Operation

Symmetra™ PX
Configurable PDU 100kW

208V, 480V, 600V &
208V Transformerless
## Overview

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## Display Interface

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Overview

Important Safety Information

Read the instructions carefully to become familiar with the equipment before trying to install, operate, service or maintain it. The following special 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.

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

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

⚠️ DANGER

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

⚠️ WARNING

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

⚠️ CAUTION

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

NOTICE

NOTICE addresses practices not related to physical injury including certain environmental hazards, potential damage or loss of data.
Disclaimer

The information presented in this manual is not warranted by Schneider Electric to be authoritative, error free, or complete. Schneider Electric assumes no liability for damages, violations of codes, improper installation, system failures, or any other problems that could arise based on the use of this publication.

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This publication shall not be for resale in whole or in part.

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. 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.
Additional Safety Information

Before you begin

Verify that the system is free from all short circuits and grounds, except those grounds installed according to local regulations (according to the National Electrical Code in the U.S.A., for instance). If high-potential voltage testing is necessary, follow recommendations in equipment documentation to prevent accidental equipment damage.

Before energizing equipment:

- Remove tools, meters, and debris from equipment.
- Close the equipment enclosure door.
- Remove ground from incoming power lines.
- Perform all start-up tests recommended by the manufacturer.

Operation and Adjustments

The following precautions are from the NEMA Standards Publication ICS 7.1-195 (English version prevails):

- Regardless of the care exercised in the design and manufacture of equipment or in the selection and ratings of components, there are hazards that can be encountered if such equipment is improperly operated.
- It is sometimes possible to misadjust the equipment and thus produce unsatisfactory or unsafe operation. Always use the manufacturer’s instructions as a guide for functional adjustments. Personnel who have access to these adjustments should be familiar with the equipment manufacturer’s instructions and the machinery used with the electrical equipment.
- Only those operational adjustments actually required by the operator should be accessible to the operator. Access to other controls should be restricted to prevent unauthorized changes in operating characteristics.

⚠️ WARNING

UNGUARDED MACHINERY HAZARD

- Do not use this product with equipment which does not have point-of-operation protection.
- Do not reach into equipment during operation.

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

This manual is intended for users of the specified equipment. It contains important safety warnings and instructions, gives an introduction to the equipment, and provides detailed information for proper use of the equipment.

Related Documents

Download technical publications and other technical information or look for updates to your manual at our website at www.apc.com.

Product Related Information

⚠️ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Turn off all power supplying this equipment before working on the equipment.

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

User Comments

We welcome your comments about this document.
You can reach us by www.apc.com/support
Operation

Apply Power to the System

1. Close (turn ON) the main circuit breaker for the **power source** feeding the PDU.

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

3. Power the PDU distribution circuit breakers:
   a. Close (turn ON) the **main output breaker** on the front of the PDU.

**Note:** When the main output circuit breaker is closed (turned ON), the PDU distribution panel is energized.
b. Close (turn ON) the individual PDU distribution panel circuit breakers.

**Note:** When the distribution panel circuit breakers are closed (turned ON), the PDU power cables and connected equipment are energized.

c. Close (turn ON) all sub-feed breakers (if applicable).
Ensure Total Power Off

1. Open (turn OFF) the main circuit breaker for the power source feeding the PDU.

2. Open (turn OFF) the main input breaker on the PDU.

3. Open (turn OFF) the main output breaker on the front of the PDU and all sub-feed circuit breakers (if applicable).
Display Interface

Overview

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

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Load Powered LED</td>
<td>When lit green, all output phases are within the limits specified by the output alarm limit thresholds.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Check Log LED</td>
<td>When lit yellow, at least one new alarm condition has been detected.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Bypass LED</td>
<td>When lit yellow, power to the load is being supplied directly by the utility while 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 (if applicable).</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Alarm LED</td>
<td>When lit red, an alarm condition exists.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>LCD</td>
<td>View alarms, status data, instructional help, and configuration items.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Up and Down navigation keys</td>
<td>Selects menu items and accesses information.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>ENTER key</td>
<td>Opens menu items and inputs changes to system parameters.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>HELP key</td>
<td>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).</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>ESC key</td>
<td>Returns to the previously displayed screen.</td>
<td></td>
</tr>
</tbody>
</table>
Top-level status screens
Following the title page of the Display Interface, there are four screens of basic status information. These four screens can be scrolled automatically and continuously. To view a specific status screen press the Up or Down arrow keys.

<table>
<thead>
<tr>
<th>Volts In</th>
<th>Volts Out</th>
<th>Load Current</th>
<th>Neut:000</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1-2: 000</td>
<td>L1: 000</td>
<td>L1: 000</td>
<td></td>
</tr>
<tr>
<td>L2-3: 000</td>
<td>L2: 000</td>
<td>L2: 000</td>
<td></td>
</tr>
<tr>
<td>L3-1: 000</td>
<td>L3: 000</td>
<td>L3: 000</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Output Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>kw: 000</td>
</tr>
<tr>
<td>kVA: 000</td>
</tr>
<tr>
<td>Freq: 00.0</td>
</tr>
</tbody>
</table>

No Active Alarms
System Date/Time:
Jun-24 2003 07:58

Top-level menu screen
From any top-level status screen, press ENTER to open the top-level menu screen.

<table>
<thead>
<tr>
<th>Load-Meter</th>
<th>Alarms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volt-Meter</td>
<td>Panel</td>
</tr>
<tr>
<td>Contacts</td>
<td>Config</td>
</tr>
<tr>
<td>Breakers</td>
<td>Help</td>
</tr>
</tbody>
</table>

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.

Navigating through screens
To open any screen, press the Up or Down arrow until the selector arrow (A) rests next to your desired selection. Press ENTER to view the selected screen.

When configuring settings, press the Up or Down arrow until the selector arrow (A) rests next to the setting you want to change and then press ENTER. If the setting is a list of choices, an input arrow (B) will appear next to the setting. Press the Up or Down arrow until your desired change is listed. Press ENTER to select the setting.
On some screens, continue arrows (/gpio) indicate there are additional screens to view in the category. Press the Up or Down arrow 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 until the correct letter is displayed and then press ENTER.

   **Note:** After pressing ENTER, the character you entered is displayed as an asterisk and the input arrow moves to the next space to await your selection of the next password character.

2. Press ENTER twice after you have finished entering 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 (Irms), 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 (kW/kVA), 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
- **kW**: The power, in kilowatts, provided by the phase
- **PF**: The power factor (kW/kVA), which affects the power available to the load

See “Branch Ckt Loading” on page 15.
# Voltmeter Screen

From the **Voltmeter** screen, you can select the following items:

<table>
<thead>
<tr>
<th><strong>Input Voltage</strong></th>
<th>Displays each phase-to-neutral UPS input voltage (e.g., L1 for phase L1 to neutral).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Output Voltage</strong></td>
<td>Displays each phase-to-phase UPS 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).</td>
</tr>
</tbody>
</table>
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**: Displays 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 *mm/dd/yyyy hh:mm:ss*.
  - The most recent alarm is initially displayed.
  - If the log contains no alarms, the screen displays Alarm Log Empty.

- **Entire Log**: Displays a description and the date and time of each alarm in the alarm log. The date/time format is *mm/dd/yyyy hh:mm:ss*.
  - The most recent alarm is initially displayed. To move to the previous alarm, press the Down arrow. To move to the next more recent alarm, press the Up arrow.
  - If the log contains no alarms, the screen displays Alarm Log Empty.

- **Clear Log**: Delete the contents of the alarm log. You will be asked to confirm this deletion.

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

- **Loading Limits**: Configure the following in amps and as a percentage of full load:
  - **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**: Configure the following as a percentage under or over the rated voltage:
  - **Input**: The allowed range for input voltage
  - **Output**: The allowed range for output voltage

- **Other Limits**: Configure these limits:
  - **Frequency**: The frequency variation, in hertz, that is acceptable for the output current.
  - **Gnd Current**: The ground current, in amps, that is acceptable (if applicable).
Global Alarm Config

Set all the loading limits or voltage limits simultaneously as a percentage of full load:

- **Load Limits**: Set the same percentage for the upper limit of output current, the lower limit of output current, and the upper limit of 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).

Select **Apply Now** and then **YES** to implement your changes.

**Alarm Beeper**

Use this option of the **Alarms** screen to turn the alarm beeper ON or OFF.

**PDU Alarms**

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

<table>
<thead>
<tr>
<th>Alarm Condition</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input V &lt;Ln-N&gt; = &lt;Value&gt;</td>
<td>UPS Input voltage of the indicated phase has dropped below the configured lower limit.</td>
</tr>
<tr>
<td>Voltage Under Limit</td>
<td></td>
</tr>
<tr>
<td>Input V &lt;Ln-N&gt; = &lt;Value&gt;</td>
<td>UPS Input voltage of the indicated phase exceeded the configured upper limit.</td>
</tr>
<tr>
<td>Voltage Over Limit</td>
<td></td>
</tr>
<tr>
<td>Output V &lt;Ln-N&gt; = &lt;Value&gt;</td>
<td>Phase-to-neutral output voltage for phase &lt;L-N&gt; dropped below the configured limit.</td>
</tr>
<tr>
<td>Voltage Under Limit</td>
<td></td>
</tr>
<tr>
<td>Output V &lt;Ln-N&gt; = &lt;Value&gt;</td>
<td>Phase-to-neutral output voltage for phase &lt;L-N&gt; exceeded the configured limit.</td>
</tr>
<tr>
<td>Voltage Over Limit</td>
<td></td>
</tr>
<tr>
<td>Output I L&lt;n&gt; = &lt;Value&gt;</td>
<td>Current of output phase &lt;n&gt; exceeded the configured limit.</td>
</tr>
<tr>
<td>Current Over Limit</td>
<td></td>
</tr>
<tr>
<td>Output I L&lt;n&gt; = &lt;Value&gt;</td>
<td>Current of output phase &lt;n&gt; dropped below the configured limit.</td>
</tr>
<tr>
<td>Current Under Limit</td>
<td></td>
</tr>
<tr>
<td>Output Neut = &lt;Value&gt;</td>
<td>Current on the neutral wire for the output phases exceeded the configured limit.</td>
</tr>
<tr>
<td>Current Over Limit</td>
<td></td>
</tr>
<tr>
<td>Output FDev = &lt;Value&gt;</td>
<td>Frequency of the output current is above or below the range that was configured as acceptable.</td>
</tr>
<tr>
<td>Freq Out of Range</td>
<td></td>
</tr>
</tbody>
</table>
Panel Screen

Branch Ckt Loading

**Note:** Max 60Amp breaker allowed on distribution panel.

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 individual pole positions on the distribution panel. To view the status of a pole position, select the range that includes the position:

```
Branch Ckt Loading
Select Range:
→ [01..41] [02..42]
```

The panel position numbers on the screen correspond to the numbers on the distribution panel (odd numbers on the left, even numbers on the right). After selecting the correct range, press the Up or Down arrow to scroll through the list of circuit breakers within the selected range. Poles that are tied together will be shown on the same screen.

```
Ckt: 03 of 21 Irms %LD
05: 20A 11.3 56.5
```

In the example above, the screen shows the third 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:

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

**Branch Ckt Limits**

This is 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.

**Sub-feed Monitoring**

By default, Sub-feed monitoring is enabled from the factory. Contact APC to make changes to this feature.

**Note:** When Sub-feed monitoring is enabled, branch circuit monitoring will not be available on panelboard positions 37, 39 and 41.

**Note:** Contact APC Technical Support to schedule a service call.
Panel Configuration

You can configure the branch metering settings for each circuit breaker on a distribution panel. To configure a circuit breaker, select the range that includes the circuit breaker. The top line of selections applies to the top distribution circuit breaker panel on the PDU. The numbers correspond to the pole positions (odd numbers on the left, even numbers on the right).

After selecting the correct range, configure the settings for each circuit breaker within the range.

**Pos:** The pole positions in the selected range.

**Breaker:** There are two configurable breaker items:

- The circuit breaker rating, in amps.
- The circuit breaker tie indicator. This defines the number of tied (or associated) pole positions. You can associate positions with circuit breakers, which enables you to view the status of 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 pole 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 cable and that feed power to the same equipment enclosure.

To configure the values on this screen:

1. From the first column, use the arrows to scroll up or down to the pole position you want to configure.
2. Press ENTER 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 pole position with the next position in the list, choose the + character immediately following the circuit breaker rating. To indicate that the position is not tied to (associated with) the next pole position in the list, choose the ] character 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 pole positions.

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

Global Panel Configuration

Configures the same number of poles or circuit breaker ratings for all circuit breakers simultaneously. For example, if your system uses only 3-pole, 60-amp circuit breakers, choose this option, scroll to the value 3 for **Poles** and 60 A 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/mm/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 StruxureWare Central 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 sub-network on which the InfraStruXure PDU operates.

- **GW**: The gateway address. This is the physical address of the InfraStruxure PDU, expressed as a 48-bit hexadecimal number.
Electrical Config

This option of the Config screen displays information about UPS Input voltage, the presence of a transformer, panel breaker and output voltage. All of the values displayed on this screen are set at the factory. Use this information when viewing and setting alarms.

**Input Config**
View the following items:

- **Main Input**: UPS Input voltage.
  - 4W: 3-phase Wye, measured line-to-neutral
- **Transformer**: Indicates whether the PDU has a transformer.

**Output Config**
View the following items:

- **Panel Voltage**: The nominal voltage of the distribution panel 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 panel.

Manufacturer Data

Use this option of the Config screen to display a scrollable list containing information about the PDU. 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

System ID

System ID can also be configured via the Network Interface. Use this option of the Config screen to identify your PDU. The following fields can be configured:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Device Name</strong></td>
<td>Set a unique name for your PDU.</td>
</tr>
<tr>
<td><strong>Product Location</strong></td>
<td>Provide the physical location of the PDU in your data center.</td>
</tr>
<tr>
<td><strong>Product Contact</strong></td>
<td>Identify the person to notify concerning questions or problems with regard to the PDU.</td>
</tr>
</tbody>
</table>

Factory Defaults

Use this option of the Config screen to reset PDU settings to their factory default values.
Communications Configuration

PDU Management Options

Overview
Manage the PDU and any other equipment through the StruxureWare Central® (APC LAN), or through the APC network management interfaces (User LAN).

StruxureWare Central
The StruxureWare Central is a rack-mount management device that provides a single interface to coordinate the management functions of APC InfraStruxure-certified devices. See “Configuring the StruxureWare Central” on page 20 for configuration instructions.

\textbf{Note}: For more information about the StruxureWare Central, see the \textit{Installation and Configuration} manual included with the StruxureWare Central.

Network management interfaces
Use the control console and Web interfaces to manage the PDU. See “Configuring the Network Management Interface” on page 21 for configuration instructions.

\textbf{Note}: For more information about the internal user interfaces, see the \textit{Network Management User’s Guide}.

Use the SNMP interface with the PowerNet® Management Information Base (MIB) to manage the PDU. See “Configuring the Network Management Interface” on page 21 for configuration instructions.

\textbf{Note}: To use the PowerNet MIB with an SNMP browser, see the \textit{PowerNet® SNMP Management Information Base (MIB) Reference Guide}, which is provided on the PDU Utility CD and can also be found at www.apc.com
Configuring StruxureWare Central

Connect the PDU to StruxureWare Central

1. Connect a CAT-5 network cable to the ethernet port on the user connection plate.

2. Once all equipment has been installed, connect all network cables to the StruxureWare Central Hub. When system start-up is complete, configure StruxureWare Central.

Note: Refer to StruxureWare Central On-line Help (990-9457). Available at www.apc.com

Note: For detailed configuration instructions, see the Installation and Quick-Start manual included with StruxureWare Central.
Configure the Network Management Interface

Connect the PDU to your network

1. Connect a CAT-5 network cable to the ethernet port on the user connection plate.
2. Configure the TCP/IP settings of the PDU.

Configuration overview

Configure the following TCP/IP settings to allow the PDU to operate on a network:

- IP address of the PDU
- Sub-net mask
- Default gateway

Note: If a default gateway is unavailable, use the IP address of a computer located on the same sub-net as the PDU and that is usually running. The PDU uses the default gateway to test the network when traffic is very light.

See “Watchdog Features” in the “Introduction” of the PDU’s on-line Network Management User’s Guide for more information about the watchdog role of the default gateway.

Note: Refer to the manual InfraStruXure Power Distribution Units (990-0819A).

TCP/IP configuration methods

Use one of the following methods to define the TCP/IP settings needed by the PDU:

- Device IP Configuration Wizard (See “Device IP Configuration Wizard” on this page.)
- BOOTP or DHCP server (See “BOOTP & DHCP configuration” on page 22.)
- Local computer (See “Display Interface Configuration Method” on page 24.)
- Networked computer (See “Remote access to the control console” on page 25.)

Device IP Configuration Wizard

You can use the Device IP Configuration Wizard on a Windows 2000, or Windows XP computer to discover unconfigured PDUs and configure their basic TCP/IP settings.

Note: Refer to the Network Management Card Installation and Quick-Start Guide for AP9617, AP9618, AP9619. (990-7142D-001).
To configure one or more PDUs by exporting configuration settings from a configured PDU, see “How to Export Configuration Settings” in the online Network Management User’s Guide on the Utility CD.

1. Insert the Utility CD into a computer on your network.

2. Launch the Wizard, when prompted, or, if prompted to restart the computer, access the Wizard from the Start menu after the computer has restarted.

3. Wait for the Wizard to discover the first unconfigured PDU, then follow the on-screen instructions.

Note: If you leave the Start a Web browser when finished option enabled, you can use apc for both the User Name and Password to access the PDU through your browser.

BOOTP & DHCP configuration

The Boot Mode Setting, a TCP/IP option in the PDU’s Network menu, identifies how the TCP/IP settings will be defined. The possible settings are Manual, DHCP only, BOOTP only, and DHCP & BOOTP (the default setting).

Note: The DHCP & BOOTP setting assumes that a properly configured DHCP or BOOTP server is available to provide TCP/IP settings to PDU. If these servers are unavailable, see “Device IP Configuration Wizard” on page 21, “Display Interface Configuration Method” on page 24, or “Remote access to the control console” on page 25 to configure the needed TCP/IP settings.

With Boot Mode set to DHCP & BOOTP, the PDU attempts to discover a properly configured server. It first searches for a BOOTP server, then a DHCP server, and repeats this pattern until it discovers a BOOTP or DHCP server.

Note: For more information, see “BOOTP” on this page or “DHCP” on page 23.
**BOOTP.** You can use an RFC951-compliant BOOTP server to configure the TCP/IP settings for the PDU.

**Note:** The BOOTP setting assumes that a properly configured BOOTP server is available to provide TCP/IP settings to APC PDUs. If a BOOTP server is unavailable, see “Device IP Configuration Wizard” on page 21, “Display Interface Configuration Method” on page 24, or “Remote access to the control console” on page 25 to configure the TCP/IP settings.

1. Make sure that the **BOOTP** setting, a **TCP/IP** option in the PDU’s **Network** menu, is enabled.
2. Enter the InfraStruXure PDU’s MAC and IP addresses, the subnet mask and default gateway settings, and an optional Bootup file name in the BOOTPTAB file of the BOOTP server.

For the MAC address, look on the Quality Assurance slip included with the PDU.

3. When the PDU reboots, the BOOTP server provides it with the TCP/IP settings.
   - If you specified a bootup file name, the PDU attempts to transfer that file from the BOOTP server using TFTP or FTP. The PDU assumes all settings specified in the bootup file.
   - If you did not specify a bootup file name, the PDU can be configured remotely by using Telnet or by using the Web interface: **User Name** and **Password** are both **apc**, by default.

   To create the bootup file, see your BOOTP server documentation.

**DHCP.** You can use a RFC2131/RFC2132-compliant DHCP server to configure the TCP/IP settings for the PDU.

This section briefly summarizes the PDU communication with a DHCP server. For more detail about how a DHCP server is used to configure the network settings for a PDU, see “DHCP Configuration” in the **PDU’s online Network Management User’s Guide**.

1. An PDU sends out a DHCP request that uses the following to identify itself:
   - A Vendor Class Identifier (APC by default)
   - A Client Identifier (by default, the PDU’s MAC address value)
   - A User Class Identifier (by default, the identification of the PDU’s application firmware)
2. A properly configured DHCP server responds with a DHCP offer that includes all of the settings that the PDU needs for network communication. The DHCP offer also includes the Vendor Specific Information option (DHCP option 43). By default, the PDU will ignore DHCP offers that do not encapsulate the APC cookie in the Vendor Specific Information option using the following hexadecimal format:

Option 43 = 01 04 31 41 50 43

where:

– the first byte (01) is the code
– the second byte (04) is the length
– the remaining bytes (31 41 50 43) are the APC cookies

See your DHCP server documentation to add code to the Vendor Specific Information option.

To change the control console’s DHCP Cookie Is setting, use the Advanced option in the TCP/IP menu. See “Remote access to the control console” on page 25.

**Display Interface Configuration Method**

Use the Display Interface to obtain the IP address of the 0M-5103 Intelligence Module.

After powering-on the 0M-5103 Intelligence Module, press the ESC button to get to the MENU screen as shown at the right. Using the UP/DOWN arrow keys, select ADMIN and press ENTER.

Using the UP/DOWN arrow keys, select NETWORK SETUP and press ENTER.

Using the UP/DOWN arrow keys, select MODE and press ENTER.

Using the UP/DOWN arrow keys, select the communications method to be used and press ENTER.

Display shows IP Address. IP Addresses displayed by the Display Interface have ‘leading zeroes’ which are not used in IP addresses. Press UP/DOWN arrow keys to raise or lower numbers. Press ENTER to change position.
Remote access to the control console

From any computer on the same subnet as the PDU, you can use ARP and Ping to assign an IP address to a PDU, and then use Telnet to access that PDU’s control console and configure the needed TCP/IP settings.

Note: After a PDU has its IP address configured, you can use Telnet, without first using ARP and Ping, to access that PDU.

1. Use ARP to define an IP address for the PDU, and use the PDU’s MAC address in the ARP command. In this example, to define an IP address of: 156.205.14.141 for a PDU with a MAC address of: 00 c0 b7 63 9f 67, use one of the following commands:
   – Windows command format:
     arp -s 156.205.14.141 00-c0-b7-63-9f-67
   – LINUX command format:
     arp -s 156.205.14.141 00:c0:b7:63:9f:67

   For the MAC address, look on the Quality Assurance slip included with the PDU.

2. Use Ping with a size of 113 bytes to assign the IP address defined by the ARP command. For the IP address defined in step 1, use one of the following Ping commands:
   – Windows command format:
     ping 156.205.14.141 -l 113
   – LINUX command format:
     ping 156.205.14.141 -s 113

3. Use Telnet to access the PDU at its newly assigned IP address. For example:
   telnet 156.205.14.141

4. Use apc for both User Name and Password.

5. See “Control console” on page 26 to finish the configuration.
Control console

After you log on at the control console, as described in “Remote access to the control console” on page 25:

1. Choose Network from the Control Console menu.
2. Choose TCP/IP from the Network menu.
3. If you are not using a BOOTP or DHCP server to configure the TCP/IP settings, select the Boot Mode menu. Select Manual boot mode, and then press ESC to return to the TCP/IP menu. (Changes will take effect when you log out.)
4. Set the System IP, Subnet Mask, and Default Gateway address values.
5. Press CTRL-C to exit to the Control Console menu.
6. Log out (option 4 in the Control Console menu).
Access a Network Management Interface

On a Configured PDU

Note: Disregard the procedures in this section if using the StruxureWare Central in your system. See instead the Installation and Quick-Start manual included with the StruxureWare Central for information on recovering from a lost password.

Note: Refer to the manual InfraStruXure Power Distribution Units (990-0819A).

Overview
After the Network Management Card is running on your network, you can use the interfaces summarized here: Web interface, Telnet and SSH, SNMP, FTP and SCP, and, for an AP9618 Network Management Card, a built-in analog modem.

Web interface
Use Microsoft Internet Explorer (IE) 5.5 or higher (on Windows operating systems only), Firefox, version 1.x, by Mozilla Corporation (on all operating systems) to access the Web interface of the Management Card. Other commonly available browsers may work but have not been fully tested by APC.

You can use either of the following protocols when you use the Web interface:
• The HTTP protocol (enabled by default), which provides authentication by user name and password but no encryption.
• The HTTPS protocol, which provides extra security through Secure Socket Layer (SSL), encrypts user names, passwords, and data being transmitted, and authenticates Network Management Cards by means of digital certificates.

To access the Web interface and configure the security of your device on the network:
1. Address the Network Management Card by its IP address (or its DNS name, if a DNS name is configured).
2. Enter the user name and password (by default, apc and apc for an Administrator).
3. To enable or disable the HTTP or HTTPS protocols, use the Network menu on the Administration tab, and select the access option under the Web heading on the left navigation menu.

Note: See the Security Handbook: Network Management Card, available on the APC Network Management Card Utility CD or from the APC Web site, www.apc.com, for more information on selecting and configuring network security.

Telnet/SSH
You can access the control console through Telnet or Secure SHell (SSH), depending on which is enabled. To enable these access methods, select the Administration tab, the Network menu on the top menu bar, and the access option under Console on the left navigation menu. By default, Telnet is enabled. Enabling SSH automatically disables Telnet.
Telnet for basic access. Telnet provides the basic security of authentication by user name and password, but not the high-security benefits of encryption. To use Telnet to access an Network Management Card’s control console from any computer on the same subnet:

1. At a command prompt, use the following command line, and press ENTER:
   
   telnet address
   
   As address, use the Network Management Card’s IP address or DNS name (if configured).

2. Enter the user name and password (by default, `apc` and `apc` for an Administrator, or `device` and `apc` for a Device User).

SSH for high-security access. If you use the high security of SSL for the Web interface, use Secure SHell (SSH) for access to the control console. SSH encrypts user names, passwords, and transmitted data.

The interface, user accounts, and user access rights are the same whether you access the control console through SSH or Telnet, but to use SSH, you must first configure SSH and have an SSH client program installed on your computer.

   Note: See the On-line User’s Guide for more information on configuring and using SSH.

Simple Network Management Protocol (SNMP)

After you add the PowerNet MIB to a standard SNMP MIB browser, you can use that browser to access the Network Management Card. The default read community name is `public`; the default read/write community name is `private`.

To use StruxureWare Central to manage a UPS on the public network of an InfraStruxure system, you must have SNMP enabled in the InfraStruxure PDU interface.

To enable or disable SNMP access, you must be an Administrator. Select the Administration tab, select the Network menu on the top menu bar, and use the access option under SNMP on the left navigation menu.

FTP and SCP

You can use FTP (enabled by default) or SCP to transfer downloaded firmware to an InfraStruxure PDU, or to access a copy of an InfraStruxure PDU’s event or data logs.

To use StruxureWare Central to manage a UPS, you must have FTP Server enabled in the InfraStruxure PDU interface.

To enable or disable FTP Server access, you must be an Administrator. Select the Administration tab, select the Network menu on the top menu bar, and use the FTP Server option on the left navigation menu.

   Note: In the Rack PDU User’s Guide, see the following sections:
   • To transfer firmware, see “File Transfers.”
   • To retrieve a copy of the event or data log, see “How to use FTP or SCP to retrieve log files.”

Managing the security of your system

   Note: For detailed information on enhancing the security of your system after installation and initial configuration, see the Security Handbook, available on the APC Network Management Card Utility CD and on the APC Web site, www.apc.com.
Recover From a Lost Network Management Interface Password

**Note:** If using StruxureWare Central in your system see the Installation and Quick-Start manual included with StruxureWare Central for information on recovering from a lost password.

**Note:** Contact APC Technical Support to schedule a service call.

You can reach us by [www.apc.com/support](http://www.apc.com/support)
Radio Frequency Interference

**Note:** Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user’s authority to operate this equipment.

**USA—FCC**

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.

**Canada—ICES**

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.*
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 access documents in the APC Knowledge Base and to submit customer support requests.
  – www.apc.com (Corporate Headquarters)
    Connect to localized APC Web sites for specific countries, each of which provides customer support information.
  – www.apc.com/support/
    Global support searching APC Knowledge Base and using e-support.

• Contact the APC Customer Support Center by telephone or e-mail.
  – Local, country-specific centers: go to www.apc.com/support/contact for contact information.

For information on how to obtain local customer support, contact the APC representative or other distributors from whom you purchased your APC product.

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