Operation Manual

Modular Power Distribution Unit, Remote Power Panel, and Rack Distribution Panel

PDPM138H-5U

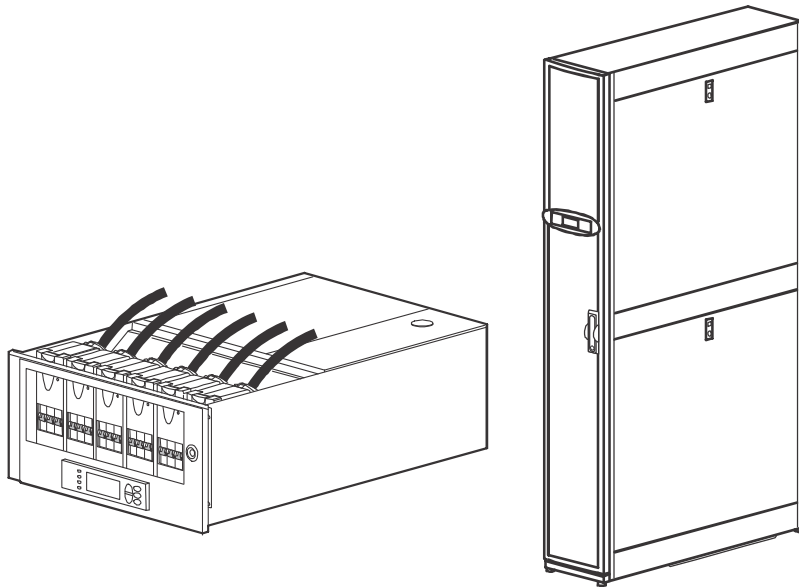**PDPM138H-R**

PDPM72F-5U

PDPM277H

PDPM144F

990-3054E-001

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Schneider Electric

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Contents

Overview

Important Information

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

CAUTION
CAUTION, used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, **can result in** equipment damage.

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

About This Manual

This manual contains important safety warnings and instructions, gives an introduction to the display interface and provides detailed information for proper use of the equipment.

Related Documents

Download technical publications or look for updates to your manual at **www.schneider-electric.com**.

User Comments

Contact **www.schneider-electric.com**. We welcome your comments about this document.

Safety

IMPORTANT SAFETY INSTRUCTIONS

This manual contains important instructions that must be followed during installation, operation, and maintenance of the PDU. For safety reasons, only trained users are allowed to operate the display interface and replace the Power Distribution Modules (PDMs).

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

• Electrical equipment must be installed, operated, serviced, and maintained only by qualified personnel.
• To remove a Power Distribution Module:
  1. Turn off all power supplying the equipment and perform appropriate lockout/tagout procedures before installing or removing the Power Distribution Module.
     OR
  2. If a Symmetra PX UPS is providing power to the Modular PDU, place the UPS into battery operation (to reduce fault current) before removing the Power Distribution Module. To place the UPS into battery operation, see the UPS Operation Manual.
• The PDU must be installed in accordance with the National Electrical Code or the Canadian Electrical Code and all applicable local codes.
• Service access areas are locked with a Red Key. The Red Keys must remain under the control of qualified service personnel.
• Wear appropriate personal protection equipment (PPE) when performing maintenance on this PDU.

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

⚠ WARNING

UNEXPECTED BEHAVIOR OF APPLICATION

Only trained users should operate the display or replace the Power Distribution Modules.

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

CAUTION

HAZARD OF EQUIPMENT DAMAGE

• For PDMs with Residual Current Devices (RCDs) installed, the occurrence of a ground fault will automatically open the adjacent circuit-breaker.
• PDMs with RCDs are equipped with a test button. Periodic testing of the RCD may be required. Check local codes for your region.

Failure to follow these instructions can result in equipment damage.

Regulatory Agency Approval

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

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.

This is a class A product. In a domestic environment this product may cause interference in which case the user may be required to take adequate measures.

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.
- 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 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 other equipment used with this product.
- 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.

Commissioning

Pre-Start Checklists

<table>
<tr><td colspan="2" align="center">⚠ ⚠ DANGER</td></tr>
<tr><td colspan="2">HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH
• Procedures in this section should be performed by qualified personnel only.
• Equipment must be properly de-energized and locked-out prior to performing service.
Failure to follow these instructions will result in death or serious injury.</td></tr>
</table>

After installation, verify that all components are working properly and that the equipment is ready to begin operation.

Initial Inspection Checklist

Ensure the:

❏	Installation procedure is complete according to the installation manual.
❏	Equipment shows no signs of damage.
❏	Clearance around the equipment is in accordance with local and national codes and regulations as well as the installation manual.
❏	Equipment is leveled and joined to the adjacent racks as specified in the installation manual.

Electrical Inspection Checklist

Ensure the:

❏	Incoming voltages match the phase and voltage listing on the nameplate.
❏	Electrical wiring complies with local and national codes and regulations.
❏	Equipment is properly grounded.
❏	All field electrical connections are tight.
❏	Circuit breakers are correct.

User Interface Inspection Checklist

Ensure the:

❏	The building management system is connected correctly.
❏	The network port is connected correctly and an IP address has been assigned to the equipment.

Final Inspection Checklist

Ensure the:

❏	System is clean and free from debris.
❏	Packaging materials are disposed of properly.

Start-up Inspection Checklist

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Wear appropriate personal protective equipment (PPE) when checking hazardous voltages.

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

.

❏	Verify that the PDU is in Total Power OFF mode. All circuit breakers and modules are OFF.
❏	Set all modules that will be used to ON
❏	1. Power Up the PDU. 2. Make sure the incoming power circuit breaker is set to ON. 3. If applicable, set the Subfeed circuit breaker to ON.
❏	Verify that the display interface is working properly.
❏	Verify through the display interface that the PDU sees the correct number of power modules.
❏	Using a phase rotation meter, verify phase rotation.
❏	Resolve any unexpected alarms.
❏	Configure the date and time through the display interface.
❏	Review the Event Log. Check for abnormalities in the log. Resolve any abnormalities in the log. Clear the Event Log when you are finished.

Operation

Display Interface
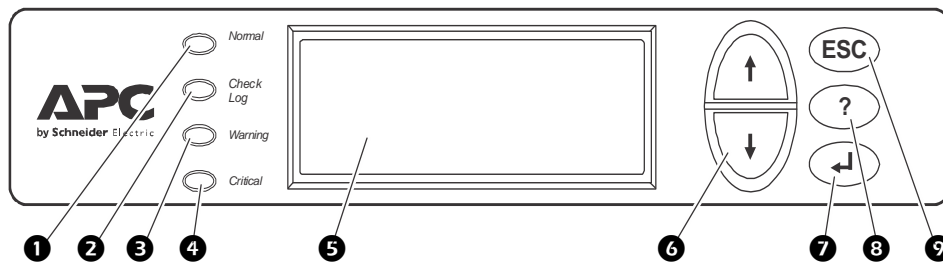
❶	NORMAL LED	When green, no alarms are present.
❷	CHECK LOG LED	When green, a new event has been added to the log.
❸	WARNING LED	When yellow, a warning alarm exists.
❹	CRITICAL LED	When red, there are one or more critical alarms in the system.
❺	LCD SCREEN	Displays alarms, status data, instructional help, and configuration items.
❻	UP AND DOWN KEYS	Scrolls through menu items.
❼	ENTER	Opens menu items and confirms changes to system parameters.
❽	HELP	Opens context-sensitive help.
❾	ESC	Returns to previous screen.

Navigate the display interface
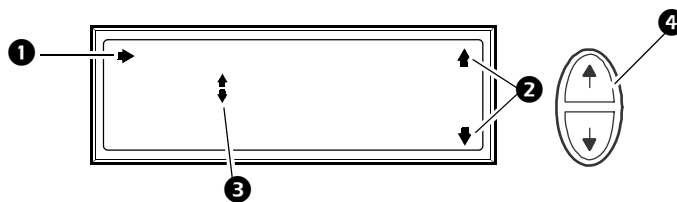
❶ Selector arrow. Press the UP or DOWN arrow key to move the selector arrow to a menu option or setting. Press the ENTER key to view the selected screen or modify the setting.

❷ Continue arrows. Indicate that additional screens are available on a menu or status screen. Press the UP or DOWN arrow key to view the additional items.

❸ Input arrows. Input arrows next to a selected setting indicate that the setting can be modified by pressing the UP or DOWN arrow key. Press the ENTER key to save the change or the ESC key to cancel.

❹ Press the UP or DOWN arrow key to:
a. navigate the selector arrow through the menu prompts
b. change target item
c. edit a text string. Press the UP or DOWN arrow key to change the character in the text string. Press ENTER to confirm and advance to the next character.

Top dynamic display

Overview Screens When the system is running, the display will scroll through screens showing status information of the PDU and any active alarms.

Overview Screens (No active alarms)

```
 No Active Alarms

 System Date/Time:
 01/09/2012 10:37:01
```

```
Out     Amps     kW
L1:     0.0      0.00
L2:     0.0      0.00
L3:     0.0      0.00
```

```
Output Voltage
L1: 00V L1-2: 0V
L2: 00V L2-3: 0V
L3: 00V L3-1: 0V
```

Overview screen Alarm Shown

```
 Active Alarms: 1 of 15
 Communication Lost
 With Metering Board
 [1.6]
```

Press the ENTER key to move from the Overview Screens to the Main Menu Screen.

Main Menu Screen Use the Main Menu Screen to operate, configure, and monitor the system through the sub menu screens: Modules, Totals, Alarms, Log, Admin, and Help.

Main Menu Screen

```
➡Modules        Admin
  Totals        Help
  Alarms
  Log
```
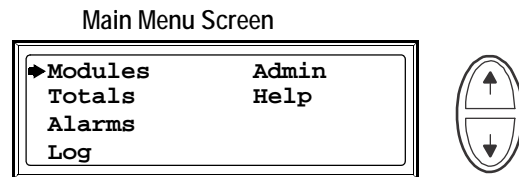
NOTE: 1. If the display interface is inactive for the time configured for the screen timeout, the display will return to the scrolling status screens.
2. Pressing the UP arrow key when the selector arrow is at the first item of the main menu will take you to the last item on the menu.

Password protection

Certain screens can be configured to require a predefined password to allow access to those screens. Pressing the ENTER key after selecting a protected screen will result in the user being prompted for the password.

```
      Enter Password:
          *****
```

```
   Incorrect Password:
    Press any key to
     Try again...
```
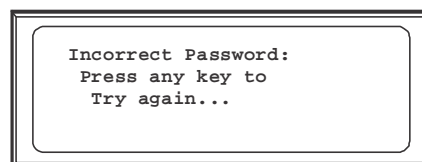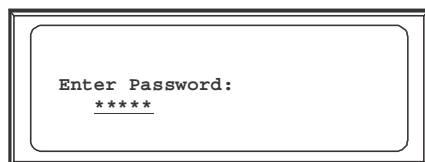
Menu tree

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

Module View	Module: 00 of 00	
	Status: Normal/Critical	
	Circuit Details	
	About This Module	Module Mfg Info
		Cable Details
		Breaker Ratings

Modules

Load/Energy Meter	Current & Power
	Percent Loading
	Energy Usage

Circuit Config	Individual Load Cfg	Threshold Values
	Mass Configuration	Threshold Enable
	Reset Ckt Defaults	Breaker Position
	Electrical Cfg	

Overview Screen

Main Menu

Totals

Total Load Status	Total Load Summary
Total Load by Phase	Total Output Current
Volt-Meter	Voltages/Frequency

Alarms

Log

Admin

Network Setup	
Local Interface	Local Password
	Display Behavior
	Alarm Beeper: On/Off
Date & Time	
Device ID	Device Name
Manufacturer Data	
Factory Defaults	
Firmware Upgrade	
Configure Modbus	Enable/Disable
	Target ID: 000
	Baud Rate: 9600 bps

Help

pdx0872a

Modules Submenu

View Module status

❶ Select Modules on the Main Menu Screen and press ENTER. At the next screen, select Module View and press ENTER.

❷ Press ENTER at the Module number. Scroll through the module list to the specific module and press ENTER.

❸ To view more information about the module, select Circuit Details and press ENTER.

❹ For 3-cord modules, select the relevant cable and press ENTER.

❺ Scroll through the three status screens for information on the specific Power Distribution Module.

❶
```
→Modules        Admin
 Totals         Help
 Alarms
 Log
```

❶
```
→Module View
 Load/Energy Meter
 Circuit Config
```

❷
```
 Module: 00 of 00
 Status: Critical
```
❸
```
→ Circuit Details
  About This Module
```

One-cord Modules

❹
```
 Module 00: Cable 0:
 >Cable 1: Normal
→>Cable 2: Critical
 >Cable 3: Normal
```

Three-cord Modules

```
 Module 00, Cable 0:
 Name:
 Circuit (Name)
 Power: 00.0 kW      ↓
```

```
 Mod 00, Breakers:   ↑
 L1: Closed
 L2: Open
 L3: Closed          ↓
```
❺

```
 Mod 00, Cable 0:    ↑
 L1: 0.0A 0.0%
 L2: 0.0A 0.0%
 L3: 0.0A 0.0%
```

View Power Distribution Module information

❶ Select Modules on the Main Menu Screen and press ENTER. On the next screen, select Module View and press ENTER.

❷ Press ENTER at the Module number. Scroll through the list of modules to the specific module and press ENTER.

❸ Select About This Module and press ENTER.

❹ The module you chose is shown in this submenu. Select and press ENTER to view:
   Ⓐ Module Mfg Info
   Ⓑ Cable Details
   Ⓒ Breaker Ratings

❶
```
➤Modules        Admin
  Totals        Help
  Alarms
  Log
```

❶
```
➤ Module View
  Load/Energy Meter
  Circuit Config
```

❷
```
➤Module:⬍ 00 of 00
  Status: Critical
    Circuit Details
    About This Module
```

```
  Module:⬍ 00 of 00
  Status: Normal
    Circuit Details
➤  About This Module
```
❸

❹
```
  Module: 00
    Module Mfg Info Ⓐ
    Cable Details Ⓑ
    Breaker Ratings Ⓒ
```

Ⓐ
```
  Module 00 Info:
  Model: xxxxxxxxxx
  S/N: xxxxxxxxxxxx
  Mfg Date: dd/mm/yyyy
```

Ⓒ
```
  Mod: 00, Cable:⬍ 0 of 0
  Breaker Ratings:
  L1:0.0A L2:0.0A L3:0.0A
```

Ⓑ
```
  Mod 00, Cable: 0 of 0
  Length: 0.0ft (0.0m)
  Connector: IEC309-3W
  Voltages 400V
```

View circuit status information

Use the Load/Energy screens to view status information on a circuit level and the data is grouped by output cable. Scroll through the list to the specific circuit. The circuit names are listed for identification.

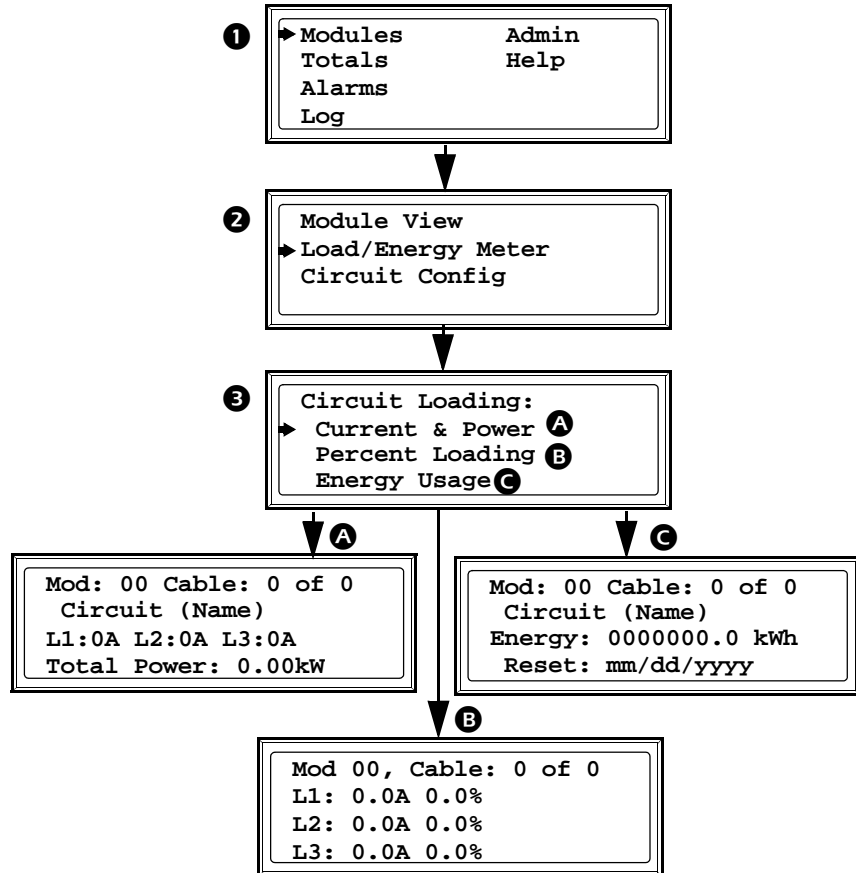Refer to "Set the name and location of the circuits" on page 16 for information on how to set the circuit name.

❶ Select Modules on the Main Menu Screen and press ENTER.

❷ Select Load/Energy Meter on the submenu screen and press ENTER.

❸ Select from the Circuit Loading submenu:
Ⓐ Current & Power
Ⓑ Percent Loading
Ⓒ Energy Usage (kWh)
Press ENTER at the Reset prompt to reset the kWh registration to zero and change the reset date to the current date.

❶
```
→Modules        Admin
  Totals        Help
  Alarms
  Log
```

❷
```
  Module View
→Load/Energy Meter
  Circuit Config
```

❸
```
  Circuit Loading:
→  Current & Power  Ⓐ
   Percent Loading  Ⓑ
   Energy Usage     Ⓒ
```

Ⓐ
```
 Mod: 00 Cable: 0 of 0
   Circuit (Name)
 L1:0A L2:0A L3:0A
 Total Power: 0.00kW
```

Ⓒ
```
 Mod: 00 Cable: 0 of 0
   Circuit (Name)
 Energy: 0000000.0 kWh
   Reset: mm/dd/yyyy
```

Ⓑ
```
 Mod 00, Cable: 0 of 0
 L1: 0.0A 0.0%
 L2: 0.0A 0.0%
 L3: 0.0A 0.0%
```

View load status

❶ Select Totals on the Main Menu Screen and press ENTER.

❶
```
  Modules        Admin
→Totals         Help
  Alarms
  Log
```

❷ Select Total Load Status on the submenu and press ENTER.

❷
```
→Total Load Status
  Total Load by Phase
  Volt-Meter
```

❸ Status can be Normal, Warning, or Critical. The total power factor and total load is shown in kW and kVA.
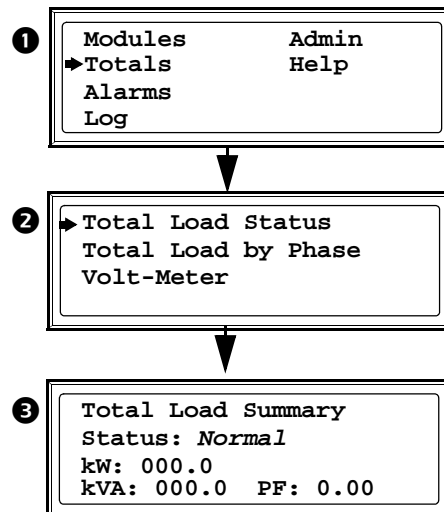
❸
```
  Total Load Summary
  Status: Normal
  kW: 000.0
  kVA: 000.0   PF: 0.00
```

View total load by phase

❶ Select Totals on the Main Menu Screen and press ENTER.

```
❶  ┌──────────────────────────┐
   │ Modules        Admin     │
   │➤Totals         Help      │
   │ Alarms                   │
   │ Log                      │
   └──────────────────────────┘
```
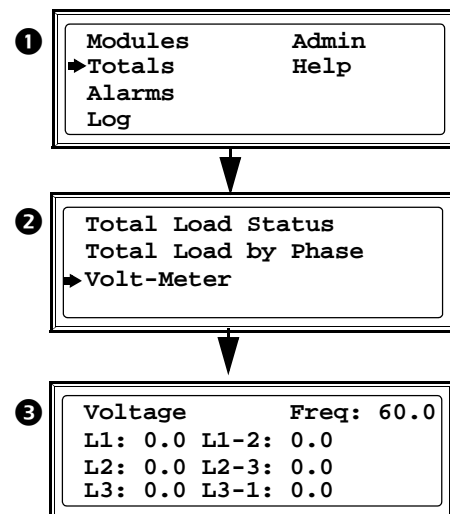
❷ Select Total Load by Phase on the submenu and press ENTER.

```
❷  ┌──────────────────────────┐
   │ Total Load Status        │
   │➤Total Load by Phase      │
   │ Volt-Meter               │
   └──────────────────────────┘
```

❸ View total output current and power for each phase. High!, Low!, Min!, or Max! indicates a reading above or below the threshold level.
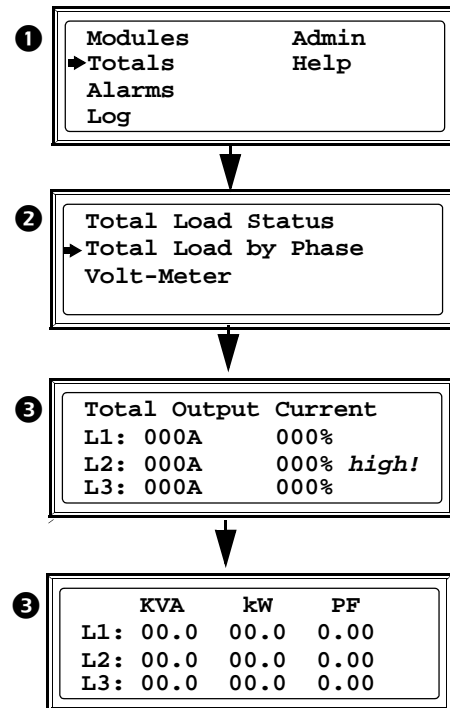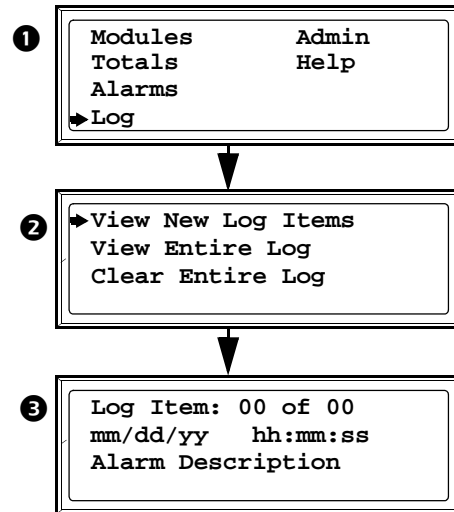
```
❸  ┌──────────────────────────┐
   │ Total Output Current     │
   │ L1: 000A       000%      │
   │ L2: 000A       000% high!│
   │ L3: 000A       000%      │
   └──────────────────────────┘
```

```
❸  ┌──────────────────────────┐
   │    KVA     kW     PF     │
   │ L1: 00.0  00.0   0.00    │
   │ L2: 00.0  00.0   0.00    │
   │ L3: 00.0  00.0   0.00    │
   └──────────────────────────┘
```

View output voltages

❶ Select Totals on the Main Menu Screen and press ENTER.

```
❶  ┌──────────────────────────┐
   │ Modules        Admin     │
   │➤Totals         Help      │
   │ Alarms                   │
   │ Log                      │
   └──────────────────────────┘
```

❷ Select Volt-Meter on the submenu and press ENTER.

```
❷  ┌──────────────────────────┐
   │ Total Load Status        │
   │ Total Load by Phase      │
   │➤Volt-Meter               │
   └──────────────────────────┘
```

❸ The Voltage Screen shows the output voltages for the three phases and the phase-to-phase voltages.

```
❸  ┌──────────────────────────┐
   │ Voltage        Freq: 60.0│
   │ L1: 0.0 L1-2: 0.0        │
   │ L2: 0.0 L2-3: 0.0        │
   │ L3: 0.0 L3-1: 0.0        │
   └──────────────────────────┘
```
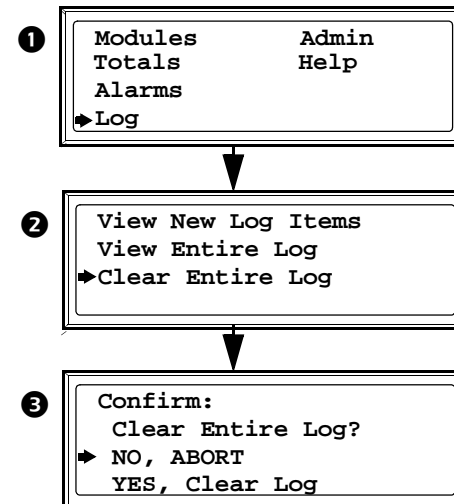
View the log

The log saves information every time a change in the PDU is detected. Alarms and events are recorded in the log and displayed as an active alarm. Status changes are only displayed in the log, and will not display as an active alarm. Viewing the log will clear the Check Log LED.

➊ Select Log on the Main Menu Screen, and press ENTER.

➋ Choose to view recently logged items or the entire log.

➌ Use the arrow keys to scroll through the list of events. Press the ENTER key to view the date and time of a specific event.

➊
```
  Modules        Admin
  Totals         Help
  Alarms
➥Log
```

➋
```
➥View New Log Items
  View Entire Log
  Clear Entire Log
```

➌
```
  Log Item: 00 of 00
  mm/dd/yy    hh:mm:ss
  Alarm Description
```

Clear the log

➊ Select Log on the Main Menu Screen, and press ENTER.

➋ Select Clear Entire Log and press ENTER.

➌ Select Yes and press ENTER to clear the entire log, or No to return to the Main Menu Screen.

➊
```
  Modules        Admin
  Totals         Help
  Alarms
➥Log
```

➋
```
  View New Log Items
  View Entire Log
➥Clear Entire Log
```

➌
```
  Confirm:
   Clear Entire Log?
➥ NO, ABORT
   YES, Clear Log
```
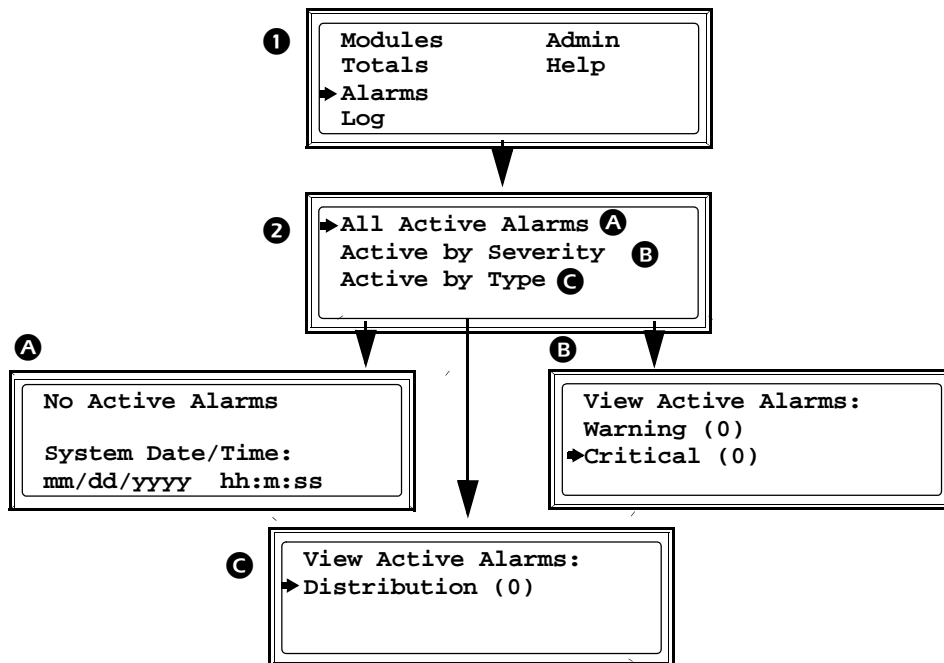
View the list of active alarms

The alarm menu lists all active alarms in the PDU. When an alarm is triggered, the PDU will create an alarm and the LEDs on the front panel will illuminate to signify that an alarm has been set.

❶ From the Main Menu Screen, select Alarms.
❷ View all alarms, or alarms by severity or type.
  Use the UP and DOWN arrow keys to scroll through the list.

  Ⓐ All Active Alarms
  Ⓑ Active by Severity
  Ⓒ Active by type

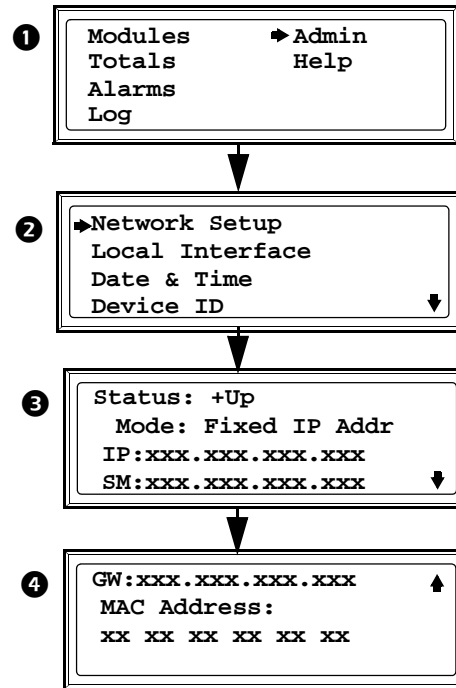 Press the ENTER key at the selected alarm to view the date and time of a specific alarm.

❶
```
Modules        Admin
Totals         Help
►Alarms
 Log
```

❷
```
►All Active Alarms Ⓐ
 Active by Severity   Ⓑ
 Active by Type Ⓒ
```

Ⓐ
```
 No Active Alarms

 System Date/Time:
 mm/dd/yyyy  hh:m:ss
```

Ⓑ
```
 View Active Alarms:
 Warning (0)
►Critical (0)
```

Ⓒ
```
 View Active Alarms:
►Distribution (0)
```

Configuration

Settings

Set up the network

```
┌──────────────────────────┐
│ Modules      ➡Admin      │
│ Totals        Help       │
❶│ Alarms                  │
│ Log                      │
└──────────────────────────┘
```

❶ Select Admin on the Main Menu Screen, and press ENTER.

```
┌──────────────────────────┐
│➡Network Setup           │
❷│ Local Interface         │
│ Date & Time              │
│ Device ID             ↓  │
└──────────────────────────┘
```

❷ Select Network Setup and press ENTER.

```
┌──────────────────────────┐
│ Status: +Up              │
❸│  Mode: Fixed IP Addr    │
│ IP:xxx.xxx.xxx.xxx       │
│ SM:xxx.xxx.xxx.xxx    ↓  │
└──────────────────────────┘
```

❸ Mode choices are DHCP Only, BOOTP Only, DHCP & BOOTP (to set the IP-address and subnet mask for the system) or Fixed IP Address.

```
┌──────────────────────────┐
│ GW:xxx.xxx.xxx.xxx    ↑  │
❹│ MAC Address:            │
│ xx xx xx xx xx xx        │
└──────────────────────────┘
```

❹ Press the continue arrow to set the Gateway address. The MAC address can be viewed on this screen.
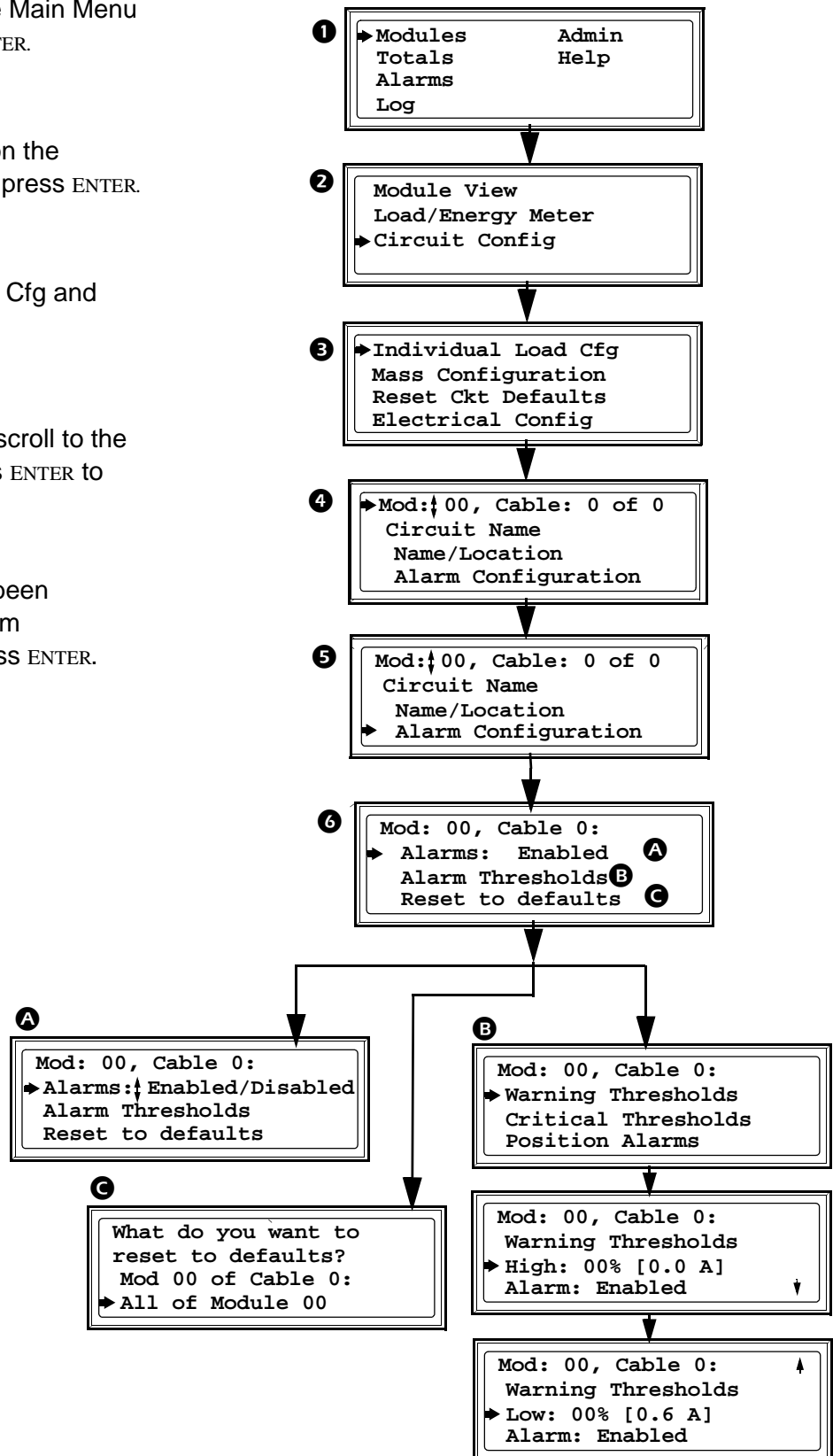
Set the name and location of the circuits

```
┌──────────────────────────┐
│➡Modules       Admin     │
│ Totals        Help       │
❶│ Alarms                  │
│ Log                      │
└──────────────────────────┘
```

❶ Select Modules on the Main Menu Screen, and press ENTER.

```
┌──────────────────────────┐
│ Module View              │
❷│ Load/Energy Meter       │
│➡Circuit Config          │
└──────────────────────────┘
```

❷ Select Circuit Config on the submenu, and press ENTER.

```
┌──────────────────────────┐
│➡Individual Load Cfg     │
❸│ Mass Configuration      │
│ Reset Ckt Defaults       │
│ Electrical Config        │
└──────────────────────────┘
```

❸ Select Individual Load Cfg and press ENTER.

```
┌──────────────────────────┐
│ Mod: xx Cable: 0 of 0    │
❹│  Circuit Name           │
│➡Name/Location           │
│ Alarm Configuration      │
└──────────────────────────┘
```

❹ Select Name/Location and press ENTER.

```
┌──────────────────────────┐
│ Mxx, Cable y:            │
❺│  Name: Circuit Name     │
│  Location:               │
│  Circuit Location        │
└──────────────────────────┘
```

❺ Change the settings for circuit name and circuit location. Use the UP and DOWN arrow keys to select a character, press ENTER to confirm, and go to the next character.
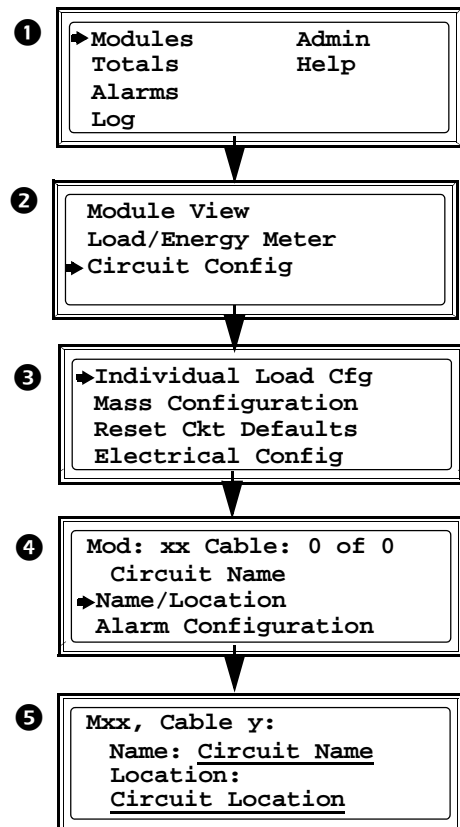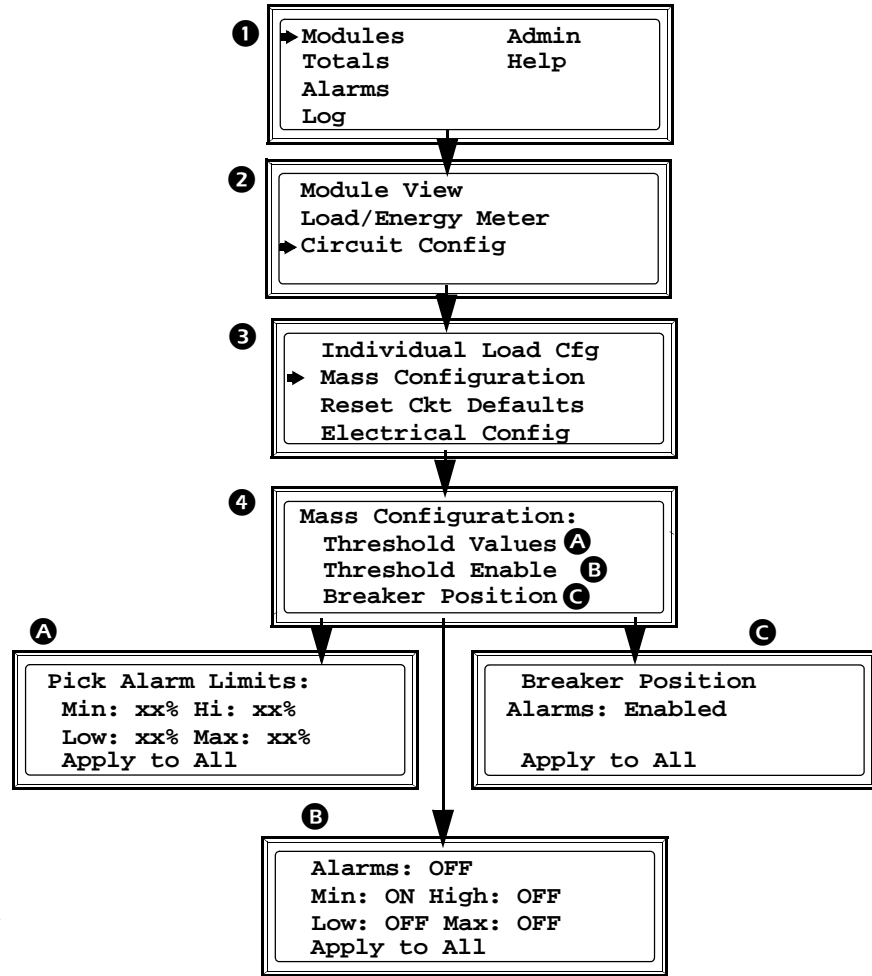
Set individual alarm thresholds

The Individual Load Cfg screens are used to set the alarm thresholds for a single Power Distribution Module.

❶ Select Modules on the Main Menu Screen, and press ENTER.

```
❶  ⮕Modules      Admin
     Totals       Help
     Alarms
     Log
```

❷ Select Circuit Config on the submenu screen, and press ENTER.

```
❷   Module View
     Load/Energy Meter
    ⮕Circuit Config
```

❸ Select Individual Load Cfg and press ENTER.

```
❸  ⮕Individual Load Cfg
     Mass Configuration
     Reset Ckt Defaults
     Electrical Config
```

❹ In the next submenu, scroll to the desired module. Press ENTER to select a module.

```
❹  ⮕Mod:⬍00, Cable: 0 of 0
      Circuit Name
      Name/Location
      Alarm Configuration
```

❺ After the module has been selected, scroll to Alarm Configuration and press ENTER.

```
❺   Mod:⬍00, Cable: 0 of 0
      Circuit Name
      Name/Location
    ⮕ Alarm Configuration
```

❻ The selections for Alarm Configuration are:
Ⓐ Alarms: Enable or disable.
Ⓑ Alarm Thresholds: Change the settings.
Ⓒ Reset to defaults: Reset to factory defaults.

```
❻   Mod: 00, Cable 0:
    ⮕ Alarms:  Enabled    Ⓐ
       Alarm ThresholdsⒷ
       Reset to defaults  Ⓒ
```

```
Ⓐ   Mod: 00, Cable 0:
    ⮕Alarms:⬍Enabled/Disabled
      Alarm Thresholds
      Reset to defaults
```

```
Ⓒ   What do you want to
     reset to defaults?
      Mod 00 of Cable 0:
    ⮕All of Module 00
```

```
Ⓑ   Mod: 00, Cable 0:
    ⮕Warning Thresholds
      Critical Thresholds
      Position Alarms
```

```
    Mod: 00, Cable 0:
     Warning Thresholds
    ⮕High: 00% [0.0 A]
     Alarm: Enabled      ⬇
```

```
    Mod: 00, Cable 0:     ⬆
     Warning Thresholds
    ⮕Low: 00% [0.6 A]
     Alarm: Enabled
```

Set alarm thresholds for all Modules in the PDU

❶ Select Modules on the Main Menu Screen, and press ENTER.

❷ Select Circuit Config on the submenu screen, and press ENTER.

❸ Select Mass Configuration and press ENTER.

❹ Change the settings for
  Ⓐ Threshold Values: Select the maximum and minimum values that should generate an alarm.
  Ⓑ Threshold Enable: Enable or disable the alarms for the different settings.
  Ⓒ Breaker Position: Enable or disable alarms when a breaker is opened.

❺ Select Apply to All and press ENTER to confirm your changes.

❶
```
➤Modules        Admin
  Totals        Help
  Alarms
  Log
```

❷
```
  Module View
  Load/Energy Meter
➤Circuit Config
```

❸
```
  Individual Load Cfg
➤ Mass Configuration
  Reset Ckt Defaults
  Electrical Config
```

❹
```
  Mass Configuration:
    Threshold ValuesⒶ
    Threshold Enable Ⓑ
    Breaker PositionⒸ
```

Ⓐ
```
  Pick Alarm Limits:
   Min: xx% Hi: xx%
   Low: xx% Max: xx%
   Apply to All
```

Ⓒ
```
    Breaker Position
   Alarms: Enabled

    Apply to All
```

Ⓑ
```
   Alarms: OFF
   Min: ON High: OFF
   Low: OFF Max: OFF
   Apply to All
```

Set and change the password settings

Set, change or set the time lock on password-protected screens. Set the time limit before the display will lock, and a password will be required to make any changes.

❶ Select Admin on the Main Menu screen and press ENTER.

❷ Select Local Interface and press ENTER.

❸ Select Local Password and press ENTER.

❹ Select Password and enter the new password. Use the UP and DOWN arrow keys to select a character and press ENTER to confirm and go to the next character.

❶
```
  Modules       ➤Admin
  Totals        Help
  Alarms
  Log
```

❷
```
  Network Setup
➤Local Interface
  Date & Time
  Device ID          ▾
```

❸
```
➤Local Password
  Display Behavior
  Alarm Beeper:⬍Off
```

❹
```
➤Password: xxxxx
  Timeout:⬍10 min
  Invalidate NOW
```
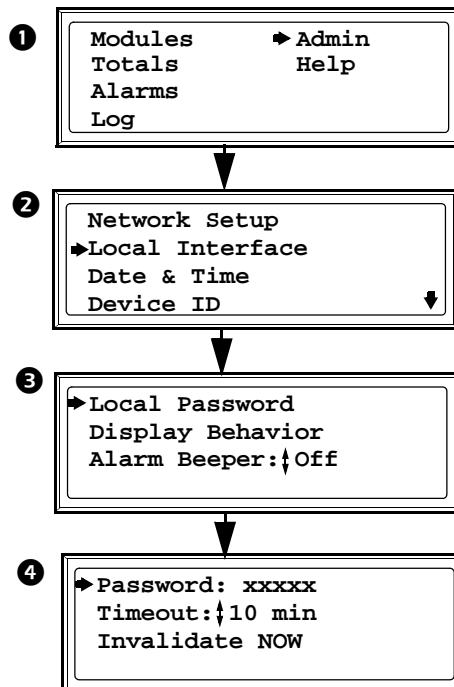
Change the display settings

❶ Select Admin on the Main Menu screen and press ENTER.

❶
```
Modules      �──➤ Admin
Totals           Help
Alarms
Log
```

❷ Select Local Interface and press ENTER.

❷
```
Network Setup
➤Local Interface
 Date & Time
 Device ID              ↓
```

❸ Select Display Behavior and press ENTER.

❸
```
 Local Password
➤Display Behavior
 Alarm Beeper: Off
```

❹ From this screen, change the settings for:
    a. Contrast - setting from 00 to 07
    b. Key Click - Off/On
    c. Beeper Volume - Off/Low/Med/High
    d. Check Log Light - Info/Warning/Critical/Disable
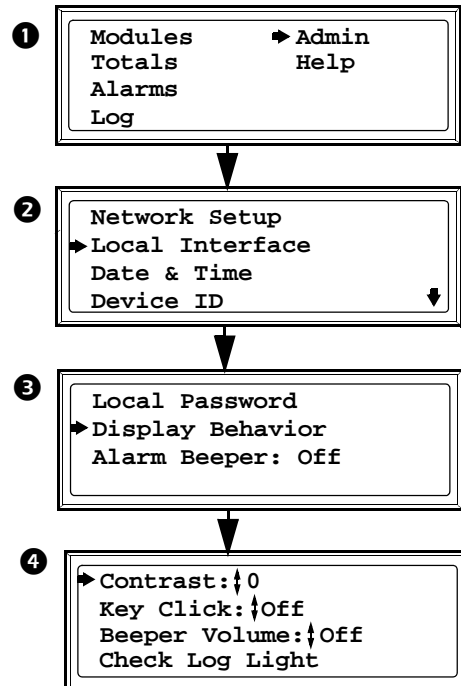
❹
```
➤Contrast:↕0
 Key Click:↕Off
 Beeper Volume:↕Off
 Check Log Light
```

Change date and time

❶ Select Admin on the Main Menu screen and press ENTER.

❶
```
Modules      �──➤ Admin
Totals           Help
Alarms
Log
```

❷ Select Date & Time and press ENTER.

❷
```
 Network Setup
 Local Interface
➤Date & Time
 Device ID              ↓
```

❸ The date format, date, and time can be changed from this screen.

❸
```
 Mode: Manual
 Format:
 Date: xx-xxx-xx
 Time: xx:xx:xx
```
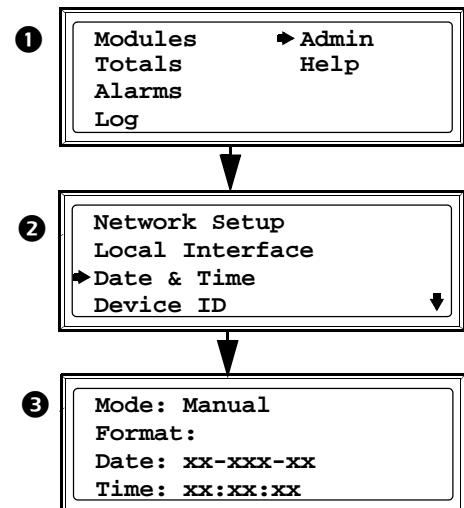
Modbus Configuration

Configure Modbus through the Display Interface.

Path: Main > Admin > Configure Modbus

Use the menu to set up communications between the equipment and the building management system.

Modbus: Enable or disable Modbus.

Target ID: Each Modbus device must have a unique target identification number. Enter a unique number, ranging from 1 to 247, for this unit.

Baud Rate: Choose either 9600 bps or 19200 bps.

Modbus communication is available at the console port (RS232 DB-9 connector).

Note: An RS232 to RS485 converter (not provided) must be used to connect to a building management system.

To communicate RS-232 to the RPP/RDP through the console port, the RS232 to RS485 converter must be configured as a DTE device with Send Data Control rather than RTS control (most converters are DCE - some can be ordered as DTE). Some devices like the Omega Model 285 Superverter support DCE/DTE selection with a switch. Other devices such as those produced by B&B Electronics require a zero ohm resistor re-position to configure as a DCE device - see the device data sheet for details. RTS or SD selection is generally accomplished with a jumper. An appropriate RS-232 cable like the APC 940-0024D is also required.

The console port can be configured to run at either 9600 or 19200 baud. This must match the Building Management System or Modbus network transfer rate.

Most serial converters are capable of either 4-wire or 2-wire modbus connections. The unit is designed to handle 2-wire, half-duplex communication. For a 2-wire, half-duplex connection, jumper connectors should be placed between R+ & T+, and R- & T-. Then the modbus + wire is connected to R+/T+ and the - wire is connected to R-/T-. Some converters like the B&B Electronics 4850T9L offer dip switches to accomplish the jumper connections.

Note: All RS232 to RS485 converters tested relied on a power supply that plugs into 110V AC wall receptacle.
Note: There is a known modbus polarity labeling ambiguity between converters, so if the modbus communication isn't successful, try reversing the 2-wire connection.

Network Management Configuration

Overview

NOTE: For complete Network Management Card setup instructions, see the online User Guide at **www.apc.com**.

Connections

Make the connection to the PDU: A Cat-5 cable is plugged into the bottom RJ-45 connector **C** on the back of the unit. Connect the other end of the cable to a local computer or a network hub. Do not use the top RJ-45 connector **A** above the serial port **B**.
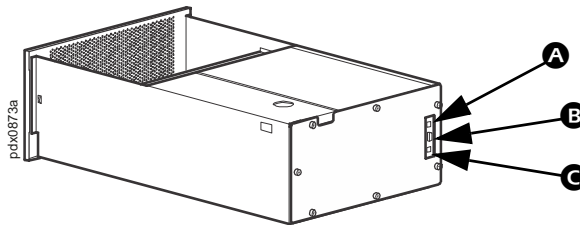
A serial cable can be connected at the serial port **B**. Connect the other end to a local computer.

Initial setup

You must configure the following three TCP/IP settings before the Modular PDU can operate on a network:

- IP address of the Modular PDU
- Subnet mask
- Default gateway
  If a default gateway is unavailable, use the IP address of a computer (that is usually running) located on the same subnet as the NMC. The NMC uses the default gateway to test the network when traffic is light.

  NOTE: Do not use the loopback address as the default gateway address for the Network Management Card. You will lose communication with the equipment. Doing so will disable the card and require you to reset TCP/IP settings to their defaults using a local serial login.

TCP/IP configuration methods Use one of the following methods to define the basic TCP/IP settings needed by the Network Management Card.

- APC Device IP Configuration Wizard
- BOOTP or DHCP server
- Networked computer

Device IP Configuration Wizard

The Wizard runs on Microsoft Windows 2000, Windows 2003, and Windows XP operating systems. The Device IP Configuration Wizard configures the IP address, subnet mask, and default gateway of one or more NMCs.
You can use the Wizard in either of the following ways:

- Remotely over your TCP/IP network to discover and configure unconfigured NMCs on the same network segment as the computer running the Wizard.

- Through a direct connection from a serial port of your computer to the PDU to configure or reconfigure it.

Installation - Install the Wizard from a downloaded executable file:

1. Go to www.apc.com/tools/download.

2. Download the Device IP Configuration Wizard.

3. Run the executable file in the folder in which it was downloaded.

Launch the Wizard-- The installation creates a shortcut link in the Start menu to launch the Wizard. Most software firewalls must be temporarily disabled for the Wizard to discover unconfigured NMCs.

Supported Web browsers

Use Microsoft® Internet Explorer (IE) 7.x and higher (Windows operating systems) or Mozilla Firefox 3.0.6 or higher (all operating systems) to access the NMC through its Web interface. Other commonly available browsers may work but have not been fully tested by Schneider Electric. The NMC cannot work with a proxy server. Before using a Web browser to access its Web interface, do one of the following:

- Configure the Web browser to disable the use of a proxy server for the NMC.

- Configure the proxy server so that it does not proxy the specific IP address of the NMC.

Network management features

These applications and utilities work with a Modular PDU that connects to the network through its Network Management Card:

- StruxureWare—Provide enterprise-level power management and management of agents, PDUs, information controllers, and environmental monitors

- PowerNet® Management Information Base (MIB) with a standard MIB browser—Perform SNMP SETs and GETs and to use SNMP traps

- Device IP Configuration Wizard—Configure the basic settings of one or more NMCs over the network

- Security Wizard—Create the components needed for high security for the NMC when using Secure Sockets Layer (SSL) and related protocols and encryption routines

Log On

Use the DNS name or System IP address of the NMC for the URL address of the Web interface. The default password is **apc** for all three account types. The default user name differs by account type:

- apc for an Administrator
- device for a Device user
- readonly for a Read-Only user

If you are using HTTPS (SSL/TSL) as your access protocol, your logon credentials are compared with information in a server certificate. If the certificate was created with the Security Wizard, and an IP address was specified as the common name in the certificate, you must use an IP address to log on to the NMC. If a DNS name was specified as the common name on the certificate, you must use a DNS name to log on.

URL address formats

Type the DNS name or IP address of the NMC in the URL address field of the Web browser and press ENTER. When you specify a non-default Web server port in Internet Explorer, you must include `http://` or `https://` in the URL.

Common browser error messages at log-on

Error Message	Browser	Cause of the Error
"You are not authorized to view this page" or "Someone is currently logged in..."	Internet Explorer, Firefox	Someone else is logged on.
"This page cannot be displayed."	Internet Explorer	Web access is disabled, or the URL was not correct
"Unable to connect."	Firefox	

Security

Access priority for logging on

Only one user at a time can log on to the PDU.

- Local access from a computer with a direct serial connection to the PDU.
- Telnet or Secure SHell (SSH) access to the control console from a remote computer.
- Web access, either directly or through StruxureWare

User accounts

The three levels of access are protected by user name and password requirements. During authentication, the user's credentials are compared against the Local User Database and/or are validated against a RADIUS server (depending on configuration). If valid, access with appropriate permissions is granted.

- An Administrator can use all the menus in the Web interface. The default user name and password are both **apc**.
- The default user name for the Device User is **device**, and the default password is **apc**. A Device User can access only the menus on the Home, Power Distribution, and Logs tabs in the Web interface.
- A Read-Only User has only Web interface access. The same menus as Device User are visible but no changes can be made. Links to configuration options are visible but disabled. Event and data logs display no button to clear the log. The default user name is **readonly**, and the default password is **apc**.

Watchdog Features

Watchdog mechanisms detect internal problems. After a restart, a System: Warmstart event is recorded in the event log.

Network interface watchdog mechanism

Watchdog mechanisms protect the NMC from becoming inaccessible over the network. If it does not receive any network traffic for 9.5 minutes, it assumes there is a problem with its interface and restarts.

Resetting the network timer

To ensure the NMC does not restart if the network is quiet for 9.5 minutes, it attempts to contact the default gateway every 4.5 minutes. The gateway response resets the 9.5-minute timer. If your application does not require or have a gateway, specify the IP address of a computer that is running on the network most of the time and is on the same subnet. The network traffic of that computer will restart the 9.5-minute timer frequently enough to prevent the NMC from restarting.

Recover from a Lost Password

1. At the local computer, select a serial port, and disable any service that uses it.

2. Connect the provided serial cable to the computer and the port on the PDU.

3. Run a terminal program (such as HyperTerminal®) and configure the port for 9600 bps, 8 data bits, no parity, 1 stop bit, and no flow control.

4. Press ENTER, repeatedly if necessary, to display the User Name prompt. If you are unable to display the User Name prompt, verify the following:

   – The serial port is not in use by another application.

   – The terminal settings are correct as specified in step 3.

   – The correct cable is being used.

5. Press the Reset button on the back of the unit. The Status LED will flash. Press the Reset button a second time while the LED is flashing to reset the user name and password to the default.

6. Press ENTER as many times as necessary until the User Name prompt displays, then use the default, apc, user name and password. (If you take longer than 30 seconds to log on after the User Name prompt is displayed, you must repeat step 5 and log on again.)

7. Select System, then User Manager.

8. Select Administrator, and change the User Name and Password settings from the default **apc**.

9. Press CTRL+C and log off. Return the local computer to its configuration.

Maintenance

Parts Replacement

Determine if you need a replacement part

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

1. The display interface may show additional screens if module replacement is necessary. Press any key to scroll through these lists, record the information, and provide it to the representative.

2. Write down the serial number of the unit so that you will have it easily accessible when you contact Customer Support.

3. If possible, call Customer Support from a telephone that is within reach of the unit so that you can gather and report additional information to the representative.

4. Be prepared to provide a detailed description of the problem. A representative will attempt to help you over the telephone, if possible, or will assign a Return Material Authorization (RMA) number to you. If a module is returned, this RMA number must be clearly printed on the outside of the package.

5. If the unit is within the warranty period, repairs or replacements will be performed free of charge. If it is not within the warranty period, there will be a charge.

6. If the unit is covered by a service contract, have the contract available to provide information to the representative.

Return parts

Contact Customer Support to obtain an (Returned Materials Authorization (RMA) number.

To return a module, pack the module in the original shipping materials, and return it by insured, prepaid carrier. The Customer Support representative will provide the destination address. If you no longer have the original shipping materials, ask the representative about obtaining a new set. Pack the module properly to avoid damage in transit. Never use Styrofoam beads or other loose packaging materials when shipping a module, as the module may settle in transit and become damaged. Enclose a letter in the package with your name, RMA number, address, a copy of the sales receipt, description of the problem, a phone number, and a check as payment (if necessary).

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

Power Distribution Modules

> ### ⚠ ⚠ DANGER
>
> **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**
> - Electrical equipment must be installed, operated, serviced, and maintained only by qualified personnel.
> - To remove a Power Distribution Module:
>   1. Turn off all power supplying the equipment and perform appropriate lockout/tagout procedures before installing or removing the Power Distribution Module.
>   OR
>   2. If a Symmetra PX UPS is providing power to the Modular PDU, place the UPS into battery operation (to reduce fault current) before removing the Power Distribution Module. To place the UPS into battery operation, see the UPS Operation Manual.
>
> **Failure to follow these instructions will result in death or serious injury.**

> ### NOTICE
>
> - Install only Schneider Electric PDMs with matching output voltage.
> - Install PDMs starting from the bottom of the panel to avoid cable congestion.
> - Save filler plates for future re-use. If a module is removed, a filler plate must be installed to cover the open space.

Factory installed filler plates and slot locks cover each module position.

Before putting the unit into service, the backplane of each module position must be covered with a filler plate or a Power Distribution Module (PDM). All positions must be secured with a slot lock.

Component identification

❶ Slot lock key

❷ Slots (hold modules in place)

❸ Backplane

❹ Filler plate

❺ Module slot lock

❻ Power distribution module
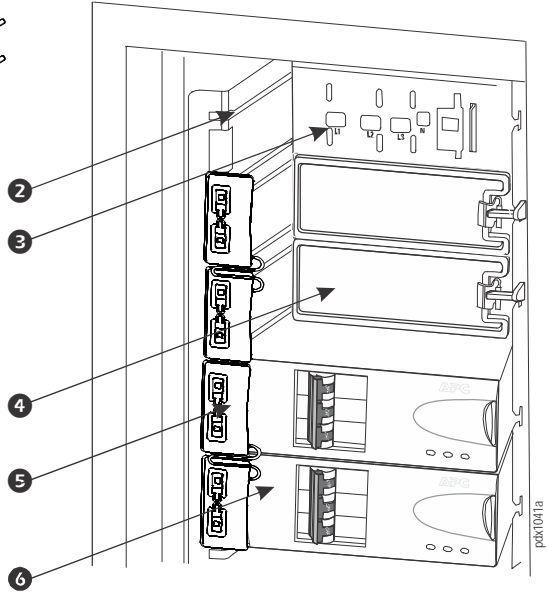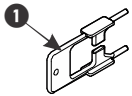
NOTE: Two slot locks are attached together as a pair. The illustration shows the top lock removed from its slot but still attached to the installed lock below it.

Module Types

PDM – Single and Three phase
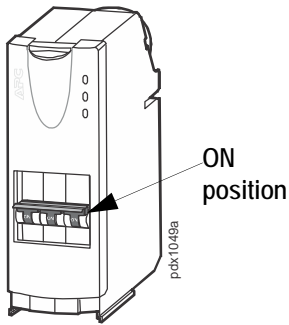
PDM with RCD (Residual Current Devices) - Three phase
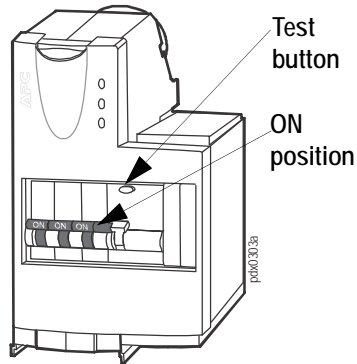
PDM with RCD – Single phase

ON position

pdx1049a

Test button

ON position

pdx0303a

Test button

ON position

pdx0302a
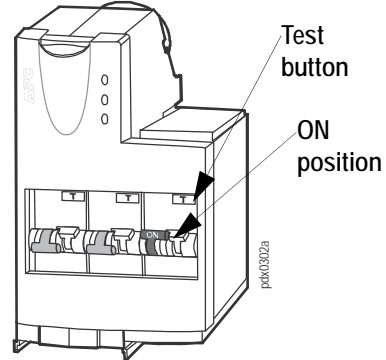
PDMs with RCDs
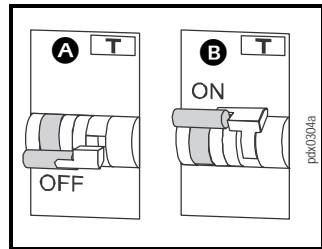
pdx0304a

Ⓐ A ground fault will open the adjacent circuit breaker to the OFF position. The fault is indicated by a red strip on the RCD toggle.

Ⓑ The circuit breaker has been closed manually by pushing the toggle to the ON

Test the Residual Current Device

NOTE: Pushing the test button will open circuit breakers, distributing power to the equipment.

❶ Press the test button and confirm that the Residual Current Device (RCD) and adjacent circuit breaker trip to the OFF position.

❷ Reset the RCD and circuit breaker to normal by pushing the toggle to the ON position.

pdx0427a
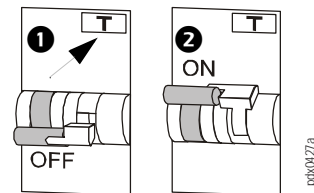
NOTE: Some module circuit breaker styles have circuit breaker handles that will pull all the breakers to the OFF position but can be flipped up to access the individual breakers separately.

OFF position   **ON positions**
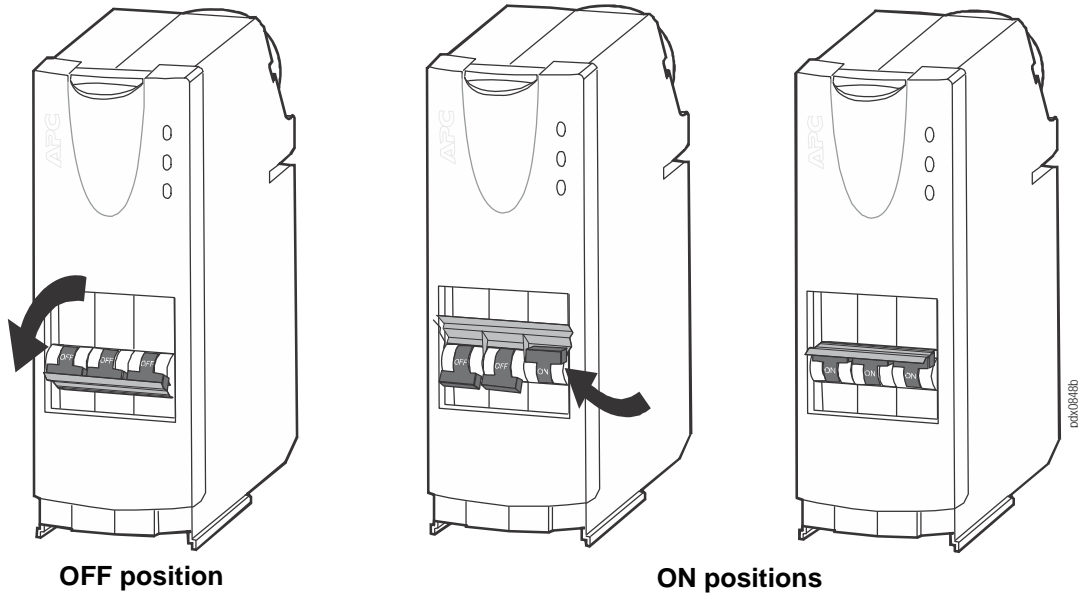
Installation

⚠ ⚠ **DANGER**

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

• To remove a Power Distribution Module:

    1. Turn off all power supplying the equipment and perform appropriate lockout/tagout procedures before installing or removing the Power Distribution Module.
       OR

    2. If a Symmetra PX UPS is providing power to the Modular PDU, place the UPS into battery operation (to reduce fault current) before removing the Power Distribution Module. To place the UPS into battery operation, see the UPS Operation Manual.

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

Open the front door of the unit.

Remove the slot lock
Use the key (provided) to remove the slot lock.

❶ Insert the key in the slot lock as shown in the illustration.

❷ Squeeze the sides of the key inward to grasp the slot lock firmly.

❸ Pull the slot lock key out, while squeezing, to extract the lock from the slot.
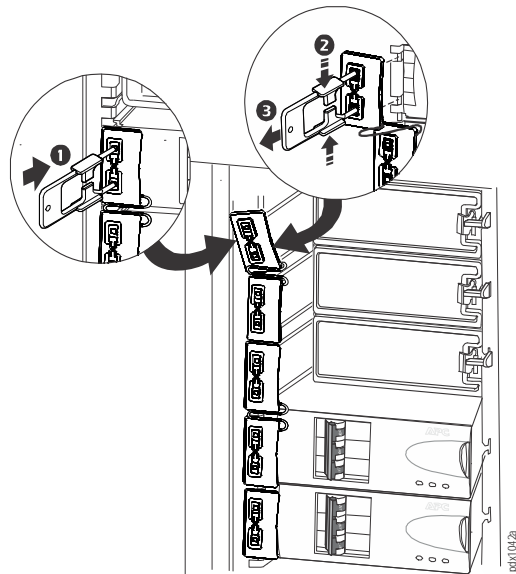
Remove the filler plates

❶ Press down on the filler plate clip to release its locking mechanism.

❷ Pull the filler plate along the slot until it is free.

pdx1040a
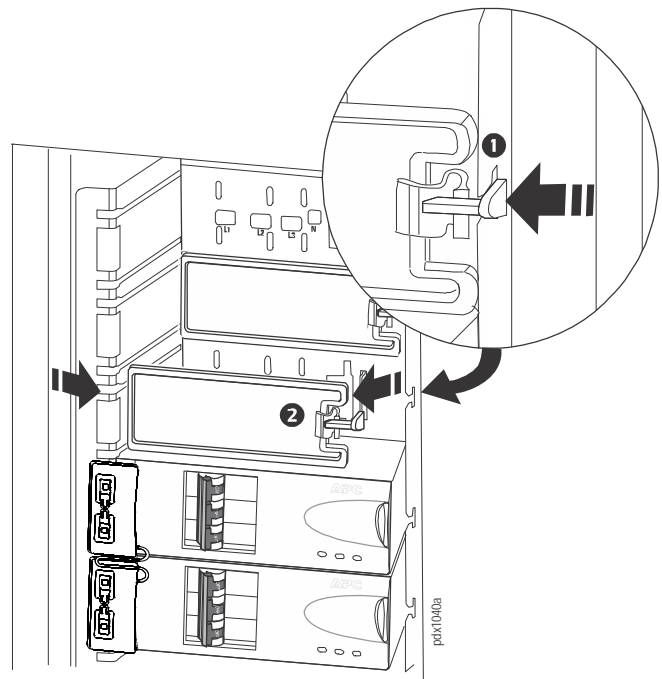
Install a module

❶ Make sure all circuit breakers on the PDM being installed are in the OFF (open) position.
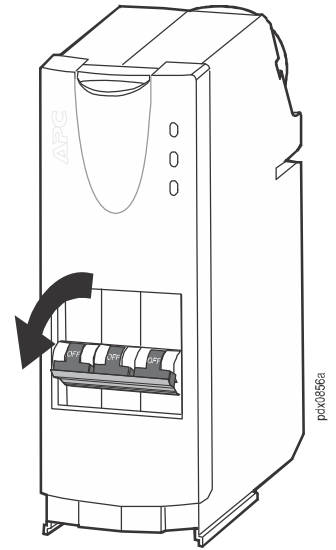
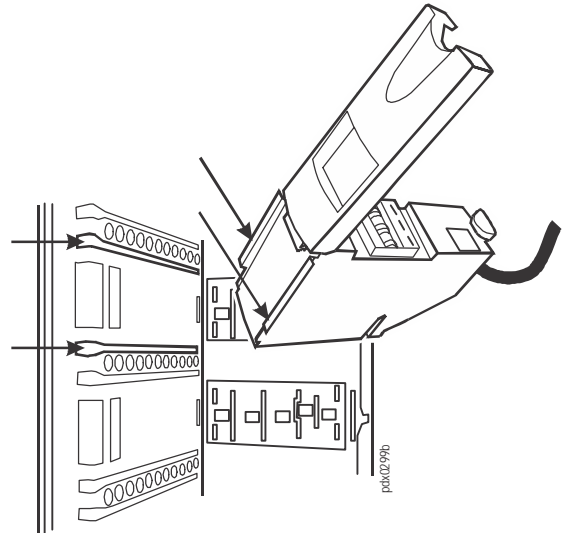❷ Press the red button to release the latch on the PDM.

❸ Pull open the latch.
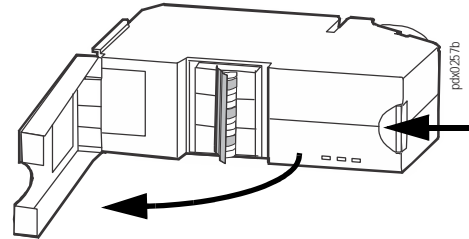
❹ Slide the PDM into the panel using the top and bottom guide tracks (slots) for that position. Slide the PDM all the way into position. Close the latch to tighten the electrical contacts in the PDM against the backplane.

Horizontal Rack Distribution Panel   **Vertical Rack Distribution Panel**
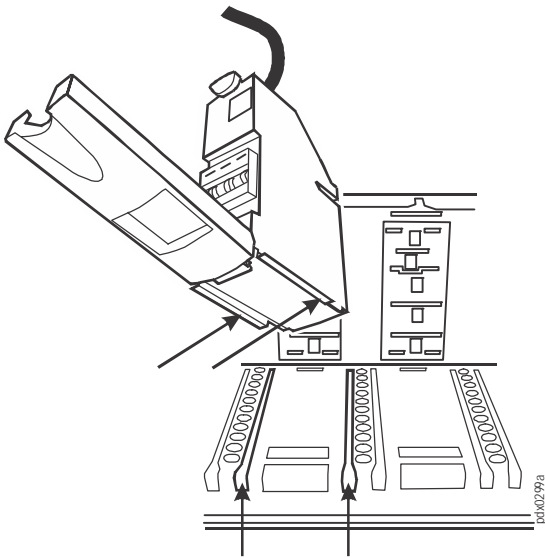
❺ Feed cable from the PDM through the slot in the roof.
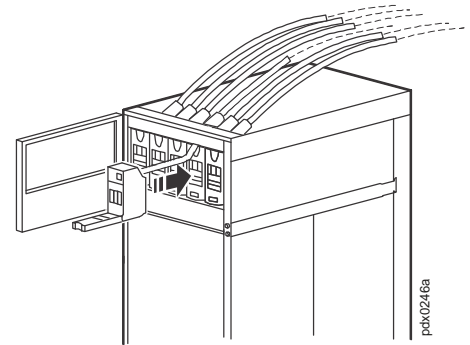
❻ Vertical Rack Distribution Panel Only: Leave a minimum of 7 inches (178 mm) of slack in the cable behind the module. The slack is useful in case the module is ever removed or replaced. 10 to 20 inches (254 to 508 mm) is recommended but space restrictions in the PDU and cable diameter size will cause the amount of slack to necessarily vary.
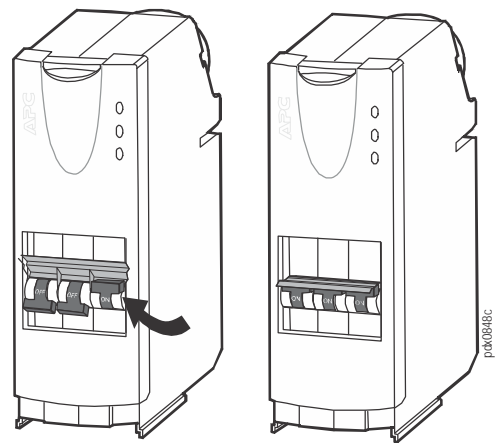
When installing PDMs near the top of the panel, feed the cable first, pulling up the slack, and then secure the module to the backplane to avoid cable congestion between the panel and the slot.
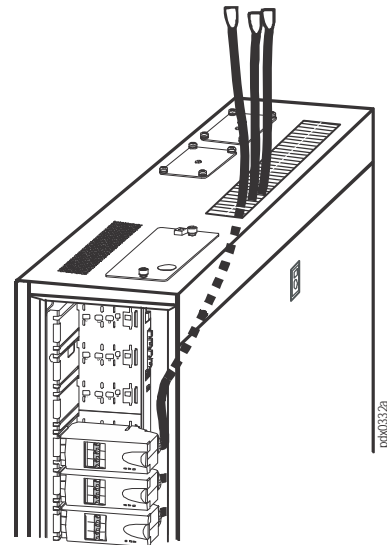
Use plastic ties to secure loose cable(s) to the enclosure
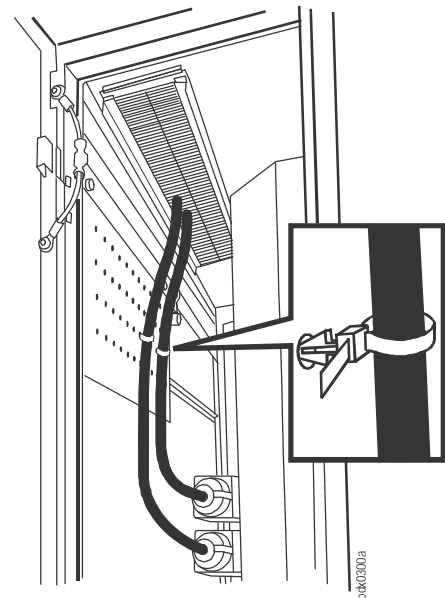
❼ Set the required breakers on the newly installed PDM to the ON (closed) position.
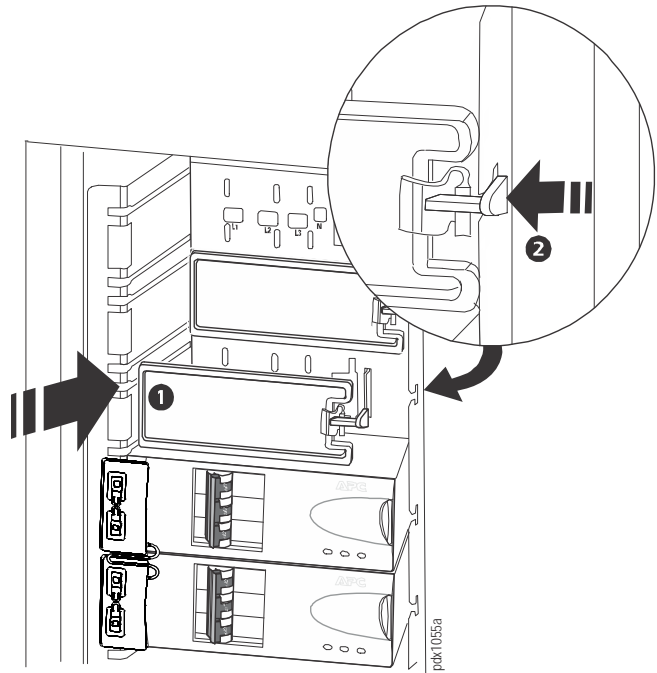
One Circuit Breaker ON   All Circuit Breakers ON

Install filler plates

Install filler plates to properly cover 3-pole panel positions not occupied by a PDM.

❶ Position the filler plate in front of an open PDM location and insert the bottom tab of the filler plate into the slot.

❷ Snap the filler plate into position. Check that the latch is secure.

Install a slot lock

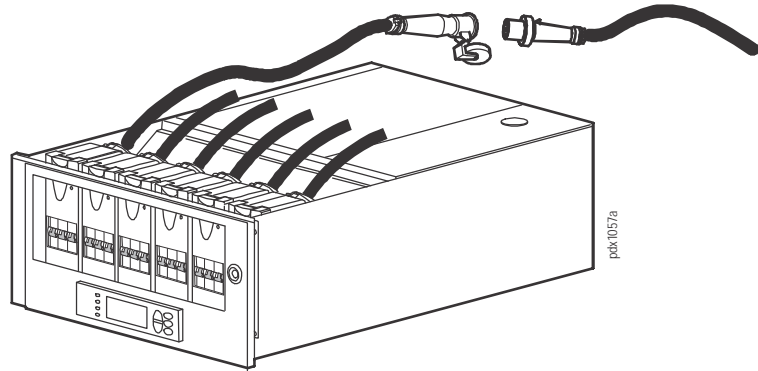**NOTE:** A slot lock must be installed in each module space whether filled by a module or filler plate.

Press the slot lock into the slots as shown in the illustration.
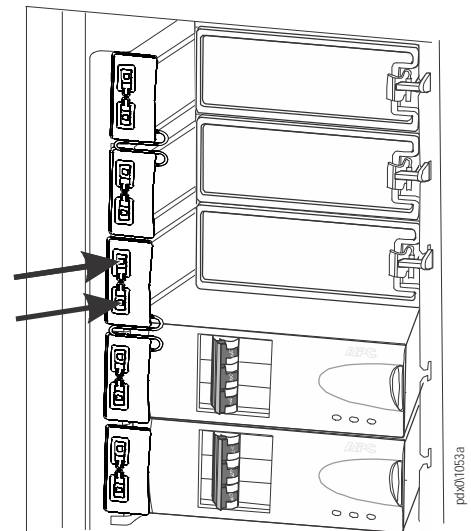
NOTE: Upon completion of PDM installation, close the door to the PDU.

Connect Module cables

Connect the PDM cable to the
appropriate Rack PDU or other
equipment.

NOTE: Power can be restored to the PDU following connection of the PDM cables to the load.

Remove a PDM

⚠ ⚠ **DANGER**
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH
• Electrical equipment must be installed, operated, serviced, and maintained only by qualified personnel.
• To remove a Power Distribution Module:
1. Turn off all power supplying the equipment and perform appropriate lockout/tagout procedures before installing or removing the Power Distribution Module. OR
2. If a Symmetra PX UPS is providing power to the Modular PDU, place the UPS into battery operation (to reduce fault current) before removing the Power Distribution Module. To place the UPS into battery operation, see the UPS Operation Manual.
Failure to follow these instructions will result in death or serious injury.

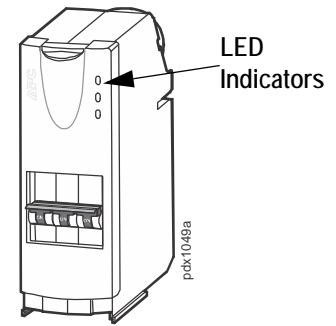Reverse the module installation procedure to remove a PDM.

Troubleshooting

LED Indicators on PDMs

There are three LEDs on each Power Distribution Module. The LEDs indicate the following conditions:

- Red: A critical alarm.
- Yellow: A warning alarm
- Green: No alarm.
- Flashing green: The module is being identified by the system.

LED Indicators

pdx1049a

Status and Alarm Messages

Display Message	Detailed Description	Corrective Action
High Module Current.	The high module current threshold has been exceeded.	Evaluate the threshold setting. Adjust for your situation.
High Subfeed Current.	The high subfeed current threshold has been exceeded.	Evaluate the threshold setting. Adjust for your situation.
High Total Output Current	The total output current exceeded the high threshold.	Evaluate the threshold setting. Adjust for your situation.
High Output Voltage	The output voltage exceeded the high threshold.	Evaluate the threshold setting.Adjust for your situation.
Low Module Current.	The low module current threshold has been exceeded.	Evaluate the threshold setting. Adjust for your situation.
Low Subfeed Current.	The low subfeed current threshold has been exceeded.	Evaluate the threshold setting. Adjust for your situation.
Low Total Output Current	The total output current dropped below the low threshold.	Evaluate the threshold setting. Adjust for your situation.
Low Output Voltage	The output voltage dropped below the low threshold.	Evaluate the threshold setting. Adjust for your situation.
Maximum Module Current.	The maximum module current threshold has been exceeded.	Evaluate the threshold setting. Adjust for your situation.
Maximum Subfeed Current.	The maximum subfeed current threshold has been exceeded.	Evaluate the threshold setting. Adjust for your situation.
Max Total Output Current	The total output current exceeded the maximum threshold.	Evaluate the threshold setting. Adjust for your situation.
Max Output Voltage	The output voltage exceeded the maximum threshold.	Evaluate the threshold setting. Adjust for your situation.
Minimum Module Current.	The minimum module current threshold has been exceeded.	Evaluate the threshold setting. Adjust for your situation.
Minimum Subfeed Current.	The minimum subfeed current threshold has been exceeded.	Evaluate the threshold setting. Adjust for your situation.

Display Message	Detailed Description	Corrective Action
Modular Distribution Communication.	Communication has been lost with the modular distribution breakers.	Check the communication cables to ensure they are properly connected. Contact Customer Support.
Module Breaker Open.	A modular circuit breaker is open.	Check the modular circuit breakers to see if one has overloaded. Replace if necessary.
Output Frequency	The output frequency is exceeding the frequency deviation threshold.	Evaluate the threshold setting and the power quality. Adjust the threshold setting to accommodate your situation. Note: Some backup generators do not tightly regulate their output during normal operation and can trigger this alarm.
Subfeed Breaker Open.	A subfeed circuit breaker is open.	Check the subfeed circuit breakers to see if one has been over-loaded.

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.

Japan—VCCI

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may occur, in which case, the user may be required to take corrective actions.

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準
に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると、電波
妨害を引き起こすことがあります。この場合には、使用者が適切な対策を講ず
るように要求されることがあります。

Taiwan—BSMI

警告使用者：
這是甲類的資訊產品，在居住的
環境中使用時，可能會造成射頻
干擾，在這種情況下，使用者會
被要求採取某些適當的對策。

Worldwide Customer Support

Customer support for this product is available at **www.schneider-electric.com** or contact the representative or other distributors from whom you purchased the product.