, and a choice of three different connections (contact closure, 24VAC, 24VDC) for an EPO switch.
- ❹ These **fuses** protect the silicon-controlled rectifiers in the UPS bypass static switch. The fuses are present only on PDUs without a transformer.
- ❺ The delta-wye **input transformer** is based on your input voltage (208 V, 480 V, or 600 V input). The output of the transformer feeds the input circuit breaker of the maintenance bypass panel. (APC also offers a 208 V PDU without a transformer.)
- ❻ The **UPS input and output cables** connect the PDU to the UPS and are shipped coiled on the floor of the PDU. The input cables consist of 5 wires: 3 phases, 1 neutral, and one ground. The output cable consist of 4 wires: 3 phases and 1 neutral. Each wire is labeled and corresponds to a terminal on the Symmetra PX UPS. During installation, the Field Service Engineer will connect the PDU to the UPS.

PDU monitoring unit

- ❶ The **User contacts** are four contact closure connections (NO or NC) for monitoring dry contacts.
- ❷ **EPO state LEDs** indicate the state of the EPO switch.
 - green=armed
 - red=tripped
 - unlit=test mode (not tripped)

The two LEDs are on independent circuits and should work in tandem.

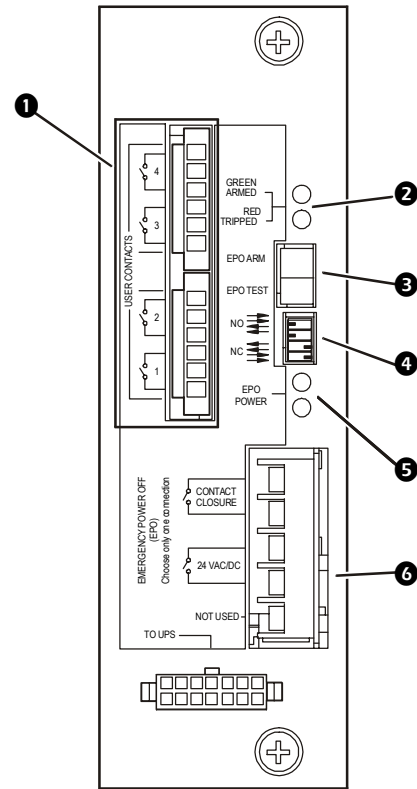
- ❸ The **EPO Arm/Test switch** determines the operation of the EPO switch. When this switch is in the Test position, engaging the EPO switch will not cause the load to be powered off. When the switch is in the Armed position, engaging the EPO switch will cause the PDU's main input switch to be switched OFF, and the UPS will be powered off.
- ❹ **EPO DIP switches** determine what type of EPO switch is connected (NO or NC).

- ❺ **EPO power LEDs** indicate that the circuits controlling the EPO are powered.
- ❻ The **EPO connections** connect a remote switch (not included) to the PDU. You can have a contact closure or a 24VAC or a 24VDC connection.



Note

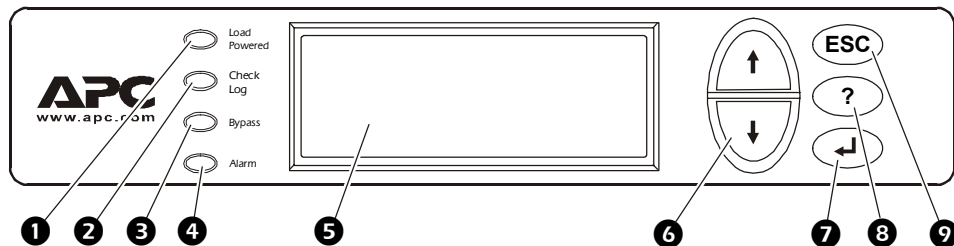
The 10BaseT (CAT-5) connector for the Information Controller hub (or switch) is on the back of the PDU monitoring unit chassis. There is a communication cable prewired to this connector. Use the communication cable to connect to the hub.



PDU Display Interface

Overview

You can use the display interface to configure settings, set alarm thresholds, and provide audible and visual alarms.



❶	Load Powered LED	When green, all output phases are within the limits specified by the output alarm limit thresholds.
❷	Check Log LED	When yellow, at least one new alarm condition has been detected.
❸	Bypass LED	When yellow, power to the load is being supplied directly by the utility power source—the UPS has been removed from the circuit for maintenance or replacement. Bypass breakers on the PDU function as input circuit breakers to protect the load equipment.
❹	Alarm LED	When red, an alarm condition exists.
❺	LCD	View alarms, status data, instructional help, and configuration items.
❻	Up and Down navigation keys	Selects menu items and accesses information.
❼	ENTER key	Opens menu items and input changes to system parameters.
❽	HELP key	Launches context-sensitive help. Press the HELP key for information about each item on the screen and for instructions on how to perform certain tasks (i.e. placing the UPS into Maintenance Bypass operation.)
❾	ESC key	Returns to previous screen displayed.

Top-level status screens

After displaying a brief start-up screen after system start-up, the display interface scrolls automatically and continuously through four screens of basic status information. Press the Up and Down arrow keys to interrupt the automatic scrolling to view a specific status screen.

Volts In L1-2: 000 L2-3: 000 L3-1: 000	Volts Out L1: 000 L2: 000 L3: 000	Load Current L1: 000 L2: 000 L3: 000 Neut:000
Total Output Loading kW: 000 kVA: 000 Freq: 00.0	PF: 000 %LD: 000	No Active Alarms System Date/Time: Jun-24 2003 07:58

Top-level menu screen

On any top-level status screen, press the ENTER key to open the top-level menu screen.

→ Load-Meter	Alarms
Volt-Meter	Panel
Contacts	Config
Breakers	Help



Note

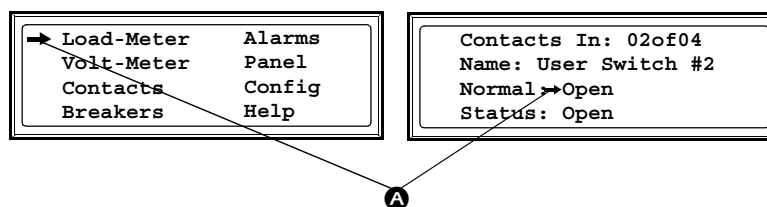
If the display interface is inactive for the time specified as the **Time-out** setting, the interface reverts to the initial basic monitoring screens.



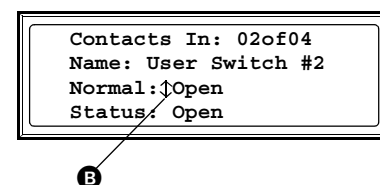
For descriptions of the top-level menu choices, see the individual sections starting on page 12.

Navigating through screens

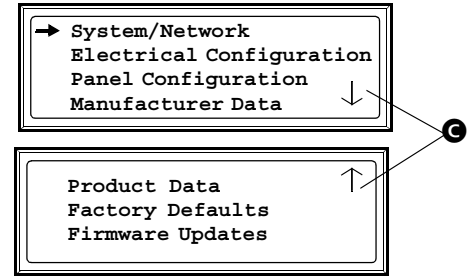
To open any screen, press the Up and Down arrow keys until the selector arrow (A) rests next to your desired selection. Press the ENTER key to view the selected screen.



When configuring settings, press the Up and Down arrow keys until the selector arrow (A) rests next to the setting you want to change, and press the ENTER key. If the setting is a list of choices, an input arrow (B) will appear next to the setting. Press the Up and Down arrow keys until your desired change is listed. Press the ENTER key to select the setting.



On some screens, continue arrows (↻) indicate that there are additional screens to view in the category. Press the Up or Down arrow key to view the additional screens.



Password-protected screens

When configuring or changing settings, you will be prompted for your password. To enter your password:

1. Press the Up or Down arrow key until the correct letter is displayed, and then press the ENTER key.



Note

After you press the ENTER key, the character you entered is displayed as an asterisk and the input arrow moves to the next space for you to select the next password character.

2. Press the ENTER key twice after you enter your password.



See “System Password” on page 22 to change your password.

Load-Meter Screen

From the **Load-Meter** screen, you can select the following items:

Total Load by Phase The load supported by each phase in kVA, in RMS current (**I_{rms}**), and as a percentage of the maximum allowable load (**%LD**).

Total Load Summary For the total load supported:

- **kW**: The power provided, in kilowatts
- **kVA**: The actual power drawn by the load, in kilovolt-amperes
- **Freq**: The frequency
- **PF**: The power factor, which affects the power available to the load
- **%LD**: The load as a percentage of the maximum allowable load

Power Factor For each phase:

- **kVA**: The actual power drawn by the load, in kilovolt-amperes (kVA)
- **kW**: The power, in kilowatts provided by the phase
- **PF**: The power factor (kW/kVA), which affects the power available to the load

Volt-Meter Screen

From the **Volt-Meter** screen, you can select the following items:

- Output Voltage** Displays each phase-to-phase output voltage (e.g., **L1-2** for phase L1 to phase L2) and each phase-to-neutral output voltage (e.g., **L1** for phase L1 to neutral).
- Input Voltage** Displays each phase-to-phase input voltage (e.g., **L1-2** for phase L1 to L2), or, if your service transformer is a Wye transformer, each phase-to-neutral input voltage (e.g., **L1** for phase L1 to neutral).

Contacts Screen

Use the **Contacts** screen to display and configure information on the contact inputs (dry contacts).

Contact In	Scroll through the list to display information about each of the installed contact inputs. For example, 02of04 displays information about the second of four installed contact inputs.
Name	The name of this contact input. <i>Maximum:</i> 14 alphanumeric characters
Normal	The normal position of this contact input, either Open or Closed .
Status	The position of this contact input. If the condition is not the normal position, an alarm condition occurs.

How to connect contacts to the PDU monitoring unit. To connect and monitor your contacts:

1. Choose the contact number(s) on the PDU monitoring unit that you will connect to.
2. From the PDU display interface:
 - a. Press the ESC or ENTER key to go to the top-level menu screen.
 - b. Select **Contacts** on the top-level menu screen and press the ENTER key.
 - c. Press the ENTER key to select the number of the contact you are connecting. The continue arrow ⇕ will appear next to the contact number.
 - d. Press the Up or Down arrow key to select the appropriate contact number and press the ENTER key.
 - e. Press the Down arrow key to enter a unique **Name** for the contact and to configure the **Normal** state of the contact (Open or Closed). The default **Normal** state is Open. Press the ENTER key to select the item you wish to configure.



Note

You will be prompted for your password to configure these items.

3. Connect contact wires (300 V-rated cabling required) to the **User Contacts** terminal block on the PDU monitoring unit. You will need a 2.5-mm standard screwdriver.
4. Run the wires from the terminal block out the roof or under the floor of the PDU to your contact's location.



Warning

Ensure that wires are properly retained and away from high voltage lines and breakers.

Breakers Screen

Use the **Breakers** screen to view the status of the system and PDU circuit breakers.

UPS & System Bypass	Reports the operation mode of the UPS and the state of the Q1, Q2, and Q3 circuit breakers on the PDU.
Main Input	Reports status of PDU Main Input Switch (Open or Closed). Under normal operation, this switch is Closed .

Alarms Screen

View Active Alarms

Use this option of the **Alarms** screen to display active alarms (alarms that have not been resolved). Scroll through the list to view each active alarm.

Alarm/Event Log

Use this selection of the **Alarms** screen to access the following options:

- | | |
|----------------------------|--|
| New Logged Items | Display a description and the date and time of each alarm that occurred since the last time this option was used. The date/time format is <i>mm/dd/yyyy hh:mm:ss</i> . <ul style="list-style-type: none">• The most recent alarm is displayed initially.• If the log contains no alarms, the screen displays Alarm Log Empty. |
| Entire Log | Display a description and the date and time of each alarm in the alarm log. The date/time format is <i>mmm-dd yyyy hh:mm:ss</i> . <ul style="list-style-type: none">• The most recent alarm is displayed initially. To move to the previous alarm press the Down arrow key. To move to the next more recent alarm, press the Up arrow key.• If the log contains no alarms, the screen displays Alarm Log Empty. |
| All Possible Alarms | Display a description of each alarm that can occur. To move through the list, press the Up or Down arrow key. |
| Clear Log | Delete the contents of the alarm log. |

Alarm Setup

Use this option of the **Alarms** screen to access the following options:

- | | |
|----------------------------|--|
| Loading Limits | <p>Configure the following in amps and as a percentage of full load:</p> <ul style="list-style-type: none"> • Out High: The upper limit for output current • Out Low: The lower limit for output current • Out Neut: The upper limit for current on the neutral wire for the output phases |
| Voltage Limits | <p>Configure the following as a percentage under or over the rated voltage:</p> <ul style="list-style-type: none"> • Input: The allowed range for input voltage • Output: The allowed range for output voltage |
| Other Limits | <p>Configure these limits:</p> <p style="padding-left: 40px;">Frequency: The frequency variation, in hertz, that is acceptable for the output current.</p> |
| Global Alarm Config | <p>Set all the loading limits or all the voltage limits simultaneously as a percentage of full load:</p> <ul style="list-style-type: none"> • Load Limits: Set the same percentage for the upper limit for output current, the lower limit for output current, and the upper limit for current on the neutral wire for the output phases. (Use the Loading Limits option to set these thresholds individually). • Volt Limits: Set the same percentage for the high and low thresholds for input and output voltage. (Use the Voltage Limits option to set these thresholds individually). <p>Select Apply Now and then YES to implement your changes.</p> |

Alarm Beeper

Use this option of the **Alarms** screen to access the following two options:

- | | |
|------------------------|--|
| Activate Beeper | <p>Turn on the beeper if it has been previously deactivated by the Silence All Alarms option.</p> |
| Silence Alarms | <p>Configure one of the following options:</p> <ul style="list-style-type: none"> • Silence All Alarms: Turn off the audible alarm for present and future alarms. • Silence Active Alarms: Turn off the audible alarm for the present alarm condition only. If the condition recurs, the alarm sounds again. |

PDU Alarms

This table lists all alarms that can be generated by the PDU with System Bypass, as displayed by the **All Possible Alarms** option, with numeric variables between the < > characters. Logged alarms will display specific numbers instead.

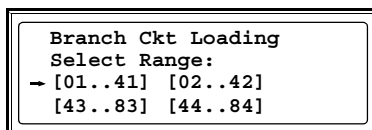
Alarm Condition	Explanation
Input V <Ln-N>=<Value> Voltage Under Limit	Input voltage of the phase indicated has dropped below the configured lower limit.
Input V <Ln-N>=<Value> Voltage Over Limit	Input voltage of the phase indicated exceeded the configured upper limit.
Output V <Ln-N>=<Value> Voltage Under Limit	Phase-to-neutral output voltage for phase <L-N> dropped below the configured limit.
Output V <Ln-N>=<Value> Voltage Over Limit	Phase-to-neutral output voltage for phase <L-N> exceeded the configured limit.
Output I L<n>=<Value> Current Over Limit	Current of output phase <N> exceeded the configured limit.
Output I L<n>=<Value> Current Under Limit	Current of output phase<N> dropped below the configured limit.
Output Neut=<Value> Current Over Limit	Current on the neutral wire for the output phases exceeded the configured limit.
Output FDev=<Value> Freq Out of Range	Frequency of the output current is above or below the range that is configured as acceptable.
Input Transformer Temperature Too High, <i>if applicable</i>	The temperature of the PDU transformer exceeded the normal limit.
Main Breaker Open Alarm Active	The Main input switch is Off.
<User Contact Name> Alarm Active	A user-configured contact connected to the PDU monitoring unit is reporting an alarm condition.
No UPS Input Breaker Q1 Open	The Q1 circuit breaker is open, and the PDU is not receiving power from the UPS.
No Panel Feed Breakers Q2&Q3 Open	The Q2 & Q3 circuit breakers are open, and the PDU is not supporting connected equipment.
Atypical Bypass Mode Alarm Active	The system state as set by the Q1, Q2, & Q3 breakers is in a bypass mode.
Branch Ckt Pos: <nn> Current Over Limit	Current on one of the poles of branch circuit breaker <i>nn</i> exceeded the configured limit.
Branch Ckt Pos: <nn> Current Under Limit	Current on one of the poles of branch circuit breaker <i>nn</i> dropped below the configured limit.
Fan Rotation Failure Alarm Active, <i>if applicable</i>	There is a failure in one of the fans. The fan needs to be replaced.

Panel Screen

Branch Ckt Loading

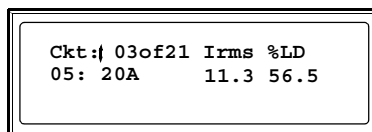
You can display **Branch Ckt Loading** (Branch Circuit Loading) status if the option to measure current at the distribution circuit breakers is installed.

You can view data for each individual panel position on the distribution panel. To view status of a panel position, select the range that includes the position:



The top line of selections on the screen applies to the top distribution circuit breaker panel on the PDU. The bottom line of selections applies to the bottom distribution circuit breaker panel on the PDU. The panel position numbers on the screen correspond to the numbers on the distribution panel. (Odd numbers are on the left; even numbers are on the right.)

Once you have selected the correct range, press the Up and Down arrow keys to scroll through the list of circuit breakers in the selected range. Poles that are tied together will be shown on the same screen.



In the example above, the screen shows the third circuit breaker of 21 circuit breakers in the selected range. This is a single-pole circuit breaker, occupying panel position 05. The circuit breaker is rated at 20 amps. The following data are displayed for each pole:

- **I rms**: Measured root mean square (RMS) current of the pole position.
- **%LD**: Present load as a percentage of rated load of the panel position.

Branch Ckt Limits

Available only if the option to measure individual currents is installed, **Branch Ckt Limits** (Branch Circuit Limits) accesses a scrollable list of the circuit breakers in the panel. For each circuit breaker, the screen displays, in the **Loading** column, the current on each panel position as a percentage of the rated current. In the **Load Alarm** column, you can configure the high and low thresholds for the circuit breaker as a percentage of its rated current. For example, if you set 80% as the high threshold for a single-pole 20-amp circuit breaker, an alarm condition occurs if the current reaches 16 amps.

Panel Configuration

Configure the branch metering settings for each circuit breaker on the distribution panel, or configure both panels simultaneously.

To configure a circuit breaker, select the range that includes the circuit breaker. The top line of selections on the screen apply to the top distribution circuit breaker panel on the PDU. The bottom line of selections apply to the bottom distribution circuit breaker panel on the PDU. The panel position numbers on the screen correspond to the numbers on the distribution panel. (Odd numbers are on the left; even numbers are on the right.) Once you have selected the correct range, configure the settings for each circuit breaker in the range:

Panel Configuration	
Select Range:	
→ [01..41]	[02..42]

Pos: The panel positions in the selected range.

Breaker: Two configurable items:

- The circuit breaker rating, in amps
- The circuit breaker tie indicator: Define the number of panel positions tied (i.e., associated). You can associate positions with circuit breakers, which enables you to view status about each circuit breaker and receive alarm notification when any of a circuit breaker's poles are above or below the configured branch circuit limit. You can also tie together panel positions that are logically associated. For example, you can tie together panel positions for three separate circuit breakers that are connected to the same PDU power cord and that feed power to the same equipment enclosure.

To configure the values on this screen:

1. From the first column, use the arrow keys to scroll up or down to the pole position you want to configure.
2. Press the ENTER key to move to the item you want to configure in the third column (the circuit breaker rating or the circuit breaker tie indicator).
3. Scroll again to select the value you want for the circuit breaker rating or the circuit breaker tie indicator. To associate one panel position with the next position in the list, choose the + character as the tie indicator immediately following the circuit breaker rating. To indicate that the position is not associated with (tied to) the next panel position in the list, choose the] character as the tie indicator immediately following the circuit breaker rating. When you change the + or] character that follows the circuit breaker rating in one row, the + or [character before the circuit breaker rating in the next row also changes to indicate the changed association between the panel positions.

For example, this screen shows three, single-pole, 20A, tied circuit breakers occupying positions 08, 10, and 12 on the top right distribution panel.

Pos	Breaker
→ 08	[20A +
10	+ 20A +
12	+ 20A]

Global Panel Config

Configures the same number of poles or circuit breaker ratings for all circuit breakers in both distribution panels simultaneously. For example, if your system uses only 3-pole, 20 amp circuit breakers, choose this option, scroll to the value 3 for **Poles** and 020 for **Amp Rating**, and then select **Apply Now** and **YES** to implement your changes.

Config Screen

System/Network

Use this option of the **Config** screen to access these options:

System Password

- **Password:** Change the system password required to access protected screens and fields in the display interface. Enter a string of up to eight alphanumeric characters, followed by the underline character () to indicate the end of the string. The default password is APC.
- **Time-out:** Set the time that the display interface waits for user input before it reverts to the initial scrolling of status screens. Select 1, 2, 5, 10 (the default), or 30 minutes; or 1, 2, or 4 hours, or Forever.
- **Invalidate NOW:** Re-enter the system password for viewing password-protected screens.

Date/Time

- **Date:** Set in the following format: *dd-mmm yyyy*.
- **Time:** Set in the following format: *hh:mm:ss*.

Local Interface

- **Contrast:** Set the screen contrast for the LCD. Select from 1 (high contrast) to 8 (low contrast).
- **Key Click:** Choose **On** for an audible click whenever you press a navigation key. Choose **Off** to disable the key click.
- **Beeper:** Select **High**, **Medium**, **Low**, or **Off** to adjust the loudness of the audible beeper and the key click.

Network Address

The following values are set by the Information Controller during initial configuration:

- **IP:** The System IP address, which the domain name server translates into a domain name.
- **Mask:** The subnet mask, which identifies the subnetwork on which the PDU with System Bypass operates.
- **MAC:** The Media Access Control address. This is the physical address of the PDU with System Bypass, expressed as a 48-bit hexadecimal number.

Electrical Config

This option of the **Config** screen displays information about the electrical service that provides input to the PDU with System Bypass. All of the values displayed on this screen are set at the factory. Use this information when viewing and setting alarms.

Input Config

Configure the following items:

- **Main Input:** The voltage from the building's electrical service coming into the PDU main input switch.
 - 3W: 3-phase Delta, measured line-to-line
 - 4W: 3-phase WYE, measured line-to-neutral
- **Transformer:** Indicates whether the PDU with System Bypass has a transformer.
- **Bypass Input:** Indicates whether the PDU has a bypass input switch (B).
- **Fuse:** Indicates whether the PDU has fuses protecting the SCRs in the UPS. The fuses are present only on single-fed PDUs without a transformer.

Output Config

Configure the following items:

- **Panel Voltage:** The nominal voltage of the distribution panels supplying power to the load equipment. (This is measured line-to-neutral.)
- **Panel Breaker:** The rating, in amps, of the circuit breaker feeding the distribution panels.

Other Config Items

Configure the following items:

- **Load Test Port:** Indicates whether the PDU has a load test port installed.
- **Max Power:** Maximum power of your PDU with System Bypass (40 or 80 kW).

Manufacturer Data

Use this option of the **Config** screen to display a scrollable list containing information about the PDU with System Bypass. This information is useful when requesting service or product updates. The following information is displayed:

- Manufacturer Name
- Date of Manufacture
- Date of Calibration
- Hardware Revision
- Firmware Revision (for PDU Monitoring and Metering)
- Serial Number
- Model Number

Product Data

Use this option of the **Config** screen to identify your PDU with System Bypass. The following fields can be configured:

Device Name	Set a unique name for your PDU with System Bypass.
Product Location	Name the physical location of the product in your data center.
Product Contact	Identify the person to notify concerning questions or problems with regard to the product.

Factory Defaults

Use this option of the **Config** screen to reset all PDU with System Bypass settings to their factory default values.

Firmware Updates

Use this option of the **Config** screen to download updated firmware to the PDU with System Bypass.

Operation

InfraStruXure System

How to transfer the UPS into maintenance bypass operation



Note

Select **Help** from the top-level menu screen of the PDU display interface and select the first help topic, **Putting the PDU into Maintenance Bypass**, or follow the procedure below.

When servicing the System, transfer the System into maintenance bypass operation. When the System is operating in maintenance bypass, input power flows directly to the PDU and out to the load equipment.

1. Command the UPS into static bypass operation through the UPS display interface:

- a. Press the ESC key at the top-level status screen to open the top-level menu.
- b. Select **Control** on the top-level menu, and press the ENTER key.

Top-Level Menu

→ Control	Logging
Status	Display
Setup	Diags
Accessories	Help

- c. Select **UPS Into Bypass** on the **Control** menu and, press the ENTER key.

Control Menu

→ UPS Into Bypass
Do Self Test
Simulate Power Fail
Graceful Reboot

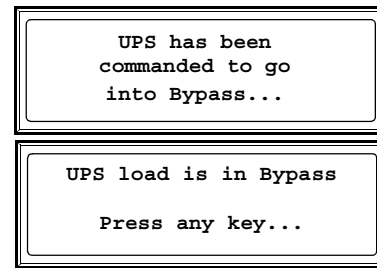
Graceful Turn Off
Start Runtime Cal
Turn Load On

- d. Confirm the selection on the next screen: select **Yes, UPS into Bypass** and press the ENTER key.

Confirmation Screen

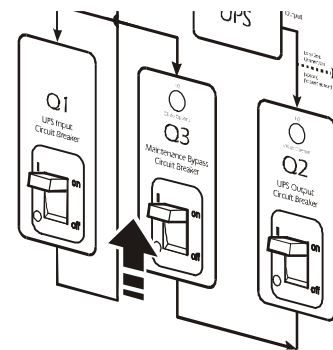
Confirm
→ Yes, UPS into Bypass
No, Abort

The UPS BYPASS LED illuminates and the following screens appear:



The **H3** LED above the **Q3** breaker illuminates, indicating that it is safe to operate the **Q3** breaker.

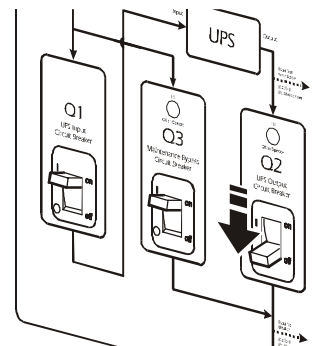
2. Close (turn ON) the **Q3** breaker on the PDU.



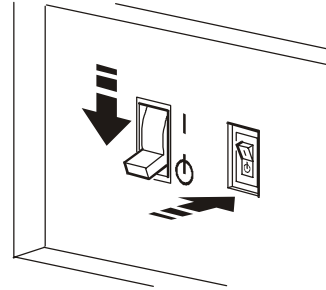
The **H2** LED above the **Q2** breaker illuminates, indicating that it is safe to operate the **Q2** breaker.

3. Open (turn OFF) the **Q2** breaker on the PDU.

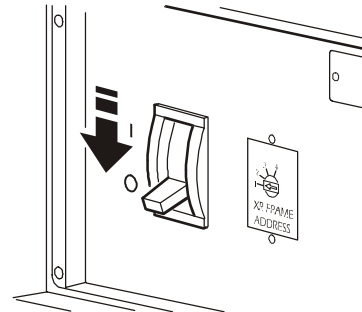
The UPS will show a **Forced Bypass** message on the display interface, and the Fault LED will be red.



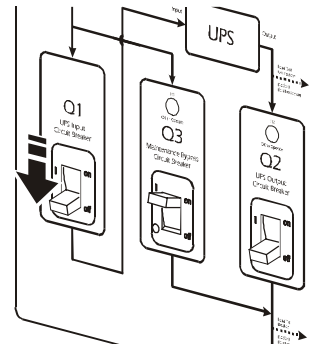
4. Set the UPS **System Enable** switch to OFF and then, set the UPS **DC Disconnect** breaker to OFF.



5. If applicable, set the XR Battery Enclosure **DC Disconnect** breaker to OFF.



6. Open (turn OFF) the **Q1** breaker on the PDU.



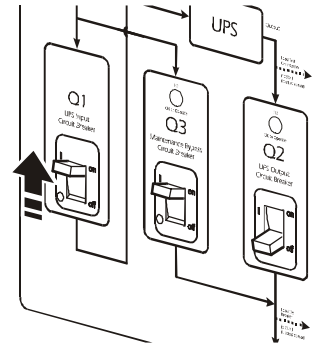
The UPS is now in maintenance bypass operation.

How to return from maintenance bypass operation

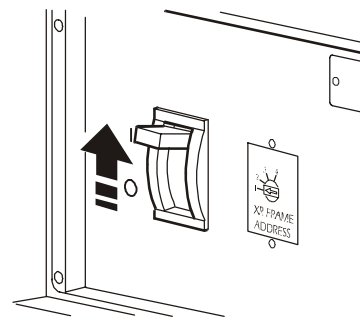


Select **Help** from the top-level menu screen on the PDU display interface and select the second help topic, **Returning from PDU Maintenance Bypass**, or follow the procedure below:

1. Close (turn ON) the **Q1** breaker on the PDU.

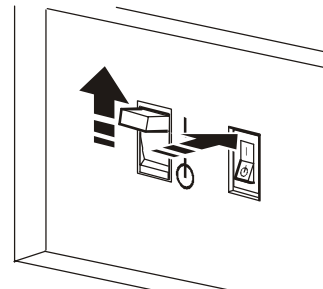


2. If applicable, set the XR Battery Enclosure **DC Disconnect** breaker to ON.



3. Set the UPS **DC Disconnect** breaker to ON and then, set the UPS **System Enable** switch to ON.

The UPS will show a **Forced Bypass** message on the display interface, and the Fault LED will be red.



4. Command the UPS to apply power to the load:

- a. Press the ESC key at the top-level status screen to open the top-level menu and have access to eight submenus.

Top-Level Menu

→ Control	Logging
Status	Display
Setup	Diags
Accessories	Help

- b. Select **Control**, and press the ENTER key.

Control Menu

UPS Into Bypass
Do Self Test
Simulate Power Fail
Graceful Reboot

- c. Select **Turn Load On** from the **Control** menu, and press the ENTER key.

Graceful Turn Off
Start Runtime Cal
→ Turn Load On

- d. On the next screen: select **Yes, UPS Load ON**, and press the ENTER key.

Confirmation Screen

Confirm
→ Yes, UPS Load ON
No, Abort

The LOAD ON LED illuminates and the interface displays the following two screens:

UPS has been commanded to turn load power on...

UPS load is on Press any key...
--

5. Command the UPS into static bypass operation through the UPS display interface:

- a. Press the ESC key at the top-level status screen to open the top-level menu.

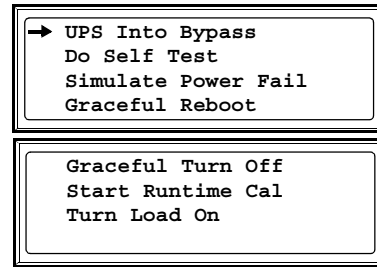
Top-Level Menu

→ Control	Logging
Status	Display
Setup	Diags
Accessories	Help

- b. Select **Control** on the top-level menu, and press the ENTER key.

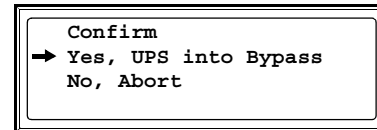
- c. Select **UPS Into Bypass** on the **Control** menu, and press the ENTER key.

Control Menu



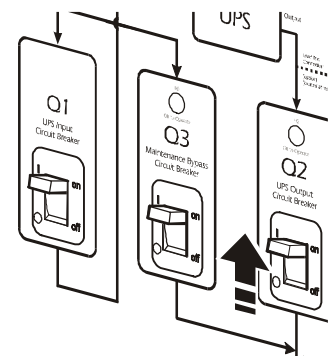
- d. Confirm the selection on the next screen: select **Yes**, **UPS into Bypass**, and press the ENTER key.

Confirmation Screen



The **H2** LED above the **Q2** breaker illuminates, indicating that it is safe to operate the **Q2** breaker.

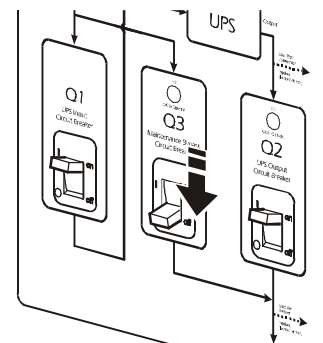
6. Close (turn ON) the **Q2** breaker on the PDU.



The **H3** LED above the **Q3** breaker illuminates, indicating that it is safe to operate the **Q3** breaker.

7. Open (turn OFF) the **Q3** breaker on the PDU.

The UPS automatically comes out of Static Bypass operation.



How to ensure total power off

1. Command the UPS to turn off power to the load:

- a. Press the ESC key at the top-level status screen to open the top-level menu and have access to eight submenus.
- b. Select **Control**, and press the ENTER key.

Top-Level Menu

→ Control	Logging
Status	Display
Setup	Diags
Accessories	Help

Control Menu

UPS Into Bypass
Do Self Test
Simulate Power Fail
Graceful Reboot

Graceful Turn Off
Start Runtime Cal
→ Turn Load Off

- c. Select **Turn Load Off** from the **Control** menu, and press the ENTER key.

Confirmation Screen

Confirm
→ Yes, UPS Load OFF
No, Abort

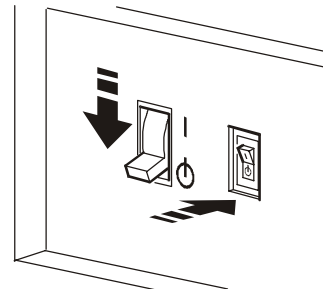
- d. On the next screen: select **Yes, UPS Load OFF**, and press the ENTER key.

The LOAD ON LED turns off and the interface displays the following two screens:

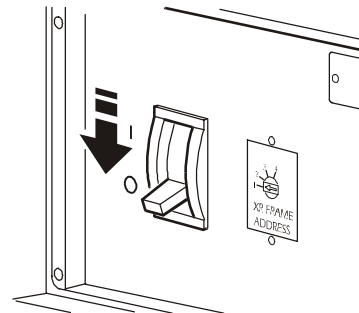
UPS has been commanded to turn load power off...
--

UPS load is off
Press any key...

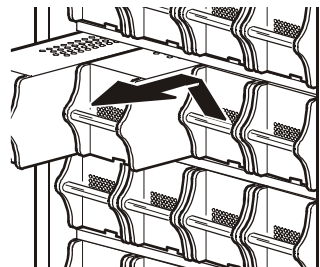
2. Set the UPS **DC Disconnect** breaker and **System Enable** switch to OFF.



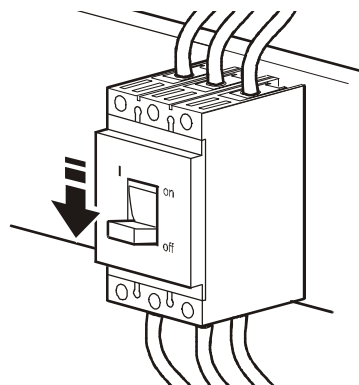
3. If applicable, set the XR Battery Enclosure **DC Disconnect** breaker to OFF.



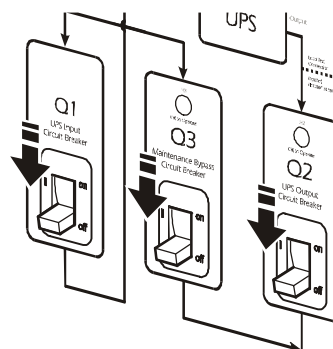
4. Pull out all battery units in the UPS and XR Battery Enclosures to the red battery disconnect line.



5. Set the PDU **Main Input** switch to OFF.



6. Open (turn OFF) the **Q1**, **Q2**, and **Q3** breakers on the PDU.



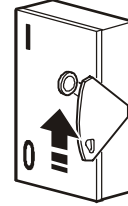
7. Set the upstream input utility circuit breaker to the OFF or Locked Out position.



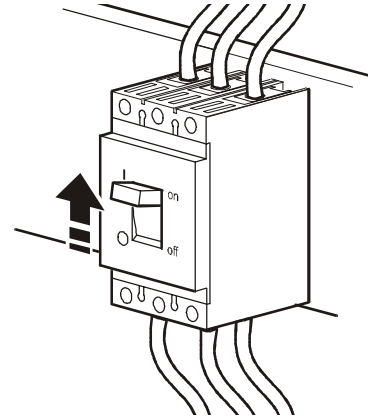
How to apply power to the system

This procedure instructs on how to apply power to a system that has already been installed. For initial start-up instructions, see the Start-up section of this manual.

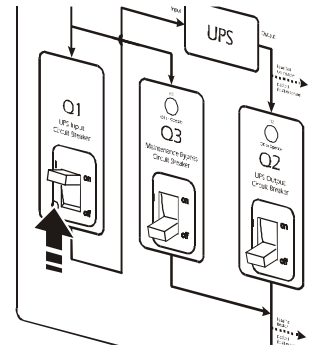
1. Set the upstream utility circuit breaker to ON.



2. Set the **Main Input** switch on the PDU to ON.

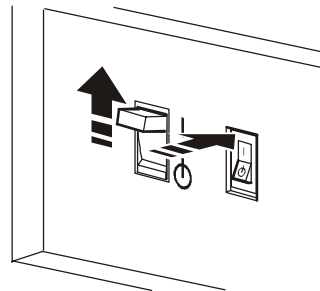


3. Close (turn ON) the **Q1** breaker on the PDU to apply power to the UPS.

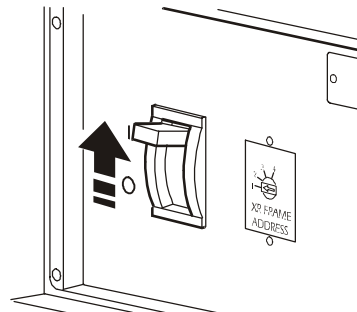


4. Ensure that all battery units are pushed all the way into the Symmetra PX UPS and XR Battery Enclosures and locked into position.

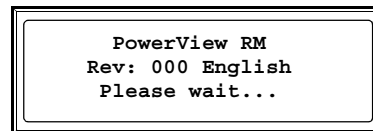
5. Set the UPS **DC Disconnect** breaker to ON and then, set the UPS **System Enable** switch to ON.



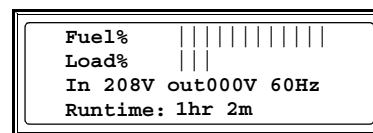
6. If applicable, set the XR Battery Enclosure **DC Disconnect** breaker to ON.



When the **System Enable** switch is placed in the ON position, the Startup screen appears on the display interface of the Symmetra PX UPS.



The top-level status screen appears on the display interface. This may take up to 30 seconds.



7. Read the messages displayed on the UPS display interface:

- a. Note any alarms, and verify that they are appropriate for start-up conditions.
- b. Verify that the UPS accepts the input.

Top-Level Status Screen

```

Fuel%      |||||
Load%      |||
In 208V out000V 60Hz
Runtime: 1hr 2m
  
```

8. Command the UPS to apply power to the load:

- a. Press the ESC key at the top-level status screen to open the top-level menu and have access to eight submenus.
- b. Select **Control**, and press the ENTER key.

Top-Level Menu

```

→ Control      Logging
Status         Display
Setup          Diags
Accessories    Help
  
```

- c. Select **Turn Load On** from the **Control** menu, and press the ENTER key.

Control Menu

```

UPS Into Bypass
Do Self Test
Simulate Power Fail
Graceful Reboot
  
```

```

Graceful Turn Off
Start Runtime Cal
→ Turn Load On
  
```

- d. On the next screen: select **Yes, UPS Load ON**, and press the ENTER key.

Confirmation Screen

```

Confirm
→ Yes, UPS Load ON
No, Abort
  
```

The LOAD ON LED illuminates, and the interface displays the following two screens:

```

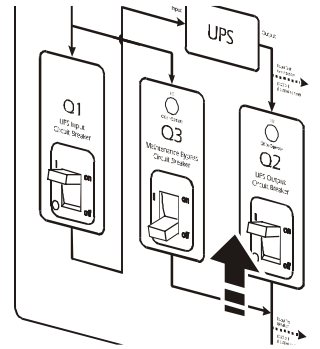
UPS has been
commanded to turn
load power on...
  
```

```

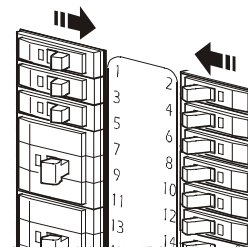
UPS load is on

Press any key...
  
```

- 9 . To apply power to the PDU distribution panel, close (turn ON) the **Q2** breaker on the PDU.



10. To apply power to the PDU power cables and connected equipment, close (turn ON) the distribution panel breakers.



Maintenance

Important Safety Instructions



APC does not recommend that you perform maintenance of the PDU while it is receiving input power. However, due to the critical nature of data center loads, this may occur. If you must perform maintenance while the PDU is receiving input power, observe the following precautions to reduce the risk of electric shock:

1. Never work alone.
2. Perform the maintenance only if you are a certified electrician who is trained in the hazards of live electrical installation.
3. Know the procedure for disconnecting electricity to the PDU and the data center in case of an emergency.
4. Wear appropriate personal protective equipment.
5. Use double-insulated tools.
6. Always follow local and site regulations when working on the PDU.

PDU Orderable Part List

Breakers

PD1P20ABBSD 20-amp, single-pole breaker

PD3P20ABBSD 20-amp, three-pole breaker

Power Cables

PDW5L21-20R 5-foot power cable

PDW7L21-20R 7-foot power cable

PDW9L21-20R 9-foot power cable

PDW11L21-20R 11-foot power cable

PDW13L21-20R 13-foot power cable

PDW15L21-20R 15-foot power cable

PDW17L21-20R 17-foot power cable

PDW19L21-20R 19-foot power cable

PDW21L21-20R 21-foot power cable

PDW23L21-20R 23-foot power cable

PDW25L21-20R 25-foot power cable

PDW27L21-20R 27-foot power cable

PDW29L21-20R 29-foot power cable

PDW31L21-20R 31-foot power cable

PDW33L21-20R 33-foot power cable

PDW35L21-20R 35-foot power cable

PDW37L21-20R 37-foot power cable

PDW39L21-20R 39-foot power cable

PDW41L21-20R 41-foot power cable

PDW43L21-20R 43-foot power cable

PDW45L21-20R 45-foot power cable

PDW47L21-20R 47-foot power cable

PDW49L21-20R 49-foot power cable

PDW51L21-20R 51-foot power cable

PDW53L21-20R 53-foot power cable

PDW55L21-20R 55-foot power cable

PDW57L21-20R 57-foot power cable

PDW59L21-20R 59-foot power cable

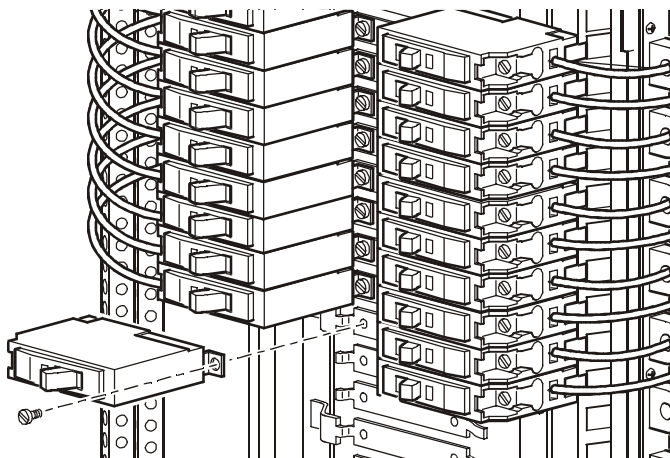
PDW61L21-20R 61-foot power cable

PDW63L21-20R 63-foot power cable

How to Add Breakers and Power Cables

Add a breaker on the PDU

1. Snap and bolt the new breaker into a position on the panel.

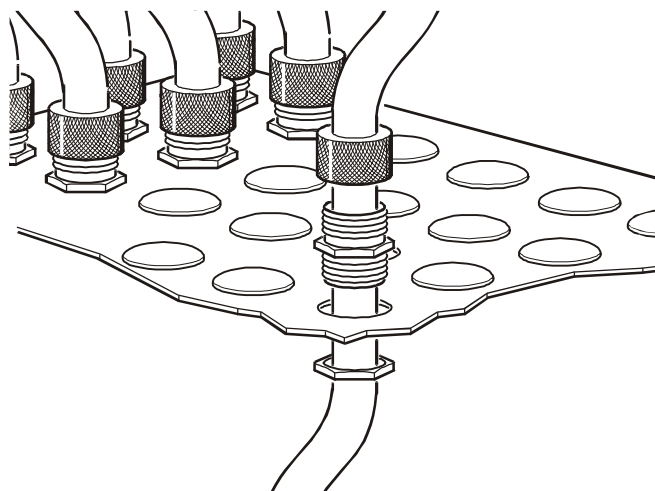


2. Remove the corresponding plastic blanking plate on the front panel of the PDU.

Add a power cable to the PDU

Before adding a power cable, add a breaker.

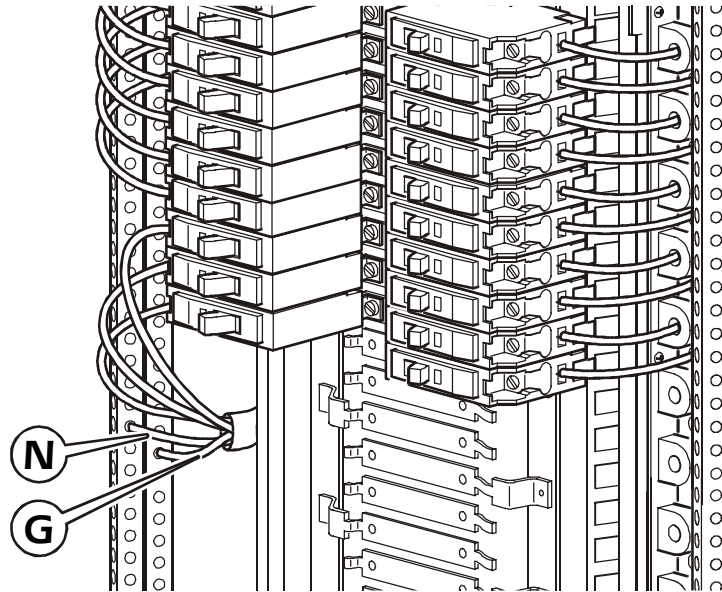
1. Install a strain-relief connector in any available knockout on the roof of the PDU.
2. Slide enough of the power cable through the strain-relief connector to reach the new circuit breaker.
3. Tighten the strain-relief connector.



Note

If you are adding a power cable that will attach to a breaker on the bottom circuit breaker panel, use a non-conductive fish tape to feed the power cable down the rectangular wireway (chute) in the center of the PDU. This will allow you to easily access the bottom circuit breaker panel.

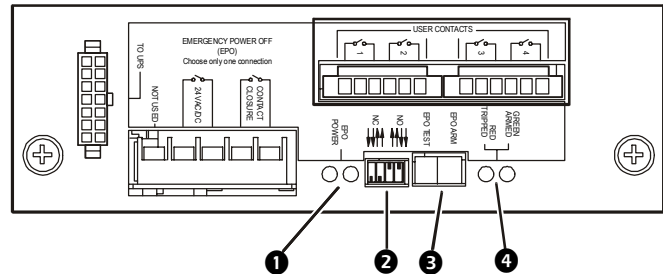
4. At the front of the PDU, connect the power cord's individual wires:
 - a. If you have branch current monitoring installed, route the phase conductor through a current sensor. If it is a three-phase cable, route the L1, L2, and L3 wires through a current sensor.
 - b. Connect the L1, L2, and L3 wires to the circuit breaker(s). The illustration below shows single pole breakers; however, you can also connect three-pole breakers.
 - c. Connect the neutral wire to the closest open termination point on the Neutral Bar.
 - d. Connect the ground wire to the closest open termination point on the Ground Bar.



How to Test the EPO Switch

After you have connected an EPO switch to the PDU monitoring unit (either on the unit or on the remote user connection plate), you can easily test the switch to make sure it is wired and working properly. The illustration below shows the front panel of the PDU monitoring unit.

- ❶ **EPO power LEDs** indicate that the circuits controlling the EPO are powered.
- ❷ **EPO DIP switches** determine what type of switch is connected (NO or NC).

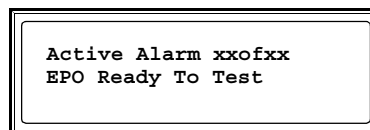


- ❸ The **EPO Arm/Test switch** determines the operation of the EPO switch. When this switch is in the Test position, engaging the EPO switch will not cause the load to be powered off. When the switch is in the Armed position, engaging the EPO switch will cause the PDU's main input breaker and bypass input breaker (if equipped) to be tripped open and the UPS will be powered off.
- ❹ **EPO state LEDs** indicate the state of the EPO switch.
 - green=armed
 - red=tripped
 - unlit=test mode (not tripped)

The two LEDs are on independent circuits and should work in tandem.

To test your EPO wiring and switches:

1. Place the Arm/Test switch in the **Test** position. The EPO state LEDs will be off and the PDU display interface will show the following alarm (in addition to any other active alarms):



2. Engage the EPO switch. (If your switch is momentary, engage it with one person watching the EPO state LEDs, and another at the EPO switch.)
3. Observe the EPO LEDs. If the switch is wired and working properly, when the switch is engaged, both of the EPO state LEDs are red.

4. If the test was successful, place the Arm/Test switch back to the **Arm** position. The PDU display interface will clear the EPO test mode alarm. If the test was not successful, see the troubleshooting chart below:

Problem	Action
Neither state LED was red when EPO switch was engaged	<ul style="list-style-type: none">• Check the wiring to your EPO switch.• Check to make sure the EPO DIP switch configuration is correct for your switch (NO or NC).
Only one of the state LEDs was red when EPO switch was engaged	<ul style="list-style-type: none">• Check to make sure the EPO DIP switch configuration is correct for your switch (NO or NC) and test again.• If the switch is configured correctly and both LEDs are not red after testing again, contact customer support at a number on the back cover of this manual.

Repeat this test for each EPO switch installed.

Specifications

40kW PDU with System Bypass

Electrical	208 V input	480 V input	600 V input
Service Distribution Breaker (provided by customer)†	175 A	80 A	60 A
Conductors to Main Input Switch (provided by customer)	Transformer: 3W + G + GEC No Transformer: 4W + G	3W + G + GEC	3W + G + GEC
Recommended wire sizing†			
L1, L2, L3, N	3/0 AWG	6 AWG	6 AWG
G	6 AWG	8 AWG	8 AWG
GEC	4 AWG	8 AWG	8 AWG
Nominal Input Voltage AC	208 V	408 V	600 V
Nominal Output Voltage AC	208:120 V WYE	208:120 V WYE	208:120 V WYE
Frequency	57–63 Hz	57–63 Hz	57–63 Hz
Full Load Output Rating	40 kW	40 kW	40 kW
Maximum Continuous Input Current (at minimum mains)	155 A	67 A	54 A
Maximum Continuous Output Current + 125% Overload (Bypass Mode only)	139 A	139 A	139 A
Nominal Output Current	111 A	111 A	111 A
Nominal Input Current	125 A	54 A	43 A
Internal Static Switch Fuses	175 A	175 A	175 A
External Output Breaker	150 A	150 A	150 A
Grounding—input	PE node (from AC feed or floor grid)		
Grounding—output	Separately derived neutral/ground bond		
Cooling method	Natural convection		

† The specifications are recommendations. Consult the NEC and local codes for requirements specific to your installation.

Transformer (if installed)	208 V	480 V	600 V
Type	Isolation	Step-Down	Step-Down
Configuration	Delta to WYE		
Maximum power rating	60kVA		
Maximum current rating	166 A	72 A	58 A
Construction	Cu windings, open core		
Temperature rating	220° C (Class H)		
Maximum temperature rise	150° C		
Efficiency	97–98 %		
Over-current protection			
Main input breaker	200 A	100 A	80 A
UPS input breaker	200 A		
Maintenance breaker	150 A		
UPS output breaker	150 A		
Distribution breakers (1-phase & 3-phase)	20 A / 10kAIC (bolt-on)		
Fusing	175 A / 600 V (J Class); if applicable		
PDU output current limit	Determined by UPS		
Wiring			
UPS to PDU wiring	3W + G (1/0 AWG)		
PDU to distribution panels	4W + G (1/0 AWG)		
Distribution panels (whips) to racks/power strips	4W + G (12 AWG)		
Power cable connections	L21-20 connector system		
Power cable lengths	Various		
Power cable wiring—top	Accommodates 28, 3-phase power cables (42 knock-outs)		
Power cable wiring—bottom	Accommodates 28, 3-phase power cables (48 knock-outs)		

Panel Boards

Panel style	3-phase
Number of panels (per PDU)	2 maximum
Positions per panel	42
3-phase breakers per panel	14 maximum
1-phase breakers per panel	42 maximum
Panel rating	240 V / 225 A (per phase)
Breaker pitch	3/4 in
Accessibility	Through front of unit

System Monitoring

Current	Distribution branch monitoring (optional)
Voltage	<ul style="list-style-type: none"> • AC Main input • UPS input • Output at distribution panels • Output of fuses (if installed)
Transformer temperature sensor	180° C
Bypass	<ul style="list-style-type: none"> • Bypass breaker positions • Bypass lamp cue / feedback
Switch Status	Main input switch position

Branch Current Monitoring

Branch Monitor Parameters	Maximum current (RMS): 95 A Maximum current (peak): 135 A Maximum crest factor: 3 Minimum current: 0.5 A Measurement accuracy: +/- 0.5 A or 5% of reading (which ever is greater) Maximum wire size: 0.350 in (8.89 mm) maximum diameter
InfraStruXure System Parameters	Branch circuit range: 20–60 A Maximum scan (refresh) time: 3 seconds Display resolution: 0.1 A

Physical

PDU dimensions (W × D × H)	23.5 × 35.5 × 81.5 in (597 × 902 × 2070 mm)
Shielding Trough dimensions (W × D × H)	22.8 × 12.7 × 7.5 in (579 × 323 × 191 mm)
Weight—with transformer	1500lbs (680kg)
Shipping weight—with transformer	1550lbs (704kg)
Heat Output—with transformer	208V: 4645BTU 480V: 4617BTU 600V: 3425BTU
Service access	Front and rear
Service clearance	Greater than or equal to 36in (914mm)

Operating

Environment	Indoor use only; protected from water and conductive contaminates
Storage Elevation (for aircraft transportation)	10 000 m
Relative Humidity (for operating and storage)	95% non-condensing
Storage Temperature	–15to 45°C (5 to113°F)
Operating Temperature	0 to 40°C (32 to104°F)
Acoustic Noise Emission	Maximum 50dB(A) at 1 m

Compliance

Agency Approvals	UL, cUL
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Product Information

Warranty

InfraStruXure™ Standard Warranty

The InfraStruXure™ system ships with a 2-year standard warranty. If you purchase all components in the InfraStruXure™ system, APC offers an additional free[†] 1-year warranty. Under this warranty, APC will ship all parts to your site at no cost to be available to you the next business day after APC is notified of the requirement. If you choose to upgrade the system to include an on-site contract, APC offers modular service packages to match your needs.

[†] All warranties are null and void unless installation and startup are performed by authorized APC Global Services service centers.

Life-Support Policy

APC Three-Phase Systems

American Power Conversion Corporation (APC) and its affiliates and subsidiaries worldwide 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 customer assumes all risks and signs the *APC System Configuration and Use Form*, and
- c. The customer and operators of the APC UPS system agree to indemnify 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 life-support devices include, but are not limited to, neonatal oxygen analyzers, nerve stimulators (whether used for anaesthesia, pain relief, or other purposes), auto-transfusion 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.

How to Obtain Service



Note

If you ordered on-site service, see your entitlement certificate and terms and conditions of the service before following the procedure described below. An on-site service contract entitles you to an on-site visit by an APC technician to assess the issue, determine the problem, and replace parts, if needed. (Response time varies per contract.)

Obtaining service

To obtain support for problems with your InfraStruXure System:

1. Note the serial number and date of purchase. of the component with which you are having problems.
2. Contact Customer Support at a phone number on the back cover of this document. A technician will try to help you solve the problem by phone.
3. If you must return the product, the technician will give you a return material authorization (RMA) number. If the warranty expired, you will be charged for repair or replacement.
4. Pack the unit carefully. The warranty does not cover damage sustained in transit. Enclose a letter with your name, address, RMA number and daytime phone number; a copy of the sales receipt; and a check as payment, if applicable.
5. Mark the RMA number clearly on the outside of the shipping carton.
6. Ship by insured, prepaid carrier to the address provided by the Customer Support technician.



APC Worldwide Customer Support

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

- 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)
Direct InfraStruXure Support	(1)(877)537-0607 (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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