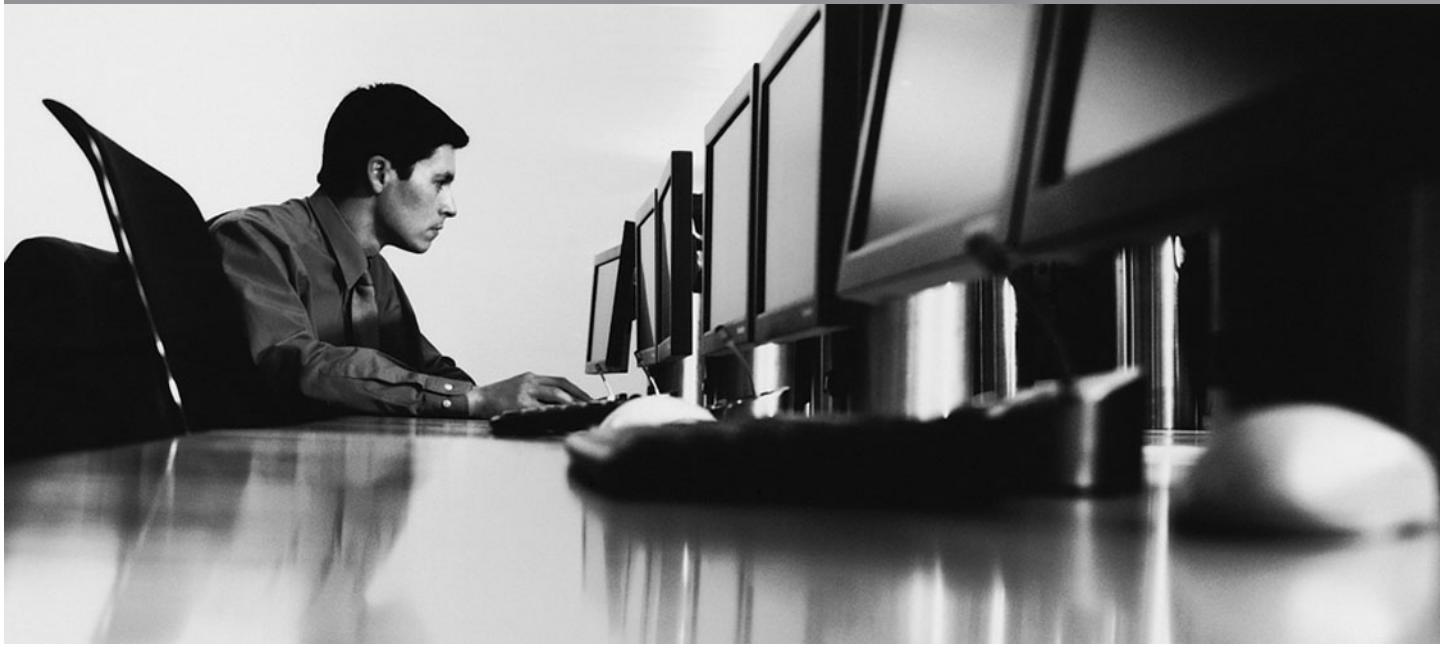




## AVOCENT PM PDU

Installer/User Guide



## **USA Notification**

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

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

## **Canadian Notification**

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

## **Japanese Notification**

この装置は、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要求されることがあります。

VCCI-A

## **Safety and EMC Approvals and Markings**

UL, FCC, cUL, ICES-003, CE, GOST-R, C-Tick, CB





# **Avocent PM PDU**

## **Installer/User Guide**

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590-860-501H

# Symbols Used

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**NOTE:** The following symbols may appear within the documentation or on the appliance.

---



## Instructions

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



## Dangerous Voltage

This symbol is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



## Power On

This symbol indicates the principal on/off switch is in the on position.



## Power Off

This symbol indicates the principal on/off switch is in the off position.



## Protective Grounding Terminal

This symbol indicates a terminal which must be connected to earth ground prior to making any other connections to the equipment.



## Functional Earthing Terminal

This symbol indicates a terminal which serves the purpose of establishing chassis ground equal potential.

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**CHAPTER****1**

# ***Introduction***

This guide enables you to install, configure and maintain your Avocent Power Management Power Distribution Unit (PM PDU).

All Avocent PM PDUs (PM 1000, PM 2000 and PM 3000 PDUs) have strip level metering capabilities. All attached units can also be managed through a web manager, Command Line Interface (CLI), SNMP or serially in conjunction with several Avocent DSR™ KVM over IP switches, ACS 6000 advanced console servers or with DSView™ 3 management software.

The 2000 and 3000 models both provide outlet level metering capability, while the 3000 model also provides outlet level switching.

Metering capability on all Avocent PM units includes:

- Current - Present, Maximum, Minimum, Average
- Voltage - Present, Maximum, Minimum, Average
- Power - Present, Maximum, Minimum, Average
- Power Factor
- Cumulative Watt Hour

## **Features and Benefits**

### **Alarms and monitoring**

The Avocent PM PDU delivers accurate, real-time global current monitoring of all connected devices via the web manager, DSView 3 software or locally through an LED digital display. Users can set a current alarm threshold that, once exceeded, will cause the PM PDU to sound an alarm or send a notification message, or both.

## **LED display**

The PM PDU has an LED that displays aggregate current, phase/bank current, outlet current or temperature. You can use the Function 1 button to switch the type of display and use the Function 2 button to cycle through different targets. Pressing and holding any function button for two seconds will reset the overcurrent protection.

## **Power reset button**

The PM PDU has a power reset button that can be used to reset the PDU without affecting the power supply to equipment plugged into the PDU.

## **In-rush current control**

The PM PDU incorporates an in-rush current control feature that prevents all power outlet receptacles from turning on at once, eliminating possible current surges that could render the equipment inoperable. Together with the global current monitoring, the in-rush current control feature lets users safely install more equipment on existing power circuits without the worry of current overloads.

## **Support for daisy chaining**

PM PDUs can be daisy chained to increase capacity by connecting the control interfaces of several PM PDUs in a series.

## **Integration with Avocent management products**

The PM PDU can be combined with an ACS 6000 console server or DSR KVM over IP switch to provide power management capabilities and faster problem solving by integrating system access and power control in a single interface. Please refer to the appropriate product documentation for more information on how to use the PM PDU with your specific implementation.

## **DSView 3 software plug-in**

The DSView 3 software may be used with the PM PDU to allow IT administrators to remotely access, monitor and control target devices on multiple platforms through a single, web-based user interface. For more information, see the DSView 3 Installer/User Guide or the Avocent PM PDU Technical Bulletin (DSView 3 Software Plug-in).

## **External sensors**

The PM PDU supports external sensors which can monitor a variety of states depending on the model of the sensor. The PM PDU has two RJ-45 connectors which can be used to connect the

---

sensors. Contact your Avocent representative for more information about external sensors for the PM PDU.

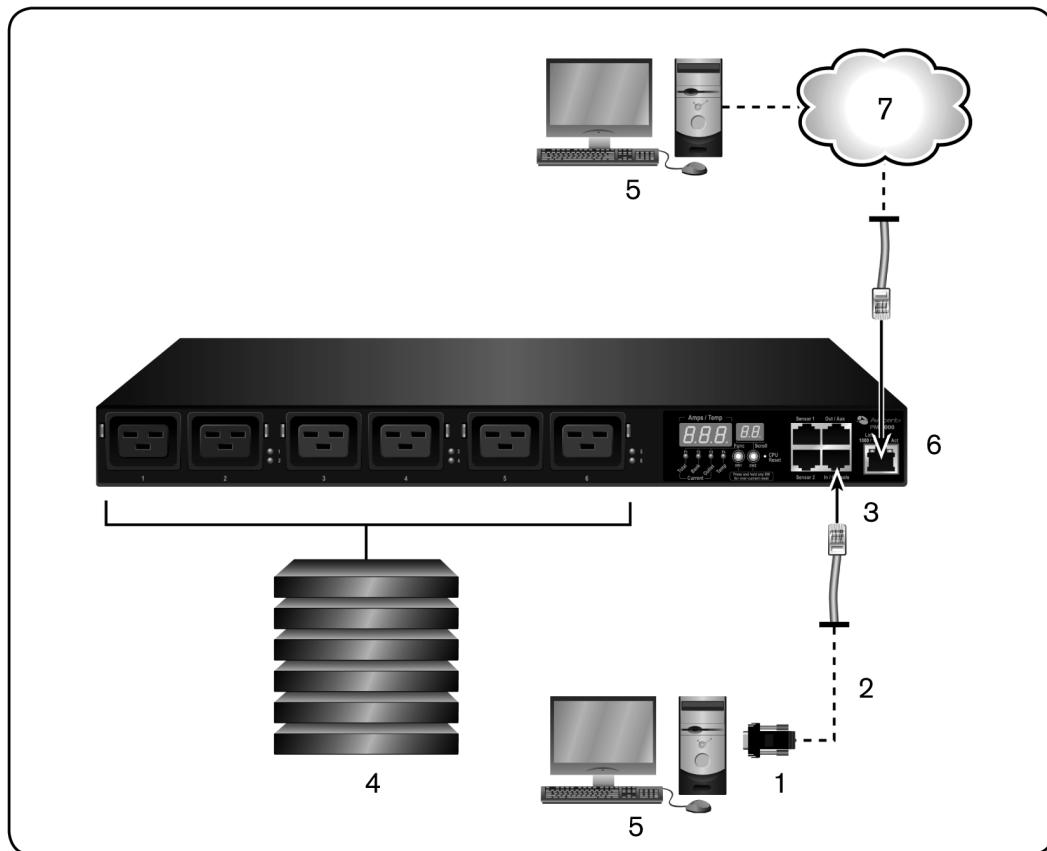
## **Hardware Configuration Options**

The PM PDU may be used in one of two hardware configurations:

- Standalone – Managed independently of any other hardware device.
- Daisy chained - Multiple PDUs connected to one another and managed by one main Avocent PM PDU.

### **Standalone configuration**

In a standalone configuration, the PM PDU operates independently of any other hardware. The following graphic displays a PM PDU with the console port connected to a computer running terminal emulation.



**Figure 1.1: Standalone Configuration**

**Table 1.1: Standalone Configuration Descriptions**

Number	Description	Number	Description
1	RJ-45 to DB-9F Adaptor (Optional)	4	Servers
2	CAT 5 Cable	5	Workstation
3	IN Port	6	Ethernet Port
		7	Ethernet Connection

---

**NOTE:** The installation shows the PM PDU being connected with the RJ-45 to DB-9F adaptor that is shipped with the product. If your unit does not have a DB-9M COM port, you may use a USB serial adaptor and connect to a USB port when possible.

---

## Daisy-chained configuration

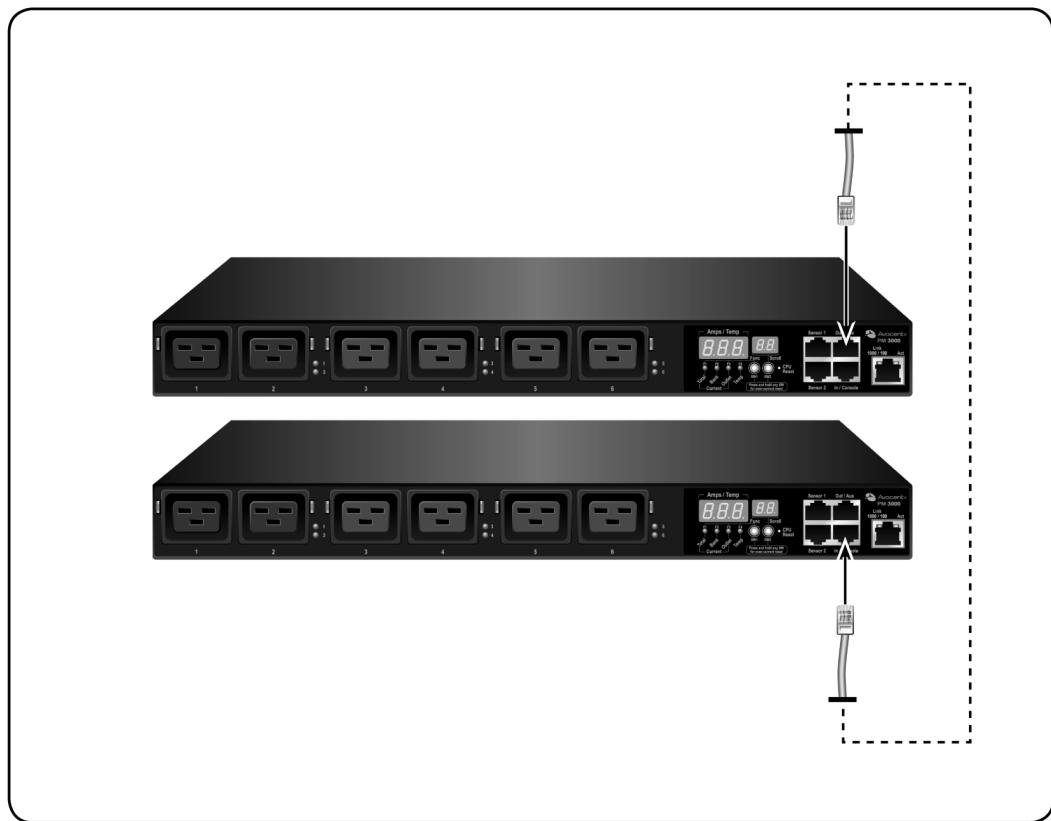
In a daisy-chained configuration, multiple PM PDUs are connected to one another and managed by a single main PM PDU. The PM PDUs are linked together with CAT 5 cables connected through the PM PDU's IN and OUT ports. Avocent PM PDUs can be daisy chained with Cyclades™ PDUs.

---

**NOTE:** You cannot daisy chain an Avocent PM PDU from a Cyclades PDU.

---

You may manage a maximum of five PDUs or a maximum of 128 outlets by connecting multiple PM PDUs to the main PM PDU. The following example shows two PM PDUs operating in a daisy chained environment.



**Figure 1.2: Daisy Chained Avocent PM PDUs**

**To daisy chain a PM PDU:**

1. Connect one end of a CAT 5 cable to the OUT port of the main PM PDU, which is connected to a workstation or management appliance.
  2. Connect the other end of the CAT 5 cable to the IN port of the secondary PM PDU.
- Repeat these steps until you have connected the desired number of PM PDUs.

# ***Installation***

## **Getting Started**

Before installing your Avocent PM PDU, refer to the following list to ensure you have all items shipped with the PDU, as well as other items necessary for proper installation.

### **Supplied with the PM PDU**

- PM PDU Quick Installation Guide (QIG)
- Security Warning Card
- Power Cord
- RJ-45 to RJ-45 straight-through CAT 5 cable
- RJ-45 to DB-9F straight-through adaptor
- RJ-45 adaptor
- Mounting brackets, screws and cord retention clips
- Keyhole mounting kit

---

**NOTE:** If your PM PDU model does not have a fixed power input cable, it may ship with a modular cable. Depending on your site's location, the modular input power cables included in the box vary.

---

### **Additional items needed**

If you are configuring the PM PDU in a standalone configuration, you will also need the following items:

- One or more RJ-45 to RJ-45 CAT 5 straight-through cables
- An RJ-45 to DB-9F straight-through adaptor
- A PC running a terminal emulation program

## Rack Mounting the PM PDU

You may rack mount the PM PDU or place it on a desktop or other flat surface. A horizontal PM PDU can be mounted in a 1U fashion using the included brackets. It can be mounted on either the front or back to display outlets and LEDs on either the front or rear of the rack. A vertical PM PDU can be mounted utilizing the side bars in the rack. When using the sidebars, the PM PDU can be mounted with the outlets on either the top end or the bottom end of the PM PDU.

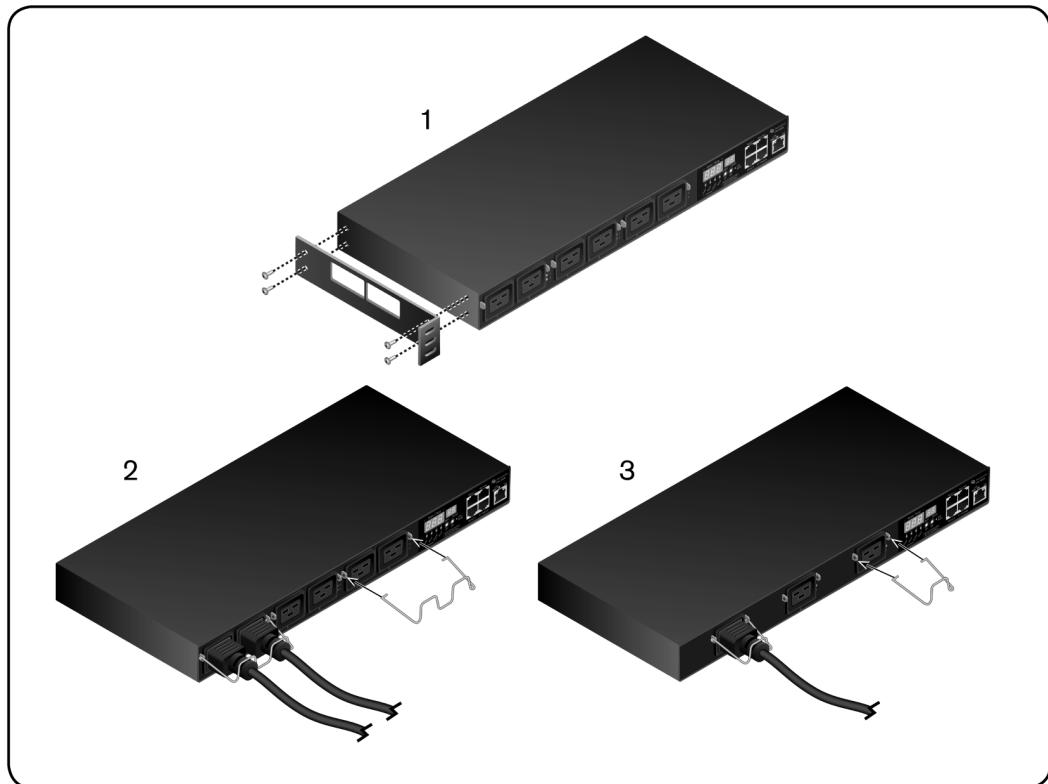
### Mounting a horizontal PM PDU

Attach the supplied mounting brackets to the PM PDU using the four retaining screws provided for each bracket. Align the mounting holes of the brackets with the notched holes on the vertical rail of the rack and attach with the retaining screws. Attach the supplied retention clips (single retention clip for 3-port PM PDU, dual retention clip for 6-port PM PDU) using the notches to the side of the outlets on the PM PDU. Use the provided retention clips or VELCRO® strips to secure the power cords to the PM PDU.

---

**NOTE:** Ensure each bracket is attached to the correct side of the PM PDU so that neither bracket is covering any part of the air vents on the sides of the PDU.

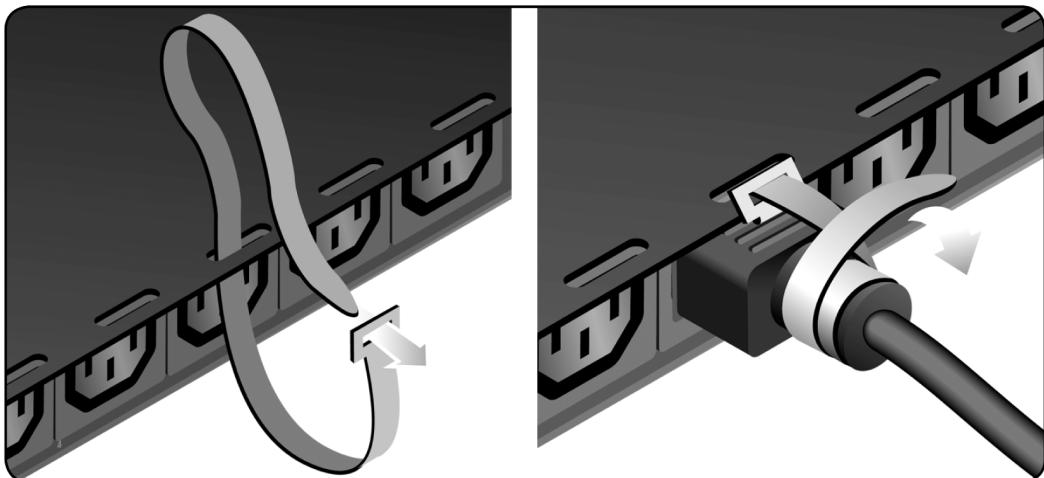
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**Figure 2.1: Mounting a Horizontal PM PDU**

**Table 2.1: Descriptions for Mounting a Horizontal PM PDU**

Number	Description
1	Attaching mounting brackets to a horizontal PM PDU
2	Attaching retention clips to a 3-port horizontal PM PDU
3	Attaching retention clips to a 6-port horizontal PM PDU



**Figure 2.2: Attaching VELCRO® Retention Strips for a Horizontal PM PDU**

## Mounting a vertical PM PDU

### Rack mounting using the tool-less keyed mounting hardware

Locate the two pre-installed round plastic keys on the far ends of the back of the PM PDU. Line up each key with the large end of the keyhole-shaped mounting socket on each end of the rack. Insert the keys and then pull down to lock the PM PDU in place. Use the provided retention clips or VELCRO strips to secure the power cords to the PM PDU.

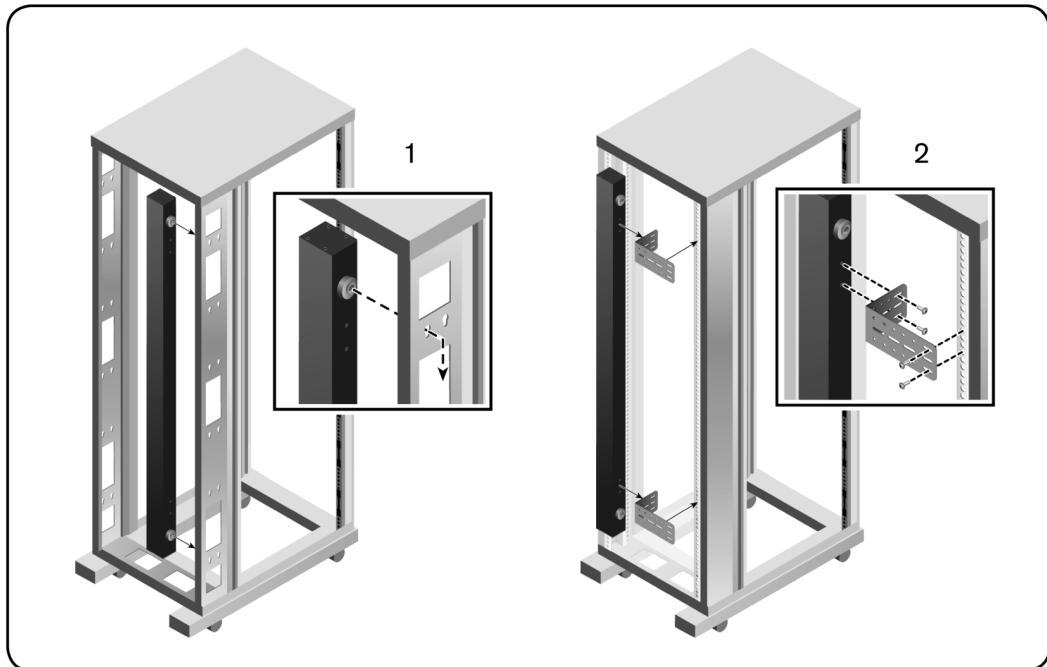
### Rack mounting using the universal mounting brackets

Locate the four pre-installed machine screws on the ends of the back of the PM PDU. Remove these four screws, leaving the the plastic keys installed. Using the same screws you just removed, attach the L-shaped universal mounting brackets to the PM PDU, making sure they are in the desired orientation. Using two screws (designed for your rack) for each bracket, attach the PM PDU to the rack. Leave enough space at either end for cable connections. Attach the supplied retention clips or VELCRO strips using the notches to the side of the outlets on the PM PDU.

---

**NOTE:** Ensure the positioning of the bracket does not interfere with equipment in the rack or doors.

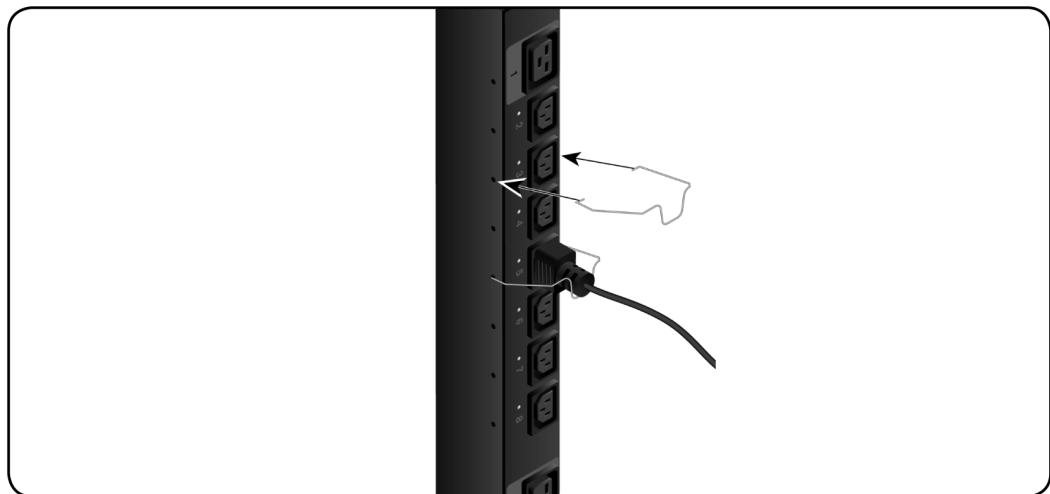
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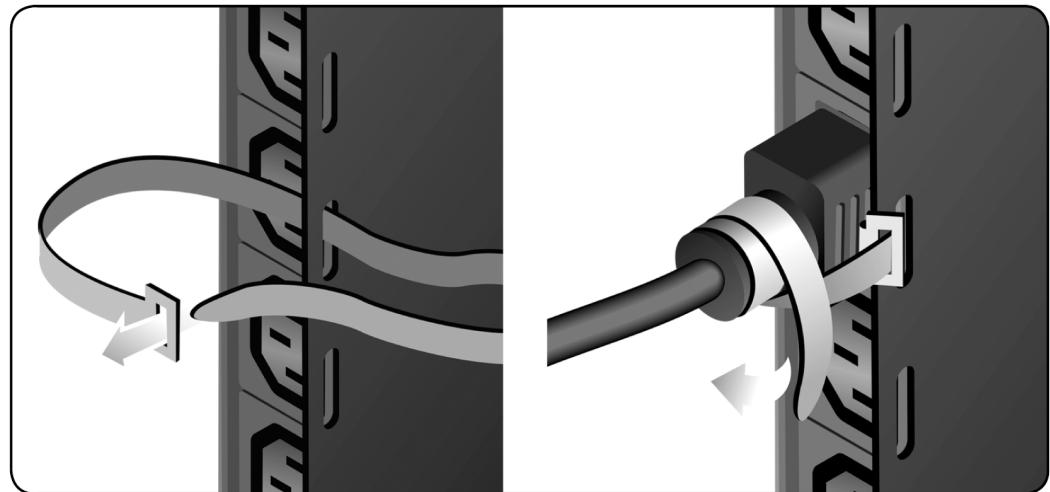
**Figure 2.3: Rack Mounting a Vertical PM PDU**

**Table 2.2: Descriptions for Rack Mounting a Vertical PM PDU**

Number	Description
1	Rack mounting using the tool-less keyed mounting hardware.
2	Rack mounting using the universal mounting brackets.



**Figure 2.4:** Attaching Retention Clips for a Vertical PM PDU



**Figure 2.5:** Attaching VELCRO Retention Strips for a Vertical PM PDU

---

## Rack mount safety considerations

- Elevated Operating Ambient Temperature: If the PM PDU is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature.
- Reduced Air Flow: Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- Mechanical Loading: Mounting of the equipment in the rack should be such that a hazardous condition is not created due to uneven mechanical loading.
- Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable Grounding: Reliable grounding of rack mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit, such as power strips or extension cords.

---

**NOTE:** Install a PM PDU model in a location where there is an adjacent and accessible socket outlet.

---

## Safety Precautions

Read all the following safety guidelines to protect yourself and your PDU.

---

**WARNING:** All outlets of the PDU output high voltage. Necessary precautions should be taken.

---

**WARNING:** Do not push any objects through the openings of the PDU. Doing so may cause fire or electric shock by shorting out interior components.

---

**WARNING:** There is a possibility of severe electrical shock from either the live or neutral side of any of the power outlets or their wiring, even if one of the circuit breakers is disabled.

---

**WARNING:** The PDU is intended for indoor use only.

---

**WARNING:** To help protect the PDU from electrical power fluctuations, use a surge suppressor, line conditioner or uninterruptible power supply.

---

**WARNING:** Be sure that nothing rests on the cables of the PDU and that it is not located where it may be stepped on or tripped over.

---

**WARNING:** Do not spill food or liquids on the PDU. If it gets wet, disconnect the power immediately and contact Avocent.

---

**WARNING:** Keep the PDU away from heat sources.

---

**WARNING:** Disconnect power from the product by unplugging the power cord from either the electrical outlet or the PDU. The AC inlet is the main disconnect for removing power to the PDU. For PDUs that have more than one AC inlet, to remove power completely, all AC line cords must be disconnected. The socket-outlet shall be installed near the equipment and shall be easily accessible.

---

**WARNING:** The PDU relies on protective devices in building installations. Please refer to Appendix A for Listed Branch Circuit type protection.

---

## Accessing the PM PDU

Users and administrators may access the PM PDU either by making a direct console connection to the PM PDU's IN port or by connecting the PM PDU to an Avocent console server or KVM switch.

### To connect the PM PDU to a computer:

1. Connect a CAT 5 cable to the IN port on the PM PDU.
2. Connect the CAT 5 cable to a computer with a terminal emulation program using the RJ-45 to DB-9F straight-through adaptor or a USB serial adaptor.
3. Using a terminal emulation program, connect to the PM PDU with the following settings: ANSI emulation, 9600 bps, 8 bits, no parity, 1stop bit and no flow control.

When prompted, log in either as **admin** with the default password **avocent** or as **root** with the default password **linux**.

### To connect a PM PDU to an Avocent DSR switch:

1. Plug the male end of the included RJ-45 adaptor into the DSR switch's SPC port.
2. Plug one end of a straight-through CAT 5 cable into the female end of the adaptor and plug the other end of the CAT 5 cable into the PM PDU's IN port.

### To connect a PM PDU to an Avocent ACS 6000:

1. Plug one end of a straight-through CAT 5 cable into one of the ACS 6000's serial ports.
2. Plug the other end of the CAT 5 cable into the PM PDU's IN port.

## Configuring the PM PDU

The PM PDU may be configured by either of two methods:

- 
- Command Prompt
  - Browser or text based menu

For information about integrated use with an Avocent management device visit, [www.avocent.com](http://www.avocent.com) or refer to the appropriate product documentation.

## Default configuration parameters

The PM PDU's default configuration is as follows:

- User is admin
- Admin user's password is pm8

---

**NOTE:** The pm8 password is valid only for the console and is used by the main PM PDU in a chain to log in to chained PM PDUs.

---

- All outlets are named. The default name is PDU id\_<outlet number>
- All outlets are unassigned to user
- All outlets are turned on
- All outlets are unlocked

## Recovering the PM PDU password

### To recover the PM root password:

1. Connect directly to the PM PDU's console port.
2. Press the power reset button or power cycle the PM PDU.
3. Type **Ctrl-C** to access the uboot prompt.
4. Type **hw\_boot single** and press **Enter**.
5. The PM PDU will boot into single-user mode. Type **passwd** and press **Enter**.
6. Enter the new password and confirm.
7. Type **reboot** and let the unit boot normally.



**CHAPTER****3**

# **Accessing a PM PDU via the Web Manager**

Once you've connected your Avocent PM PDU to a network, you can access the PM PDU with the web manager. The web manager provides direct access to the PM PDU via a graphical user interface instead of a command-based interface.

---

**NOTE:** For instructions on accessing the PM PDU via the command line interface (CLI), SNMP or DSView 3 software, see *Accessing a PM PDU via the Command Line Interface* on page 47, *Accessing a PM PDU via SNMP* on page 73 or the DSView 3 Installer/User Guide.

---

## **Web Manager Overview for Administrators**

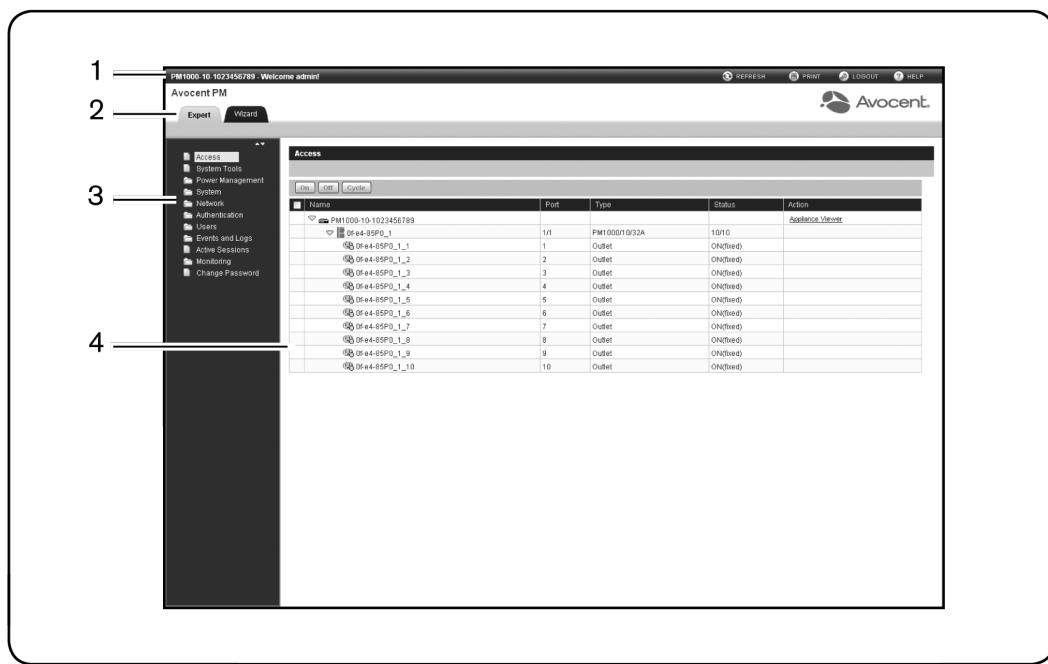
---

**NOTE:** For an overview of the web manager for regular users, see *Web Manager Overview for Regular Users* on page 44.

---

### **To log into the web manager:**

1. Open a web browser and enter the PM PDU's IP address in the address field.
2. Log in as either **admin** with the password **avocent** or as **root** with the password **linux**.

**Figure 3.1: Administrator Web Manager Screen****Table 3.1: Web Manager Administrators Screen Functional Areas**

Number	Description
1	Top option bar. The name of the appliance and of the logged in user appear on the left side. Refresh, Print, Logout and Help buttons appear on the right.
2	Tab bar. Displays whether the admin is in Expert or Wizard mode.
3	Side Navigation Bar. Menu options for configuration, viewing of system information and access to devices. The options change based on user rights.
4	Content area. Contents change based on the options selected in the side navigation bar.

## Wizard Mode

The Wizard mode is designed to simplify the setup and configuration process by guiding an administrator through the configuration steps. An administrator can configure the Security Profile, Network and Users Settings using the Wizard.

By default, the first time an administrator accesses the PM PDU through the web manager, the Wizard will be displayed. Subsequent log-ins will open in Expert mode, and once the PM PDU has been configured, Expert mode becomes the default mode. An administrator can toggle between Expert and Wizard modes by clicking the tab bar on the web manager administrator screen.

Figure 3.2 shows a typical screen when an administrator is in Wizard mode.



**Figure 3.2: Wizard screen**

The following procedures describe how to configure the PM PDU from the Wizard.

### To configure security parameters and select a Security Profile:

1. Select the *Security* link in the content area.
2. Select the desired Security Profile. If using a Custom Security Profile, click the checkboxes and enter values as needed to configure the services, SSH and HTTP and HTTPS options to conform with your site security policy.
3. Under the Bootp Configuration Retrieval heading, uncheck the box(es) to disable Bootp configuration retrieval or live configuration retrieval.
4. If you are not using DSView 3 software to manage the appliance, uncheck the *Allow Appliance to be Managed by DSView 3* box.

5. Click *Next* to configure the Network or click the *Network* or *Users* link to open the appropriate screen.

**To configure network parameters:**

1. Select the **Network** link in the content area.
2. Enter the Hostname, Primary DNS and Domain in the appropriate fields.
3. Select the IPv4 or IPv6 method for the ETH0 interface. If using Static, enter the Address, Mask and Gateway in the appropriate fields.
4. Click *Next* to configure Users or click on the *Security* or *Users* link to open the appropriate screen.

**To configure users and change the default user passwords:**

---

**WARNING:** For security reasons, it is recommended you change the default password for both root and admin users immediately.

---

1. Select the *Users* link in the content area.
2. Click a username (*admin* or *root*) and enter the new password in the Password and Confirm Password fields.  
-or-  
Click *Add* to add a user. Enter the new username and password in the appropriate fields.
3. (Optional) To force the user to change the default password, select the *User must change password at the next* in checkbox.
4. Assign the user to one or more groups.
5. (Optional) Configure account expiration and password expiration.
6. Click *Next*.
7. Repeat steps 3-6 as needed to configure new user accounts and assign them to default groups.
8. Click *Save*, then click *Finish*.

## Expert Mode

The following tabs are available in the Side Navigation Bar of the web manager when an administrator is in Expert mode.

## Access

Click *Access* to view all PM PDUs connected to the network. Click on a PM PDU's name to display its outlets. Click on the arrow next to a PM PDU to display a list of PDUs in a daisy-chained configuration.

---

**NOTE:** For PM 3000 models, you can turn on, turn off or cycle individual outlets or all outlets in the PDU from the Action column. You can also select multiple outlets or multiple PDUs by checking the box next to their names, then turn on, turn off, cycle, lock or unlock them all at the same time.

---

### To view and connect to devices using the web manager:

1. Select *Access* in the Side Navigation Bar. The content area displays the name of the PM PDU and a list of names or aliases for all installed and configured devices the user is authorized to access.
2. Select *Appliance Viewer* from the Action column. A Java applet viewer appears, which shows the following:

```
Welcome to PM1024 <PM1000-24-1024000004>.  
Type help for more information.  
--:- / cli->
```

3. Log in if prompted.

**Table 3.2: Java Applet Buttons for Connecting to the Console Server**

Button	Purpose
SendBreak	To send a break to the terminal
Disconnect	To disconnect from the Java applet
	Select the left icon to reconnect to the server or device; or select the right icon to end the session and disconnect from the Java applet

## System Tools

Click *System Tools* to display icons which can be clicked to reboot or shut down the PM PDU, upgrade its firmware, save or restore its configuration, restore it to factory default settings or open a terminal session with the PM PDU.

For details on upgrading the PM PDU's firmware through a direct connection to the network, an advanced console server or the DSView 3 software, see the "Upgrading Firmware" Technical Bulletin for the PM PDU.

## Power Management

The following tabs are listed under Power Management in the Side Navigation Bar.

### PDUs

#### To manage a PDU:

1. Select *Power Management - PDUs*.
2. Select the checkbox next to the PDU for which you want to manage power.
3. Click *On, Off, Cycle, Reboot PDU, Reset HW Overcurrent Protection for Factory Defaults* if desired. A confirmation appears. Click *OK*.

---

**NOTE:** The power controls (On, Off and Cycle) will be applied to all outlets of the PDU.

---

4. To change the PDU ID, click *Rename* and enter the name in the New PDU ID field.
5. Click *Save*.

#### To view a PDU's information:

1. Select *Power Management - PDUs*.
2. Click the name of the PDU you want to view or manage.
3. The Outlet Table with power controls window appears and the Side Navigation Bar displays a list of options.
4. To manage outlets of PDU:
  - a. Check the box(es) of the outlet number(s) you want to manage.
  - b. Click *On, Off, Cycle, Lock* or *Unlock* to perform that function for the selected outlet(s).
5. Click *Information* in the Side Navigation Bar to view a PDU's information.
6. Click *Overview, Current, Voltage, Power Consumption, Cumulative Power or Environment* in the Side Navigation Bar to view a table with appropriate information.
7. To reset values, check the box next to the outlet you want to reset and click *Reset Values* to clear Max, Min and Average values.

#### To manage outlets on a PDU:

1. Select *Power Management - PDUs* and click on the name of the PDU you want to manage.
2. Click *Settings* to expand the Side Navigation Bar.
3. Click *Outlets*.

4. Click on an outlet number to change its settings. You can change the Name, Post On Delay, Post Off Delay, Current Critical Threshold, Current Warning Threshold and Current Low Warning Threshold. Click *Save*, then click *Close*.  
-or-  
Check two or more boxes next to the outlets for which you want to change settings. Click *Edit*. You can change the Prefix Name (the outlet name will be the Prefix Name with an underscore and the outlet number), Post On Delay, Post Off Delay, Current Critical Threshold, Current Warning Threshold and Current Low Warning Threshold. Click *Save*.
5. Click *PDU* to see PDU settings. You can configure Cold Start Delay and Current Threshold(s). Click *Save* when finished.
6. Click *Phases or Banks*.
  - a. Click on the name of a phase or bank to change its settings, or click one or more boxes next to the phase(s) or bank(s) you want to change. You can change the Current Critical Threshold, Current Warning Threshold and Current Low Warning Threshold.
  - b. Click *Save* to save the settings and click *Close* to return to the Phases or Banks screen.
7. Click *Environment*.
  - a. Click on the name of a sensor to change its settings. You can configure a sensor's name and its thresholds. Click *Save*.

---

**NOTE:** The PDU model defines available parameters in the Settings window.

---

## Settings

Select *Power Management -Settings* to view and configure power management settings.

### To manage PDU settings:

1. Select *Power Management - Settings*.
2. In the Password field, enter the password an administrator can use to log in to the PDU from its console port. This password is saved in plain text format and it is not the secure password of an admin user, which by default is set as *avocent*. The password is also used by the PM PDU to connect to any daisy-chained PDUs.
3. Enter the polling rate (in seconds) the PM PDU will use to retrieve data from daisy-chained PDUs.

4. Enter the power cycle interval (in seconds) and then use the drop-down menus to enable or disable syslog, buzzer and SW overcurrent protection. These settings will apply to all PDUs in a daisy-chained configuration.
5. To enable data logging, check the box next to Enable Data Logging.
6. Click *Save*.

## Outlet Groups

By selecting the *Outlet Groups* tab, you can view status, outlet and power consumption for outlet groups. You can also turn on, turn off or cycle selected outlet groups.

### To add an outlet group:

1. Select *Power Management - Outlet Groups*. The Outlet Groups window appears.
2. Click *Add*. The Add Group window appears.
3. Enter the name of the Outlet Group in the Group Name field.
4. Click *Save*.

### To manage outlet groups:

1. Select *Power Management - Outlet Groups*. The Outlet Groups window appears.
2. Check the box next to the name of the Outlet Group you want to manage.
3. Click *Delete* to remove the outlet group. Click *On*, *Off* or *Cycle* as desired.

---

**NOTE:** If the command fails for one outlet, the entire command is rejected so no outlets in the group will change.

---

### To configure an outlet group:

1. Select *Power Management - Outlet Groups*. The Outlet Groups window appears.
2. Click the name of the outlet group you want to configure. The Outlet Group Details window appears.
3. Click *Add*. The Outlet Settings window appears.
4. Click the radio button next to *Select PDU* to use a connected PDU. Enter the outlets to be part of the group in the outlets field.

-or-

Click the radio button next to *Custom* and enter the PDU ID and outlets in the appropriate fields.
5. Click *Save*.

**To view and change outlet group information:**

1. Select *Power Management - Outlet Groups*. The Outlet Groups window appears.
2. Click on the name of the outlet group for which you want to view information. The Outlet Group Information window appears displaying outlet, status and power consumption information.

## Data Logging

By selecting the *Data Logging* tab, you can clear or export data logging for PDU, phase, bank, outlet or environment.

**To clear data logging:**

1. Select *Power Management - Data Logging*. The Data Logging window appears.
2. Select the checkbox next to the type you want to clear.
3. Click *Clear Data Logging*. A confirmation box opens. Click *OK*.

**To export data logging:**

1. Select *Power Management - Data Logging*. The Data Logging window appears.
2. Select the checkbox next to the type you want to export.
3. Click *Export Data Logging*. The Export Data Logging window appears.
4. Select to export data logging to either an FTP Site or to a Local File, then click *Save*.

## System

Click *System* to display information about the PM PDU and allow an administrator to configure the PM PDU's system parameters. The following tabs are listed under System in the Side Navigation Bar.

## Security

Security Profiles determine which network services are enabled on the PM PDU.

During initial configuration, the PM PDU administrator must configure security parameters to conform with the site security policy. The following security features can be configured either in the web manager, CLI or the DSView 3 software:

- Configure the session idle time-out
- Enable or disable RPC
- Enable outlet access control by authorized user groups.

- Select a Security Profile, which defines:
  - Enabled services (FTP, ICMP, IPSec, SNMP and Telnet)
  - SSH and HTTP/HTTPS access

The administrator can select either a preconfigured Security Profile or create a custom profile.

All the services and the SSH and HTTP/HTTPS configuration options that are enabled and disabled for each Security Profile are shown in the Wizard - Security and the System - Security - Security Profile pages.

#### To configure the Security Profile:

1. Select *System - Security - Security Profile*.
2. In the Idle Timeout field, enter the number of seconds before the PM PDU times out open sessions.

---

**NOTE:** This value applies to any user session to the appliance via HTTP, HTTPS, SSH, Telnet or CONSOLE port. The new idle time-out will be applied to new sessions only.

---

3. Under the Enabled Services section, enable or disable the *RCP* checkbox.
4. Under the Authorization heading, uncheck the box if you want to allow regular users to be able to control outlets.
5. Under the Bootp Configuration Retrieval heading, uncheck the box(es) to disable Bootp configuration retrieval or live configuration retrieval.
6. Select the checkbox for *Custom, Moderate, Open or Secure* under the Security Profile heading.
  - a. If using a Custom security profile, to enable Telnet, FTP, SNMP or ICMP, check the appropriate box(es) in the Enabled Services field.
  - b. Use the pull-down menu to set the version, check the box to allow root access and enter the TCP Port number in the SSH field.
  - c. Enable HTTP and HTTPS by checking the appropriate boxes in the WEB field.
  - d. Enter the numbers for the HTTP and HTTPS ports in the appropriate fields.
  - e. Use the pull-down menu to set the HTTPS SSL Version.
  - f. Check the box to redirect HTTP/HTTPS.
7. Click *Save*.

You can also configure DSView 3 software security settings. When the PM PDU is managed by the DSView 3 software, the DSView 3 server will supply the certificate to the PM PDU. Under normal conditions, the DSView 3 software will manage the certificate to clear and replace it with a new certificate as needed. If communication with the DSView 3 software is lost, the DSView 3 server will be unable to clear the certificate and the PM PDU cannot be used. Click the *Clear DSView 3 Certificate* button to configure the PM PDU in Trust All mode.

### To configure DSView 3 software security settings:

1. Select *System - Security - DSView 3*.
2. Click the *Allow appliance to be managed by DSView 3* checkbox and click *Save*.

### Bootp Configuration Retrieval

You can set your PM PDU to be reconfigured during boot or at IP renewal.

### To reconfigure a PDU via bootp:

1. Click *System Tools-Save Configuration* and save the configuration to either an FTP site or locally.

-or-

Use the *list\_configuration* command to get the CLI template scripts, edit the configuration of the PDU and save it as a text file.

2. Transfer the saved file to a DHCP server.
3. Click *System-Security-Security Profile*. Under the Bootp Configuration Retrieval heading, ensure the box next to Enabled is checked.
4. Uncheck the box next to Enable Live Configuration. The saved configuration will be retrieved and applied on the next reboot.

-or-

Ensure the box next to Enable Live Configuration is checked. The saved configuration will be retrieved and applied on the next IP renewal.

---

**NOTE:** You must configure your DHCP server in order to transfer the configuration file to your PM PDU.

---

## Date and Time

The PM PDU provides two options for setting the date and time. It can retrieve the date and time from a network time protocol (NTP) server, or you can set the date and time manually so that the PM PDU's internal clock is used to provide time and date information.

---

**NOTE:** The Current Time displayed in the Date & Time screen shows only the time when the screen was opened. It does not continue to update in real time.

---

**To set the time and date using NTP:**

1. Click *System - Date And Time*.
2. Select *Enable network time protocol*.
3. Enter the NTP server site of your choice and click *Save*.

**To set the time and date manually:**

1. Click *System - Date And Time*.
2. Select *Set manually*.
3. Using the drop-down menus, select the required date and time and click *Save*.

**To set the time zone using a predefined time zone:**

1. Click *System - Date And Time - Time Zone*.
2. Select *Predefined*.
3. Select the required time zone from the drop-down menu and click *Save*.

**To define custom time zone settings:**

1. Click *System- Date And Time - Time Zone*.
2. Select *Define Time Zone*.
3. Enter the Time Zone Name and Standard Time Acronym of your choice.
4. Enter the GMT Offset.
5. Select *Enable daylight savings time* if needed.
6. Select or enter the required values for daylight savings time settings and click *Save*.

## Help and Language

Click *System - Help And Language* and use the drop-down menu to select the PM PDU's language. Enter the full URL of the online help, ending in /index.html, on the local web server in the Online Help URL field. Click *Save*.

### Online help

When the online help feature is configured for your PM PDU, clicking the *Help* button from any form on the web manager opens a new window and redirects its content to the configured path for the online help product documentation.

---

**NOTE:** Using the online help feature from the Avocent/Cyclades server is not always possible due to firewall configurations, nor is it recommended. It is generally advisable for you to use the online help system provided with the product or download the online help .zip file and run it from a local server.

---

The system administrator can download the online help from Avocent. For more information on downloading the online help, contact Technical Support.

Once the online help file is obtained (in zip format), the files must be extracted and put in to a user-selected directory under the web server's root directory. The web server must be publicly accessible.

## Boot Configuration

Boot configuration defines the location from which the PM PDU loads the operating system. The PM PDU can boot from its internal firmware or from the network. By default, the PM PDU boots from Flash memory. Clicking *System- Boot Configuration* will display the Boot Configuration screen.

If you need to boot from the network, make sure the following prerequisites are met:

- A TFTP or BootP server must be available on the network
- An upgraded PM PDU boot image file must be downloaded from Avocent and made available on the TFTP or BootP server
- The PM PDU must be configured with a fixed IP address
- The boot filename and the IP address of the TFTP or BootP server is known

### To configure boot configuration:

1. Click *System - Boot Configuration*.
2. Under Boot Mode, select *From Flash*, and select *Image 1* or *Image 2*.

-or-

Select *From Network* and enter the following information:

- Appliance IP Address: Enter the fixed IP address or a DHCP assigned IP address to the PM PDU.
  - TFTP Server IP: Enter the IP address of the TFTP boot server.
  - Filename: Enter the filename of the boot firmware.
3. Using the drop-down menu, select whether the Watchdog Timer is enabled. If the Watchdog Timer is enabled, the PM PDU reboots if the software crashes.
  4. Using the drop-down menu, select one of the following speeds for Ethernet 0: 100BT full, 100BT half, 10BT full, 10BT half or Auto. Click *Save*.

---

**NOTE:** Ethernet Mode will be affected after saving. The rest of the configuration will be applied after rebooting.

## Information

Click *System-Information* to view the PM PDU's identity, versions and CPU information.

## Usage

Click *System-Usage* to view memory and Flash usage.

## Network

Click *Network* to view and configure the network options for Hostname, DNS, IPv6, IPv4 and IPv6 static routes, Hosts, Firewall and SNMP.

## Settings

Click *Network - Settings* to make changes to the configured network settings.

## Devices

An administrator can select, enable and configure the IP addresses assigned to the network interface and view the MAC address. A PM PDU has a single eth port and cannot have any plugged in eth port.

### To configure a network device:

1. Select *Network - Devices*. The Devices screen appears with a list of network interfaces and their status (enabled or disabled).
2. Click the name of the network device to configure.
3. Select the status (either *Enabled* or *Disabled*) from the drop-down menu.
4. Select one of the following IPv4 method options:
  - Select *DHCP* to have the IPv4 IP address set by the DHCP server.
  - Select *Static* to enter the IPv4 IP address and subnet mask manually.
  - Select *IPv4 address unconfigured* to disable IPv4.
5. Select one of the following IPv6 method options:
  - Select *Stateless* if the link is restricted to the local IP address.
  - Select *DHCPv6* to have the IPv6 IP address set by the DHCP server.
  - Select *Static* to enter the IPv6 IP address and prefix length manually.
  - Select *IPv6 address unconfigured* to disable IPv6.
6. Select the Ethernet Mode for the built-in interface (ETH0).

---

**NOTE:** The MAC Address for the device will be displayed after this option.

---

## IPv4 and IPv6 static routes

An administrator can select *Network - IPv4 Static Routes* or *IPv6 Static Routes* to configure static routes.

### To add static routes:

1. Select *Network - IPv4 Static Routes* or *IPv6 Static Routes*. Any existing static routes are listed with their Destination IP/Mask, Gateway, Interface and Metric values shown.
2. Click *Add*.
3. Select *Default* to configure the default route.

-or-

Select *Host IP Or Network* to enter custom settings for Destination IP/Mask.

Enter the required Destination IP/Mask Bits with the syntax <destination IP>/<CIDR> in the Destination IP/Mask Bits field.

4. Enter the IP address of the gateway in the *Gateway* field.
5. Enter the number of hops to the destination in the *Metric* field, then click *Save*

## Hosts

An administrator can configure a table of host names, IP addresses and host aliases for the local network.

### To add a host:

1. Select *Network - Hosts*.
2. Click *Add* to add a new host.
3. Enter the IP address, hostname and alias of the host you want to add, then click *Save*.

### To edit a host:

1. Select *Network - Hosts*.
2. Click on the IP address of the hostname you want to edit.
3. Enter a new hostname and alias, as applicable, then click *Save*.

## Firewall

Administrators can configure the PM PDU to act as a firewall. By default, three built-in chains accept all INPUT, FORWARD and OUTPUT packets. Select the *Add*, *Delete* or *Change Policy*

buttons to add a user chain, delete user added chains and to change the built-in chains policy. Default chains can have their policy changed (Change Policy) to accept or drop, but cannot be deleted. Clicking on the *Chain Name* allows you to configure rules for chains.

Firewall configuration is available by clicking *Network - Firewall*. Separate but identical configuration screens are available from either the *IPv4 Filter Table* or *IPv6 Filter Table* menu options.

Only the policy can be edited for a default chain; default chain policy options are ACCEPT and DROP.

When a chain is added, only a named entry for the chain is created. One or more rules must be configured for a chain after it is added.

### Configuring the firewall

For each rule, an action (either *ACCEPT*, *DROP*, *RETURN*, *LOG* or *REJECT*) must be selected from the Target pull-down menu. The selected action is performed on an IP packet that matches all the criteria specified in the rule.

If *LOG* is selected from the Target pull-down menu, an administrator can configure a Log Level, a Log Prefix and whether the TCP sequence, TCP options and IP options are logged in the Log Options Section.

If *REJECT* is selected from the Target pull-down menu, an administrator can select an option from the Reject with pull-down menu; the packet is dropped and a reply packet of the selected type is sent.

### Protocol options

Different fields are activated for each option in the Protocol pull-down menu.

- If *Numeric* is selected from the Protocol menu, enter a Protocol Number in the text field.
- If *TCP* is selected from the Protocol menu, a TCP Options Section is activated for entering source and destination ports and TCP flags.
- If *UDP* is selected from the Protocol menu, the UDP section is activated for entering source and destination ports.

**Table 3.3: Firewall Configuration - TCP and UDP Options Fields**

---

Field/Menu Option	Definition
Source Port - or - Destination Port	A single IP address or a range of IP addresses.

---

---

Field/Menu Option	Definition
TCP Flags	[TCP only] SYN (synchronize), ACK (acknowledge), FIN (finish), RST (reset), URG (urgent) and PSH (push). The conditions in the pull-down menu for each flag are: Any, Set or Unset.

---

- If ICMP is selected from the Protocol menu, the ICMP Type pull-down menu is activated.
- If an administrator enters the Ethernet interface (eth0 or eth1) in the input or output interface fields and selects an option (*2nd and further packets*, *All packets and fragments* or *Unfragmented packets and 1st packets*) from the Fragments pull-down menu, the target action is performed on packets from or to the specified interface if they meet the criteria in the selected Fragments menu option.

**To add a chain:**

1. Select *Network - Firewall*.
2. Select either *IPv4 Filter Table* or *IPv6 Filter Table* as needed.
3. Click *Add*.
4. Enter the name of the chain to be added.
5. Click *Save*.

---

**NOTE:** Spaces are not allowed in the chain name.

---

6. Add one or more rules to complete the chain configuration.

**To change the policy for a default chain:**

---

**NOTE:** User-defined chains cannot be edited. To rename a user-added chain, delete it and create a new one.

---

1. Select *Network - Firewall*.
2. Select either *IPv4 Filter Table* or *IPv6 Filter Table* as needed.
3. Select the checkbox next to the name of the chain you want to change (*FORWARD*, *INPUT*, *OUTPUT*).
4. Click *Change Policy* and select *Accept* or *Drop* from the drop-down menu.
5. Click *Save*.

**To add a rule:**

1. Select *Network - Firewall*.
2. Select either *IPv4 Filter Table* or *IPv6 Filter Table* as needed.
3. From the chain list, click the name of the chain you want to add a rule to.

4. Click *Add* and configure the rule as needed, then click *Save*.

**To edit a rule:**

1. Select *Network - Firewall*.
2. Select either *IPv4 Filter Table* or *IPv6 Filter Table* as needed.
3. From the chain list, click the name of the chain with the rule you want to edit.
4. Select the rule you want to edit and click *Edit*.
5. Modify the rule as needed and click *Save*.

## SNMP configuration

An administrator can configure SNMP, which is needed if notifications are to be sent to an SNMP management application.

**To configure SNMP:**

1. Click *Network - SNMP*.
2. Click the *System* button.
  - a. Enter the SysContact information (email address of the PM PDU's administrator, for example, **pmpdu\_admin@avocent.com**).
  - b. Enter the SysLocation information (physical location of the PM PDU, for example, **Avocent\_pmpdu**), then click *Save* to go back to the SNMP screen.
3. Click *Add* to add a new community or v3 user.
4. Enter the community name for SNMP v1/v2 or the user name for SNMP v3 in the Name field and enter the OID.
5. Select the desired permission from the pull-down menu. Choices are *Read and Write* or *Read Only*.
6. If the required SNMP version is v1 or v2, click the *Version v1, v2* button, then enter the source (valid entry is the subnet address).

-or-

If the required SNMP version is v1 or v2 using an IPv6 network, click the *Version v1,v2 for IPv6 network* button, then enter the source (valid entry is the subnet address).

-or-

If the required SNMP version is v3, click the *Version v3* button, then select the Authentication Type (*MD5* or *SHA*), enter the authentication passphrase or password,

enter the privacy passphrase for DES and select the Minimum Authentication Level (*NoAuthNoPriv*, *AuthNoPriv*, *AuthPriv*).

7. Click *SaveSNMP Configuration*.

## Authentication

Authentication can be performed locally, with OTP, or on a remote Kerberos, LDAP, NIS, Radius or TACACS+ authentication server. If the PM PDU is managed by a DSView 3 server, DSView 3 authentication is also supported. The PM PDU also supports remote group authorizations for the LDAP, Radius and TACACS+ authentication methods.

Fallback mechanisms of the following types are available:

Local authentication can be tried first, followed by remote, if the local authentication fails (Local/Remote\_Method)

-or-

Remote authentication may be tried first, followed by local (Remote\_Method/Local)

-or-

Local authentication may be tried only if a remote authentication server is down (Remote\_Method\_Down\_Local).

An administrator can configure authentication using the CLI utility and the web manager. The default authentication method for the PM PDU is Local. Any authentication method that is configured for the PM PDU is used for authentication of any user who attempts to log in through Telnet, SSH or the web manager.

## Appliance authentication

Select Appliance Authentication to configure the authentication method used to log in to the PM PDU with access to all allowed operations in the appliance, PDUs and outlets.

### To set authentication for the PM PDU:

1. Click *Authentication - Appliance Authentication*.
2. Select the desired authentication server from the Authentication Type drop-down menu.
3. Click *Save*.

## Authentication servers

When using an authentication server, you must configure its IP address and in most cases other parameters before it can be used. The following authentication servers require configuration:

RADIUS, TACACS+, LDAP(S)AD, Kerberos, NIS and DSView 3 servers.

**To configure a RADIUS authentication server:**

1. Select *Authentication - Authentication Servers - RADIUS*.
2. Enter the IP addresses of the First Authentication Server and First Accounting Server.
3. If used, enter the IP addresses for the Second Authentication Server and Second Accounting Server.
4. Enter your secret word or passphrase in the Secret field (applies to both first and second authentication and accounting servers), then re-enter the secret word or passphrase in the Confirm Secret field.
5. Enter the desired number of seconds for server time-out in the Timeout field.
6. Enter the desired number of retries in the Retries field.
7. If you select the *Enable Service-Type attribute to specify the authorization group* checkbox, enter the authorization group name for each of the following Service Types: Login, Framed, Callback Login, Callback Framed, Outbound and Administrative.
8. Click *Save*.

**To configure a TACACS+ authentication server:**

1. Select *Authentication - Authentication Servers - TACACS+*.
2. Enter the IP addresses for the First Authentication Server and First Accounting Server.
3. If used, enter the IP addresses of the Second Authentication Server and Second Accounting Server.
4. Select the desired service (PPP or raccess) from the Service drop-down menu.
5. Enter your secret word or passphrase in the Secret field (applies to both first and second authentication and accounting servers), then re-enter the secret word or passphrase in the Confirm Secret field.
6. Enter the desired number of seconds for server time-out in the Timeout field.
7. Enter the desired number of retries in the Retries field.
8. If you select the *Enable User-Level attribute of Shell and raccess services to specify the authorization group* checkbox, enter the authorization group name for up to 15 User-Levels.
9. Click *Save*.

**To configure an LDAP(S)|AD authentication server:**

1. Select *Authentication - Authentication Servers - LDAP(S)|AD*.
2. Enter the IP address of the server.
3. Enter the Base.
4. At the Secure drop-down menu, select *Off*, *On* or *Start\_TLS*.
5. Enter the Database User Name.
6. Enter your Database Password, then re-type the database password in the Confirm Password field.
7. Enter your desired Login Attributes.
8. Click *Save*.

**To configure a Kerberos authentication server:**

1. Select *Authentication - Authentication Servers - Kerberos*.
2. Enter the IP address (Realm) of the server.
3. Enter the Realm Domain Name (example: **avocent.com**).
4. Enter the Domain Name (example: **avocent.com**).
5. Click *Save*.

**To configure an NIS authentication server:**

1. Select *Authentication - Authentication Servers - NIS*.
2. Enter the NIS Domain Name of the server (example: **corp.avocent.com**).
3. Enter the NIS Server Address or **broadcast** (default is broadcast).
4. Click *Save*.

**To configure a DSView 3 authentication server:**

1. Select *Authentication - Authentication Servers - DSView 3*.
2. Enter IP Address 1 - 4 for the DSView 3 servers in the relevant fields.
3. Click *Save*.

## Users

There are three standard local user account types supported on a PM PDU: admin, root and user.

## Local accounts

The admin and root accounts are equivalent users but named differently to address users familiar with either Avocent or Cyclades equipment. Regular users can be granted permissions by administrators at any time. The PM PDU has three user account types:

- admin: Performs the initial network configuration. The factory default password for admin is **avocent**. The admin user is a member of the admin group and can configure the PM PDU as well as user and group authorizations.
- root: Has the same permissions as the admin user. The factory default password for root is **linux**. In the PM PDU, the root user is a member of the admin group and shell-login-profile groups. When a root user logs in via the CONSOLE port, SSH or telnet, the session is pre-defined by the login profile to go directly to shell. The login profile can be customized so that it does not go directly to shell.

---

**NOTE:** Change the default passwords for root and admin before you put the PM PDU into operation.

---

- Administrator-added regular users: Have limited access to the web manager features based on the group(s) to which they are assigned. Users can change their own passwords.

### To add new users:

1. Click *Users - Local Accounts - User Names*. The User Names screen is displayed with a list of all users.
2. Click *Add*. The Local User Information screen is displayed.
3. Enter the new username and enter a password, then confirm the password.
4. Select or deselect *User must change password at the next login* checkbox.
5. If you wish to add the user to an available user group, select the user group name in the box on the left and click *Add* (user is the default group). You can remove a user group from the box at right by selecting it and clicking *Remove*.
6. Enter the desired parameters for Password Expiration.
  - Min Days: Enter the minimum number of days allowed between password changes. Password changes attempted sooner will be rejected. If not specified, -1 is the default which disables the restriction.
  - Max Days: Enter the maximum number of days a password is valid. After this period, a password change will be forced. If not specified, -1 is the default which disables the restriction.

- Warning Days: Enter the number of days that a warning is issued to the user prior to expiration. Entering **0** will cause the warning to be issued on the expiration day. A negative value or no value means that no warning will be issued.
7. Enter the desired Account Expiration date (**YYYY-MM-DD**).
  8. Click *Save*.

**To delete users:**

1. Click *Users - Local Accounts - User Names*. The User Names screen is displayed with a list of all users.
2. Check the box next to the user to be deleted.
3. Click *Delete*. A confirmation box appears. Click *OK*.

**To configure password rules:**

1. Click *Users - Local Accounts - Password Rules*.
2. If password complexity is desired (recommended), make sure *Check Password Complexity* is selected.
3. If password complexity is enabled, enter the desired values for password complexity.
4. Enter the desired values for Default Expiration.
5. Click *Save*.

## Authorization

There are three default user groups on a PM PDU:

- admin
- admin-appliance
- user

User groups are given access and authorizations either by default or as assigned by an administrator. Administrators can alter the permissions and access rights of users belonging to the appliance-admin or user groups or create additional groups with custom permissions and access rights. Administrators can add, delete or modify permissions and access rights for users from any group at any time.

### **admin group**

Members of the admin group have full administrative privileges that cannot be changed. Administrators can add users and manage outlets connected to the PM PDU.

---

**NOTE:** The only configuration allowed for the admin group is adding or deleting regular users.

---

**To view admin Appliance Access Rights:**

1. Click *Users - Authorization - Groups*. The Group Names screen is displayed, showing the three default user groups along with any groups that have been created.
2. Click on *admin* under the Group Name heading. The content area will display the Members screen listing all members belonging to the admin group (default members are admin and root users).

---

**NOTE:** When any Group Name is selected, both the content area and Side Navigation Bar change. The Side Navigation Bar will display specific menu options for Members and Access Rights (which include Power and Appliance rights).

---

3. In the Side Navigation Bar, click *Power* or *Appliance* to access the screens displaying the fixed access rights and permissions for members of the admin group pertaining to power management and appliance management.

---

**NOTE:** The Power screen is read-only and cannot be changed.

---

4. In the Side Navigation Bar, click on *Access Rights - Appliance*. The Appliance Access Rights screen appears and lists all access rights available to a member belonging to the admin group. All appliance access rights are shown enabled (checked). Available appliance access rights are:
  - View Appliance Information
  - Disconnect Sessions and Reboot Appliance
  - Appliance Flash Upgrade and Reboot Appliance
  - Configure Appliance Settings
  - Configure User Accounts
  - Backup/Restore Configuration
  - Shell Access
  - Transfer Files

---

**NOTE:** The Appliance Access Rights screen for the admin and appliance-admin user groups is read-only and cannot be changed. Unchecking any box and clicking *Save* will result in an error message. The PM PDU will maintain all rights selected.

---

**appliance-admin group**

Members of the appliance-admin group have access restricted to tasks for managing only the appliance. Appliance-admin user group members have no access to power management options,

and share all of the appliance access rights as admin except for Configure User Accounts and Shell Access, which are permanently disabled for this group.

#### **user group**

Members of the user group have access to target devices unless they are restricted by an administrator but have no access rights for the PM PDU. Administrators can add appliance access rights and permissions, or can add users to custom user groups to add permissions and access rights as needed. By default, all selections on the Appliance Access Rights screen will be disabled.

---

**NOTE:** The Appliance Access Rights screen for the user group can be changed at any time by an administrator. This will change the access rights for all members of the PM PDU's user group.

---

## **Event and Logs**

The PM PDU will generate notifications for a wide variety of events. You can configure it to direct or store those event notifications to various destinations for immediate use or for analysis later.

### **Event List**

The Event List screen lists PM PDU events, each of which can be configured for SNMP Traps, Syslog, DSView 3 software, Email and SMS.

#### **To configure Events:**

1. Click *Events and Logs - Events*.
2. Locate the events for which you want notification sent and select the checkbox(es) next to the event number(s).
3. Click *Edit*.
4. If you want an event notification sent for any configured event destination type, click its associated *Send* checkbox.
5. Click *Save*. The Events page appears with an X in the column below the destination type if the Send box was checked on the Events Settings screen.

### **Event Destinations**

#### **To configure Event Destinations:**

1. Click on *Event and Logs - Event Destinations*.
2. Under the Syslog heading, use the drop-down menu to select the Facility.

3. Select *Remote Server - IPv4* to enable syslog messages to be sent to one or more remote IPv4 syslog servers, and enter the *IPv4 Address or Hostname*. Separate multiple server addresses by commas.  
-or-  
Select *Remote Server - IPv6* to enable syslog messages to be sent to one or more remote IPv6 syslog servers, and enter the *IPv6 Address or Hostname*. Separate multiple server address by commas.
4. Select *Appliance Console* to send messages to the PM PDU's console.
5. Select *Root Session* to send syslog messages to all sessions where you are logged in as root user.
6. Under the SNMP Trap heading, enter the name of the community defined in one or more of the SNMP trap servers in the Community field then enter the IP addresses of up to five servers in the server fields.
7. Under the SMS heading, enter the SMS Server, Port and Pager Number information in the appropriate fields.
8. Under the Email heading, enter the Server, Port and Destination Email information in the appropriate fields.
9. Under the DSView 3 heading, enter the IP address of the DSView 3 server where event notifications will be sent in the DSView 3 server field. Enter the syslog server port number for the DSView 3 server, the SSH information and the buffer warning information in the appropriate fields.
10. Click *Save*.

## Data Buffering

### To configure Data Buffering:

1. Select *Events and Logs - Data Buffering*.
2. Enter the segment size in kilobytes and spare segments in the Local Data Buffering Settings section.
3. In the NFS Data Buffering Settings section, enter the following information: NFS Server, NFS Path, Segment Size (Kbytes) and Spare Segments.

---

**NOTE:** RPC service must be enabled in the Security Profile screen before configuring NFS Data Buffering Settings. NFS does not support IPv6.

---

4. To configure data buffer storage on a syslog server in the Syslog Data Buffering Settings section; select a facility number from the drop-down menu: Log Local 0, Log Local 1, Log Local 2, Log Local 3, Log Local 4 or Log Local 5.
5. Click *Save*.

## Appliance Logging

### To configure Appliance Logging:

1. Click *Enable appliance session data logging*.
  - a. Select the destination for appliance session data logs from the pull-down menu. Choices are Local, NFS, Syslog and DSView 3.
  - b. Enable or disable timestamping the appliance session data logs.
2. Click *Enable appliance session data logging alerts*.
3. Enter the desired alert strings (up to ten) in the fields provided.
4. Click *Save*.

## Active Sessions

The PM PDU allows multiple users to log in and run sessions simultaneously. The Active Sessions feature allows you to view all active sessions and to kill any unwanted sessions. Click *Active Sessions* to view all open sessions on the PM PDU.

---

**NOTE:** If you start another session with the PM PDU while viewing this screen, it will not be visible until you click *Refresh* at the top of the web manager window.

---

### To kill an active session:

1. Click *Active Sessions*. The Active Sessions screen appears and lists all open sessions to the PM PDU by the user's workstation IP.
2. Select the checkbox next to the session you want to kill, then click the *Kill* button. After a few seconds, the Active Session screen will redisplay the open sessions, minus the one you killed.

## Monitoring

When you click *Monitoring*, a variety of network and console port information is available for viewing. The screens are only for viewing and have no interactivity with the user. The following table shows the types of information available.

**Table 3.4: Monitoring Screens**

Screen Name	Definition
Network - Devices	Shows Ethernet status (enabled/disabled), IPv4 Address, IPv4 Mask and IPv6 Address.
Network - IPv4 Routing Table	Shows Destination, Gateway, Genmask, Flags, Metric, Ref, Use and Iface.
Network - IPv6 Routing Table	Shows Destination, NextHop, Flags, Metric, Ref, Use and Iface.
Serial Ports	Shows Device Name, Profile, Settings, Signals, TX Bytes, RX Bytes, Frame Error, Parity Error, Break and Overrun.

## Change Password

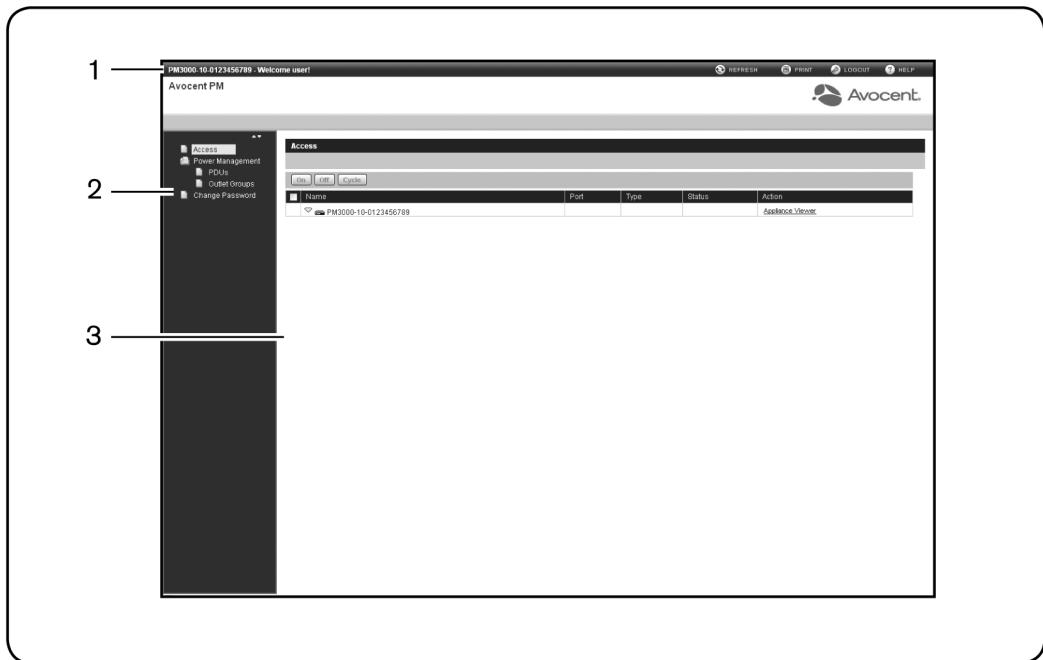
An admin or user can change his or her own password from this screen.

**To change your own password:**

1. Select *Change Password*.
2. Enter the old password and new password in the appropriate fields.
3. Confirm the new password, then click *Save*.

## Web Manager Overview for Regular Users

The following figure shows features of the web manager for a regular user.

**Figure 3.3: Web Manager Regular User Screen****Table 3.5: Web Manager Regular Users Screen Functional Areas**

Number	Description
1	Top option bar. The name of the appliance and the name of the logged in user appears on the left side and Refresh, Print, Logout and Help buttons appear on the right.
2	Side Navigation Bar. Menu options appear that are available for regular users.
3	Content area. Contents change based on the options selected in the side navigation bar.

The following table provides an overview of the options for regular users.

**Table 3.6: Web Manager Options for Regular Users**

Menu Option	Description
Access	Displays all the devices the user can access. Click <i>Appliance Viewer</i> in a device's Action column to launch a terminal session with that device.

Menu Option	Description
Power Management	Click <i>PDUs</i> to turn on, turn off, cycle, reboot, reset the HW overcurrent protection, return to factory defaults or rename PDUs connected to the PM PDU.
PDUs	
Outlet Groups	Click <i>Outlet Groups</i> to manage groups of outlets on connected PDUs.
Change Password	Change your own password.

# Accessing a PM PDU via the Command Line Interface

## Access Options and How to Log Into the CLI

The CLI utility can be accessed in the following ways:

- Through a local terminal or a computer that has a terminal emulation program connected to the console port of the console server with session settings of 9600, 8, N and 1, with no flow control.
- After the PM PDU is connected to the network and has an IP address, it can be accessed by one of the following methods:
  - An SSH or Telnet client on a remote computer (if the SSH or Telnet protocol is enabled in the selected Security Profile).
  - By selecting *Web Manager - Overview - Appliance Session*.
  - With DSView 3 software.

Administrators have full access to the CLI and to connected devices. An administrator can authorize regular users to manage power, manage data buffer storage and use one or more PM PDU administration tools. Users can always change their own passwords.

### To start the CLI:

1. Access the CLI through the console port, with Telnet or SSH or through the web manager.
2. Type the username and password at the prompt. The cli-> prompt appears.

Welcome to Avocent PM PDU <host name>.

Type help for more information

--:- / cli->

---

**NOTE:** The default password for admin is **avocent** and for root is **linux**. The password for these users may have been changed during installation of the PM PDU. If not, change the default root and admin passwords to avoid potential security breaches.

---

### To disable the shell prompt:

By default, logging in as **root** will display the shell prompt instead of the CLI prompt. To disable this, perform the following steps:

1. Log into the CLI as **admin**.
2. Type **cd/users/local\_accounts/user\_names/root** and press **enter**.

```
--:/cli-> cd/users/local_accounts/user_names/root
```

3. Type **set user\_group=admin** and press **enter**.

```
--:root cli-> set user_group=admin
```

4. Type **commit** and press **enter**.

```
**:root cli-> commit
```

## Configuration Tasks Performed With the CLI

The navigation structure of the CLI mirrors that of the web manager. Options and parameters are also the same, except that spaces in web manager options and parameters are replaced with underscores (\_), as in: *system\_tools*. Examples that show how to select an option in the web manager use a dash surrounded by two spaces ( - ). In the CLI, two similar options in a path are separated by a forward slash (/).

For example, in the web manager, user configuration is done when an administrator selects *Users - Local Accounts - User Names* to get to the User Names screen. To navigate to the equivalent configuration level in the CLI, an administrator would use the **cd** command followed by the path: **cd /users/local\_accounts/user\_names**.

Administrators should log into the CLI in one window and log into the web manager in another window to see how the menu options in the web manager map to the navigation options in the CLI.

## CLI Navigation

The CLI navigation options are in a nested tree configuration.

---

**NOTE:** When a command line is shown in an example, and the step starts with “Enter,” or when a syntax example is given, the user should type the command as shown and then press **Enter**. The **Enter** key is not shown in command line examples unless needed for clarity.

---

When a user logs in the CLI, the prompt indicates the user is at the / level.

```
--:/cli->
```

No parameters can be set at this level of the navigation tree.

At any CLI prompt at any level, if you type **cd** and press **Tab Tab**, the navigation options (path elements) for that level are listed. Different options appear for administrators and for authorized users.

- When an administrator types the **cd** command and then presses **Tab Tab** at the / prompt, the following navigation options (path elements) appear.

```
--:-/ cli-> cd<Tab><Tab>
```

```
access/ change_password/ network/ system_tools/  
active_sessions/ events_and_logs/ power_management/ users/  
authentication/ monitoring/ system/
```

- When a regular user types the **cd** command and then presses **Tab Tab** at the / prompt, the following navigation options appear.

```
--:-/ cli-> cd<Tab><Tab>
```

```
access/ power_management/ change_password/
```

Enter **cd <one\_or\_more\_path\_elements>** to move down one or more levels of the navigation tree.

```
--:-/ cli-> cd system_tools
```

A prompt like the following appears at each level.

```
--:- system_tools cli->
```

---

**NOTE:** CLI commands are case sensitive.

---

At any level, you can press **Tab Tab** at the prompt to see the commands that can be entered at the current level.

```
--:- system_tools cli-><Tab><Tab>  
cd passwd shell  
commit pwd show  
exit quit shutdown  
ftp reboot upgrade_firmware  
help restore_configuration whoami  
hostname revert wiz  
ls save_configuration  
opiepasswd scp
```

If you know the path, you can enter multiple path elements in a single command separated with forward slashes (/).

```
--:-/ cli-> cd network/devices/
```

```
--:- devices cli->
```

Enter **cd.** to move up one level of the navigation tree. Enter **cd ..[..]** to move up multiple levels.

```
--:- devices cli-> cd .../..
```

```
--:- / cli->
```

## Autocompletion

Autocompletion allows you to type the first few letters of a command or navigation option and then press **Tab**. The rest of the name is filled in automatically if the letters typed are unique to one command or to a navigation option at that level. If the letters match more than one of the commands or navigation options for that level, the matching options are listed.

For example, if you type **cd acc** and press **Tab** at the CLI prompt from the / level, the access option will be completed.

```
--:- / cli-> cd acc<Tab>
--:- / cli-> cd access
```

If you then press **Enter**, you are changed to the access level and the access level prompt appears.

```
--:- access cli->
```

The following example illustrates a case when more than one command matches the letters typed.

```
--:- / cli-> sh<Tab>
shell show
```

## Parameters

Some CLI commands take parameters. If you press **Tab Tab** after a command that requires a parameter, you are prompted to enter the parameter.

## Command Line Syntax

---

**NOTE:** Square brackets ([ ]) denote an optional element. Each element is separated by a space. There are no spaces between sub-elements.

---

Command only (help, pwd):

```
--:- <current_level> cli-> <command>
```

Commands with paths only (cd, ls, add):

```
--:- <current_level> cli-> <command> [Path]
```

---

Commands with targets (del):

```
--:-<current_level> cli-><command> [Path] <Targets>
```

Commands that require parameters (set):

```
--:-<current_level> cli-><command> [Path] <Params>
```

Commands with values only (sendmsg, ftp...):

```
--:-<current_level> cli-><command> [Path] <Values>
```

where:

```
Path := path_elem[/path_elem]*
path_elem := . | .. | Section_Label | ^
Targets := Row_Label(,Row_Label)
Params := Param_Names=PValues
Param_Names := Param_Label(:Param_Label)*
PValues := Value_text(,Value_text)*
Values := Value_text Value_text
Section_Label
Param_Label
Value_text := labels or data from the UIC.
```

Syntax used:

```
^ : beginning of the element
* : 0 - many
| : or
() : group
```

## CLI Command Set

This section describes the general commands used when accessing the PM PDU via the command line interface.

---

**NOTE:** Most of the commands work from any location when the path to the command parameter is included.

---

**NOTE:** The word “node” refers to an entity such as a route, host or user, which can be added, configured or deleted.

### help

Generate a help message about how to navigate the CLI.

Syntax:

```
--:- / cli-> help
- Thank you for using the cli -
```

This interface allows you to easily modify configurations to customize and define the functionality of your unit.

Press **<tab> <tab>** to see the list of available commands.

Please refer to the Reference Guide for a description of commands, special keys and additional information on how to use this interface.

Some basic and useful keys are:

up/down arrow - navigates up/down in the command history  
tab (once/twice) - shows the next possible option(s)

Other hints:

Use backslash '\' to escape spaces, '\' and other control characters when assigning values to parameters.

## **add**

Add a node.

Syntax:

--:- / cli-> **add <Path>**

Example:

--:- / cli-> **add network/hosts**

--:#- [hosts] cli->

## **delete**

Delete a node.

Syntax:

--:- / cli-> **delete <Path> <parameter>**

## **cd**

Change directory (level).

Syntax:

--:- / cli-> **cd <Path>**

Example:

--:- / cli-> **cd access**

Displays the following:

--:- access cli->

Example:

--:- access cli-> **cd ..**

-or-

--:- access cli-> **cd ../**

Moves up one directory level and displays the following:

--:- / cli->

Example:

--:- access cli-> **cd /**

Moves to the top level and displays the following:

--:- / cli->

Example:

--:- access cli-> **cd /information**

Displays the following:

--:- information cli->

## **pwd**

Display the path to the current level (print working directory).

Syntax:

--:- / cli-> **pwd**

## **exit/quit**

Exit the CLI and return to the login prompt.

Syntax:

--:- / cli-> **exit**

-or-

--:- / cli-> **quit**

## **ftp**

Connect to a remote FTP server.

Syntax:

--:- / cli-> **ftp [<server\_IP\_address>|<hostname>]**

---

**NOTE:** You must log into the CLI as root to have full control over the local directory path. All normal FTP commands apply.

---

**scp**

Perform a secure shell copy.

Syntax:

```
--:- / cli-> scp [[user@]host1:]file1 [...] [[user@]host2:]file2
```

**set**

Set a parameter.

Syntax:

```
--:- / cli-> set <Path> <Parameter>=<Value>
```

After a parameter has been changed using the set command, a pair of asterisks appear at the beginning of the CLI prompt.

```
**:- / cli->
```

Save the change:

```
**:- / cli-> commit
```

-or-

Undo the change:

```
**:- / cli-> revert
```

---

**NOTE:** After a commit or revert command, the asterisks at the beginning of the CLI prompt are replaced by hyphens. Asterisks will not appear after the execution of the set command if using wizard mode, which can be recognized by a prompt that has a pound sign after the colon and the current directory in square brackets (example, --:#- [hosts] cli->).

---

**commit**

Save settings.

Syntax:

```
**:- settings cli-> commit
```

**revert**

Undo a previous parameter setting.

Syntax:

```
**:- / cli-> revert
```

**show/ls**

Show the available directories, commands or parameters at the current location.

Syntax:

```
--:- / cli-> show
```

-or-

```
--:- / cli-> ls
```

Example:

```
--:- / cli-> show user_profile
```

```
user_profile  
change_password/  
--:- / cli->
```

## **cycle, on, off, lock and unlock**

Control power on outlets on a PDU.

**NOTE:** Enter commas (,) between multiple outlets or use a hyphen to specify a range (1-4).

```
--:- / cli-> cd power_management/pdus/<PDU_ID>/outlets
```

```
--:- outlets cli-> [cycle|on|off|lock|unlock] <outlet_number[,...,outlet_number]>
```

Examples:

```
--:- / cli-> cd power_management/pdus/myPDU/outlets
```

```
--:- outlets cli-> off 1,2,5,8
```

```
Are you sure you want to turn off the outlet(s)? y/n : y
```

The cycle, on and off commands can be used from the access level, where they are enabled and configured with the Power Profile.

```
--:- / cli -> [cycle|on|off] access/<PDU_ID>
```

## **passwd**

Configure the password for the current user. The terminal does not echo the password.

Syntax:

```
--:- / cli-> passwd
```

## **opiepasswd**

Configure a one time password (OTP) for the local user. After you type the command, you will be asked for the pass phrase to use for the OTP.

Syntax:

```
--:- / cli-> opiepasswd
```

Example:

```
opiepasswd -f -c teste
```

Adding teste:

Only use this method from the console; NEVER from remote. If you are using telnet, xterm, or a dial-in, type ^C now or exit with no password. Then run opiepasswd without the -c parameter.

Using MD5 to compute responses.

Enter new secret pass phrase:

Again new secret pass phrase:

```
ID teste OTP key is 499 AC0241
```

```
FOOD HUGH SKI ALMA LURK BRAD
```

## CLI Equivalent Actions to Web Manager Checkbox Selection

---

**NOTE:** The following example procedure, which configures IPv6, illustrates the actions to use in the CLI to enable or disable an option when a checkbox would be selected or deselected in the web manager.

### To configure IPv6 (example of how to perform the equivalent of web manager checkbox selection/deselection):

1. Log into the CLI and type **cd network/settings**.

```
--:- / cli-> cd network/settings
```

2. Type **show** to view the status of IPv6 configuration.

```
--:- settings cli-> show
hostname = PM1000-24-1024000004
primary_dns = 172.26.29.4
secondary_dns =
domain = corp.avocent.com
enable_ipv6 = yes
get_dns_from_dhcpv6 = no
get_domain_from_dhcpv6 = no
```

**NOTE:** At this location, you can use '=' to change the value or '/' to select a parameter inside the section.

---

3. Type **set enable\_ipv6=** and press **Tab** to view the options for the parameter.

```
--:- ipv6 cli-> set enable_ipv6=<Tab>
no yes
```

4. Type **set enable\_ipv6:** and press **Tab** to view the child parameters.

```
--:- ipv6 cli-> set enable_ipv6/<Tab>
get_dns_from_dhcpv6= get_domain_from_dhcpv6=
```

5. Type **set enable\_ipv6=no** to disable IPv6.

```
--:- ipv6 cli-> set enable_ipv6=no  
-or-
```

Type **set enable\_ipv6=yes** to enable IPv6.

```
--:- ipv6 cli-> set enable_ipv6=yes
```

6. (Optional) Type either of the following commands to enable subparameters.

```
**:- ipv6 cli-> set enable_ipv6/ get_dns_from_dhcpv6=yes  
**:- ipv6 cli-> set enable_ipv6/ get_domain_from_dhcpv6=yes
```

7. Type **show** to verify the change.

```
**:- ipv6 cli-> show  
enable_ipv6 = yes  
get_dns_from_dhcpv6 = yes  
get_domain_from_dhcpv6 = yes  
enable_bonding = no
```

8. Type **commit**.

## CLI Overview for Administrators

This section describes using the Command Line Interface for administrators. Only administrators and authorized users can access the commands listed in this section. These procedures assume you have logged into the CLI as an administrator and are at the `--:- / cli->` prompt.

---

**NOTE:** In the tables that show output from the **show** command, when an option that is followed by an equal sign (=) is left blank, that option is not assigned a value by default.

---

## System

1. Type **cd system** to navigate to the System level.

```
--:- / cli-> cd system
```

2. Type **show** to view the available options.

```
--:- system cli-> ls
```

```
security/  
date_and_time/  
help_and_language/  
boot_configuration/  
information/  
usage/
```

3. Type **show** followed by an option name to view information about each option.

```
--:- security cli-> show security_profile
```

## System/Security

Type **cd system/security** to navigate to the security level.

```
--:- / cli-> cd system/security
```

**Table 4.1: System/Security Options**

### System Navigation Tree

---

```
security_profile
```

---

```
idle_timeout=
```

---

```
outlet_access_is_controlled_by_authorization_assigned_to_user_groups=
```

---

```
rpc=
```

---

```
security_profile=
```

---

```
security_profile/
```

---

```
custom
```

---

```
answer_icmp_message=
```

---

```
enable_ftp_service=
```

---

```
enable_http_session=
```

---

```
enable_https_sessions=
```

---

```
enable_snmp_service=
```

---

```
enable_telnet_service=
```

---

```
ssh_allow_root_access=
```

---

```
ssh_tcp_port=
```

---

```
ssh_version=
```

---

```
enable_http_session
```

**System Navigation Tree**

---

```
http_port=
enable_https_session=
https_port=
https_ssl_version=
redirect_http|https=
bootp_configuration_retrieval
enabled=
interface=
enable_live_configuration_retrieval=
dsview
allow_appliance_to_be_managed_by_dsview=
```

---

**System/Boot Configuration**

Type **cd system/boot\_configuration** to navigate to the boot\_configuration level.

```
--:- / cli-> cd system/boot_configuration
```

**Table 4.2: System/Boot Configuration Options**

---

**Boot Configuration Navigation Tree**

---

```
boot_mode=
image=
watchdog_timer=
console_speed=
eth0_mode=
```

---

**System/Date and Time**

Type **cd system/date\_and\_time** to navigate to the date\_and\_time level.

```
--:- / cli-> cd system/date_and_time
```

**Table 4.3: Date and Time Options****Date and Time Navigation Tree**

date\_and\_time

date\_and\_time

settings

manual

day=

hour=

minute=

month=

second=

year=

time\_zone

predefined

zone=set

**System/Help and Language**

Type **cd system/help\_and\_language** to navigate to the online\_help level.

--:- / cli-> cd system/help\_and\_language

**To set the online help URL:**

Perform this procedure if you have downloaded the online help files to a web server that is accessible to the console server.

1. Type the following command.

--:- / cli> cd system/help\_and\_language/

2. Type the following command.

--:- help\_and\_language cli> set url=<online\_help\_location>

A line similar to the following appears.

\*\*:- help\_and\_language cli>

3. Save your settings.

---

```
**:- help_and_language cli> commit.
```

**Table 4.4: Help and Language Options****Help and Language Navigation Tree**


---

```
appliance_language=
```

---

```
url=
```

**System/Information**

1. Type **cd system/information** to navigate to the Information level.

```
--:- / cli> cd system/information/
```

2. Type **show** to view the system information.

**System/Usage**

Type **cd system/usage** to navigate to the Usage level.

```
--:- / cli> cd system/usage/
```

**Table 4.5: System/Usage Options****Usage Navigation Tree**


---

```
flash_usage
```

---

```
memory
```

**Network**

IPv4 addresses are always enabled. An administrator can also enable IPv6 addresses at the network/settings/ipv6 level. A procedure to enable IPv6 is used as an example in *CLI Equivalent Actions to Web Manager Checkbox Selection* on page 56.

1. Type **cd network** to navigate to the Network level

```
--:- / cli-> cd network/
```

2. Type **ls** to view the list of available options.

```
settings/
devices/
ipv4_static_routes/
```

```
ipv6_static_routes/  
hosts/  
firewall/  
snmp/
```

## Wiz command

The wiz command allows administrators to easily and quickly perform the initial network configuration of the eth0.

At the command prompt at the / level, enter wiz to view the current IP configuration. To change the IP configuration, press Tab to move through the parameters, and press Esc + Tab to edit the selected parameter. When you are finished, enter yes to confirm that all parameters are correct and to save the new parameters.

```
--:- / cli-> wiz  
current ipv4 address: 172.26.30.249  
current ipv6 address:  
eth0:  
device_status = enabled  
ipv4_method = dhcp  
ipv4_address = 192.168.160.10  
ipv4_mask = 255.255.255.0  
ipv4_default_gateway =  
ipv6_method = ipv6_address_unconfigured  
ipv6_address =  
ipv6_prefix_length =  
ipv6_default_gateway =  
mac address: 00:e0:86:21:67:72  
dns:  
primary_dns = 172.26.29.4  
secondary_dns =  
domain = corp.avocent.com  
hostname = PM3000-10-0011223344
```

Some basic and useful keys are:

- tab (once/twice) - shows the next possible commands/option(s)
- cntrl e - gets the current parameter value for editing

Other hints:

- Use backslash '\' to escape spaces, '\' and other control

---

characters when assigning values to parameters.

```
current ipv4 address: 172.26.30.249
current ipv6 address:
eth0:
device_status (disabled, enabled) [enabled]:
```

## Network/Settings

1. Type **cd network/settings** to navigate to the Network settings level.  
--:-- / cli-> **cd network/settings/**
2. Type **show** to view the list of available options.

**Table 4.6: Network Options**

---

**Network Navigation Tree**

---

settings

---

domain=

---

enable\_ipv6=

---

hostname=

---

primary\_dns=

---

secondary\_dns=

---

enable\_ipv6

---

get\_dns\_from\_dhcpv6=

---

get\_domain\_from\_dhcpv6=

---

## Network/IPv4 and IPv6 Static Routes

The following table displays options for configuring IPv4 and IPv6 Static Routes.

**Table 4.7: Network/IPv4 and IPv6 Static Routes Options**

---

**IPv4 and IPv6 Static Routes Navigation Tree**

---

ipv4\_static\_routes

---

default\_3

---

---

**IPv4 and IPv6 Static Routes Navigation Tree**

---

gateway=

---

interface=

---

metric=

---

ipv6\_static\_routes

---

## Network/Devices

The procedure to configure a static IP address for the primary Ethernet interface is usually performed during installation so that administrators have a fixed IP address for access to the web manager and can finish configuration.

### To configure a IPv4 or IPv6 static IP address:

---

**NOTE:** This procedure configures either an IPv4 or IPv6 static IP address for the ETH0 (eth0) port. You can configure an IPv6 static IP address only if IPv6 is enabled.

---

1. Type **cd network/devices/<eth0>/settings** to navigate to the Settings level for the desired interface.  
--:- / cli-> **cd network/devices/eth0/**
2. Type **set ipv<4|6>\_method=static** to set the method to static for IPv4 or IPv6.  
\*\*:- eth0 cli-> **set ipv4\_method=static**
3. Type **set ipv<4|6>\_method/static/ address=<IP\_Address> mask=<netmask>** to set the IP address and subnet mask then enter commit to save the change.  
--:- eth0 cli-> **set ipv4\_method/static/ ipv4\_address=172.26.31.10 ipv4\_mask=255.255.255.0**  
\*\*:- eth0 cli-> **commit**
4. Type show to view the changes.  
--:- eth0 cli-> **show**

---

**Table 4.8: Network/Devices Options**

---

**Devices Navigation Tree**

---

devices

---

eth0

---

---

**Devices Navigation Tree**

---

```
ipv4_method=
```

---

```
ipv6_method=
```

---

```
mode=
```

---

```
status=
```

---

## Network/Hosts

The following procedure describes how to add a host to the hosts table.

### To add a host to the host table:

1. Type **cd network/hosts** to navigate to the Hosts level.

```
--:- / cli-> cd network/hosts
```

2. Type **show** to view the current host settings.

```
--:- hosts cli-> show
```

```
ip hostname alias
===== ====== ====
127.0.0.1 localhost
```

3. Type **add** then press **Enter**.

```
--:- hosts cli-> add <Enter>
--:#- [hosts] cli-> show
ip =
hostname =
alias =
--:#- [hosts] cli->
```

4. Type **set hostname=<hostname> ip=<IP\_address>** to add the name of a host and the IP address for the host.

---

**NOTE:** Each parameter that follows the add command is separated by a space.

```
--:#- [hosts] cli-> set hostname=sharedpmpdu ip=172.26.31.164
```

5. Type **save**

```
--:#- [hosts] cli-> save
```

6. Type **show** to verify the changes took place and to view the new host entry.

```
--:- hosts cli-> show
```

```
ip hostname alias
=====
127.0.0.1 localhost
127.26.31.164 sharedpmpdu
```

7. Type **cd <IP\_address>/settings** to navigate to the level where you can perform additional configuration of the host entry.

```
--:- hosts cli-> cd 172.26.31.164/settings
```

8. Type **show** to view the additions to the host table and the Settings option.

```
ip hostname alias
=====
127.26.31.164 sharedpmpdu
```

---

**Table 4.9: Network/Hosts Options**

---

**Hosts Navigation Tree**

---

```
hosts
```

---

```
127.0.0.1
```

---

```
alias=
```

---

```
hostname=
```

---

## Network/Firewall

Type **cd network/firewall** to navigate to the firewall level.

```
--:- / cli-> cd network/firewall
```

---

**NOTE:** To set a rule, you must enable the interface, set the rule for the interface and physically connect the interface to the network.

---

**Table 4.10: Network/Firewall Options**

---

**Firewall Navigation Tree**

---

```
firewall
```

---

```
ipv4_filter_table
```

---

```
FORWARD
```

---

```
INPUT
```

---

---

**Firewall Navigation Tree**

---

---

OUTPUT

---

ipv6\_filter\_table

---

FORWARD

---

INPUT

---

OUTPUT

---

---

**Network/SNMP**

Type **cd network/snmp** to navigate to the snmp level.

```
--:- / cli-> cd network/snmp
```

Type **add** then press **Enter** to start configuring a new snmp community:

```
--:- snmp cli-> add <Enter>
```

```
--:#- [snmp] cli-> show
```

```
name =
oid =
permission =
version = version_v1|v2
source =
--:#- [snmp] cli-> set name=public
--:#- [snmp] cli-> save
--:- snmp cli-> show
name version source oid permission
===== ===== ===== =====
public v1/v2 default read and write
```

```
--:- snmp cli-> system
--:#- [snmp] cli-> show
syscontact = Avocent_Corporation
syslocation = Avocent_PM
```

---

**Authentication**

Type **cd authentication** to navigate to the authentication level.

```
--:- / cli-> cd authentication
```

**NOTE:** Kerberos does not work unless the administrator copies the /etc/krb5.keytab file from the Kerberos server and overwrites the /etc/krb5.keytab file in the PM PDU.

---

**Table 4.11: Authentication Options**

---

**Authentication Navigation Tree**

---

appliance\_authentication

---

authentication\_servers

---

radius

---

tacacs+

---

ldap(s)/ad

---

kerberos

---

nis

---

dsview

---

## Users

Type **cd users** to navigate to the users level.

```
--:- / cli-> cd users
```

**Table 4.12: Users Options**

---

**Users Options**

---

local\_accounts

---

user\_names

---

root

---

admin

---

password\_rules

---

password enforcement

---

default expiration

---

authorization

---

---

**Users Options**

---

groups

---

admin

---

appliance-admin

---

user

---

**To add a user and password:**

1. Type **cd users/local\_accounts/user\_names** to navigate to the user\_names level.  
--:- / cli-> cd users/local\_accounts/user\_names
2. Type **add**. Then type **set** with the parameters all on one line separated by spaces as shown.  
--:- user\_names cli-> add  
--:#- [user\_name] cli-> set user\_name=fred password=smith123abc confirm\_password=smith123abc  
--:#- [user\_names] cli->
3. Type **save**.  
--:#- [user\_names] cli-> save
4. Type **show** to verify the new user has been added.  
--:#- [user\_names] cli-> show

## **Events\_and\_Logs**

Type **cd events\_and\_logs** to navigate to the events\_and\_logs level.

--:- / cli-> cd events\_and\_logs

---

**Table 4.13: Events\_and\_Logs Options**

---

**Events\_and\_Logs Navigation Tree**

---

event list

---

event destinations

---

syslog

---

snmp trap

---

---

**Events\_and\_Logs Navigation Tree**

---

---

sms

---

email

---

dsview

---

data\_buffering

---

local\_data\_buffering\_settings

---

segment\_size\_(kbytes)=

---

spare\_segments=

---

nfs\_data\_buffering\_settings

---

nfs\_server=

---

nfs\_path=

---

segment\_size\_(kbytes)=

---

spare\_segments=

---

syslog\_data\_buffering\_settings

---

syslog\_facility=

---

---

## Power Management

Type **cd power\_management** to navigate to the power\_management level.

```
--:- / cli-> cd power_management
```

---

**Table 4.14: Power Management Options Descriptions**

---

Option	Description
pdus	Allows an authorized user to reboot, restore factory default settings or to rename PDU(s). Also allows the authorized user to view information about each PDU, monitor sensors, clear sensor values, set up syslogging of events related to the PDU, configure an alarm and the LED display mode, and to manage outlets on the PDU.

---

<b>Option</b>	<b>Description</b>
settings	Allows an authorized user to set the password used to log in to the PDU and to connect to daisy-chained PDUs. Also allows an authorized user to set the polling rate to retrieve data from daisy-chained PDUs, set the power cycle interval, syslog, buzzer and SW overcurrent protection and enable or disable data logging.
outlet_groups	Lists all configured outlet groups that the current user is authorized to manage (to manage outlet groups, the user must be in a user group that is authorized to manage all the outlets in the outlet group). An administrator can configure outlet groups.
data_logging	Allows an authorized user to clear or export data logging for PDU, phase, bank, outlet or environment.

**To rename a PDU:**

1. Log onto the CLI as an administrator and type **cd power\_management/pdus** to navigate to the pdus level.

```
--:- / cli-> cd power_management/pdus
```

2. Type **rename** and press **Tab Tab** to expand the parameters.

```
--:- settings cli-> rename <PDU_ID> <Tab><Tab>
```

3. Type **set newpdu\_id=<new\_PDU\_ID>**.

```
--:#- [settings] cli-> set new_pdu_id=mypdu
```

```
--:#- [settings] save
```

**To manage power for a selected outlet:**

See *cycle, on, off, lock and unlock* on page 55 for how to manage power at the power\_management level.

## Active Sessions Information

The Active Session information fields are described in *Active Sessions Information* on page 71. An authorized user can kill an active session with the Kill command.

**Table 4.15: Active Sessions Field Descriptions**

<b>Field</b>	<b>Description</b>
user	Logged in user
client_ip	Source of the connection

Field	Description
creation_time	Time of the session creation
session_type	Type of session (console, http)
connection_type	Type of connection (cli, wmi - that is, web manager)
target_name	Target name or alias if session is an access session
id	Session ID
parent_id	Parent ID if session is a subsession

### To view and kill Active Sessions:

- From the / level CLI prompt, type **cd active\_sessions**.

```
--:- / cli-> cd active_sessions
--:- active_sessions cli->
```

- Type **show**. Information displays as shown about all active sessions.

```
--:- active_sessions cli-> show
37
user: admin
client_ip: none
creation_time: Tue Dec 18 03:31:01 2007
session_type: console
connection_type: cli
id: 37
parent_id:
```

```
--:- active_sessions cli->
```

- To kill a session (if authorized), type **kill** followed by the session number.

```
--:- active_sessions cli-> kill_session 122
```

## APPENDICES

### Appendix A: Accessing a PM PDU via SNMP

Using a machine with an SNMP-client application, an administrator can configure PDU power parameters using snmpset and snmpget commands. An administrator can, for example, change the PDU's name, change an outlet's name or change the current thresholds of an outlet. A complete list of configurable parameters can be found in the PDU's MIB file.

Configuration via SNMP will take effect upon completion of the command. To save the configuration across reboots, you must issue the save command.

To use SNMP, you must enable it and configure it on the PDU. To enable and configure SNMP with the web manager, see *Security* on page 25 and *SNMP configuration* on page 34. To enable and configure SNMP with the CLI, see *System/Security* on page 58 and *Network/SNMP* on page 67.

---

**NOTE:** When using snmpset commands, especially in a daisy-chained configuration, it is recommended you extend the time-out with no retries. The time-out should depend on the command and the length of the chain. For example, issuing a save command or power cycling outlets will need a longer time-out.

---

Example of an SNMP command to rename the PDU:

```
#snmpset -t 60 -r 0 -v 2c -c <community> <IP address>
pmPowerMgmtPDUTablePDUTablePduId.1.1 s NewPDUname
```

Example of an SNMP command to rename an outlet:

```
#snmpset -t 60 -r 0 -v 2c -c <community> <IP address>
pmPowerMgmtOutletsTableTableName.1.1.1 s NewOut1
```

Example of an SNMP command to change the high critical threshold on an outlet:

```
#snmpset -t 60 -r 0 -v 2c -c <community> <IP address>
pmPowerMgmtOutletsTableCurrentHighCritical.1.1.1 i 100
```

Example of an SNMP command to save:

```
#snmpset -t 60 -r 0 -v 2c -c <community> <IP address>
pmPowerMgmtSerialTableSave.1 i 2
```

---

**NOTE:** Some PDU models don't support the entire set of configurable parameters. In this instance, the snmpset command will fail and the snmpget command will return 0 for integer OIDs and N/A for strings.

---

## Appendix B: Specifications

**Table B.1: Avocent PM PDU Specifications**

Unit	CMN	Input Voltage	Input Current	Output Voltage	Outlet Max Current	Bank Max Unbalanced Current	Bank Max Balanced Current	Listed Branch Circuit Protection
PM1001V-401	1075-773	US single phase 200-240 VAC 2W + PE 50/60 Hz NEMA L6-30P	24A	200-240 VAC 50/60 Hz	16A (C19) 12A (C13)	16A (see note 2)	12A	30A
PM1002V-401	1075-755	US three phase 100-120/200-240 VAC 3W+N+PE, 50/60 Hz NEMA L21-30P	24A per phase	200-208 VAC 50/60Hz	16A (C19) 12A (C13)	16A (see note 1)	13.85A	30A
PM1003V-401	1075-776	US three phase 200-240 VAC 3W + PE 50/60 Hz CS8365C	40A per phase	200-240 VAC 50/60 Hz	16A (C19) 12A (C13)	32A (see note 4)	23A	50A
PM1004V-401	1075-775	US three phase 200-240 VAC 3W + PE 50/60 Hz IEC309 460P9W	48A per phase	200-240 VAC 50/60 Hz	16A (C19) 12A (C13)	32A (see note 5)	27.71A	60A
PM1005V-401	1075-774	EU single phase 220-240 VAC 2W + PE 50/60 Hz IEC309 332P6W	32A	220-240 VAC 50/60 Hz	16A (C19) 10A (C13)	16A (see note 3)	16A	40A

<b>Unit</b>	<b>CMN</b>	<b>Input Voltage</b>	<b>Input Current</b>	<b>Output Voltage</b>	<b>Outlet Max Current</b>	<b>Bank Max Unbalanced Current</b>	<b>Bank Max Balanced Current</b>	<b>Listed Branch Circuit Protection</b>
PM1006V-401	1075-772	EU three phase 220-240/381-415 VAC 3W+N+PE 50/60 Hz IEC309 516P6W	16A per phase	220-240 VAC 50/60 Hz	16A (C19) 10A (C13)	16A	16A	20A
PM1007V-401	1075-777	EU three phase 220-240/381-415 VAC 3W+N+PE 50/60 Hz IEC309 532P6W	32A per phase	220-240 VAC 50/60 Hz	16A (C19) 10A (C13)	32A	32A	40A
PM1008V-401	1075-797	US three phase 200-240 VAC 3W+PE, 50/60 Hz NEMA L15-30	24A per phase	200-240 VAC 50/60 Hz	16A (C19) 12A (C13)	16A (see note 1)	13.85A	30A
PM2002H-401 PM3002H-401	1057-211	US three phase 200-240 VAC 3W + PE 50/60Hz NEMA L15-30P	24A per phase	200-240 VAC 50/60 Hz	16A	16A (see note 1)	13.85A	30A
PM2002V-401 PM3002V-401	1066-200	US three phase 200-240 VAC 3W + PE 50/60Hz NEMA L15-30P	24A per phase	200-240 VAC 50/60 Hz	16A (C19) 12A (C13)	16A (see note 1)	13.85A	30A
PM2004H-401 PM3004H-401	1058	EU three phase 220-240/381-415 VAC 3W+N+PE 50/60Hz IEC309 516P6W	16A per phase	220-240 VAC 50/60 Hz	16A	16A	16A	20A

Unit	CMN	Input Voltage	Input Current	Output Voltage	Outlet Max Current	Bank Max Unbalanced Current	Bank Max Balanced Current	Listed Branch Circuit Protection
PM2004V-401 PM3004V-401	1068	EU three phase 220-240/381-415 VAC 3W + N + PE 50/60Hz IEC309 516P6W	16A per phase	220-240 VAC 50/60 Hz	16A (C19) 10A (C13)	16A	16A	20A
PM2006H-401 PM3006H-401	1057-264	US three phase 100-120/200-208 VAC 3W + N + PE, 50/60 Hz NEMA L21-L30P	24A per phase	200-208 VAC 50/60 Hz	16A	16A (see note 1)	13.85A	30A
PM2001H-401 PM3001H-401	1059	US single phase 200-240 VAC 2W + PE 50/60 Hz NEMA L6-30P	24A	200-240 VAC 50/60 Hz	16A	16A (see note 2)	8A	30A
PM2001V-401 PM3001V-401	1065	US single phase 200-240 VAC 2W + PE 50/60 Hz NEMA L6-30P	24A	200-240 VAC 50/60 Hz	16A (C19) 12A (C13)	16A (see note 2)	8A	30A
YAH3001V-401	1065	US single phase 200-240 VAC 2W + PE 50/60 Hz NEMA L6-30P	24A	200-240 VAC 50/60 Hz	12A (C13)	16A (see note 2)	8A	30A
PM2003H-401 PM3003H-401	1060	EU single phase 220-240 VAC 2W + PE 50/60 Hz IEC309 332P6W	32A	220-240 VAC 50/60 Hz	16A	16A (see note 3)	10.66A	40A

Unit	CMN	Input Voltage	Input Current	Output Voltage	Outlet Max Current	Bank Max Unbalanced Current	Bank Max Balanced Current	Listed Branch Circuit Protection
PM2003V-401 PM3003V-401	1067	EU single phase 220-240 VAC 2W + PE 50/60 Hz IEC309 332P6W	32A	220-240 VAC 50/60 Hz	16A (C19) 10A (C13)	16A (see note 3)	10.66A	40A
PM2005H-403 PM3005H-403	1078-185	US three phase 200-240 VAC 3W + PE 50/60 Hz CS8365C	40A per phase	200-240 VAC 50/60 Hz	16A	32A (see note 4)	23A	50A
PM2005V-403 PM3005V-403	1076-185	US three phase 200-240 VAC 3W + PE 50/60 Hz CS8365C	40A per phase	200-240 VAC 50/60 Hz	16A (C19) 12A (C13)	32A (see note 4)	23A	50A
PM2005H-406 PM3005H-406	1079	EU three phase 220-240/381-415 VAC 3W + N + PE 50/60 Hz IEC309 532P6W	32A per phase	220-240 VAC 50/60 Hz	16A	32A	32A	40A
PM2005V-406 PM3005V-406	1077	EU three phase 220-240/381-415 VAC 3W + N + PE 50/60 Hz IEC309 532P6W	32A per phase	220-240 VAC 50/60 Hz	16A (C19) 10A (C13)	32A	32A	40A
PM2005H-404 PM3005H-404	1078-184	US three phase 200-240 VAC 3W + PE 50/60 Hz IEC309 460P9W	48A per phase	200-240 VAC 50/60 Hz	16A	32A (see note 5)	27.71A	60A

Unit	CMN	Input Voltage	Input Current	Output Voltage	Outlet Max Current	Bank Max Unbalanced Current	Bank Max Balanced Current	Listed Branch Circuit Protection
PM2005V-404	1076-184	US three phase 200-240 VAC 3W + PE 50/60 Hz IEC309 460P9W	48A per phase	200-240 VAC 50/60 Hz	16A (C19) 12A (C13)	32A (see note 5)	27.71A	60A
PM2006V-401	1066-267	US three phase 100-120/200-208 VAC 3W + N + PE, 50/60 Hz NEMA L21-30P	24A per phase	200-208 VAC 50/60 Hz	16A (C19) 12A (C13)	16A (see note 1)	13.85A	30A
PM1012V-401	1084-809	US single phase 200-240 VAC 2W + PE 50/60 Hz NEMA L6-30P	24A	200-240 VAC 50/60 Hz	12A	16A (see note 2)	12A	30A
PM1013V-401	1084-810	EU single phase 220-240 VAC 2W + PE 50/60 Hz IEC309 332P6W	32A	220-240 VAC 50/60 Hz	10A	16A (see note 3)	16A	40A
PM1014V	1084-808	Single phase 100-240 VAC 2W + PE 50/60 Hz IEC320-C20	16A	100-240 VAC 50/60 Hz	10A	N/A	N/A	20A
PM2010V-401	1083-806	US single phase 200-240 VAC 2W + PE 50/60 Hz NEMA L6-30P	24A	200-240 VAC 50/60 Hz	12A	16A (see note 2)	12A	30A

<b>Unit</b>	<b>CMN</b>	<b>Input Voltage</b>	<b>Input Current</b>	<b>Output Voltage</b>	<b>Outlet Max Current</b>	<b>Bank Max Unbalanced Current</b>	<b>Bank Max Balanced Current</b>	<b>Listed Branch Circuit Protection</b>
PM2011V-401	1083-807	EU single phase 220-240 VAC 2W + PE 50/60 Hz IEC309 332P6W	32A	220-240 VAC 50/60 Hz	10A	16A (see note 3)	16A	40A
PM2012V PM3012V	1083-805	Single phase 100-240 VAC 2W + PE 50/60 Hz IEC320-C20	16A	100-240 VAC 50/60 Hz	10A	N/A	N/A	20A
PM1009H-401	1084-799	US single phase 200-240 VAC 2W + PE 50/60 Hz NEMA L6-30P	24A	200-240 VAC 50/60 Hz	12A	16A (see note 2)	12A	30A
PM1010H-401	1084-800	EU single phase 220-240 VAC 2W + PE 50/60 Hz IEC309 332P6W	32A	220-240 VAC 50/60 Hz	10A	16A (see note 3)	16A	40A
PM1011H	1084-798	Single phase 100-240 VAC 2W + PE 50/60 Hz IEC320-C20	16A	100-240 VAC 50/60 Hz	10A	N/A	N/A	20A
PM2007H-401 PM3007H-401	1083-794	US single phase 200-240 VAC 2W + PE 50/60 Hz NEMA L6-30P	24A	200-240 VAC 50/60 Hz	12A	16A (see note 2)	12A	30A

Unit	CMN	Input Voltage	Input Current	Output Voltage	Outlet Max Current	Bank Max Unbalanced Current	Bank Max Balanced Current	Listed Branch Circuit Protection
PM2008H-401	1083-796	EU single phase 220-240 VAC 2W + PE 50/60 Hz IEC309 332P6W	32A	220-240 VAC 50/60 Hz	10A	16A (see note 3)	16A	40A
PM2009H PM3009H	1083-792	Single phase 100-240 VAC 2W + PE 50/60 Hz IEC320-C20	16A	100-240 VAC 50/60 Hz	10A	N/A	N/A	20A

**NOTE 1:** When one bank is at a maximum 16A, the other banks shall not exceed 12A per bank.

**NOTE 2:** When one bank is at a maximum 16A, the other bank(s) shall not exceed 8A total.

**NOTE 3:** When one bank is at a maximum 16A, the other bank(s) shall not exceed 16A total.

**NOTE 4:** When one bank is at a maximum 32A, the other banks shall not exceed 13A per bank.

**NOTE 5:** When one bank is at a maximum 32A, the other banks shall not exceed 23A per bank.

**Table B.2: Avocent PM PDU Information**

<b>Environmental</b>	
Operating Temperature	10°C to 45°C (50°F to 113°F)
Storage Temperature	-40°C to 65°C (-40°F to 149°F)
Relative Humidity	20% to 80% (non-condensing) across the operating temperature range; 5% to 95% (non-condensing) across the non-operating temperature range
<b>Dimensions</b>	
Form Factor	0U, 1U rack mountable
Weight	7.3 lbs (horizontal high amperage models without power cord), 14.8 lbs (vertical high amperage models without power cord), 5.2 lbs (horizontal low amperage models without power cord), 11 lbs (vertical low amperage models without power cord)

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Physical Dimensions (W x D x H)	17 x 8.272 x 1.719 in (horizontal high amperage models), 2.2 x 66 x 3.15 in (vertical high amperage models), 1.7 x 17 x 5.5 in (horizontal low amperage models), 2.2 x 3.2 x 52 in (vertical low amperage models)
<b>Network Connection</b>	
Number	1
Type	10/100/1000 Ethernet
<b>Safety Markings and Approvals</b>	
UL, FCC, cUL, CE, VCCI, C-Tick, CB Safety certifications and EMC certifications for this product are obtained under one or more of the following designations: CMN (Certification Model Number), MPN (Manufacturer's Part Number) or Sales Level Model designation. The designation that is referenced in the EMC and/or safety reports and certificates are printed on the label applied to this product.	

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## Appendix C: Outlet Bank Assignment

**Table C.3: Outlet Bank Assignment**

Unit	Bank 1	Bank 2	Bank 3	Bank 4	Bank 5	Bank 6
PM1001V-401	outlets 1, 9 and 17 FC22-FC24 FC18-FC20	outlets 2-8, 10-16 and 18-24 FC21-FC23 FC17-FC19	N/A	N/A	N/A	N/A
PM1002V-401						
PM1008V-401						
PM2002V-401	outlets 1-8 FC22-FC24	outlets 9-16 FC14-FC16	outlets 17-24 FC6-FC8	N/A	N/A	N/A
PM2006V-401	FC18-FC20	FC10-FC12	FC2-FC4			
PM3002V-401						
PM3006V-401						
PM1005V-401	outlets 1, 9 and 17 FC22-FC24	outlets 2-8, 10-16 and 18-24 FC21-FC23	N/A	N/A	N/A	N/A
PM2001H-401	outlet 1 FC5-FC6 FC7-FC8	outlet 2 FC13-FC14 FC15-FC16	outlet 3 FC21-FC22 FC23-FC24	N/A	N/A	N/A
PM3001H-401						
PM2003H-401	outlet 1 FC5-FC6	outlet 2 FC13-FC14	outlet 3 FC21-FC22	N/A	N/A	N/A
PM3003H-401						
PM2002H-401						
PM3002H-401	outlets 1 and 2 FC5-FC6	outlets 3 and 4 FC13-FC14	outlets 5 and 6 FC21-FC22	N/A	N/A	N/A
PM2006H-401	FC7-FC8	FC14-FC15-FC16	FC22-FC23-FC24			
PM3006H-401						

<b>Unit</b>	<b>Bank 1</b>	<b>Bank 2</b>	<b>Bank 3</b>	<b>Bank 4</b>	<b>Bank 5</b>	<b>Bank 6</b>
PM2004H-401	outlets 1 and 2 FC5-FC6	outlets 3 and 4 FC13-FC14	outlets 5 and 6 FC21-FC22	N/A	N/A	N/A
PM3004H-401						
PM2005H-404						
PM3005H-404	outlet 1 FC1-FC2 FC3-FC4	outlet 2 FC5-FC6 FC7-FC8	outlet 3 FC9-FC10 FC11-FC12	outlet 4 FC13-FC14 FC15-FC16	outlet 5 FC17-FC18 FC19-FC20	outlet 6 FC21-FC22 FC23-FC24
PM2005H-403						
PM3005H-403						
PM2005H-406	outlet 1 FC1-FC2	outlet 2 FC5-FC6	outlet 3 FC9-FC10	outlet 4 FC13-FC14	outlet 5 FC17-FC18	outlet 6 FC21-FC22
PM3005H-406						
PM2001V-401						
PM3001V-401	outlets 1-8 FC22-FC24 FC18-FC20	outlets 9-16 FC14-FC16 FC10-FC12	outlets 17-24 FC6-FC8 FC2-FC4	N/A	N/A	N/A
YAH3001V-401						
PM2003V-401	outlets 1-8 FC22-FC24	outlets 9-16 FC14-FC16	outlets 17-24 FC6-FC8	N/A	N/A	N/A
PM3003V-401						
PM1006V-401						
PM2004V-401	outlets 1-8 FC22-FC24	outlets 9-16 FC14-FC16	outlets 17-24 FC6-FC8	N/A	N/A	N/A
PM3004V-401						

Unit	Bank 1	Bank 2	Bank 3	Bank 4	Bank 5	Bank 6
PM1003V- 401						
PM1004V- 401						
PM2005V- 404	outlet 1 FC22- FC24 FC18-	outlets 2-8 FC21-FC23	outlet 9 FC14-FC16	outlets 10-16 FC13-FC15	outlet 17 FC6-FC8	outlets 18-24 FC5-FC7
PM3005V- 404	FC20	FC17-FC19	FC10-FC12	FC9-FC11	FC2-FC4	FC1-FC3
PM2005V- 403						
PM3005V- 403						
PM1007V- 401						
PM2005V- 406	outlet 1 FC22- FC24	outlets 2-8 FC21-FC23	outlet 9 FC14-FC16	outlets 10-16 FC13-FC15	outlet 17 FC6-FC8	outlets 18-24 FC5-FC7
PM3005V- 406						
PM1009H- 401						
PM2007H- 401	outlets 1-5 FC1-FC5	outlets 6-10 FC2-FC6	N/A	N/A	N/A	N/A
PM3007H- 401	FC4-FC8	FC3-FC7				
PM1010H- 401						
PM2008H- 401	outlets 1-5 FC4-FC8	outlets 6-10 FC3-FC7	N/A	N/A	N/A	N/A
PM3008H- 401						
PM1012V- 401						
PM2010V- 401	outlets 1-10 FC1-FC5	outlets 11-20 FC2-FC6	N/A	N/A	N/A	N/A
PM3010V- 401	FC4-FC8	FC3-FC7				
PM1013V- 401						
PM2011V- 401	outlets 1-10 FC4-FC8	outlets 11-20 FC3-FC7	N/A	N/A	N/A	N/A
PM3011V- 401						

Unit	Bank 1	Bank 2	Bank 3	Bank 4	Bank 5	Bank 6
PM1011H						
PM2009H	outlets 1-5 (no fuses)	outlets 6-10 (no fuses)	N/A	N/A	N/A	N/A
PM3009H						
PM1014V						
PM2012V	outlets 1-10 (no fuses)	outlets 11-20 (no fuses)	N/A	N/A	N/A	N/A
PM3012V						

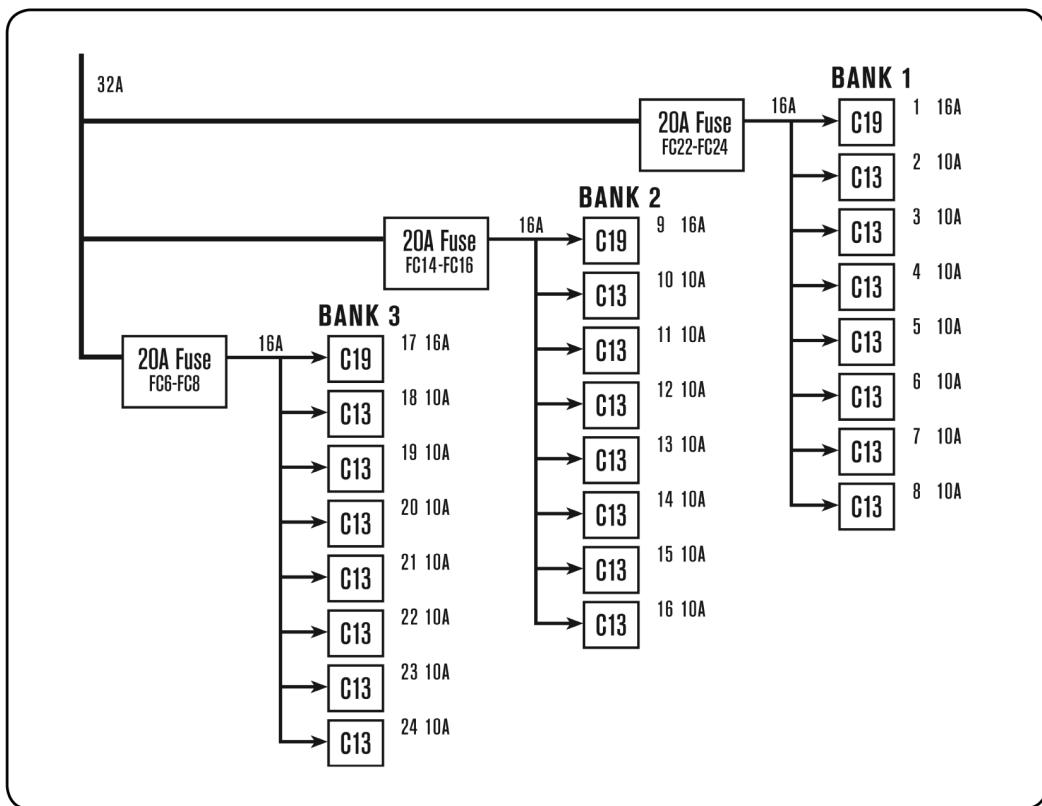


Figure C.1: PM2003V-401/PM3003V-401, IEC-309 32A 1-Phase Power Cord

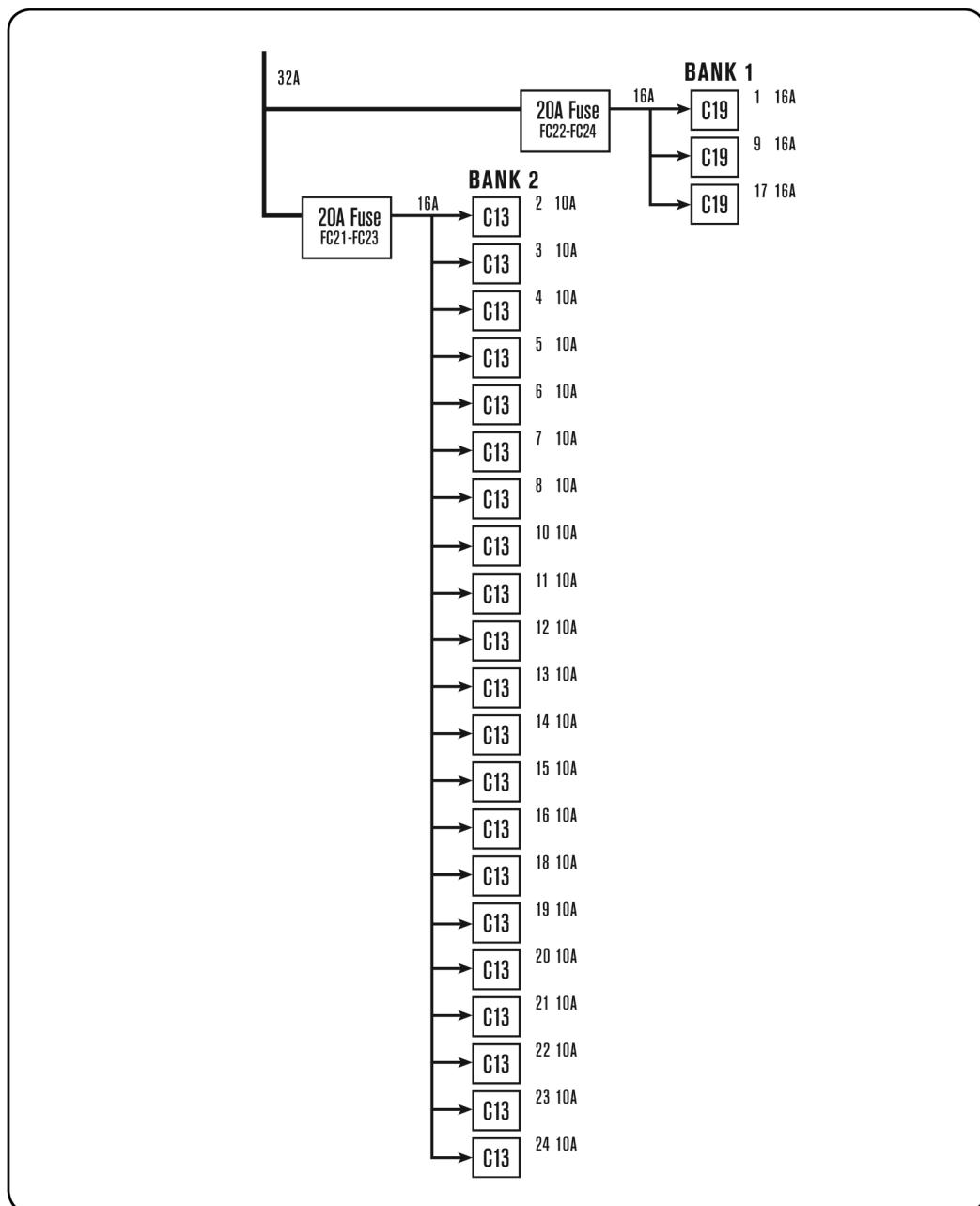


Figure C.2: PM1005V-401, IEC-309 32A 1-Phase Power Cord

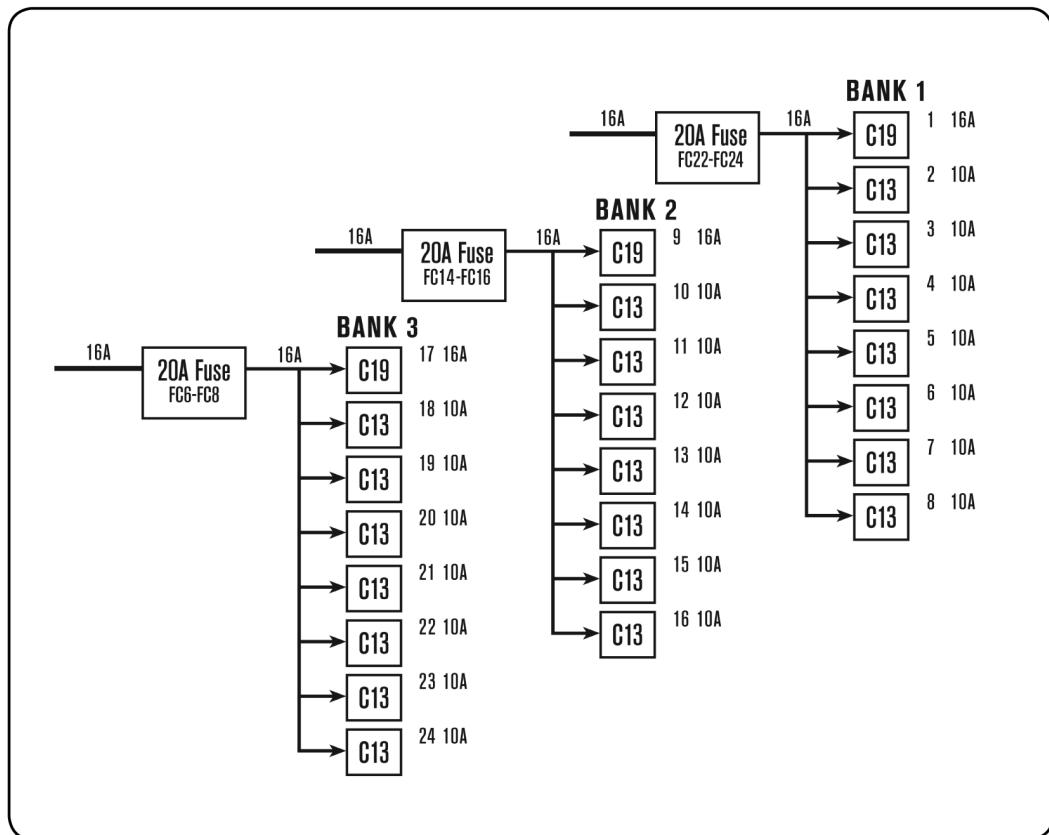
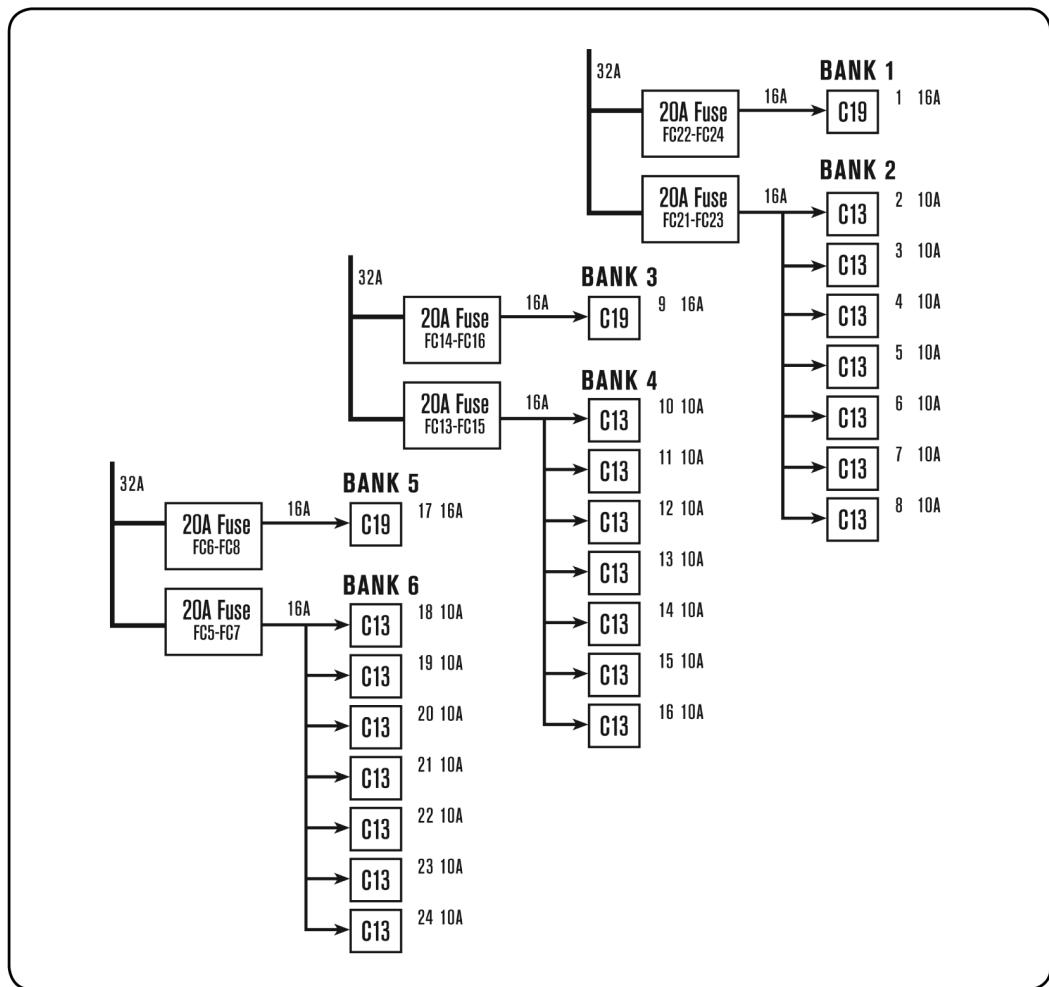
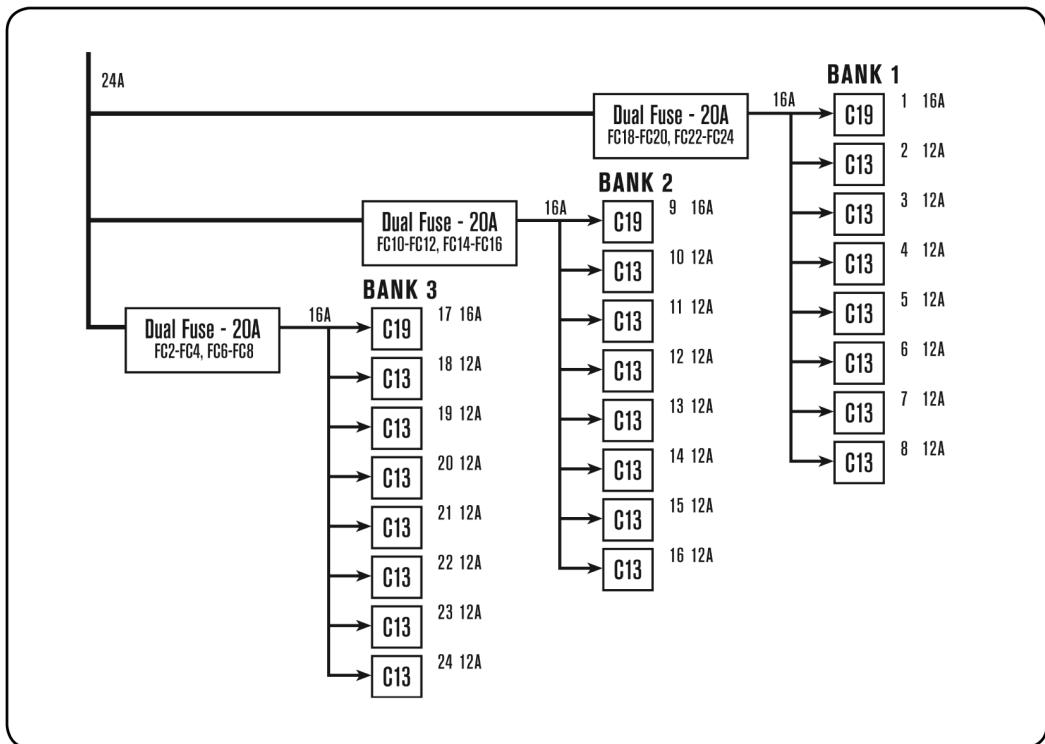


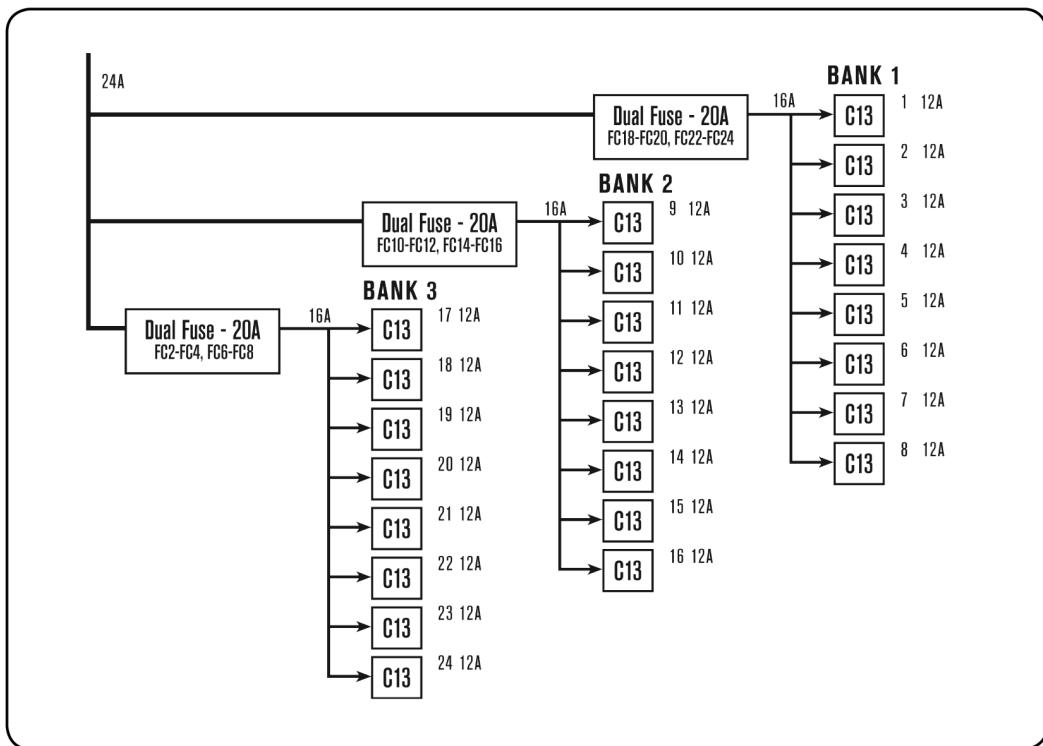
Figure C.3: PM2004-401/PM3004V-401/PM1006V-401, IEC-309 16A 3-Phase Power Cord



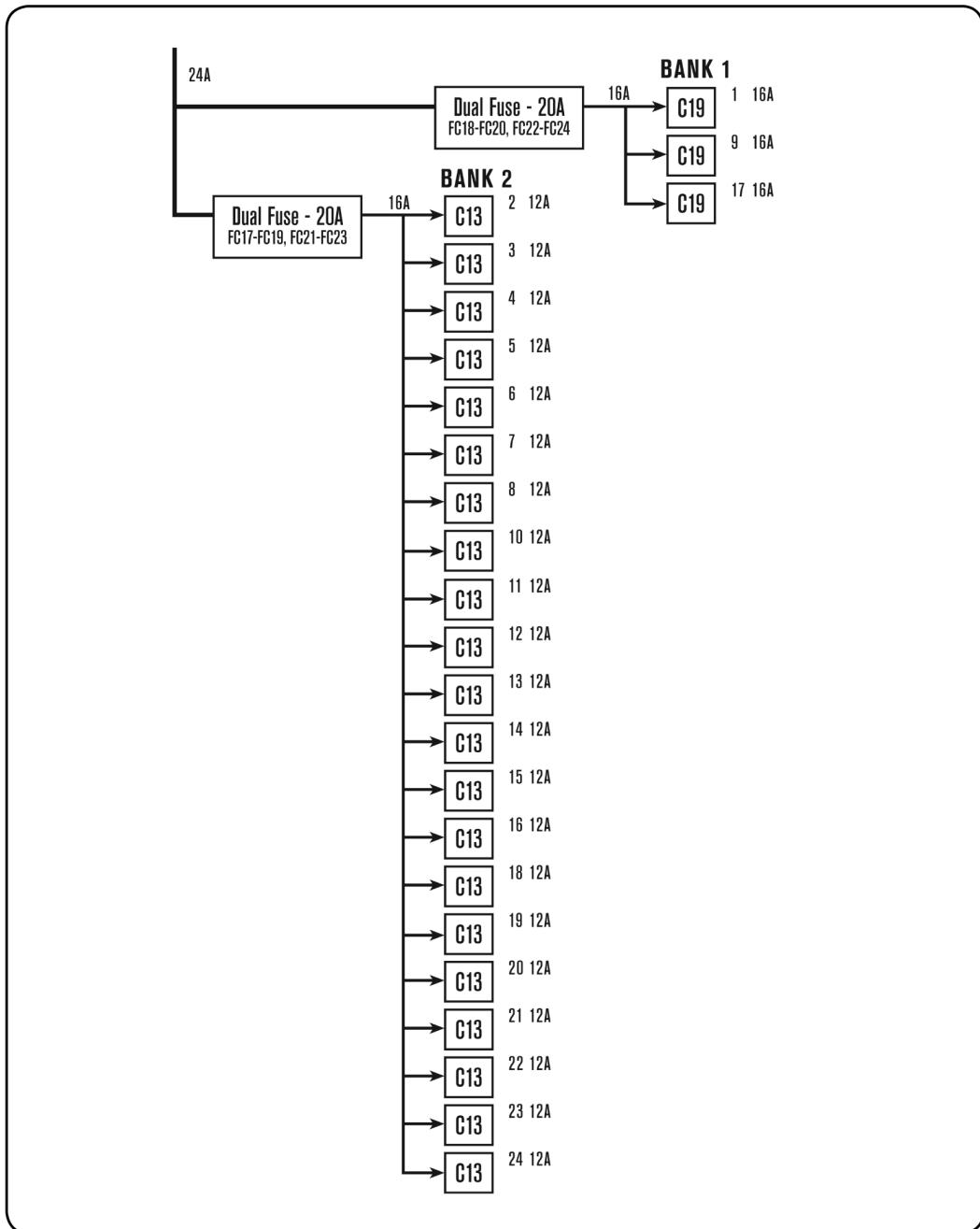
**Figure C.4: PM2005V-406/PM3005V-406/PM1007V-401, IEC 309 32A 3-Phase Power Cord**

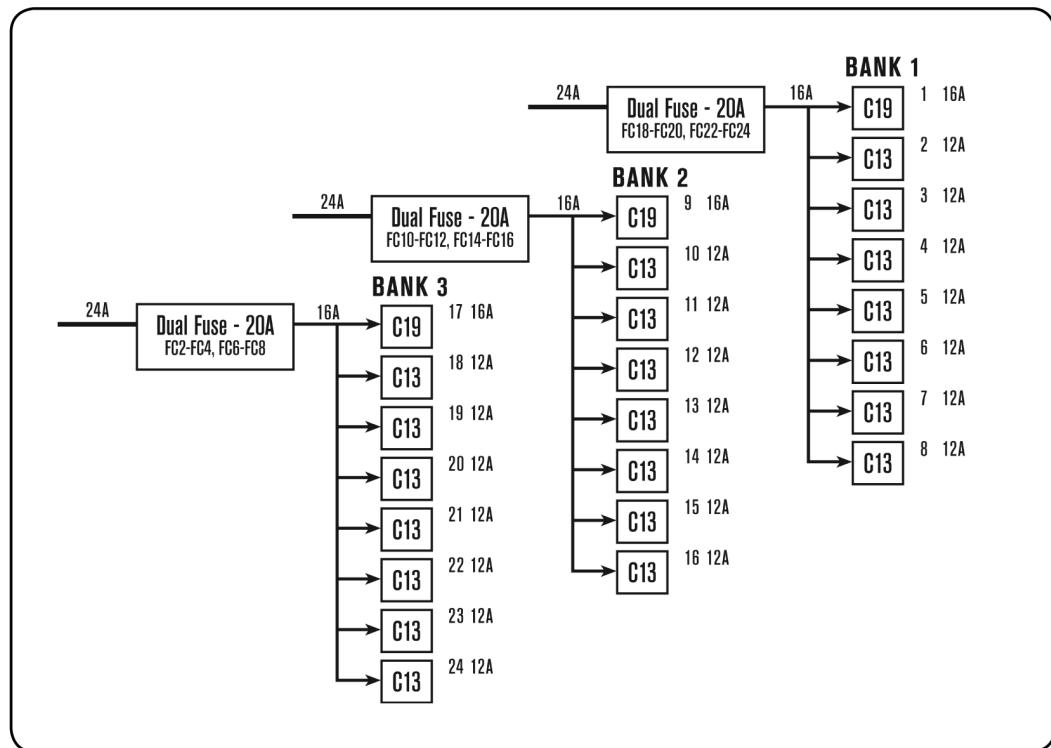


**Figure C.5: PM2001V-401/PM3001V-401, L6-30P 24A 1-Phase Power Cord**



**Figure C.6: YAH3001V-401, L6-30P 24A 1-Phase Power Cord**



**Figure C.7: PM1001V-401, L6-30P 24A 1-Phase Power Cord****Figure C.8: PM2002V-401/PM3002V-401/PM1008V-401, L15-L30P 3-Phase Power Cord PM2006V-401/PM3006V-401/PM1002V-401, L21-30P 3-Phase 24A Power Cord**

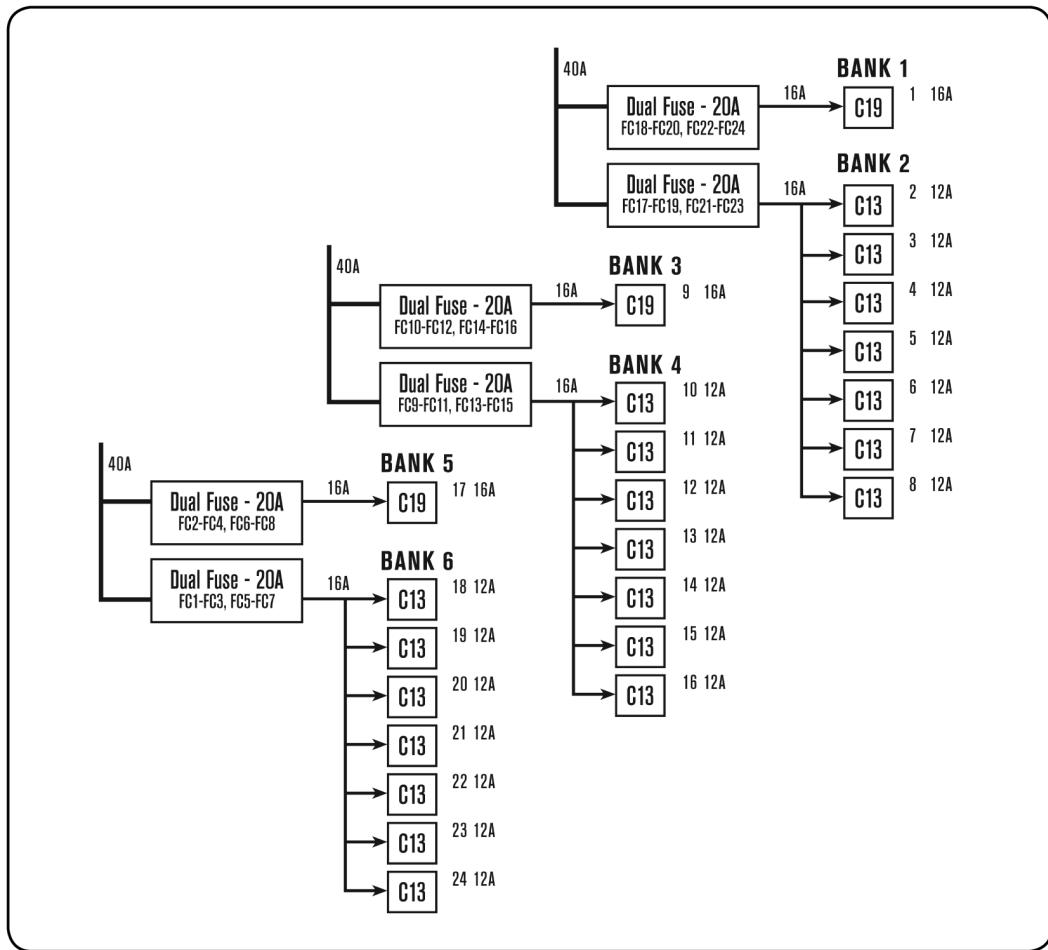


Figure C.9: PM2005V-403/PM3005V-403/PM1003V-401, Hubbell CS8365C 40A 3-Phase Power Cord

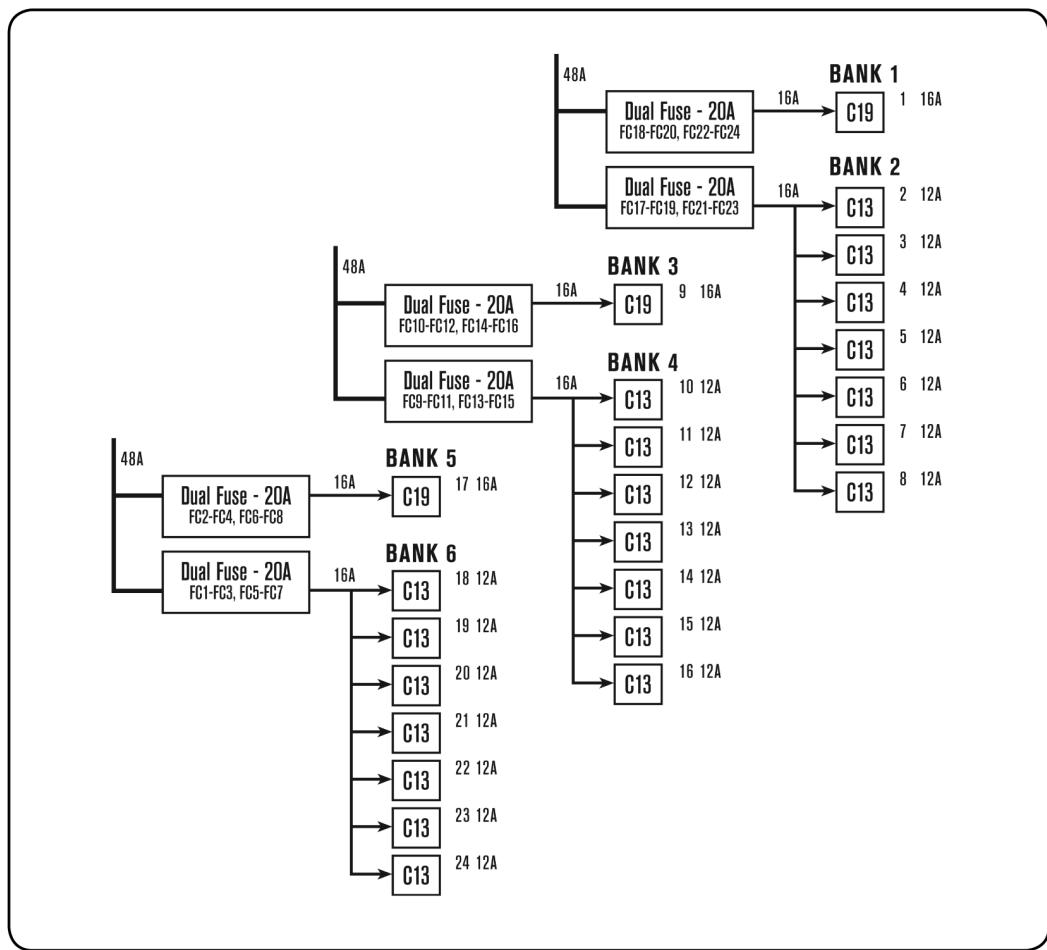
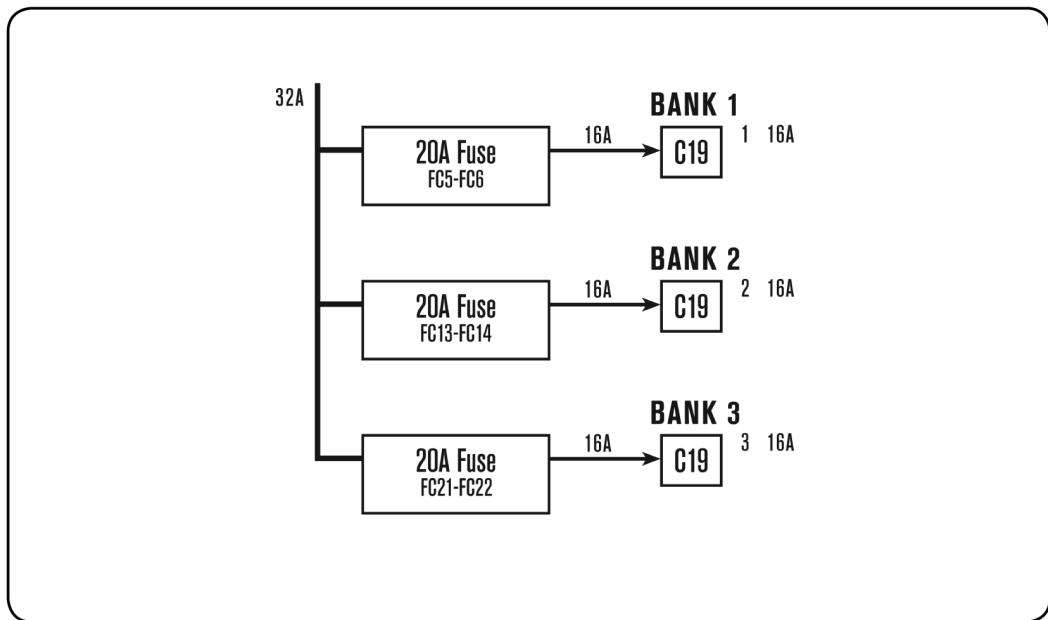
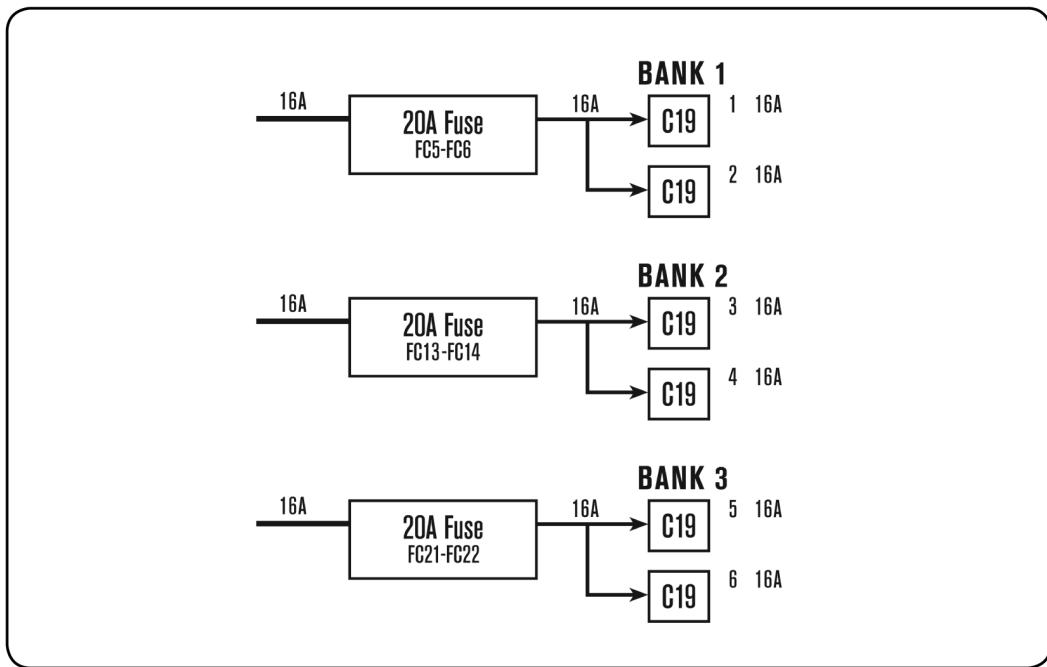


Figure C.10: PM2005V-404/PM3005V-404/PM1004V-401, IEC-309 48A 3-Phase Power Cord



**Figure C.11: PM2003H-401/PM3003H-401, IEC-309 32A 1-Phase Power Cord**



**Figure C.12: PM2004H-401/PM3004H-401, IEC-309 16A 3-Phase Power Cord**

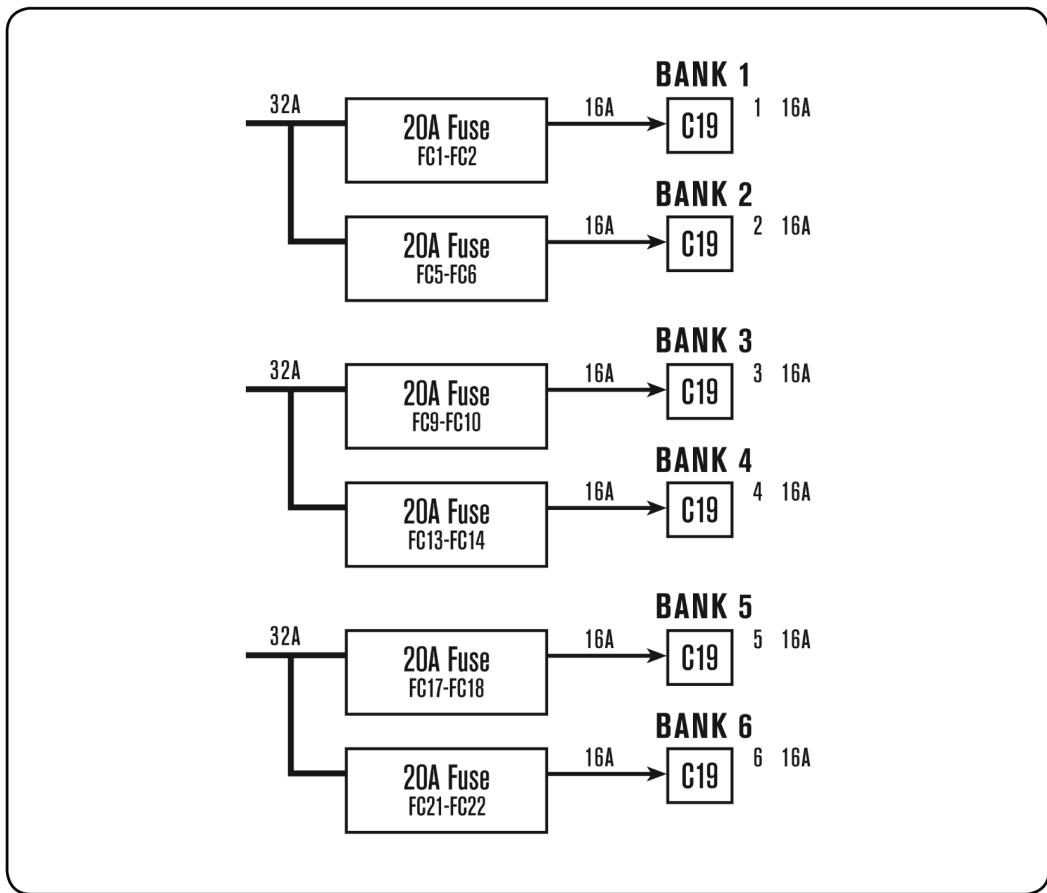
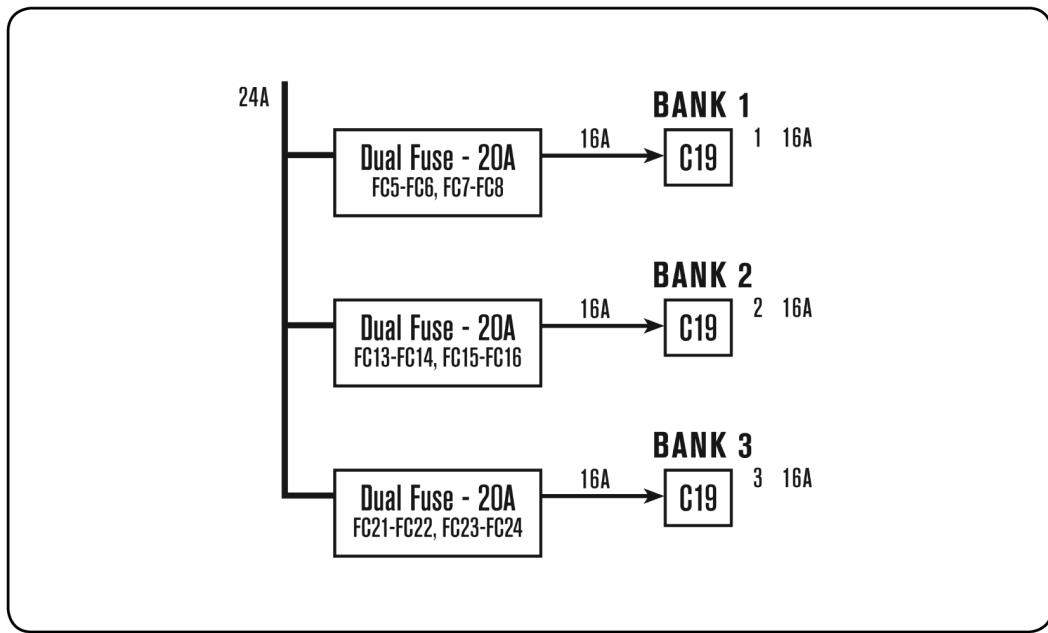
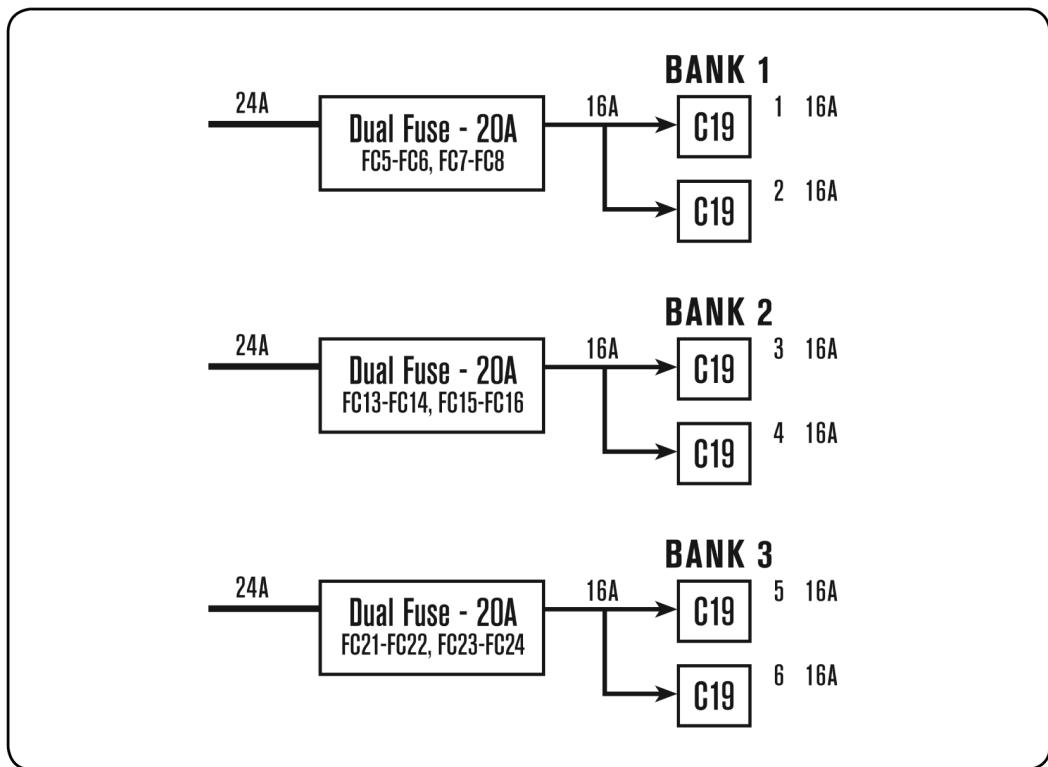


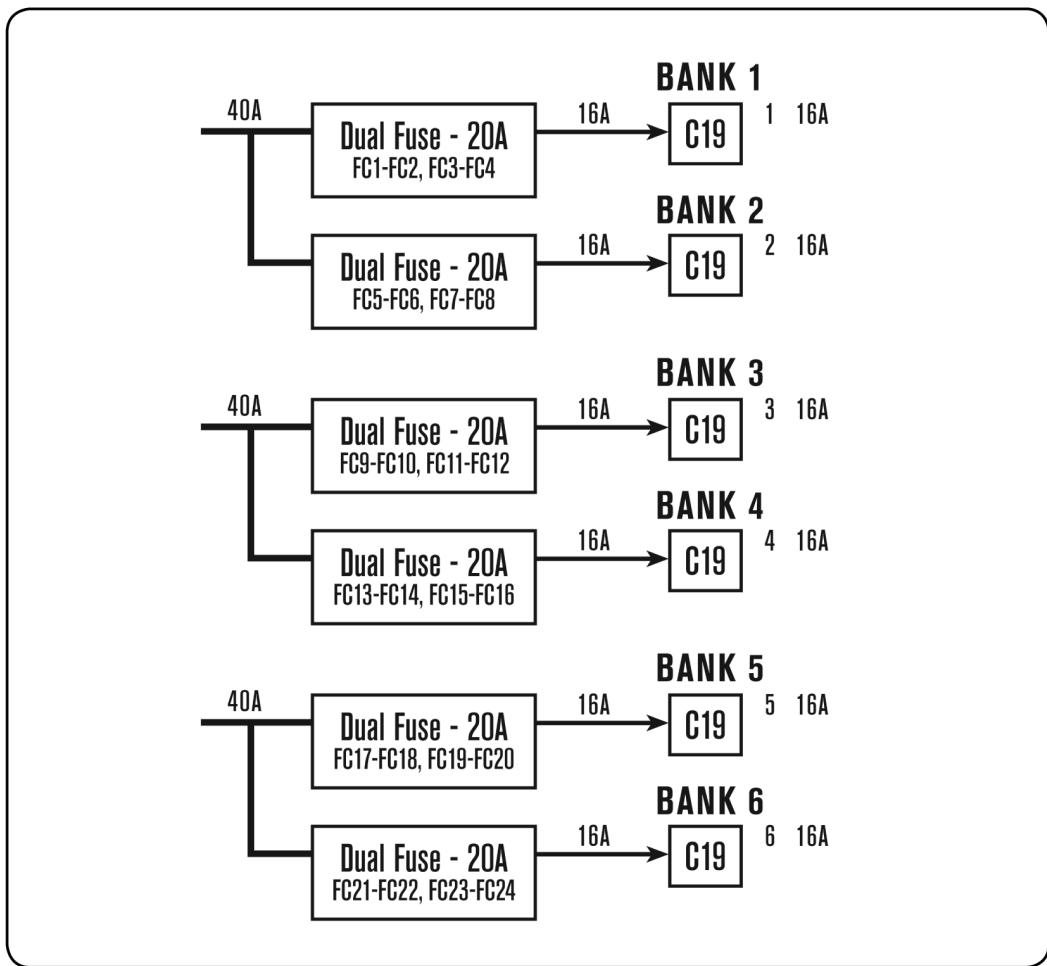
Figure C.13: PM2005H-406/PM3005H-406, IEC309 32A 3-Phase Power Cord



**Figure C.14: PM2001H-401/PM3001H-401, L6-30P 24A 1-Phase Power Cord**



**Figure C.15: PM2002H-401/PM3002H-401, L15-L30P 24A 3-Phase Power Cord PM2006H-401/PM3006H-401, L21-L30P 24A 3-Phase Power Cord**



**Figure C.16: PM2005H-403/PM3005H-403, Hubbell CS8365C 40A 3-Phase Power Cord**

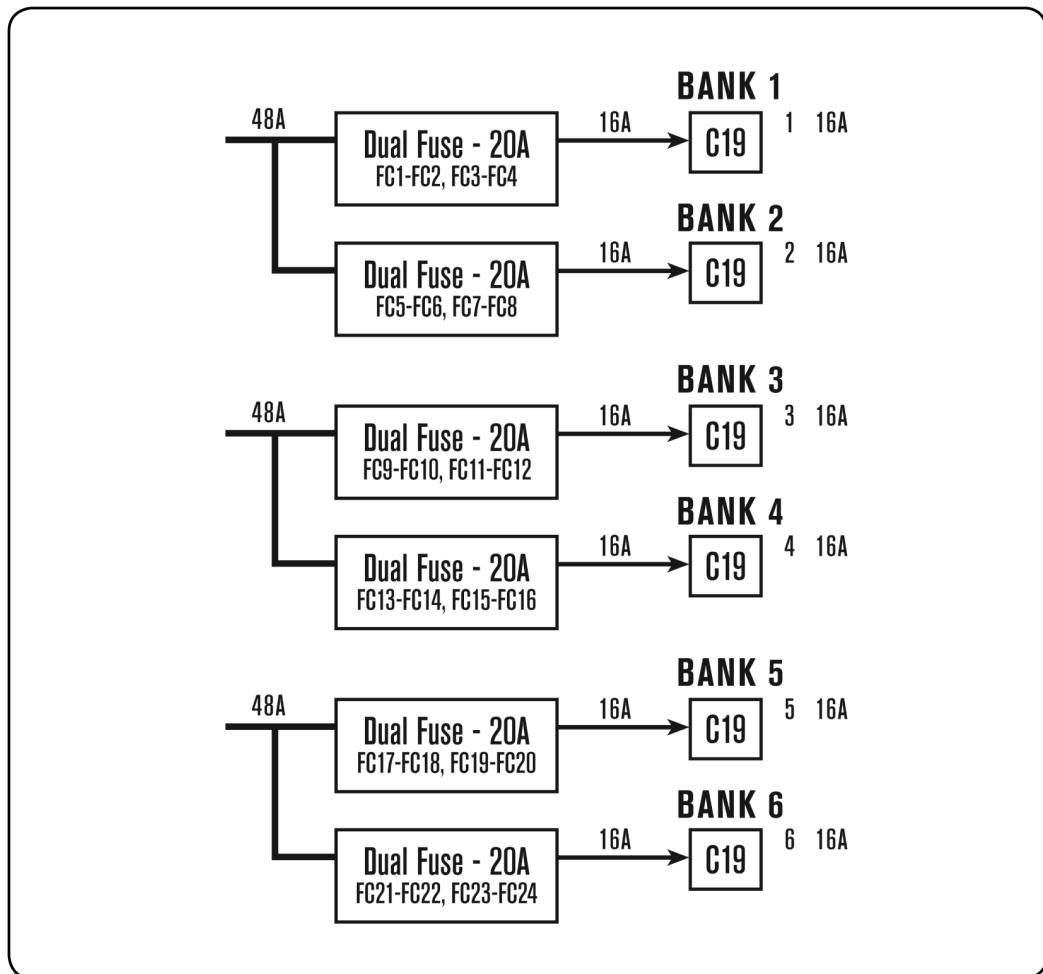


Figure C.17: PM2005H-404/PM3005H-404, IEC-309 48A 3-Phase Power Cord

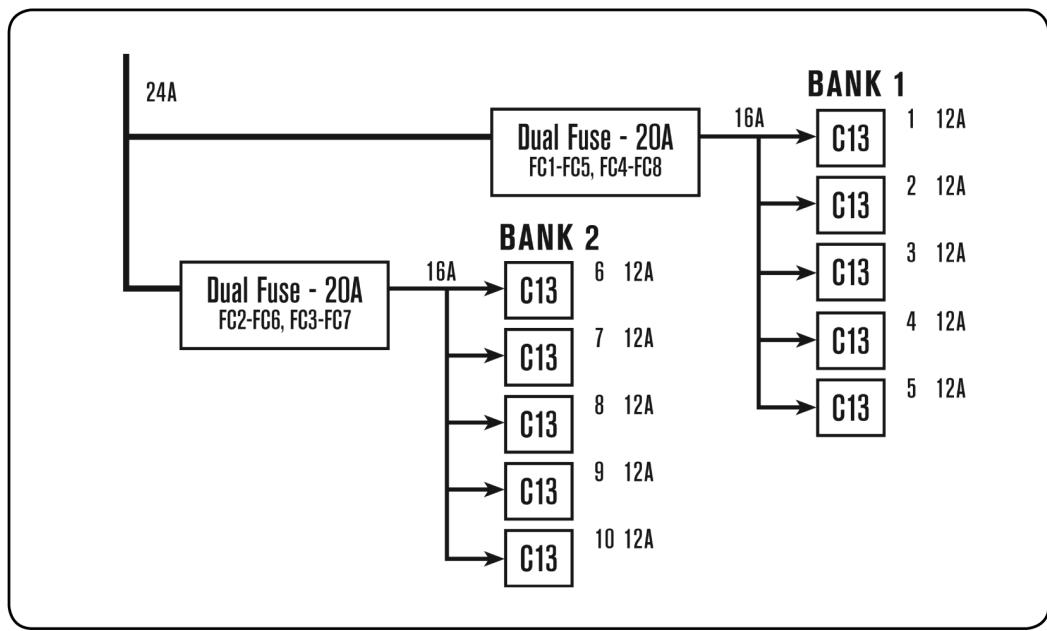


Figure C.18: PM1009H-401/PM2007H-401/PM3007H-401, L6-30P 24A 1-Phase Power Cord

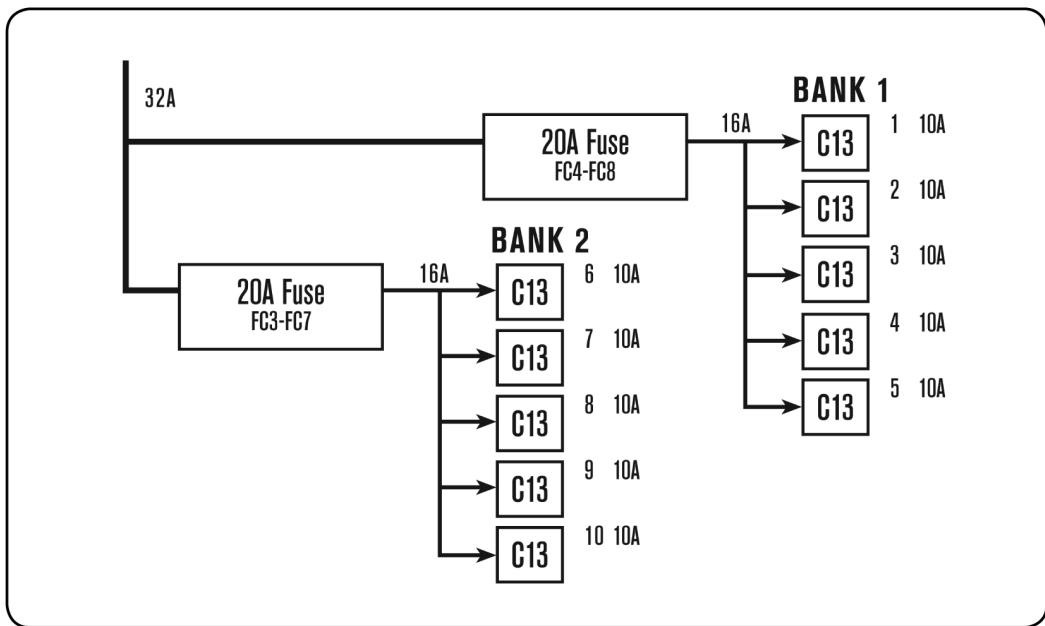
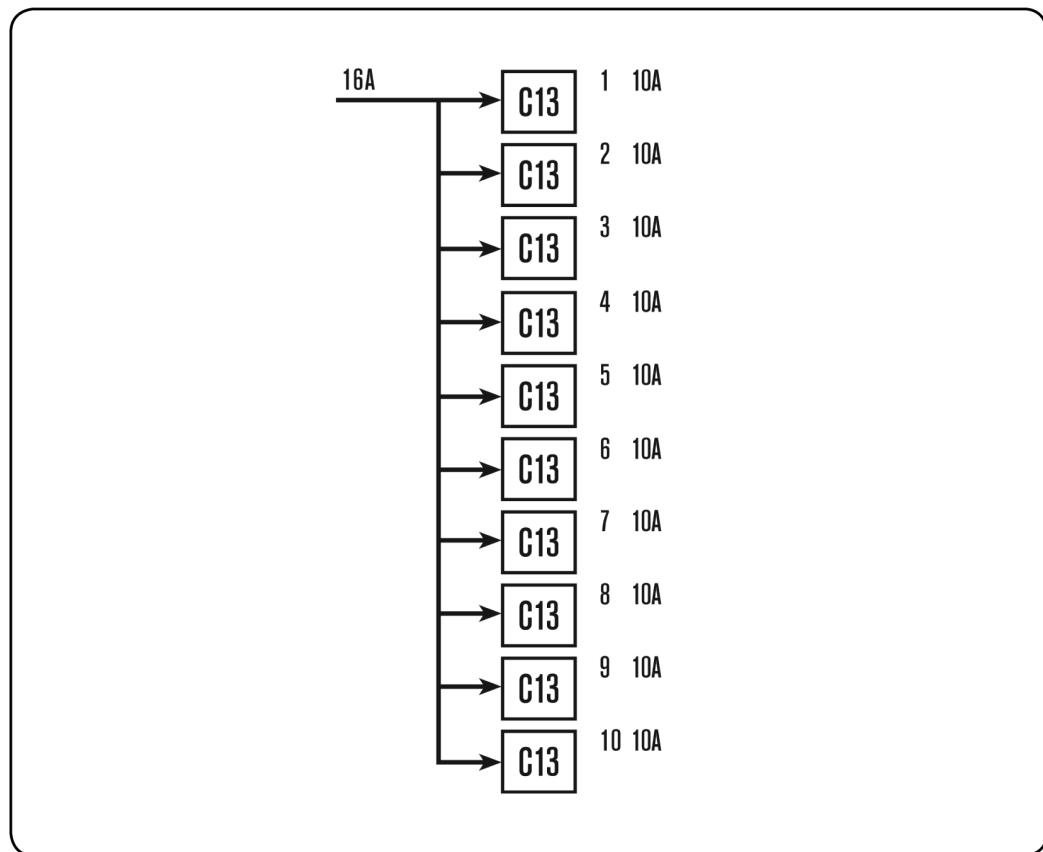
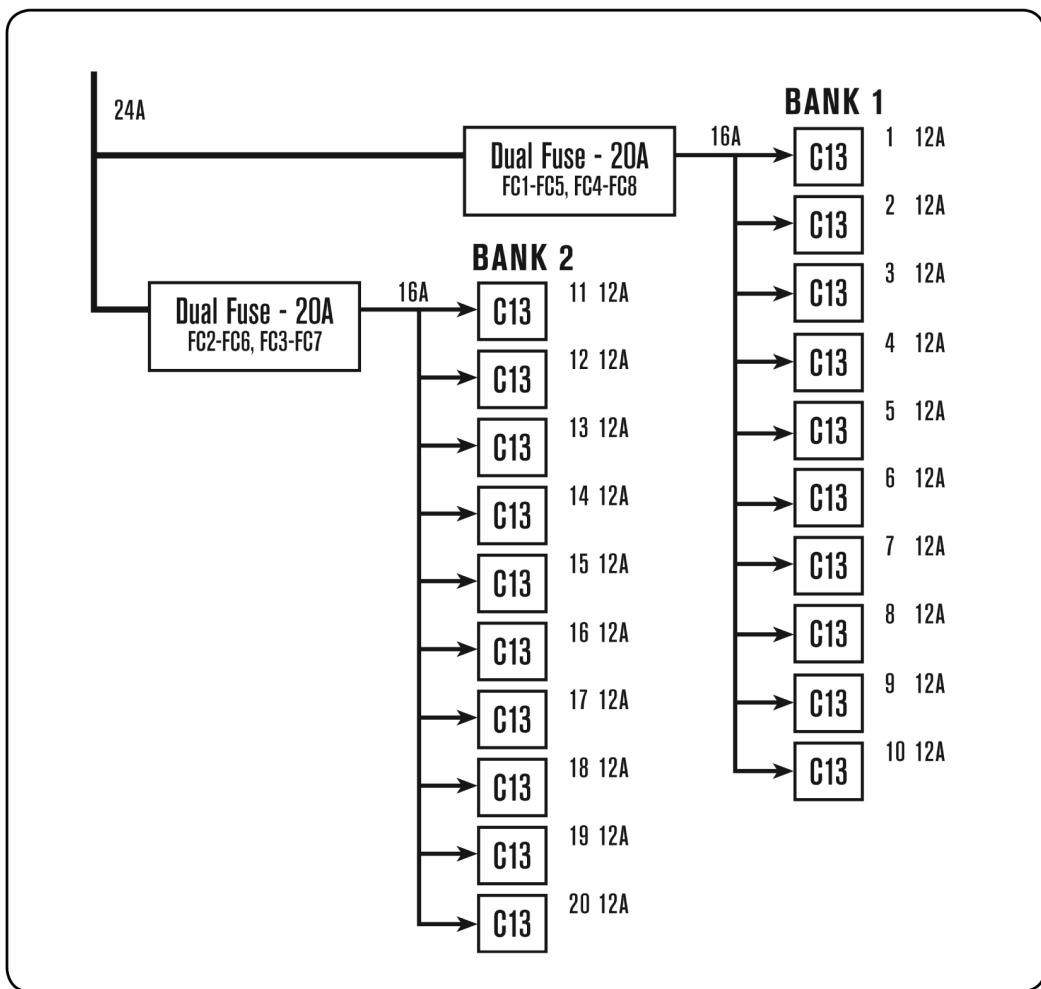


Figure C.19: PM1001H-401/PM2008H-401/PM3008H-401, IEC309 32A 1-Phase Power Cord



**Figure C.20: PM1011H/PM2009H/PM3009H, C20 16A 1-Phase Power Cord**



**Figure C.21: PM1012V-401/PM2010V-401/PM3010V-401, L6-30P 24A 1-Phase Power Cord**

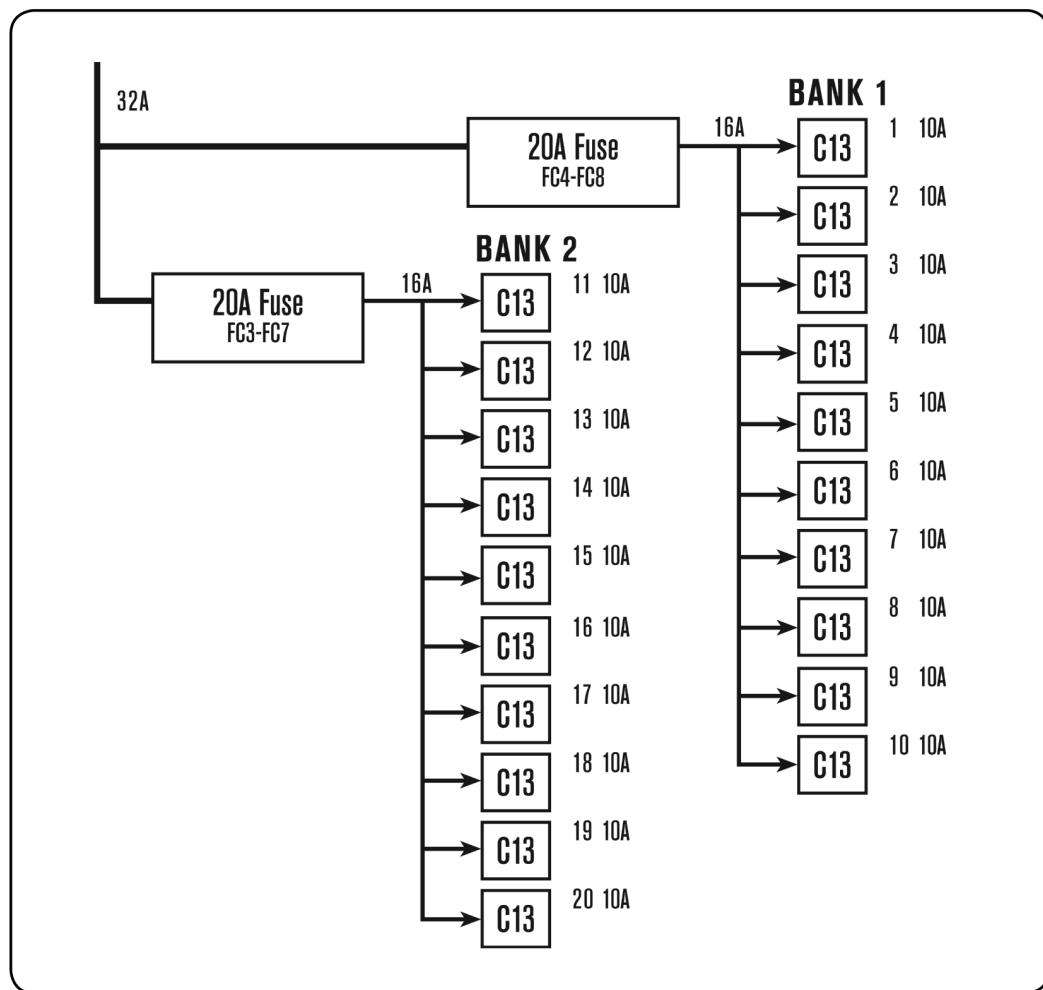
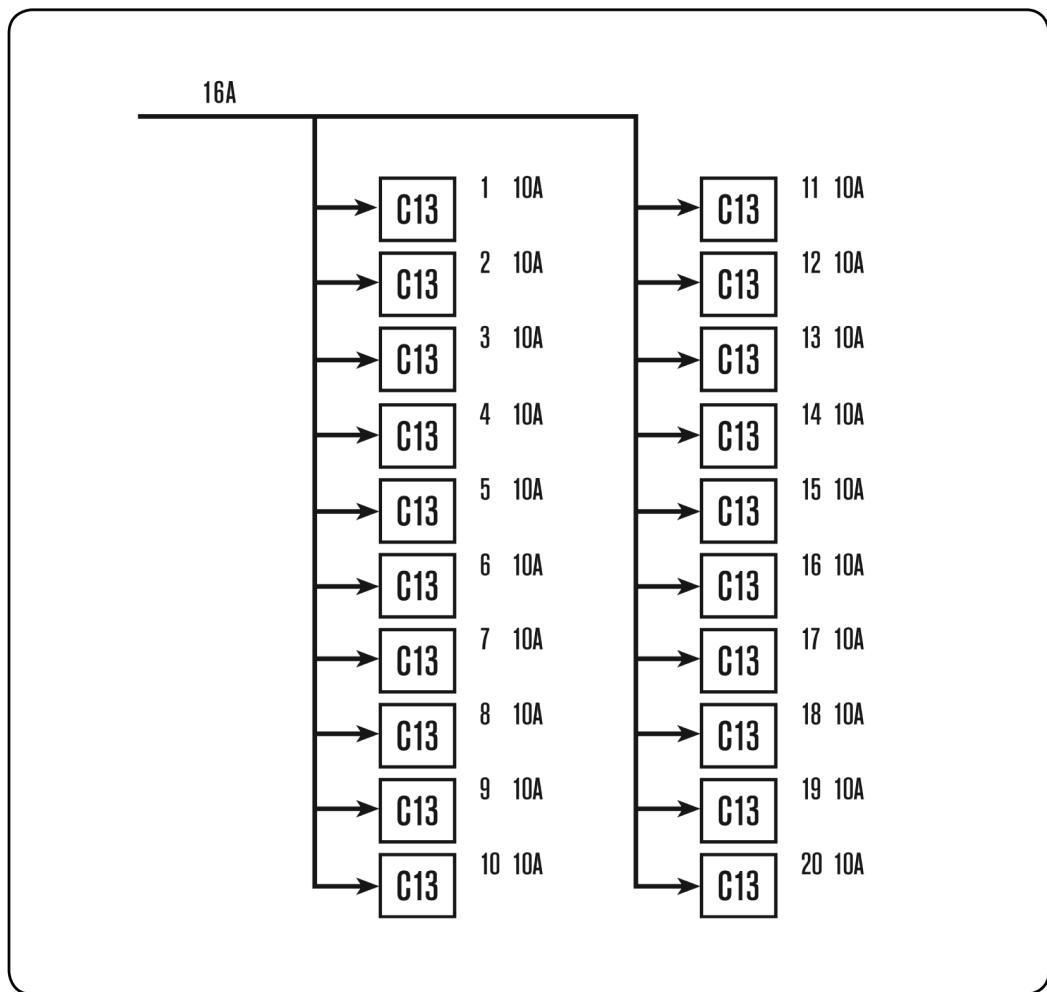


Figure C.22: PM1013V-401/PM2011V-401/PM3011V-401, IEC 309 32A 1-Phase Power Cord



**Figure C.23: PM1014V/PM2012V/PM3012V, C20 16A 1-Phase Power Cord**

**NOTE:** Hardware overcurrent protection is in place to protect fuses. All outlets in a bank, that are protected by a common fuse or dual fuses, will turn off together in case the total current in that bank exceeds the fuse limits. The web manager/CLI will show all outlets in that bank as tripped.

## Appendix D: Replacing the Fuses (For Service Personnel Only)

This product contains replaceable fuses. To avoid serious injury and/or damage to your Avocent PM PDU, make sure:

- The PDU is disconnected from a power source and all connected devices are turned off before replacing a fuse.
- Fuses are replaced with an Avocent approved branch circuit fuse class G time delay type with 20A 600 VAC rating.

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**CAUTION:** Avocent recommends using the Avocent fuse replacement kit. Avocent is not responsible for any issues that may occur using any other vendor's fuse replacement kit.

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- Fuses are replaced by qualified personnel.
- Fuses are denoted with the following markings on the board: FC1-FC2, FC3-FC4, FC5-FC6, FC7-FC8, FC9-FC10, FC11-FC12, FC13-FC14, FC15-FC16, FC17-FC18, FC19-FC20, FC21-FC22, FC23-FC24, FC1-FC5, FC2-FC6, FC3-FC7, FC4-FC8 . Refer to Appendix B for fuse(s) to outlet(s) correlation.

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**WARNING:** There is a risk of explosion if the lithium battery is replaced with an incorrect type. Dispose of used batteries according to the manufacturer's instructions.

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**CAUTION:** Double pole/neutral fusing.

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[www.avocent.com/support](http://www.avocent.com/support)

590-860-501H