# Eaton® 93PM Integrated Accessory Cabinet – Power Distribution

208V 4–Wire IAC-PD
480V 3–Wire IAC-PD
480V 4–Wire IAC-PD
Installation and Operation Manual

Powering Business Worldwide

p/n: P-164000694
Revision 02

## IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

This manual contains important instructions that you should follow during installation and maintenance of the UPS and batteries. Please read all instructions before operating the equipment and save this manual for future reference.

## CONSIGNES DE SÉCURITÉ IMPORTANTES – CONSERVER CES INSTRUCTIONS

Ce manuel comporte des instructions importantes que vous êtes invité à suivre lors de toute procédure d'installation et de maintenance des batteries et de l'onduleur. Veuillez consulter entièrement ces instructions avant de faire fonctionner l'équipement et conserver ce manuel afin de pouvoir vous y reporter ultérieurement.

## ⚠ IMPORTANT

To ensure you have the most up-to-date content and information for this product, please review the latest manual revision on our website, www.eaton.com/93PM.

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# Chapter 1 Introduction

## 1.1 Introduction

The Eaton® 93PM Integrated Accessory Cabinet-Power Distribution (IAC-PD) is designed for use with the Eaton 93PM Series Uninterruptible Power Supplies (UPSs). The IAC-PD provides power distribution options for servers, racks, and other equipment via distribution panelboards, or distributes power to larger loads via distribution subfeed circuit breakers. The distribution options are customer configurable, enabling adaptation and expansion without costly electrical rework.
Three configurations are available:

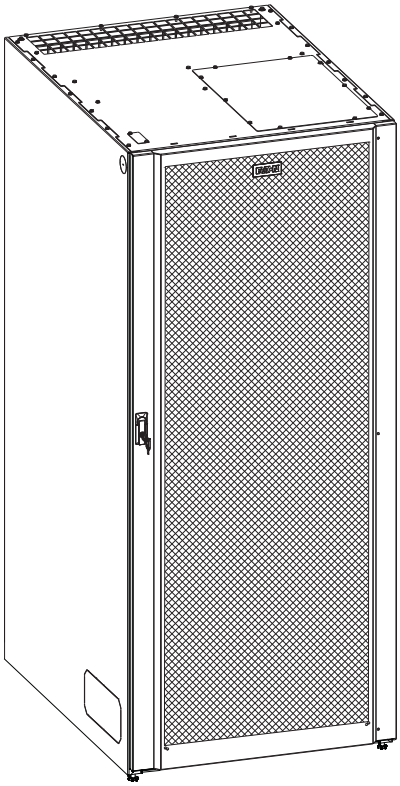
- 93PM 208V 4-Wire IAC-PD
- 93PM 480V 3-Wire IAC-PD
- 93PM 480V 4-Wire IAC-PD

The IAC-PD is housed in a single free-standing cabinet with safety shields behind the front door for hazardous voltage protection. The cabinets match the UPS cabinet in style and color.

Figure 1 shows the Eaton 93PM IAC-PD.

**NOTE** Startup and operational checks must be performed by an authorized Eaton Customer Service Engineer, or the warranty terms specified in paragraph 9.1 *Warranty* become void. This service is offered as part of the sales contract for the UPS. Contact an Eaton service representative in advance (usually a two-week notice is required) to reserve a preferred startup date.

**Figure 1. Eaton 93PM IAC-PD**



## 1.2 Features and Model Configurations

The IAC-PD is highly configurable, offering customers various distribution options for the bottom and/or the top position within the cabinet.

Key features and options include:

- Various bottom and/or top distribution combinations factory installed.
- Distribution options include panelboards and subfeed breakers (250A or 400A subfeed options available).
- Bottom position must always have a distribution option selected, while the top position may remain empty.
- The IAC-PD voltage configuration is selectable and will be configured and labeled by the factory as one of three options:
  1. 120/208V 4-Wire
  2. 277/408V 4-Wire
  3. 480V 3-Wire
- If a subfeed distribution option is ordered with less than the maximum number of subfeed breakers, the unit will include factory pre-wired subfeed provisions to allow for additional, field installable subfeed breakers.

***IAC-PD 120/208V 4-Wire Model Configurations:***

The following 120/208V 93PM IAC-PD model configurations are available for use with the 93PM UPS Series:

- One or two PRL1a 225A or 400A 42-pole distribution panels boards. If equipped with one 225A and one 400A panel board, the 400A panel board must be in the bottom position.
- One PRL1a 225A or 400A 42-pole distribution panel in the bottom position and up to three JG-Frame 3-pole 250A subfeed distribution breakers in the top position.
- One PRL1a 225A or 400A 42-pole distribution panel in the bottom position and up to two K-Frame 3-pole 400A subfeed distribution breakers in the top position.
- Up to two K-Frame 400A subfeed distribution breaker in the bottom position and up to two K-Frame 400A subfeed distribution breakers in the top position.

| | | |
|---|---|---|
|  | **NOTE 1** | JG-Frame 250A subfeed breakers are not available for the bottom position. |
| | **NOTE 2** | Two K-Frame 400A subfeed breakers must be selected for the bottom position before a top distribution option can be selected. |
| | **NOTE 3** | PRL1a panelboards used at 120/208V 4W are provided with provisions for BAB or QBHW type branch breakers. |
| | **NOTE 4** | BAB/QBHW bus mountings are not interchangeable with GHB bus mountings. |

***IAC-PD 277/480V 4-Wire and 480V 3-Wire Model Configurations:***

The following 277/480V 4-Wire or 480V 3-Wire 93PM IAC-PD model configurations are available for use with the 93PM UPS Series:

- One or two PRL2a 225A 42-pole distribution panels boards.
- One PRL2a 225A 42-pole distribution panel in the bottom position and up to three JG-Frame 3-pole 250A subfeed distribution breakers in the top position.
- One PRL2a 225A 42-pole distribution panel in the bottom position and up to two K-Frame 3-pole 400A subfeed distribution breakers in the top position.
- Up to two K-Frame 400A subfeed distribution breaker in the bottom position and up to two 400A subfeed distribution breakers in the top position.

**NOTE 1** JG-Frame 250A subfeed breakers are not available for the bottom position.

**NOTE 2** Two K-Frame 400A subfeed breakers must be selected for the bottom position before a top distribution option can be selected.

**NOTE 3** PRL2a panelboards used at 277/480V 4W or 480V 3W are provided with provisions for GHB type branch breakers.

**NOTE 4** BAB/QBHW bus mountings are not interchangeable with GHB bus mountings.

## 1.3 Installation Features

- The IAC-PD is designed to be installed in line-up-and-match or standalone configurations:
  - In line-up-and-match configurations input power wiring is routed through the side panels between the 93PM UPS and the IAC-PD. This option is only available with the 208V/220V 93PM UPS. In line-up-and-match configurations, the IAC-PD Input power cabling is factory provided.
  - In standalone configurations input power wiring is routed using external conduit through top or bottom entry conduit plates. This option is available with the 208V/220V 93PM UPS, 480V 93PM UPS, and the Eaton 93PM Integrated Accessory Cabinet - Distribution (93PM IAC-D). In standalone configurations, the IAC-PD Input power cabling is customer provided.
  - Output wiring is routed using external conduit through top or bottom entry conduit plates.
- To reduce installation time, connections to the input power connections are made via easily accessible mechanical compression lug terminals bolted to the input bus bars. The panelboard load connections are made directly to the breaker, with the neutral and ground wiring attaching to the voltbars. Subfeed load connections are made to the subfeed's terminal block all of which are located at the front of the cabinet.
- Top or rear ventilation options are available.
- The cabinet can be leveled and secured in place using the leveling feet.

A line-up-and-match IAC-PD is installed adjacent to the 93PM UPS. The IAC-PD may be installed on the left or right side of the UPS cabinet. See Figure 2 through Figure 5 for line-up-and-match configuration views.

**Figure 2. Eaton 93PM UPS with Left-Mounted Eaton 93PM IAC-PD**

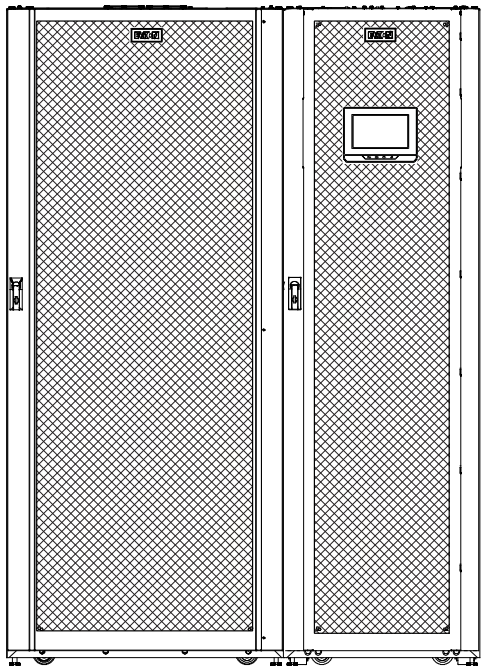


**Figure 3. Eaton 93PM UPS with Right-Mounted Eaton 93PM IAC-PD**

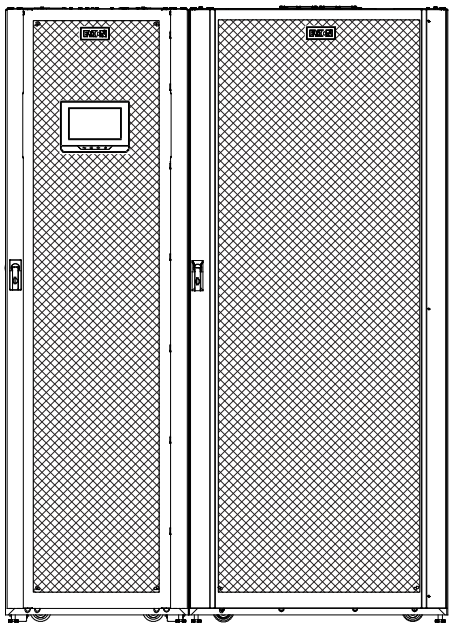


**Figure 4. Eaton 93PM UPS with Sidecar with Left-Mounted Eaton 93PM IAC-PD**

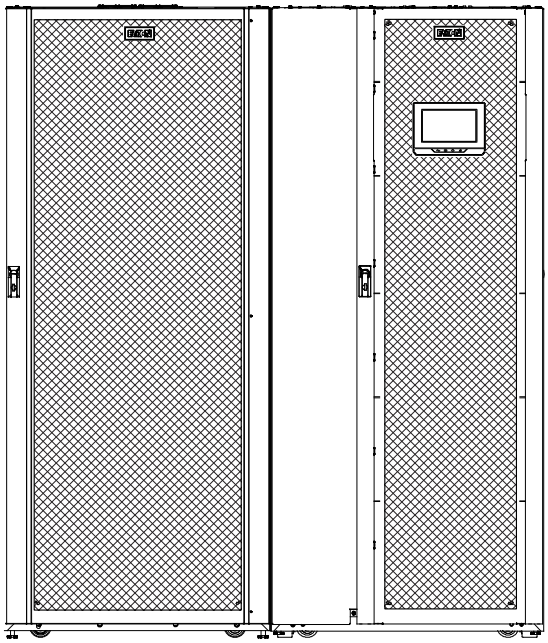
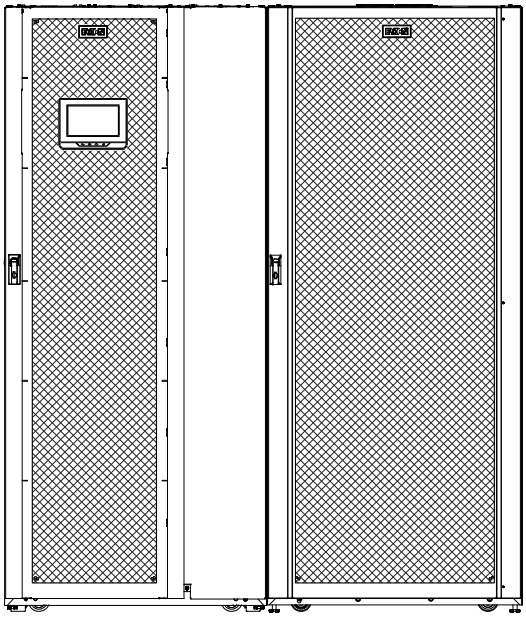


**Figure 5. Eaton 93PM UPS with Sidecar with Right-Mounted Eaton 93PM IAC-PD**



## 1.4 Using This Manual

This manual describes how to install the IAC-PD. Read and understand the procedures described to ensure trouble-free installation and operation.

Read through each procedure before beginning the work. Perform only those procedures that apply to the UPS system being installed or operated.

## 1.5 Conventions Used in This Manual

This manual uses these type conventions:

- **Bold type** highlights important concepts in discussions, key terms in procedures, and menu options, or represents a command or option that you type or enter at a prompt.
- *Italic type* highlights new terms where they are defined.
- `Screen type` represents information that appears on the screen or LCD.

| Icon | Description |
|---|---|
| **NOTE** | Information notes provide pertinent information about important features or instructions. |
| [Keys] | Brackets are used when referring to a specific key, such as [Enter] or [Ctrl]. |

In this manual, the term *UPS* refers only to the UPS cabinet and its internal elements. The term *UPS system* refers to the entire power protection system – the UPS cabinet, an external battery system, and options or accessories installed.

The term *line-up-and-match* refers to accessory cabinets that are physically located adjacent to the UPS. The term *standalone* refers to accessory cabinets that are located separate from the UPS.

## 1.6 Symbols, Controls, and Indicators

The following are examples of symbols used on the UPS or accessories to alert you to important information:

**RISK OF ELECTRIC SHOCK** - Observe the warning associated with the risk of electric shock symbol.

**CAUTION: REFER TO OPERATOR'S MANUAL** - Refer to your operator's manual for additional information, such as important operating and maintenance instructions.


This symbol indicates that you should not discard the UPS or the UPS batteries in the trash. This product contains sealed, lead-acid batteries and must be disposed of properly. For more information, contact your local recycling/reuse or hazardous waste center.

This symbol indicates that you should not discard waste electrical or electronic equipment (WEEE) in the trash. For proper disposal, contact your local recycling/reuse or hazardous waste center.

## 1.7 For More Information

Refer to the *Eaton 93PM-L UPS 20–60 kW (208V) Installation and Operation Manual*,

the *Eaton 93PM-L UPS 20–120 kW (208V) Installation and Operation Manual*,

the *Eaton 93PM-L UPS 20–160 kW (208V) Installation and Operation Manual*,

the *Eaton 93PM-L UPS 20–200 kW (208V) Installation and Operation Manual*,

the *Eaton 93PM UPS (20–50 kW, 480V – 50 kW Frame) Installation and Operation Manual*,

the *Eaton 93PM UPS 400V/480V Four-Wire – 50 kW Frame) Installation and Operation Manual*,

the *Eaton 93PM UPS (20–100 kW, 480V – 100 kW Frame) Installation and Operation Manual*,

the *Eaton 93PM UPS 400V/480V Four-Wire – 100 kW Frame) Installation and Operation Manual*,

the *Eaton 93PM UPS (20–150 kW, 480V – 150 kW Frame) Installation and Operation Manual*,

the *Eaton 93PM UPS 400V/480V Four-Wire – 150 kW Frame) Installation and Operation Manual*,

the *Eaton 93PM UPS 400V/480V Four-Wire – 200 kW Frame) Installation and Operation Manual*,

or the *Eaton 93PM UPS (100–400 kW, 480V – 400 kW Frame) Installation and Operation Manual* for the following additional information:

- UPS, optional components, and accessory installation instructions, including site preparation, planning for installation, wiring and safety information, and detailed illustrations of cabinets and optional accessories with dimensional and connection point drawings
- UPS operation, including UPS controls, functions of the UPS, standard features and optional accessories, procedures for starting and stopping the UPS, information about maintenance, communication capabilities and responding to system events
- Communication capabilities of the UPS system

Visit www.eaton.com/powerquality or contact an Eaton service representative for information on how to obtain copies of these manuals.

## 1.8 Getting Help

If help is needed with any of the following:

- Scheduling initial startup
- Regional locations and telephone numbers
- A question about any of the information in this manual
- A question this manual does not answer

Please call the Customer Reliability Center at:

| | |
|---|---|
| United States: | **1-800-843-9433** |
| Canada: | **1-800-461-9166 ext 260** |
| All other countries: | **Call your local service representative** |

Please use the following e-mail address for manual comments, suggestions, or to report an error in this manual:

**E-ESSDocumentation@eaton.com**

## 1.9 Equipment Registration

Please visit www.eaton.com/pq/register to register your new Eaton UPS / Eaton UPS Accessory.

**Model Number:** _____

**Serial Number:** _____

# Chapter 2 Safety

## 2.1 Safety Warnings

**IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS**

This manual contains important instructions that should be followed during installation and maintenance of the UPS system and batteries. Read all instructions before operating the equipment and save this manual for future reference.

The UPS system is designed for industrial or computer room applications, and contains safety shields behind the door and front panels. However, the UPS system is a sophisticated power system and should be handled with appropriate care.

**DANGER**

This UPS system contains LETHAL VOLTAGES. All repairs and service should be performed by AUTHORIZED SERVICE PERSONNEL ONLY. There are NO USER SERVICEABLE PARTS inside the UPS. Failure to follow these instructions may result in serious injury or death.

**WARNING**

- The UPS system is powered by its own energy source (batteries). The output terminals may carry live voltage even when the UPS is disconnected from an AC source.
- To reduce the risk of fire or electric shock, install this UPS system in a temperature and humidity controlled, indoor environment, free of conductive contaminants. Ambient temperature must not exceed 40°C (104°F). Do not operate near water or excessive humidity (95% maximum). The system is not intended for outdoor use.
- As a result of the connected loads, high leakage current is possible. Connection to earth ground is required for safety and proper product operation. Do not check UPS system operation by any action that includes removal of the earth (ground) connection with loads attached.
- Ensure all power is disconnected before performing installation or service.
- ELECTRIC ENERGY HAZARD. Do not attempt to alter any UPS system or battery wiring or connectors. Attempting to alter wiring may result in serious injury or death.

**CAUTION**

- Installation or servicing should be performed by qualified service personnel knowledgeable of UPS and battery systems, and required precautions. Keep unauthorized personnel away from equipment. Consider all warnings, cautions, and notes before installing or servicing equipment.
- Keep the accessory cabinet doors closed and front panels installed to ensure proper cooling airflow and to protect personnel from dangerous voltages inside the unit.
- Do not install or operate the UPS system close to gas or electric heat sources.
- The operating environment should be maintained within the parameters stated in this manual.
- Keep surroundings uncluttered, clean, and free from excess moisture.
- Observe all DANGER, WARNING, and CAUTION notices affixed to the inside and outside of the equipment.

# Chapter 3 Installation Plan and Unpacking

## 3.1 Installation Plan and Unpacking

Use the following basic sequence of steps to install the Eaton 93PM Integrated Accessory Cabinet-Power Distribution (IAC-PD):

1. Create an installation plan for the IAC-PD.
2. Prepare your site for the IAC-PD.
3. Inspect and unpack the IAC-PD.
4. Unload and install the IAC-PD, and wire the system.
5. Complete the Installation Checklist.
6. Have authorized service personnel perform preliminary operational checks and start up the UPS system.

**NOTE** Startup and operational checks must be performed by an authorized Eaton Customer Service Engineer, or the warranty terms specified in paragraph 9.1 *Warranty* become void. This service is offered as part of the sales contract for the UPS. Contact an Eaton service representative in advance (usually a two-week notice is required) to reserve a preferred startup date.

### 3.1.1 Creating an Installation Plan

Before installing the IAC-PD, read and understand how this manual applies to the system being installed. Use the procedures and illustrations in this section to create a logical plan for installing the IAC-PD. This section contains the following information:

- Physical features and requirements, including dimensions
- Power wiring installation information

## 3.2 Preparing the Site

For the UPS system to operate at peak efficiency, the installation site should meet the environmental parameters outlined in this manual. The operating environment must meet the weight, clearance, and environmental requirements specified for the applicable accessory cabinet.

### 3.2.1 Environmental and Installation Considerations

The UPS system installation, including the IAC-PD, must meet the following guidelines:

- The system must be installed on a level floor suitable for computer or electronic equipment.
- The system must be operated at an altitude no higher than 1500m (5000 ft) without derating. For additional assistance with high altitude operation, contact an Eaton service representative (see paragraph 1.8 *Getting Help*).
- The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
- Failure to follow guidelines may void your warranty.

The basic environmental requirements for operation of the IAC-PD are:

- Recommended Operating Range: 5–40°C (41–104°F)
- Maximum Relative Humidity: 5–95%, noncondensing

The IAC-PD operating environment must accommodate the weight requirements shown in Table 1 and the size and space requirements shown in Table 2 and Figure 6 through Figure 8.

**Table 1. IAC-PD Cabinet Weights**

| Model | Weight kg (lb) | | |
|---|---|---|---|
| | Shipping | Installed | Point Loading |
| Eaton 93PM IAC-PD with (2) 400A Panelboards | 342 (753.3) | 311 (686.3) | 4 at 78 (172) |
| Eaton 93PM IAC-PD with (1) 400A Panelboard and (2) 400A Subfeed Breakers | 336 (740.1) | 305 (673.1) | 4 at 76 (168) |
| Eaton 93PM IAC-PD with (1) 400A Panelboard and (3) 250A Subfeed Breakers | 330 (725.5) | 299 (658.5) | 4 at 75 (165) |
| Eaton 93PM IAC-PD with (4) 400A Subfeeds Breakers | 332 (730.1) | 301 (663.1) | 4 at 75 (166) |
| Eaton 93PM IAC-PD with (1) 400A Panelboard [Cab top empty] | 314 (691.8) | 283 (624.8) | 4 at 227 (501) |
| Eaton 93PM IAC-PD with (2) 400A Subfeed Breakers [Cab top empty] | 309 (680.5) | 278 (613.5) | 4 at 244 (539) |

Air inlets are in the front bottom of the cabinet. Outlets are in the back of the cabinet for the rear ventilation option or in the top of the cabinet for the top ventilation option.

Convection air cooling regulates internal component temperature through either of the following configurations:

- Rear ventilation (see Figure 9).
- Top ventilation (see Figure 10).

Allow clearance on top or in back of the cabinet depending on type of ventilation for proper air circulation. The clearances required around the IAC-PD cabinet are shown in Table 2.

**Table 2. IAC-PD Cabinet Clearances**

| Viewing the IAC-PD | Clearance |
|---|---|
| **From Front of Cabinet** | 914.4 mm (36") working space |
| **From Top of Cabinet with Top Venting** | 203 mm (8") minimum clearance for ventilation* |
| **From Top of Cabinet with Rear Venting** | 203 mm (8") * |
| **From Back of Cabinet with Rear Venting** | 203 mm (8") minimum clearance for ventilation |
| **From Back of Cabinet with Top Venting** | None Required |
| **From Right Side of Cabinet** | None Required |
| **From Left Side of Cabinet** | None Required |

**NOTE** *Additional Top of Cabinet clearance may be required for conduit in top entry applications.

**Figure 6. 93PM IAC-PD Cabinet Dimensions (Front, Right Side, and Back Views)**

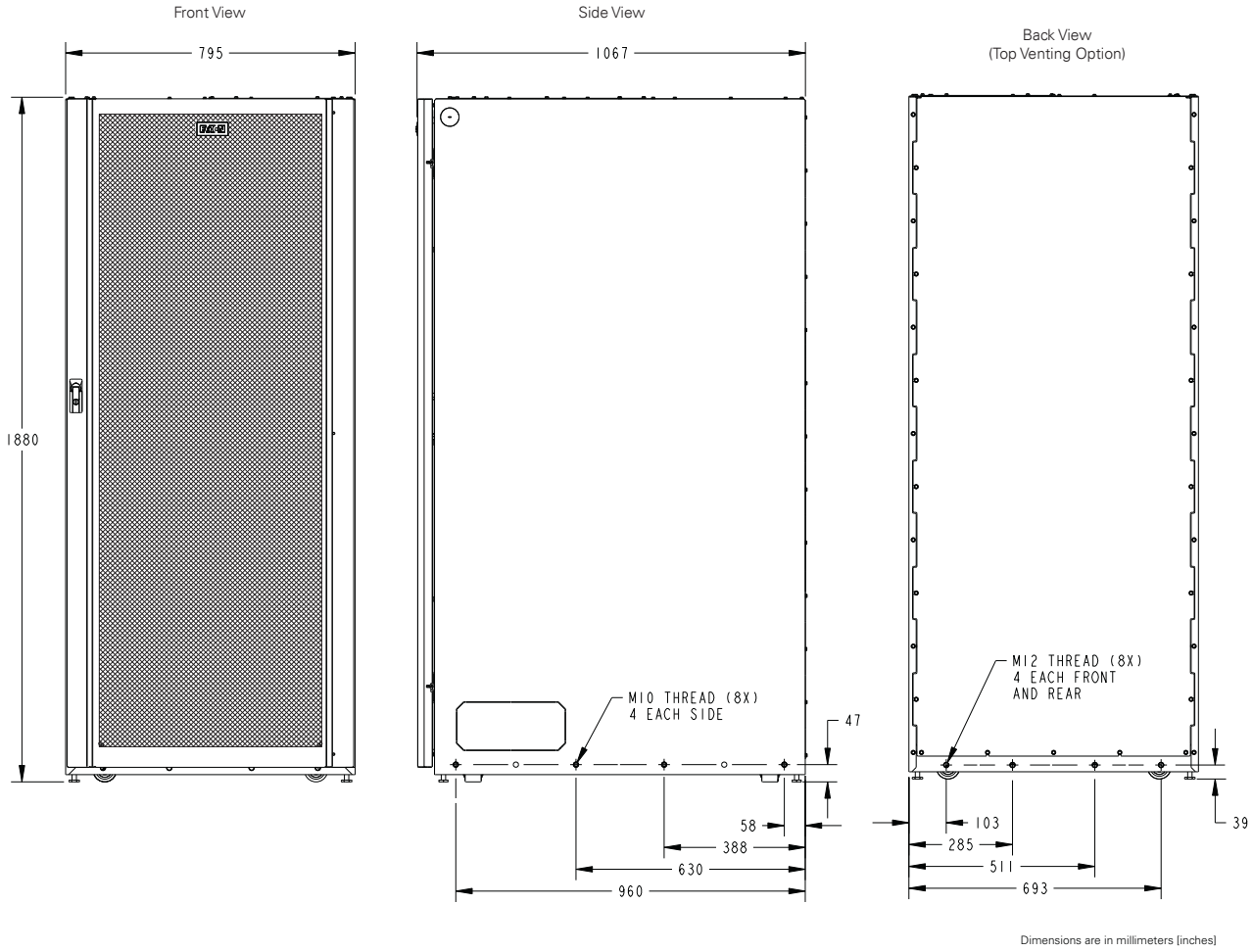


**Figure 7. 93PM IAC-PD Dimensions (Top and Bottom Views)**

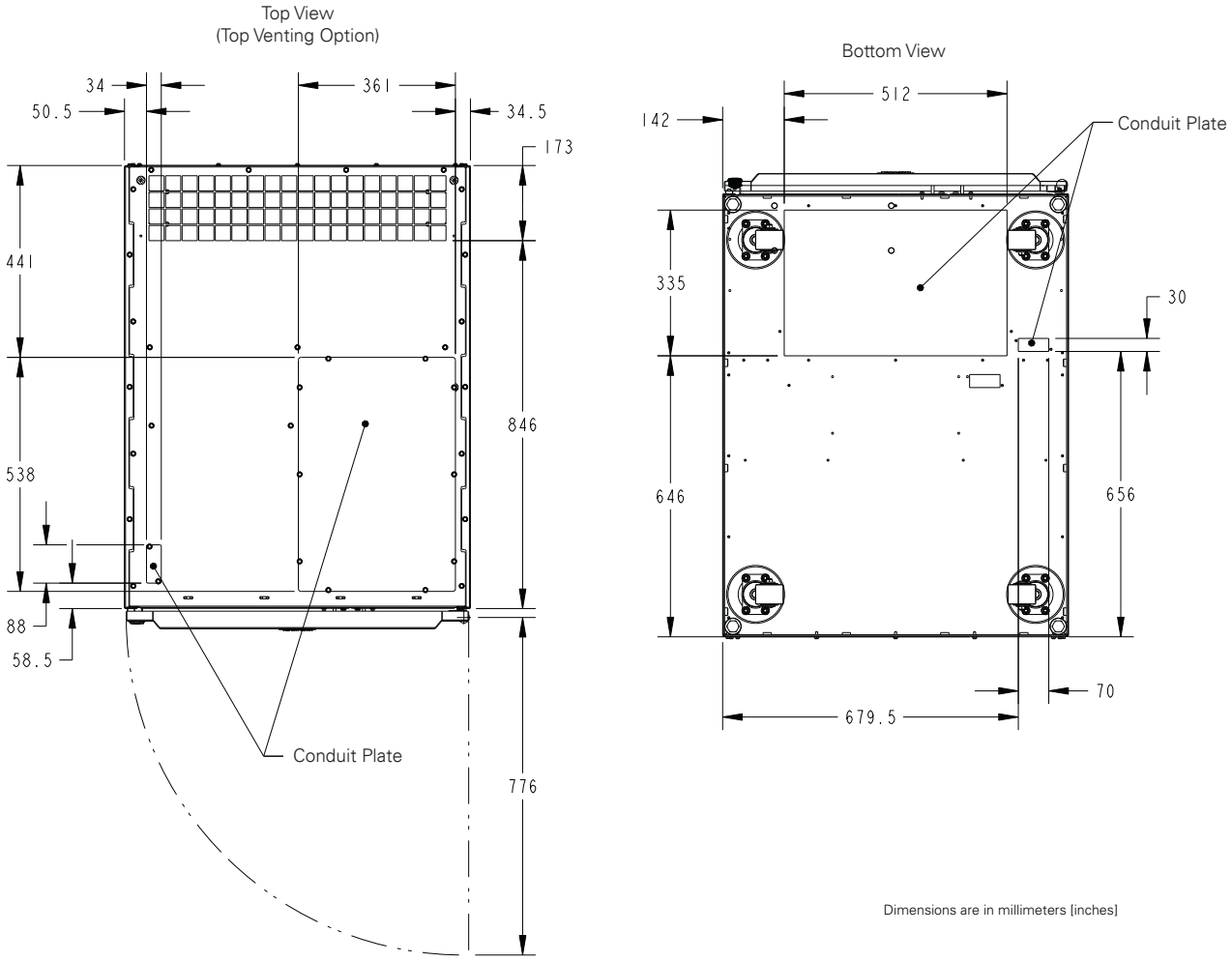


**Figure 8. 93PM IAC-PD Center of Gravity**

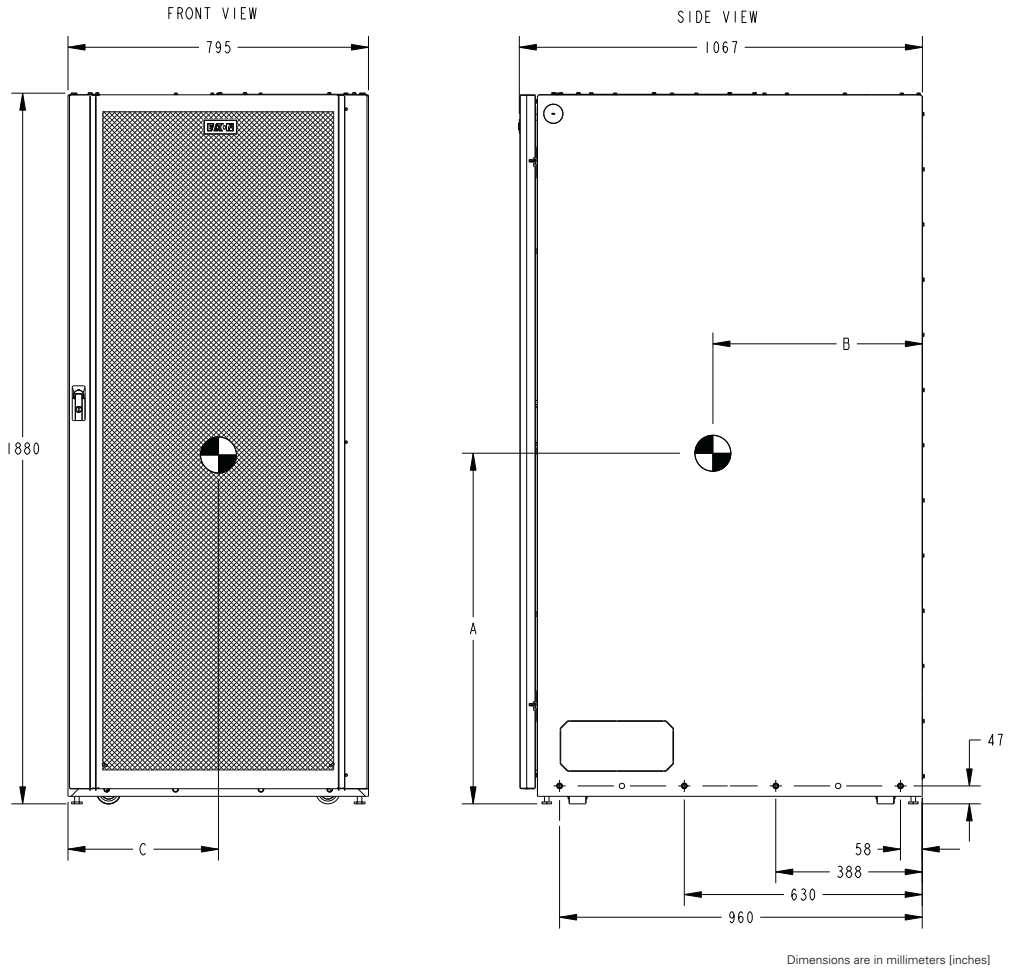
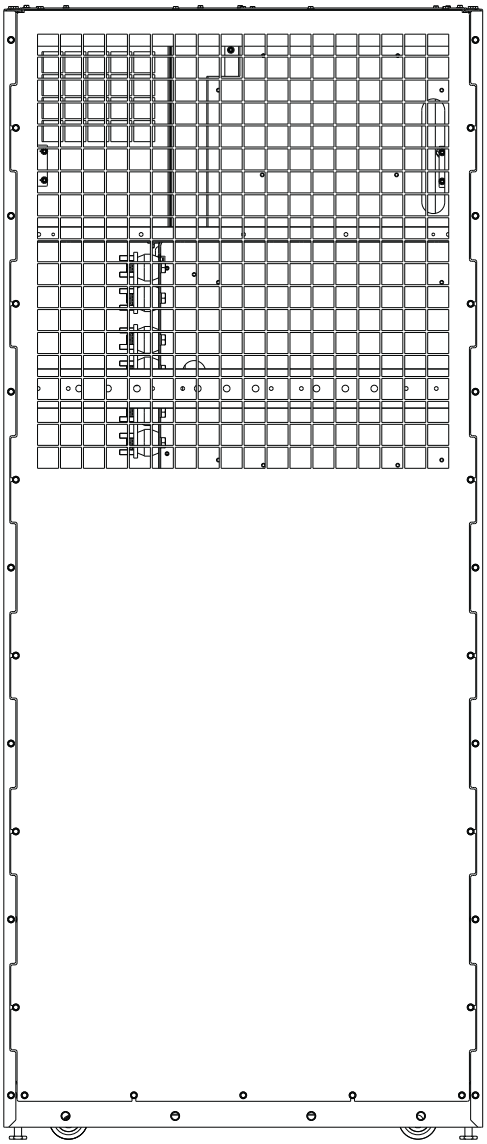



**Table 3. IAC-PD Weight and Center of Gravity Dimensions**

| IAC-PD Configuration | A mm [inch] | B mm [inch] | C mm [inch] | Weight kg [lbs] |
|---|---|---|---|---|
| Eaton 93PM IAC-PD with (2) 400A Panelboards | 922 [36.3] | 604 [23.8] | 377 [14.8] | 311 [686.3] |
| Eaton 93PM IAC-PD with (1) 400A Panelboard and (2) 400A Subfeed Breakers | 922 [36.3] | 601 [23.7] | 380 [15.0] | 305 [673.1] |
| Eaton 93PM IAC-PD with (1) 400A Panelboard and (3) 250A Subfeed Breakers | 912 [35.9] | 598 [23.5] | 380 [15.0] | 299 [658.5] |
| Eaton 93PM IAC-PD with (4) 400A Subfeeds Breakers | 935 [36.8] | 599 [23.6] | 373 [14.7] | 301 [663.1] |
| Eaton 93PM IAC-PD with (1) 400A Panelboard [Cab top empty] | 875 [34.5] | 588 [23.2] | 387 [15.2] | 283 [624.8] |
| Eaton 93PM IAC-PD with (2) 400A Subfeed Breakers [Cab top empty] | 890 [35.0] | 586 [23.1] | 391 [15.4] | 278 [613.5] |

**Figure 9. Cabinet Ventilation – Rear Venting**

Back View
(Rear Venting Option)



Top View
(Rear Venting Option)

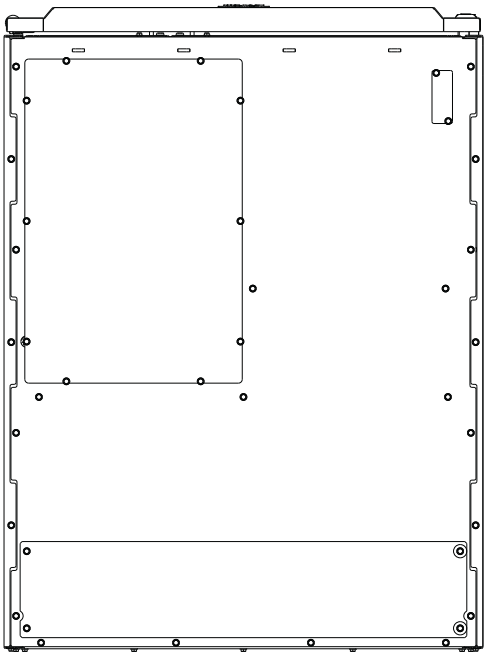
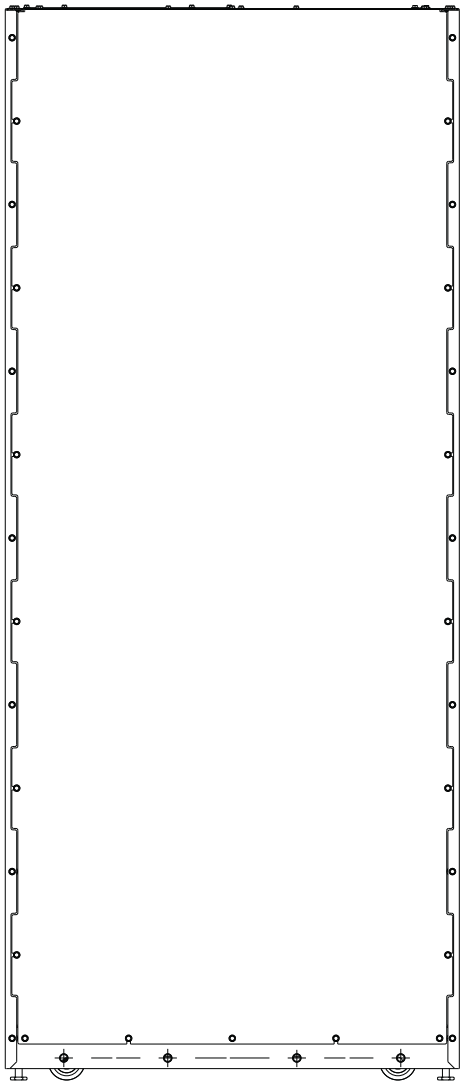
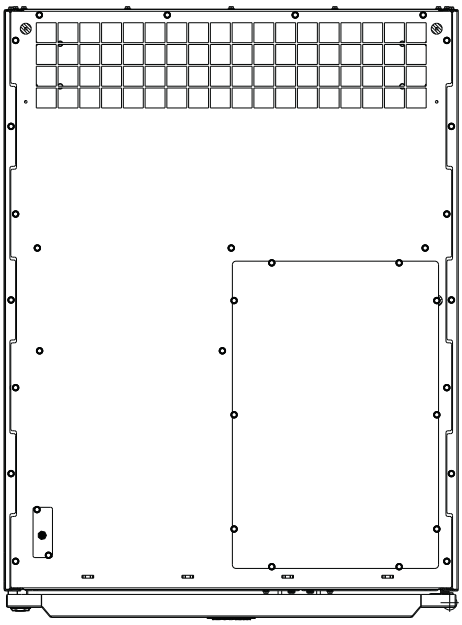


**Figure 10. Cabinet Ventilation – Top Venting**

Back View
(Top Venting Option)



Top View
(Top Venting Option)



### 3.2.2 IAC-PD Power Wiring Preparation

Read and understand the following information while planning and performing the installation:

**WARNING**

As a result of the connected loads, high leakage current is possible. Connection to earth ground is required for safety and proper product operation. Do not check IAC-PD operation by any action that includes removal of the earth (ground) connection with loads attached.

- Refer to national and local electrical codes for acceptable external wiring practices.
- For external wiring, use copper wire with 75°C rated insulation. Wire sizes listed in Table 5 and Table 6 are for copper wiring only. If wire is run in an ambient temperature greater than 40°C (104°F), higher temperature wire and/or larger size wire may be necessary. Wire sizes are based on using the specified breakers.

**IMPORTANT**

This product has been evaluated for use with **copper wire** only. For external wiring, use only 75°C copper wire.

- Recommended wire sizes are based on NFPA National Electrical Code® (NEC®) 70 Table 310.15(B)(16) 75° C ampacity with 40°C ambient correction factors.
- Refer to NEC Article 250 and local codes for proper grounding practices.
- Per NEC Article 300-20(B), all three-phase conductors must be run in the same conduit. Neutral and ground must be run in the same conduit as the phase conductors.
- Conduit is to be sized to accommodate three phase conductors, one neutral conductor the same size as the phase conductors and one ground conductor. If two neutral conductors or an oversized neutral conductor are to be installed, size the conduit to accommodate the extra wire or size.
- Distribution panels use branch circuit breakers provided by the customer.
- Material and labor for external wiring requirements are to be provided by the customer.
- Refer to the appropriate Eaton 93PM UPS manual listed in paragraph 1.7 *For More Information* for UPS cabinet conduit and terminal specifications and locations.
- The term *line-up-and-match* refers to accessory cabinets that are physically located adjacent to the UPS. The term *standalone* refers to accessory cabinets that are located separate from the UPS.

**Table 4. IAC-PD Input Device Specification**

| Configuration Description | Device Model | AC Input Voltage (V) | Maximum AC Input Current (A) | AC Output Voltage (V) | Maximum AC Output Current (A) |
|---|---|---|---|---|---|
| IAC-PD Connected to a 93PM 208V UPS | 93PM-L 60 kW UPS | 208 | 167 | 208 | See Notes |
| | 93PM-L 120 kW UPS | | 333 | | |
| | 93PM-L 160 kW UPS | | 444 | | |
| | 93PM-L 200 kW UPS | | 555 | | |
| IAC-PD Connected to a IAC-D or IAC-BD Subfeed Breaker | 93PM IAC-D 93PM IAC-BD | 208 | 250 | 208 | |
| IAC-PD Connected to a IAC-D Output Breaker (with no Distribution Option). IAC-D is Fed From a 93PM 480V UPS | IAC-D fed from 93PM 50 kVA UPS | 208 | 139 | 208 | |
| | IAC-D fed from 93PM 100 kVA UPS | | 277 | | |
| | IAC-D fed from 93PM 150 kVA UPS | | 416 | | |
| | IAC-D fed from 93PM 200 kVA UPS | | 555 | | |
| IAC-PD Connected Directly to a 93PM 480V UPS | 93PM 50 kVA UPS | 480 | 60 | 480 | |
| | 93PM 100 kVA UPS | | 120 | | |
| | 93PM 150 kVA UPS | | 180 | | |
| | 93PM 200 kVA UPS | | 240 | | |
| | 93PM 400 kVA UPS | | 480 | | |

**NOTE** Additional details on IAC-PD Input and Output Ratings:

- IAC-PD input current and voltage is based on the output from the device feeding the IAC-PD. Refer to the input device specifications found in Table 5 to determine the maximum input voltage and current for the IAC-PD application.
- The AC output current is based on the output of the distribution option of the input current available from the device powering the IAC-PD. Select the lower of the two values. For further detail, see the example situations below:
- **Example 1:** IAC-PD used with the 400kVA UPS, which has an output current availability of 480A. If the IAC-PD selected contains (2) 400A subfeeds, the 480A available UPS current would be the limiting factor for the output current of the IAC-PD.
- **Example 2:** IAC-PD used with the 120kVA 93PM-L UPS, which has an output current availability of 333A. If the IAC-PD selected contains (1) 225A panelboard, the 225A available from the panel would be the maximum output current, and so the IAC-PD configuration would be the limiting factor.

**Table 5. IAC-PD Input Power Wiring Recommendations**

| Input Current [A] | Customer Wiring | Accepted Wire Range | Torque Rating N*M [IN-LB] | Recommended Minimum Wire Size For 75° C Copper Stranded Wire | Recommended Conduit (Qty) Size (Inches) |
|---|---|---|---|---|---|
| 60 | 208V Input Phase Wire | Customer Supplied Long Barrel 2-Hole Lug | - | (1) #2 | (1) 1.5" |
| | Input Neutral Wire See Note | Customer Supplied Long Barrel 2-Hole Lug | - | (2) #3 | |
| | Ground | 14 AWG TO 1/0 | 5.1 [45] | (1) #8 | |
| 120 | 208V Input Phase Wire | Customer Supplied Long Barrel 2-Hole Lug | - | (1) 4/0 | (1) 2.5" |
| | Input Neutral Wire See Note | Customer Supplied Long Barrel 2-Hole Lug | - | (2) 3/0 | |
| | Ground | 14 AWG TO 1/0 | 5.1 [45] | (1) #6 | |
| 139 | Input Phase Wire | Customer Supplied Long Barrel 2-Hole Lug | - | (1) 250 MCM | (1) 2.5" |
| | Input Neutral Wire See Note | Customer Supplied Long Barrel 2-Hole Lug | - | (2) 4/0 | |
| | Ground | 14 AWG TO 1/0 | 5.1 [45] | (1) #6 | |
| 167 | Input Phase Wire | Customer Supplied Long Barrel 2-Hole Lug | - | (1) 350 MCM | (1) 3" |
| | Input Neutral Wire See Note | Customer Supplied Long Barrel 2-Hole Lug | - | (2) 300 MCM | |
| | Ground | 14 AWG TO 1/0 | 5.1 [45] | (1) #4 | |
| 180 | Input Phase Wire | Customer Supplied Long Barrel 2-Hole Lug | - | (1) 400 MCM | (1) 3" |
| | Input Neutral Wire See Note | Customer Supplied Long Barrel 2-Hole Lug | - | (2) 300 MCM | |
| | Ground | 14 AWG TO 1/0 | 5.1 [45] | (1) #4 | |

**Table 5. IAC-PD Input Power Wiring Recommendations (Continued)**

| Input Current [A] | Customer Wiring | Accepted Wire Range | Torque Rating N*M [IN-LB] | Recommended Minimum Wire Size For 75° C Copper Stranded Wire | Recommended Conduit (Qty) Size (Inches) |
|---|---|---|---|---|---|
| 240<br>250 | Input Phase Wire | Customer Supplied Long Barrel 2-Hole Lug | - | (2) 4/0 | (2) 2.5" |
| | Input Neutral Wire See Note | Customer Supplied Long Barrel 2-Hole Lug | - | (4) 3/0 | |
| | Ground | 14 AWG TO 1/0 | 5.1 [45] | (2) #6 | |
| 277 | Input Phase Wire | Customer Supplied Long Barrel 2-Hole Lug | - | (2) 250 MCM | (2) 2.5" |
| | Input Neutral Wire See Note | Customer Supplied Long Barrel 2-Hole Lug | - | (4) 4/0 | |
| | Ground | 14 AWG TO 1/0 | 5.1 [45] | (2) #6 | |
| 333 | Input Phase Wire | Customer Supplied Long Barrel 2-Hole Lug | - | (2) 350 MCM | (2) 3" |
| | Input Neutral Wire See Note | Customer Supplied Long Barrel 2-Hole Lug | - | (4) 300 MCM | |
| | Ground | 14 AWG TO 1/0 | 5.1 [45] | (2) #4 | |
| 416 | Input Phase Wire | Customer Supplied Long Barrel 2-Hole Lug | - | (3) 250 MCM | (3) 2.5" |
| | Input Neutral Wire See Note | Customer Supplied Long Barrel 2-Hole Lug | - | (6) 4/0 | |
| | Ground | 14 AWG TO 1/0 | 5.1 [45] | (3) #6 | |
| 444 | Input Phase Wire | Customer Supplied Long Barrel 2-Hole Lug | - | (3) 300 MCM | (3) 3" |
| | Input Neutral Wire See Note | Customer Supplied Long Barrel 2-Hole Lug | - | (6) 4/0 | |
| | Ground | 14 AWG TO 1/0 | 5.1 [45] | (3) #6 | |

**Table 5. IAC-PD Input Power Wiring Recommendations (Continued)**

| Input Current [A] | Customer Wiring | Accepted Wire Range | Torque Rating N*M [IN-LB] | Recommended Minimum Wire Size For 75° C Copper Stranded Wire | Recommended Conduit (Qty) Size (Inches) |
|---|---|---|---|---|---|
| 480 | Input Phase Wire | Customer Supplied Long Barrel 2-Hole Lug | - | (3) 300 MCM | (3) 3" |
| | Input Neutral Wire See Note | Customer Supplied Long Barrel 2-Hole Lug | - | (6) 250 MCM | |
| | Ground | 14 AWG TO 1/0 | 5.1 [45] | (3) #6 | |
| 555 | Input Phase Wire | Customer Supplied Long Barrel 2-Hole Lug | - | (3) 400 MCM | (3) 3" |
| | Input Neutral Wire See Note | Customer Supplied Long Barrel 2-Hole Lug | - | (6) 300 MCM | |
| | Ground | 14 AWG TO 1/0 | 5.1 [45] | (3) #4 | |

**NOTE** Neutral is not present on 480V 3–wire cabinets.

**Table 6. IAC-PD Output Power Wiring Recommendations (Panelboards and Subfeeds)**

| Type | Customer Wiring | Accepted Wire Range | Torque Rating N*M (IN-LB) | | Recommended Minimum Wire Size For 75° C Copper Stranded Wire |
|---|---|---|---|---|---|
| 250A Subfeeds | Output Phase Wire | (1) 6 AWG TO 500 MCM | 20 [177] | | See Note 2 |
| | Output Neutral Wire See Note 1 | Customer Supplied Long Barrel 2-Hole Lug See Note 2 | - | | |
| | Ground | 14 AWG TO 1/0 | 5.1 [45] | | |
| 400A Subfeeds | Output Phase Wire | (2) 6 AWG TO 500 MCM | 20 [177] | | |
| | Output Neutral Wire See Note 1 | Customer Supplied Long Barrel 2-Hole Lug See Note 2 | - | | |
| | Ground | 14 AWG TO 1/0 | 5.1 [45] | | |
| 208V 225A Panelboards<br>208V 400A Panelboards<br>480V 225A Panelboards | Output Neutral Wire See Note 1 | (64) 6 AWG TO 14 AWG | 6 TO 8 AWG | 2.8 [25] | |
| | | | 10 TO 14 AWG | 1.7 [15] | |
| | | (22) 1/0 | 1/0 TO 2 AWG | 5.7 [50] | |
| | | | 4 TO 6 AWG | 5.0 [45] | |
| | | | 8 AWG | 4.5 [40] | |
| | | | 10 TO 14 AWG | 4.0 [35] | |
| | Ground | (32) 6 AWG TO 14 AWG | 6 TO 8 AWG | 2.8 [25] | |
| | | | 10 TO 14 AWG | 1.7 [15] | |
| | | (11) 1/0 | 1/0 TO 2 AWG | 5.7 [50] | |
| | | | 4 TO 6 AWG | 5.0 [45] | |
| | | | 8 AWG | 4.5 [40] | |
| | | | 10 TO 14 AWG | 4.0 [35] | |

**NOTE**

1. Neutral is not present on 480V 3–Wire Cabinets
2. Wire per NFPA 70: National Electric Code for selected circuit breaker trip rating

**Table 7. IAC-PD Fuse and Breaker Details**

| Breaker Application | Electrical Specifications | Manufacturer |
|---|---|---|
| Panel Main Breaker, 225A Panelboard | 208V, 480V 3-Wire, 480V 4-Wire | Eaton |
| Panel Main Breaker, 400A Panelboard | 208V | Eaton |
| 250A Subfeed Distribution Options | 208V, 480V 3-Wire, 480V 4-Wire | Eaton |
| 400A Subfeed Distribution Options | 208V, 480V 3-Wire, 480V 4-Wire | Eaton |

**NOTE** The information required for performing arc-flash analysis (Panel Main Breakers and Subfeed Distribution Breaker part numbers) can be found in the *Eaton 93PM IAC-PD Site Plan*. For additional assistance contact an Eaton service representative (see paragraph 1.8 *Getting Help*.

External 208 Vac input overcurrent protection and disconnect are not provided by the 208V/208V IAC-PD model, but are required by codes. Overcurrent protection and disconnect are to be supplied by the customer. Refer to Table 5 and Table 6 for wiring requirements.

Table 8 lists the recommended rating for the 208 Vac input circuit breaker.

**Table 8. Recommended 208 Vac Input Circuit Breaker Rating**

| IAC-PD Model | Input Rating | |
|---|---|---|
| | Load Rating | 208V |
| Eaton 93PM IAC-PD | 80% Rated | 250A |
| | 100% Rated | 200A |
| | 80% Rated | 400A |
| | 100% Rated | 375A |

**CAUTION**

To reduce the risk of fire, connect only to a circuit provided with maximum input circuit breaker current ratings from Table 8 in accordance with the NEC, ANSI/NFPA 70.

## 3.3 Inspecting and Unpacking the IAC-PD

The cabinet is shipped bolted to a metal and wood pallet and covered with outer protective packaging material (see Figure 11).

**NOTE** Startup and operational checks must be performed by an authorized Eaton Customer Service Engineer, or the warranty terms specified in paragraph 9.1 *Warranty* become void. This service is offered as part of the sales contract for the UPS. Contact an Eaton service representative in advance (usually a two-week notice is required) to reserve a preferred startup date.

**WARNING**

The IAC-PD is heavy (see Table 1). If unpacking and unloading instructions are not closely followed, the cabinet may tip and cause serious injury. Do not tilt the IAC- PD more than 10° from vertical or the cabinet may tip over. Failure to follow these instructions may result in serious injury or death.

1. Carefully inspect the outer packaging for evidence of damage during transit.

**CAUTION**

Do not install a damaged cabinet. Report any damage to the carrier and contact an Eaton service representative immediately.

**NOTE** For the following step, verify that the forklift or pallet jack is rated to handle the weight of the cabinet.

2. Use a forklift or pallet jack to move the packaged cabinet to the installation site, or as close as possible, before unpacking. If possible, move the cabinet using the pallet. Insert the forklift or pallet jack forks between the supports on the bottom of the pallet (see Table 3 for the IAC-PD cabinet center of gravity measurements).

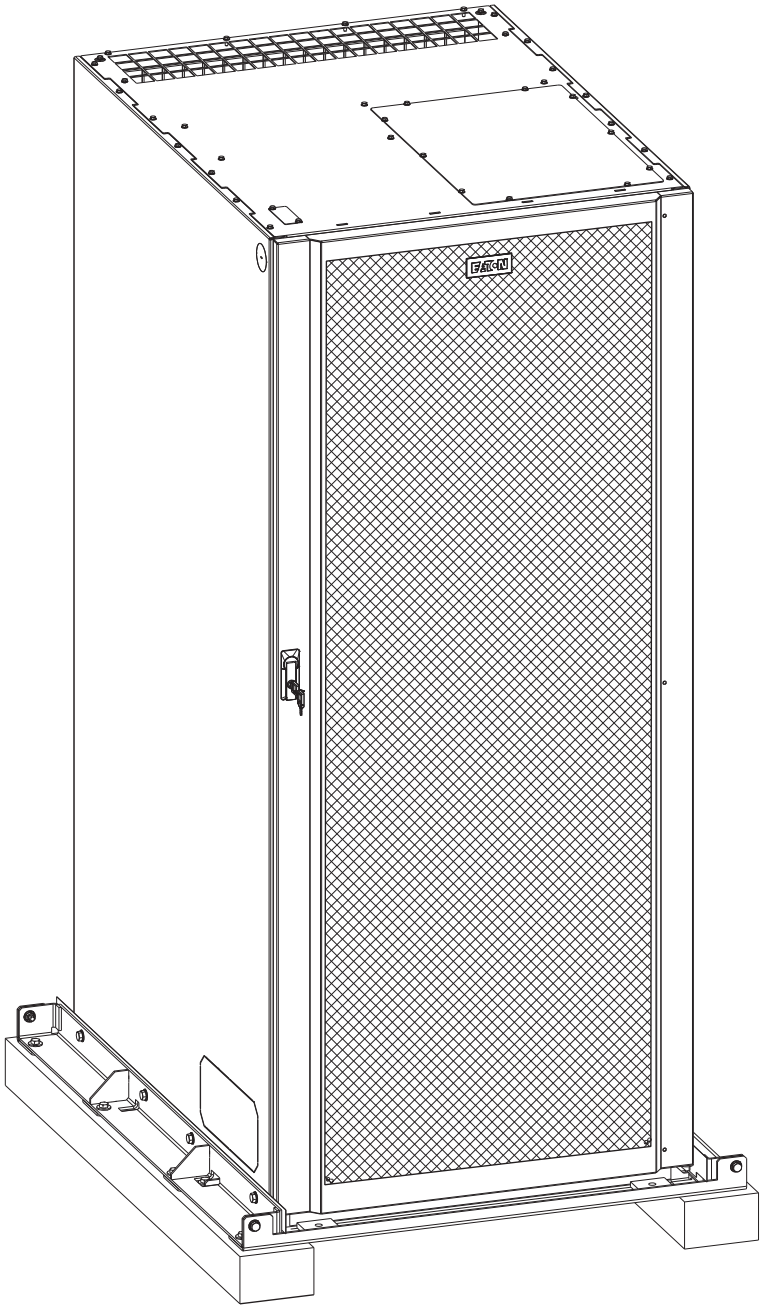
**CAUTION**

Do not tilt the IAC- PD more than 10° from vertical or the cabinet may tip over.

3. Set the pallet on a firm, level surface, allowing a minimum clearance of 3m (10 ft) on each side for removing the cabinet from the pallet.
4. Remove the protective packaging material from the cabinet and recycle in a responsible manner. Retain the parts kit box packed inside the cabinet.
5. Inspect the contents for any evidence of physical damage, and compare each item with the Bill of Lading. If damage has occurred or shortages are evident, contact an Eaton service representative immediately to determine the extent of the damage and its impact on further installation.

**NOTE** While waiting for installation, protect the unpacked cabinet from moisture, dust, and other harmful contaminants. Failure to store and protect the IAC-PD properly may void your warranty.

**Figure 11. Eaton 93PM IAC-PD as Shipped on Metal and Wood Pallet**



# Chapter 4 Installation

## 4.1 Installation

### 4.1.1 Preliminary Installation Information

**WARNING**

Installation should be performed only by qualified personnel.

When installing the Eaton 93PM Integrated Accessory Cabinet-Power Distribution (IAC-PD):

- Review **Chapter *3 Installation Plan and Unpacking*** for cabinet dimensions, equipment weight, wiring and terminal data, and installation notes.
- Do not tilt the IAC-PD more than 10° from vertical or the cabinet may tip over.
- Remove conduit landing plates to add conduit landing holes as required.

## 4.2 Unloading the IAC-PD Cabinet from the Pallet

**DANGER**

RISK OF INSTABILITY. Do not remove any internal panels until the cabinet is removed from and lowered from the pallet.

**WARNING**

- The IAC-PD is heavy (see Table 1).
- Do not tilt the cabinet more than 10° from vertical.
- Lift the cabinets only with a forklift or pallet jack or damage may occur.
- Ensure the forklift is rated to handle the weight of the cabinet.

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

**NOTE** Before performing the IAC-PD unloading, verify that the forklift or pallet jack is rated to handle the weight of the cabinet.

The IAC-PD is bolted to a pallet consisting of two metal angle supports and two flat supports secured to two wood supports.

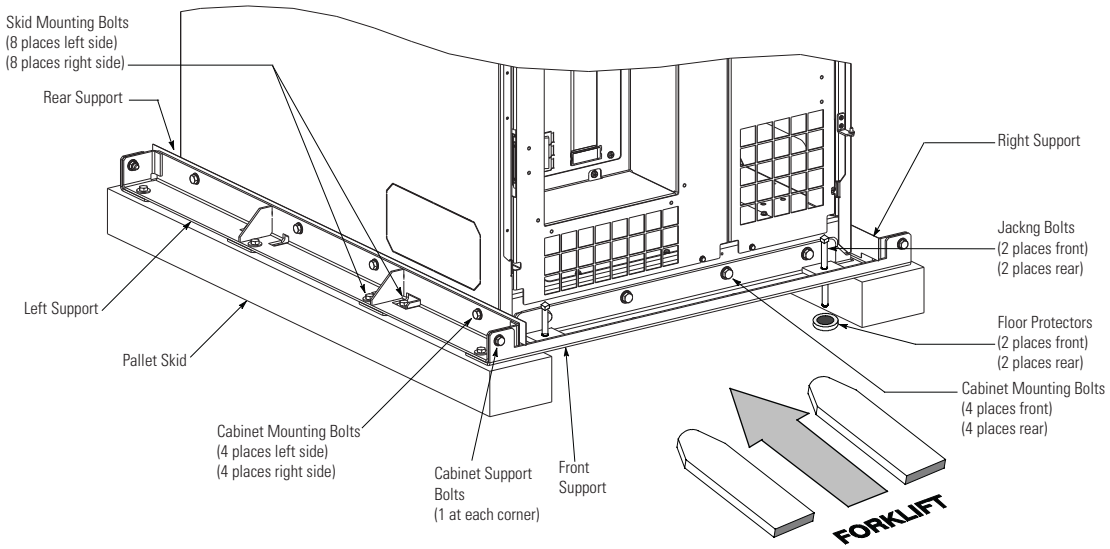
To remove the pallet:

1. If not already accomplished, use a forklift or pallet jack to move the IAC-PD to the installation area, or as close as possible, before unloading from the pallet. Insert the forklift or pallet jack forks between the supports on the bottom of the pallet (see Table 3 for the IAC-PD cabinet center of gravity measurements).
2. Open the front door by lifting the latch from the bottom and turning to the right (counterclockwise) and swing the door open.
3. Locate the four 1/2" jacking bolts from the parts bag packed inside the front door and install them in the threaded holes in the front and rear supports as shown in Figure 12. Place a floor protector from the parts kit underneath each jacking bolt, and screw the bolts down against them.

   The floor protectors protect the floor from being marred by the jacking bolts.

4. Loosen, but do not remove, the skid mounting bolts holding the left, right, front, rear, and two center supports to the pallet skids. **DO NOT** loosen or remove the cabinet mounting bolts or the cabinet support bolts.

**Figure 12. Removing the Pallet Skids and Supports – Eaton 93PM IAC-PD**




**WARNING**

RISK OF INSTABILITY. Turning the jacking bolts unevenly may cause the cabinet to become unbalanced. To prevent tipping the cabinet, raise the cabinet no more than 3 mm (1/8") above the floor (just enough to allow the removal of the pallet skids). Failure to follow these instructions can result in serious injury or death.

5. Turn each jacking bolt consecutively, two full turns, until the pallet skids clear the floor by approximately 3 mm (1/8").

**NOTE** In the following step the center supports will drop away from the cabinet and the pallet skids when the skids are removed.

6. Remove the hardware loosened in Step 4. Pull the two pallet skids out from under the left, right, front, rear, and two center supports. Recycle the pallet skids, supports, and hardware in a responsible manner.

**CAUTION**

CABINET MAY FALL. Do not loosen the hardware attaching the front supports to the cabinet base. The cabinet must be lowered by the jacking bolts before the supports can be removed.

7. Carefully and evenly **lower the cabinet by turning each jacking bolt consecutively two full turns (maximum)** until the casters contact the floor and the cabinet is no longer supported by the jacking bolts.
8. After the IAC-PD is resting on the floor, remove the jacking bolts and floor protectors. Recycle them in a responsible manner.

9. Remove the cabinet support bolts fastening the left, right, front, and rear supports together.
10. Remove the cabinet mounting bolts holding the left, right, front, and rear supports to the cabinet base and remove the supports.
11. If installing the cabinet permanently, retain the cabinet mounting bolts; otherwise, recycle the bolts along with the support brackets in a responsible manner.
12. Close the door and secure the latch.
13. If the leveling feet are not retracted, turn all four leveling feet until they are retracted as far into the cabinet as possible.

**NOTE** The IAC-PD may be located to either the right or left of the UPS cabinet. This procedure assumes the IAC-PD is located to the left of the UPS cabinet.

14. If line-up-and-match installation, remove the rectangular knockouts from the lower sides of the UPS and the IAC-PD (see Figure 13).

**CAUTION**

To prevent tipping when rolling the cabinet, push the cabinet from the rear whenever possible.

15. Roll the IAC-PD to the line-up-and-match installation location on the left side of the UPS cabinet making sure the doors are flush with each other or to the standalone installation location.
16. Lower the cabinet's leveling feet and using a bubble level, adjust the leveling feet accordingly until the cabinet is level and aligned with adjacent cabinet.
17. Locate the top splice bracket shipped with the IAC-PD.
18. Remove the screws along each adjacent cabinet top panel securing the top panels. Retain the hardware for later use.
19. Install the top splice bracket between the adjacent cabinet and secure the tie strap with retained hardware.

**NOTE** Optional front and back floor mounting brackets are available to order for permanently mounting the IAC-PD.

20. If permanently mounting the IAC-PD, proceed to Step 21; otherwise, continue to Step 24.
21. Locate the front and back floor mounting brackets from the optional floor mounting kit.
22. Using the cabinet mounting bolts from the kit, install the floor mounting brackets to the front and rear of the IAC-PD with the angle facing outward.
23. Secure the cabinet to the floor with customer-supplied hardware.
24. Proceed to paragraph 4.3 *Installing IAC-PD External Power Wiring*.

**Figure 13. Line-Up-and-Match Wiring Access Locations**

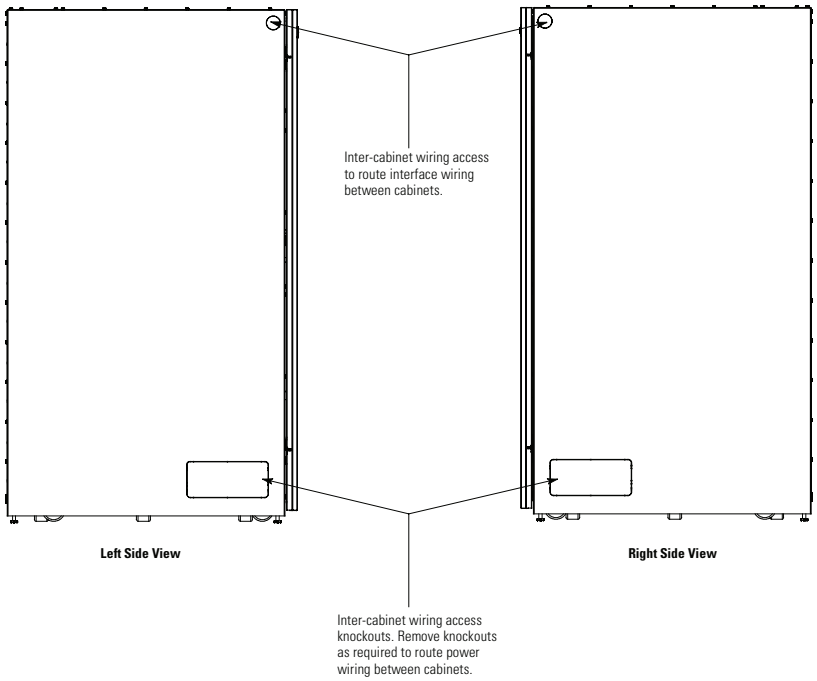
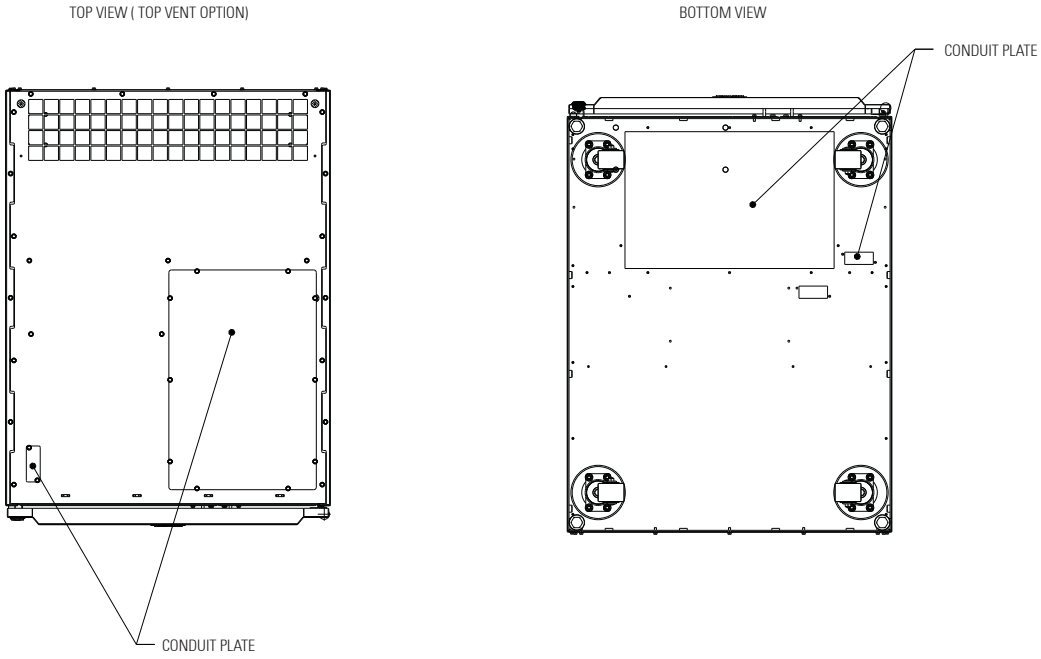



**Figure 14. Top and Bottom Conduit Landing Wire Entry Locations**



## 4.3 Installing IAC-PD External Power Wiring

### 4.3.1 Input Wiring

To install wiring to connections:

**NOTE 1** Input power wiring is routed through the inside bottom of the IAC-PD and UPS for line-up-and-match configurations or wiring can be installed using conduit between the cabinets for standalone installations.

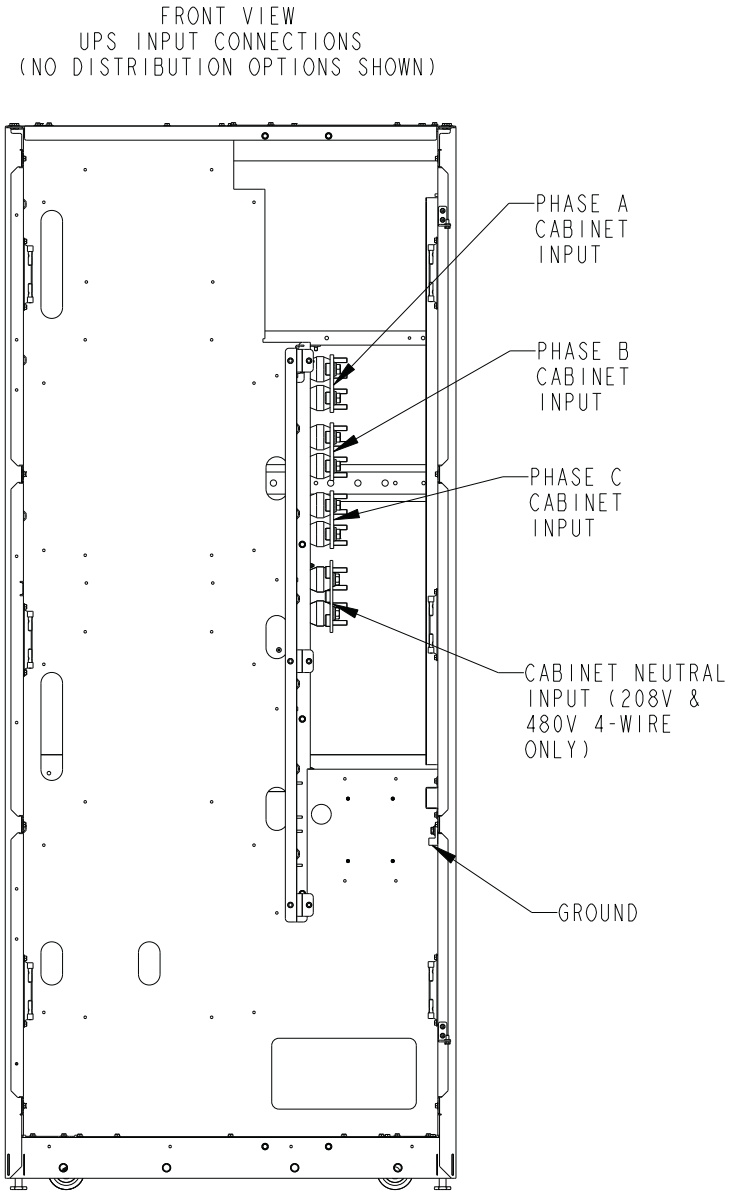
**NOTE 2** Remove the IAC-PD conduit landing plates to drill or punch conduit holes, or remove knockouts in the conduit plate (see Figure 14).

1. Verify the UPS system is turned off and all power sources are removed. Refer to the appropriate Eaton 93PM UPS manual, listed in paragraph 1.7 *For More Information*, for the UPS shutdown instructions.
2. If not already open, open the front door by lifting the latch from the bottom and turning to the right (counterclockwise) and swing the door open.
3. Loosen the screws securing the inside distribution panel door and swing the door open.
4. Remove the screws securing the breaker trim plate and remove the plate. Retain trim plate and hardware for later use.
5. If wiring the IAC-PD input power terminals using the inter-cabinet wiring access pass-through (line-up-and-match configurations), proceed to Step 6; if wiring the IAC-PD input power terminals using the bottom entry access, proceed to Step 8; if wiring the IAC-PD input power terminals using the top entry access, proceed to Step 11.
6. **Pass-through Wiring.** Route the IAC-PD input cables (phase A, B, C, Ground and Neutral [if 4–Wire]) from the UPS cabinet through the side UPS and IAC-PD inter-cabinet wiring access pass-through to the IAC-PD input terminals. See Figure 13 for IAC-PD wiring access information and Figure 15 for IAC-PD terminal locations. See paragraph 3.2.2 *IAC-PD Power Wiring Preparation*, Table 5, and Table 6 for IAC-PD wiring and termination recommendations. Refer to the applicable Eaton 93PM UPS manual, listed in paragraph 1.7 *For More Information*, for the UPS terminal locations and termination recommendations.
7. Proceed to Step 13.
8. **Bottom Entry Wiring.** Remove the bottom conduit plate (see Figure 14) from the inside bottom of the IAC-PD. Identify all conduit recommendations (both input and output) and mark their location. Drill and punch all conduit holes in the bottom conduit plate prior to mounting on the IAC-PD. Install the conduit plate and install all conduit runs into the plate. Pull the wiring through conduit into the wiring area.
9. Route the input cables (phase A, B, C, Ground and Neutral [if 4–Wire]) from the UPS through the bottom of the cabinet to the IAC-PD input terminals. See Figure 15 for IAC-PD terminal locations. Refer to the applicable Eaton 93PM UPS manual, listed in paragraph 1.7 *For More Information*, for the UPS terminal locations and termination recommendations.
10. Proceed to Step 13.
11. **Top Entry Wiring.** Remove the top conduit plate (see Figure 14) from the top of the IAC-PD. Identify all conduit recommendations (both input and output) and mark their location. Drill and punch all conduit holes in the top conduit plate prior to mounting on the sidecar. Install the conduit plate and install all conduit runs into the plate. Pull the wiring through the conduit into the wiring area.
12. Route the input cables (phase A, B, C, Ground and Neutral [if 4–Wire]) from the UPS through the top of the cabinet to the IAC-PD input terminals. See Figure 15 for IAC-PD terminal locations. Refer to the applicable Eaton 93PM UPS manual, listed in paragraph 1.7 *For More Information*, for the UPS terminal locations and termination recommendations.
13. Connect phase A, B, C, Ground and Neutral (if 4–Wire) power wiring to the corresponding input terminals on the IAC-PD.

For a detailed view of the IAC-PD input terminals, see Figure 15 .

14. Connect phase A, B, C, Ground and Neutral (if 4–Wire) power wiring to the corresponding output terminals on the UPS.

**Figure 15. Input Power Terminal Locations – 480V/208V**



### 4.3.2 Output Wiring

To install wiring to connections:

1. If not already open, open the front door by lifting the latch from the bottom and turning to the right (counterclockwise) and swing the door open.
2. Loosen the screws securing the inside distribution panel door and swing the door open.
3. Remove the screws securing the breaker trim plate and remove the plate. Retain trim plate and hardware for later use.
4. If wiring an IAC-PD with distribution panels, continue to Step 5; if wiring an IAC-PD with subfeed breakers, skip to Step 8.
5. Install customer-supplied branch circuit breakers into the distribution panel (see Figure 16 or Figure 17). Use Eaton bolt-on type BAB or QBHW breakers.

> **NOTE** When wiring branch circuits, begin adding conduits at the back of the bottom or top conduit landing plates to simplify future circuit additions.

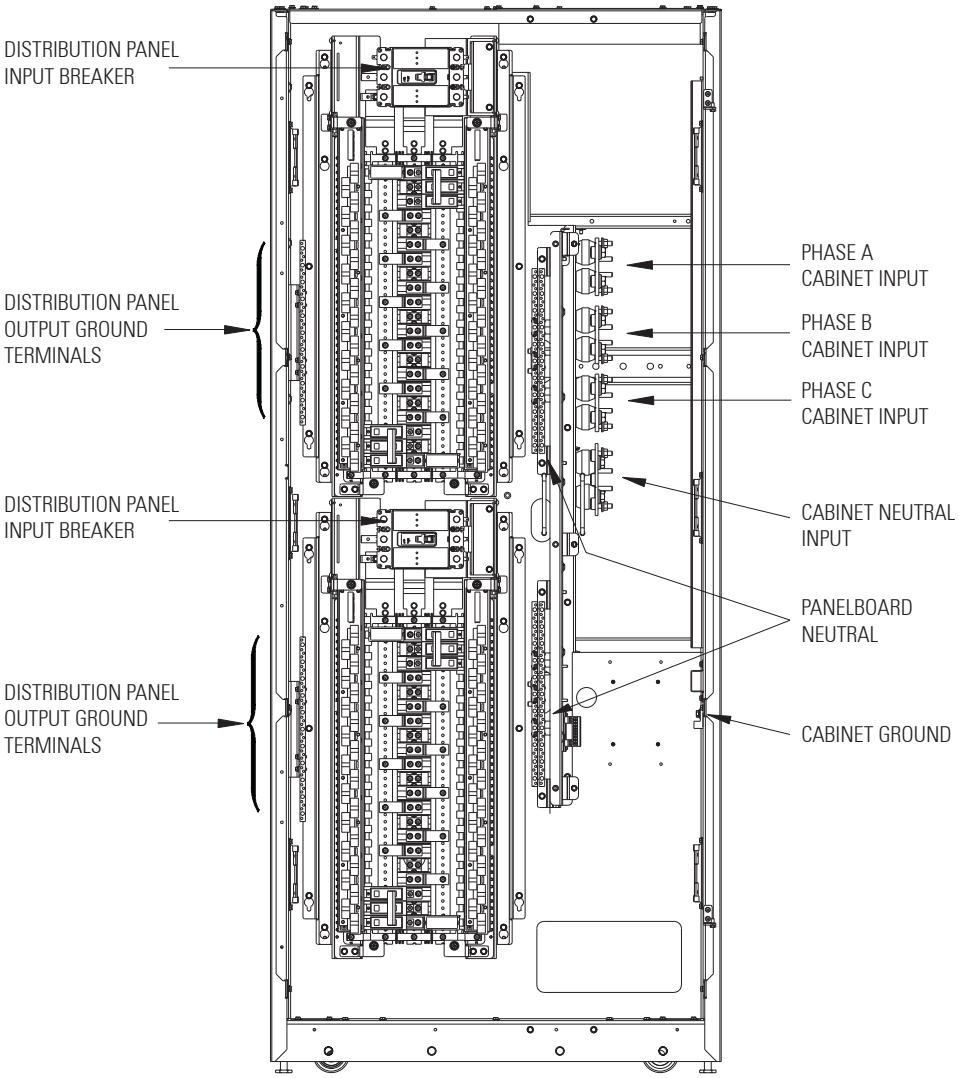
6. Route output cables to the branch circuit breakers and wire according to the manufacturer's ratings and instructions, and national and local electrical codes (input is prewired to the panelboard). See Figure 16 or Figure 17 for neutral and ground terminal locations. See paragraph 3.2.2 *IAC-PD Power Wiring Preparation*, Table 5, and Table 6 for IAC-PD wiring and termination recommendations.
7. If wiring an IAC-PD with subfeed breakers, continue to Step 8; otherwise, skip to Step 11.

> **NOTE** When wiring subfeed branch circuits, begin adding conduits at the back of the bottom or top conduit landing plates to simplify future circuit additions.

8. Route output cables from subfeed breaker terminal blocks or output breaker to the critical load. See Figure 17 or Figure 19 for IAC-PD output, neutral, and ground terminal locations. See paragraph 3.2.2 *IAC-PD Power Wiring Preparation*, Table 5, and Table 6 for IAC-PD wiring and termination recommendations.
9. Connect phase A, B, and C, Neutral, and Ground power wiring to the subfeed breaker terminal blocks or output breaker and the critical load.

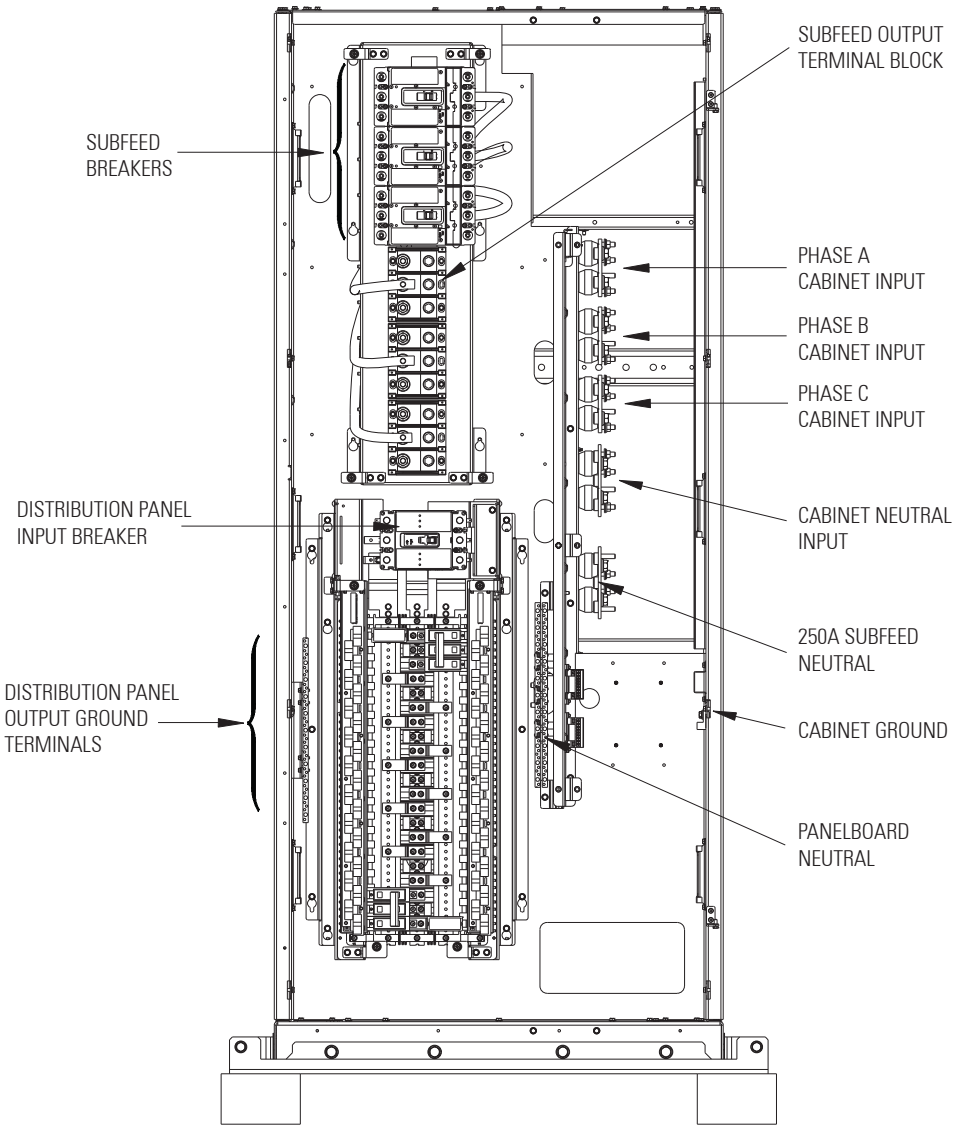
   For a detailed view of the IAC-PD output terminals, see Figure 18.
10. If adjustable subfeed breakers are installed, proceed to paragraph 4.4 *Adjustable Subfeed Breakers* to adjust current trip settings; otherwise, proceed to Step 11.
11. Reinstall the inside trim plate removed in Step 3.
12. Close the inside door and secure with screws.
13. Close the outside door and secure the latch.
14. After the IAC-PD is installed and wired, return to the applicable Eaton 93PM UPS manual listed in paragraph 1.7 *For More Information* to complete the UPS wiring.

**Figure 16. IAC-PD with Two Panelboards – Terminal Locations**




225/400A PANELBOARD (TOP)
225/400A PANELBOARD (BOTTOM)
208 OR 480V 4-WIRE
3-WIRE SAME MINUS NEUTRAL

**Figure 17. IAC-PD with Top Subfeed Breaker and Bottom Panelboard – Terminal Locations**




250A SUBFEED (TOP)
PANELBOARD (BOTTOM)
208 OR 480v 4-WIRE
3-WIRE SAME MINUS NEUTRAL

**Figure 18. Subfeed Breaker Output Power Terminal Detail**

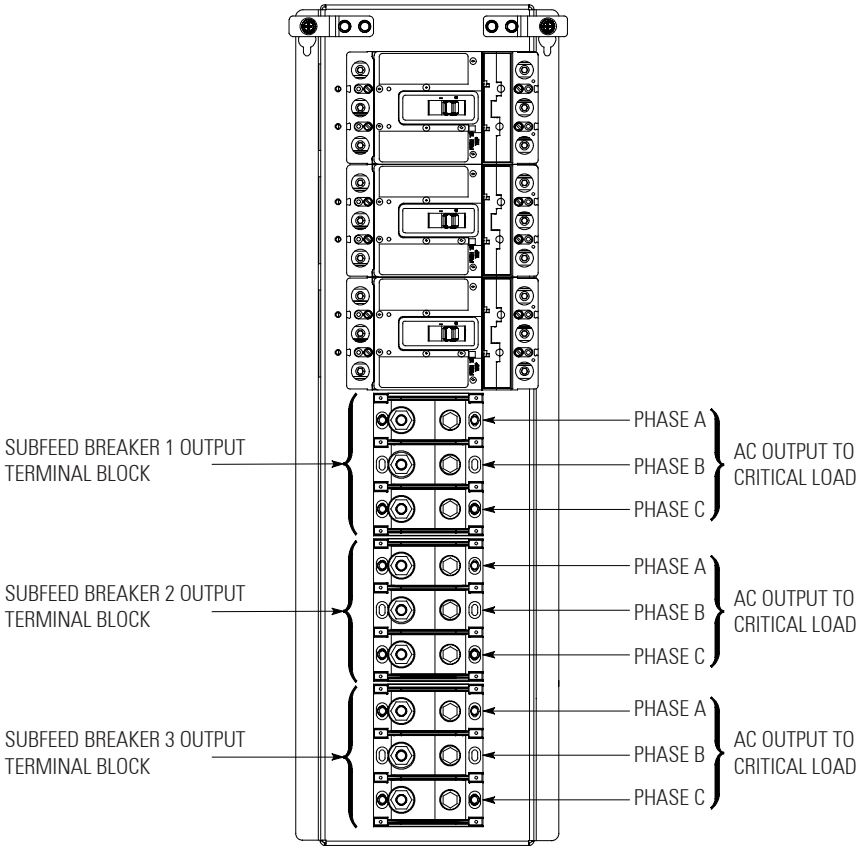
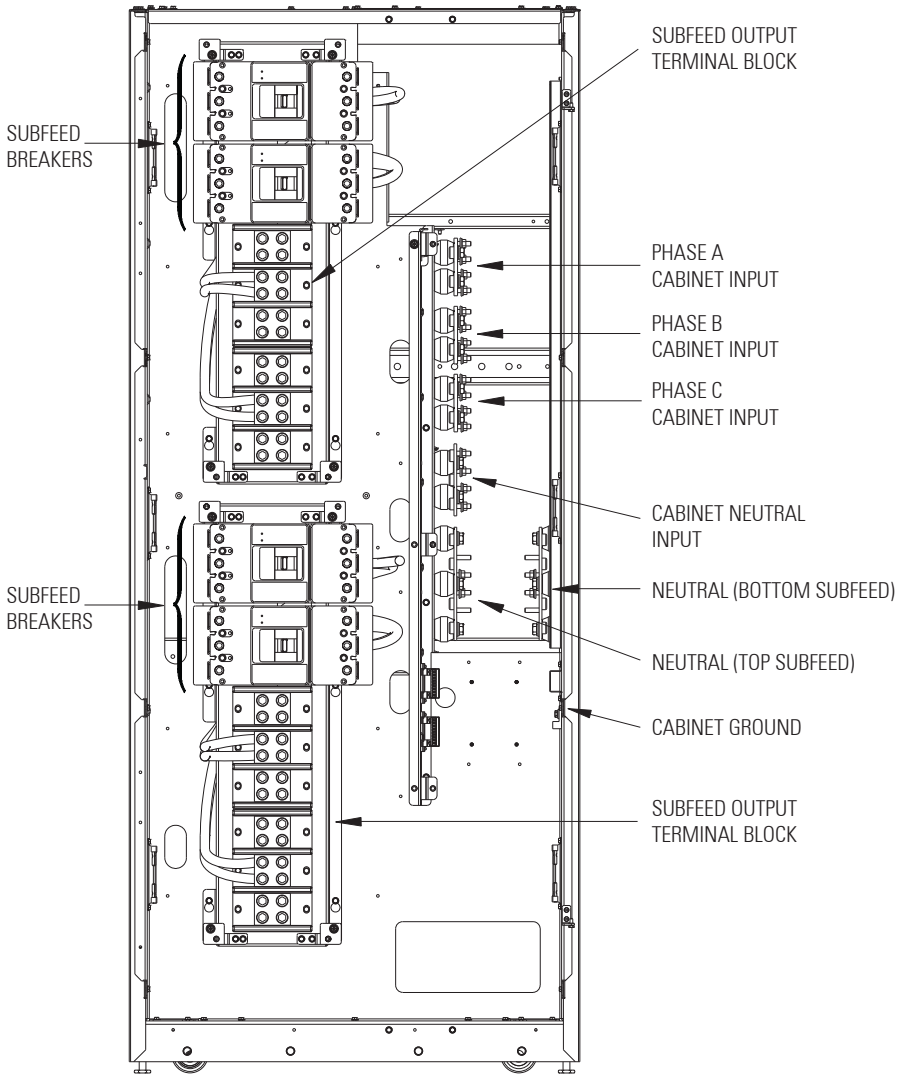


**Figure 19. IAC-PD with Top and Bottom Subfeed Breakers – Terminal Locations**




400A SUBFEED (TOP)
400A SUBFEED (BOTTOM)
208 OR 480V 4-WIRE
3-WIRE SAME MINUS NEUTRAL

## 4.4 Adjustable Subfeed Breakers

The subfeed breakers installed in the IAC-PD contain adjustable current trip settings. The continuous current (Ir) values for the corresponding lettered adjustment setting marked on the subfeed breakers are listed in Table 9 and Table 10.

To adjust breaker:

1. If not already open, open the front door by lifting the latch from the bottom and turning to the right (counterclockwise) and swing the door open.
2. Remove the screws securing the breaker trim plate and remove the plate. Retain trim plate and hardware for later use.
3. Using the dial on the subfeed breaker adjust the breaker current rating as required to protect the wiring to the load. See Table 9 and Table 10 for the breaker continuous current adjustment letter.
4. Reinstall the inside trim plate removed in Step 2.
5. Close the outside door and secure the latch.
6. After the IAC-PD is installed and wired, return to the appropriate Eaton 93PM UPS manual listed in paragraph 1.7 *For More Information* to complete the UPS wiring.

**Table 9. JG-Frame 250A Subfeed Breaker Continuous Current (Ir) Settings**

| Breaker Setting | Continuous Current (Ir) |
|---|---|
| A | 100A |
| B | 125A |
| C | 150A |
| D | 160A |
| E | 175A |
| F | 200A |
| G | 225A |
| H | 250A |

**Table 10. K-Frame 400A Subfeed Breaker Continuous Current (Ir) Settings**

| Breaker Setting | Continuous Current (Ir) |
|---|---|
| A | 160A |
| B | 200A |
| C | 225A |
| D | 250A |
| E | 300A |
| F | 315A |
| G | 350A |
| H | 400A |

## 4.5 Initial Startup

Startup and operational checks must be performed by an authorized Eaton Customer Service Engineer, or the warranty terms specified in paragraph 9.1 *Warranty* become void. This service is offered as part of the sales contract for the UPS. Contact an Eaton service representative in advance (usually a two-week notice is required) to reserve a preferred startup date.

### 4.5.1 Completing the Installation Checklist

The final step in installing the IAC-PD is completing the following Installation Checklist. This checklist ensures that you have completely installed all hardware, cables, and other equipment. Complete all items listed on the checklist to ensure a smooth installation. Make a copy of the Installation Checklist before filling it out, and retain the original.

After the installation is complete, an Eaton Customer Service Engineer must verify the operation of the UPS system and commission it to support the critical load. The service representative cannot perform any installation tasks other than verifying software and operating setup parameters. Service personnel may request a copy of the completed Installation Checklist to verify all applicable equipment installations have been completed.

**NOTE** The Installation Checklist MUST be completed prior to starting the UPS system for the first time.

### 4.5.2 Installation Checklist

- ❑ All packing materials and restraints have been removed from each cabinet.
- ❑ The IAC-PD is installed on a level floor suitable for computer or electronic equipment.
- ❑ The IAC-PD is placed in its installed location.
- ❑ The IAC-PD is secured to the building floor or attached to the adjacent 93PM system cabinet with the cabinet bracket.
- ❑ All conduits and cables are properly routed between the IAC-PD and the UPS.
- ❑ All power cables are properly sized and terminated.
- ❑ Distribution panel branch circuit breakers are installed and wired to load.
- ❑ A ground conductor is properly installed.
- ❑ All terminal cover plates are installed.
- ❑ Air conditioning equipment is installed and operating correctly.
- ❑ The area around the UPS system is clean and dust-free.
- ❑ Adequate workspace exists around the IAC-PD and other cabinets.
- ❑ Adequate lighting is provided around all IAC-PD and UPS equipment.
- ❑ A 120 Vac service outlet is located within 7.5 meters (25 feet) of the IAC-PD and UPS equipment.
- ❑ Startup and operational checks are performed by an authorized Eaton Customer Service Engineer.
- ❑ Visit www.eaton.com/pq/register to register the new Eaton UPS/Eaton UPS Accessory.

**Notes**

# Chapter 5 Onelines and Schematics

## 5.1 IAC-PD Onelines and Schematics

### 5.1.1 Onelines

Figure 20 through Figure 25 show the simplified internal structure of the various Eaton 93PM IAC-PD configurations.

**Figure 20. 93PM IAC-PD with Single Panelboard**

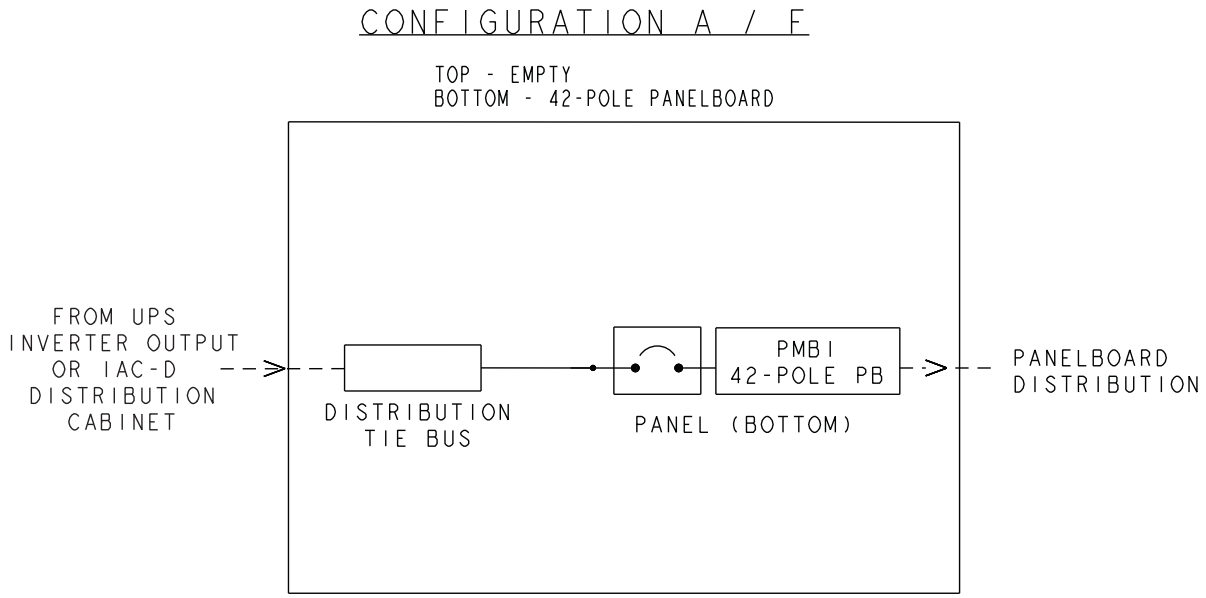


**Figure 21. 93PM IAC-PD with Dual Panelboards**

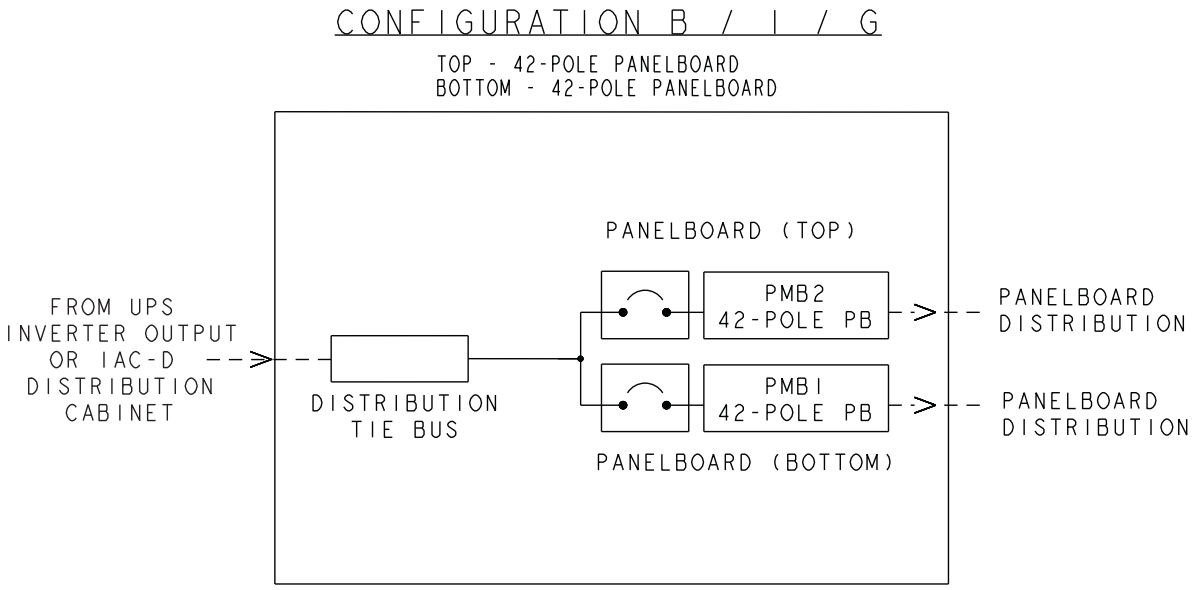



**Figure 22. 93PM IAC-PD with One, Two, or Three 250A Subfeed Breakers and a Single Panelboard**

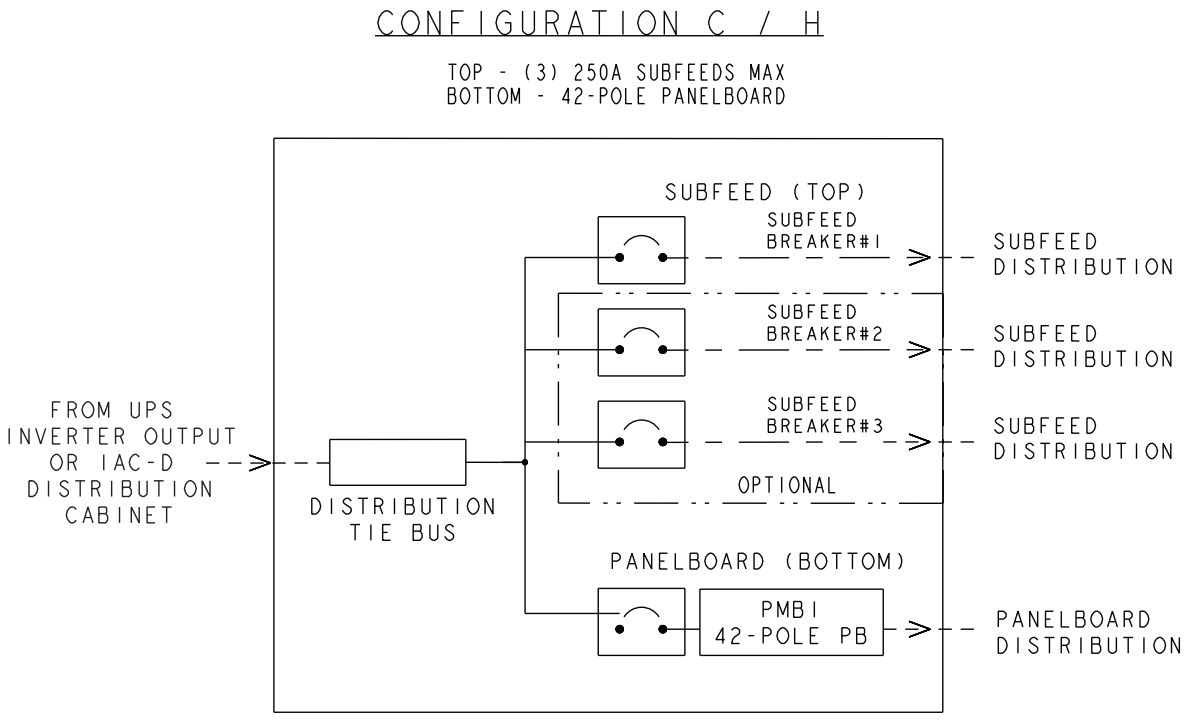


**Figure 23. 93PM IAC-PD with One or Two 400A Subfeed Breakers and a Single Panelboard**

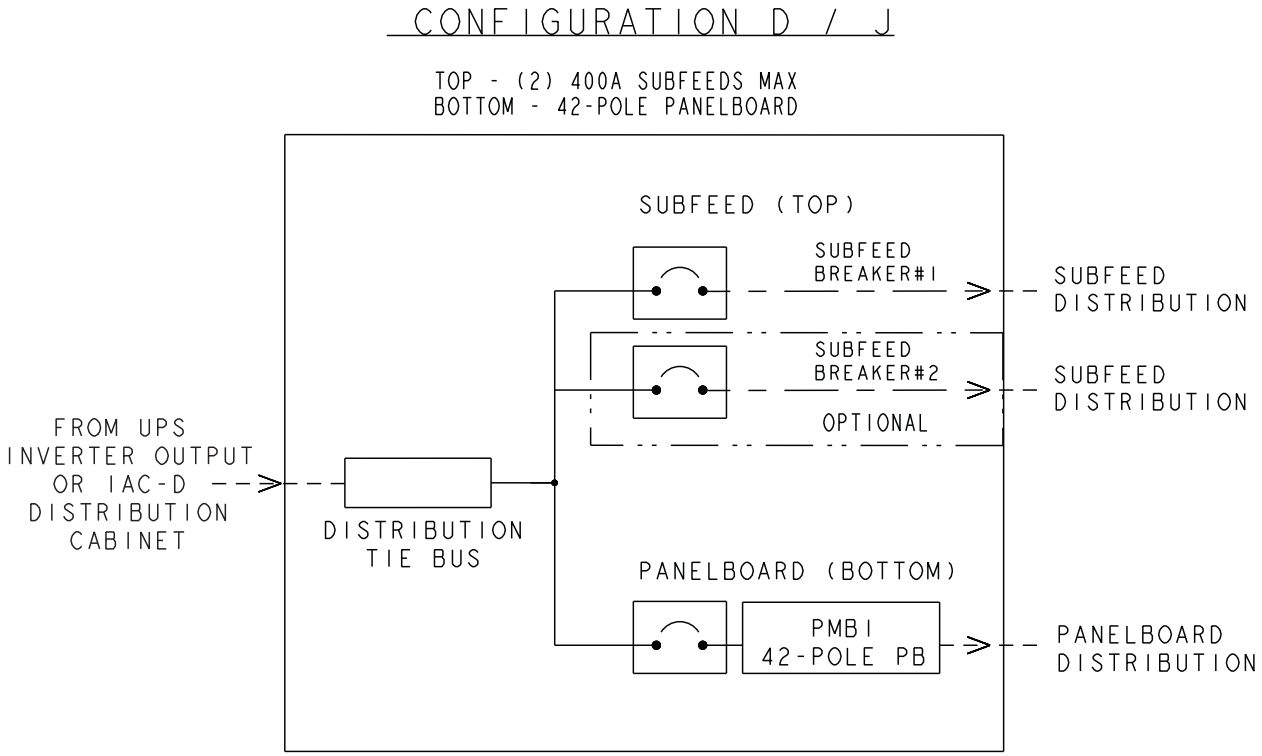


**Figure 24. 93PM IAC-PD with Four 400A Subfeed Breakers**

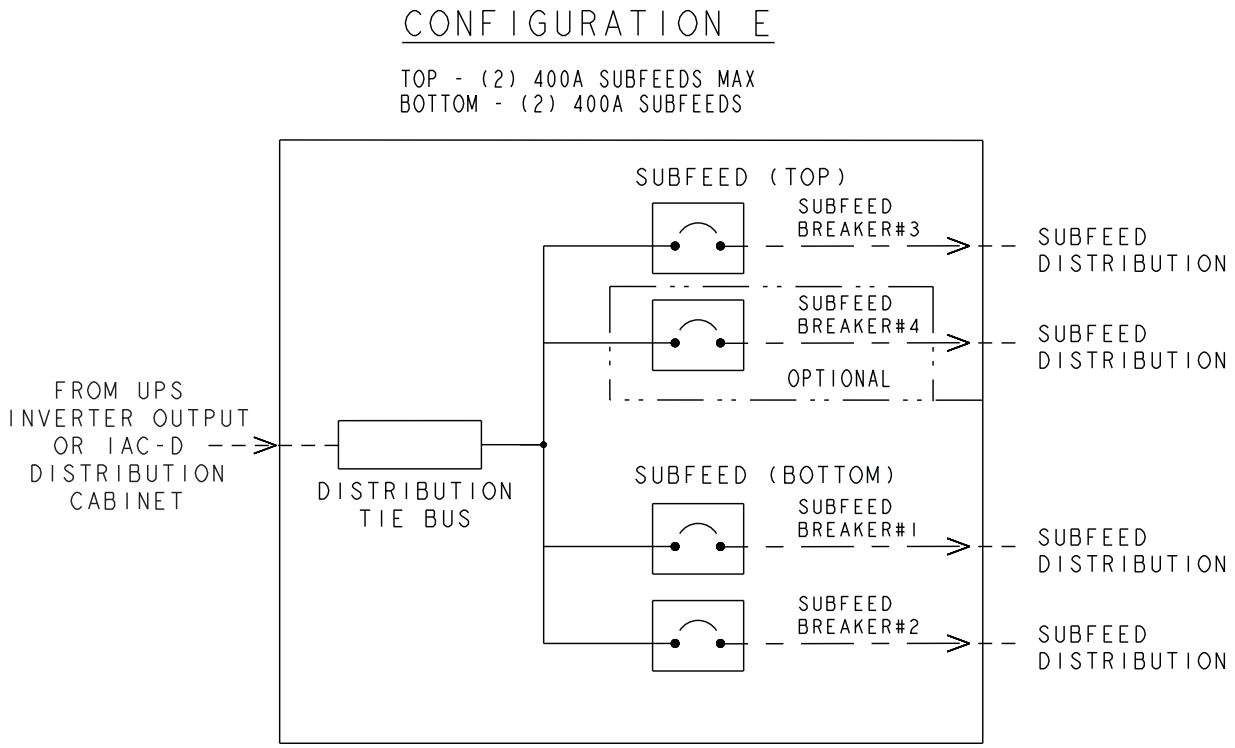
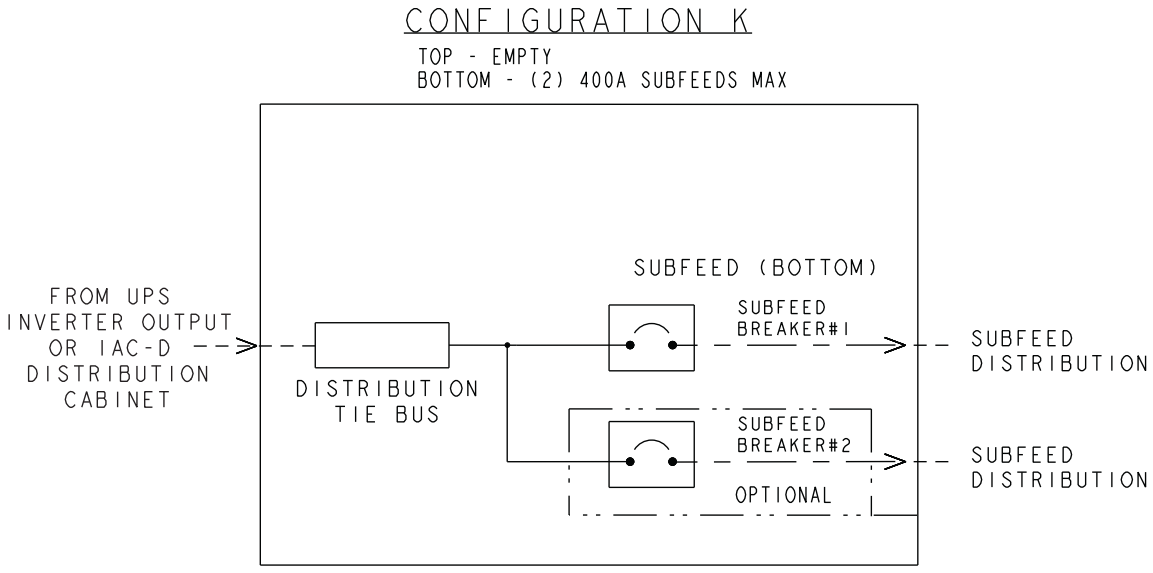


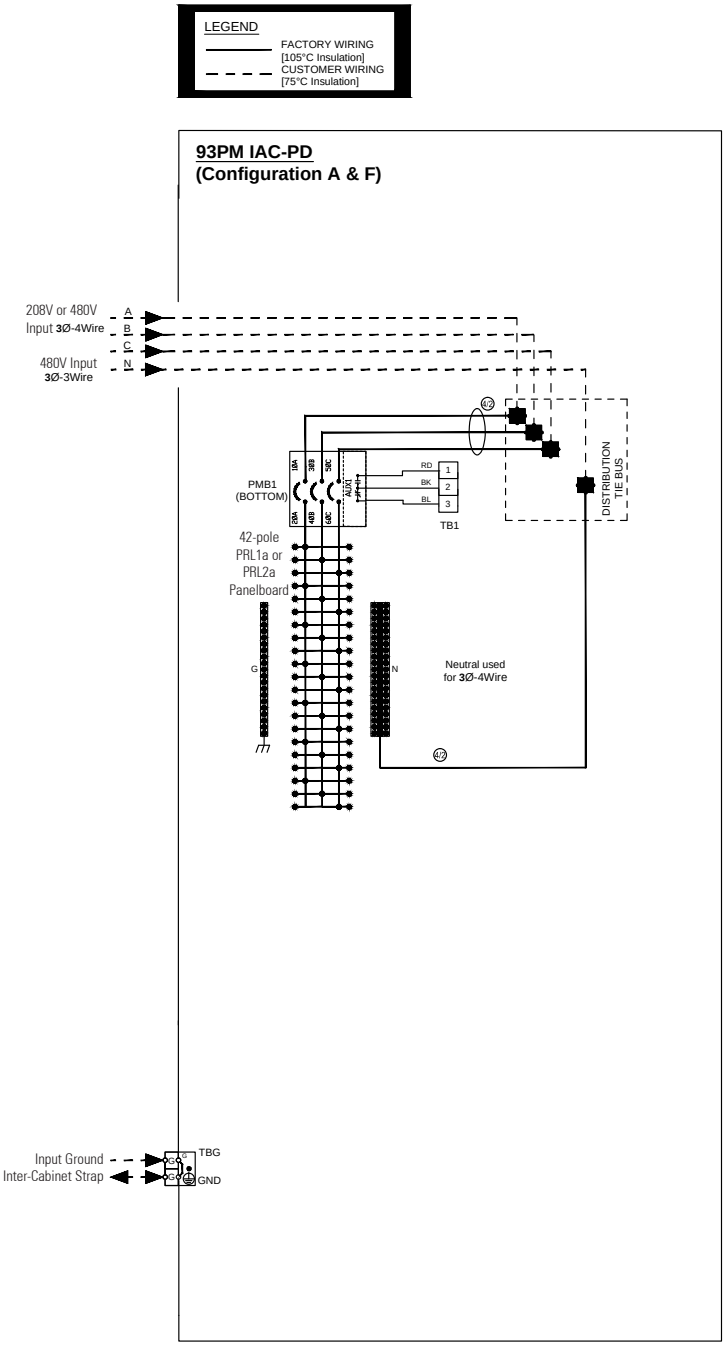

**Figure 25. 93PM IAC-PD with Two 400A Subfeed Breakers**

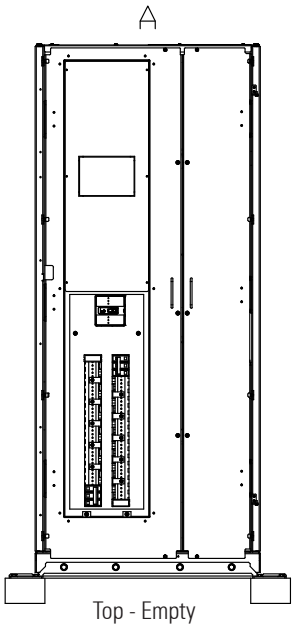


### 5.1.2 Schematics

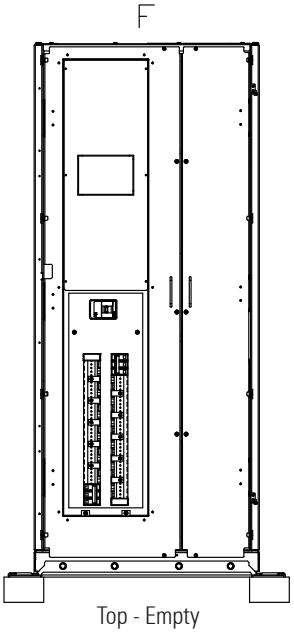
Figure 26 through Figure 30 show the schematics for the various 93PM IAC-PD configurations.

**Figure 26. 93PM IAC-PD Configuration A and F Schematic**



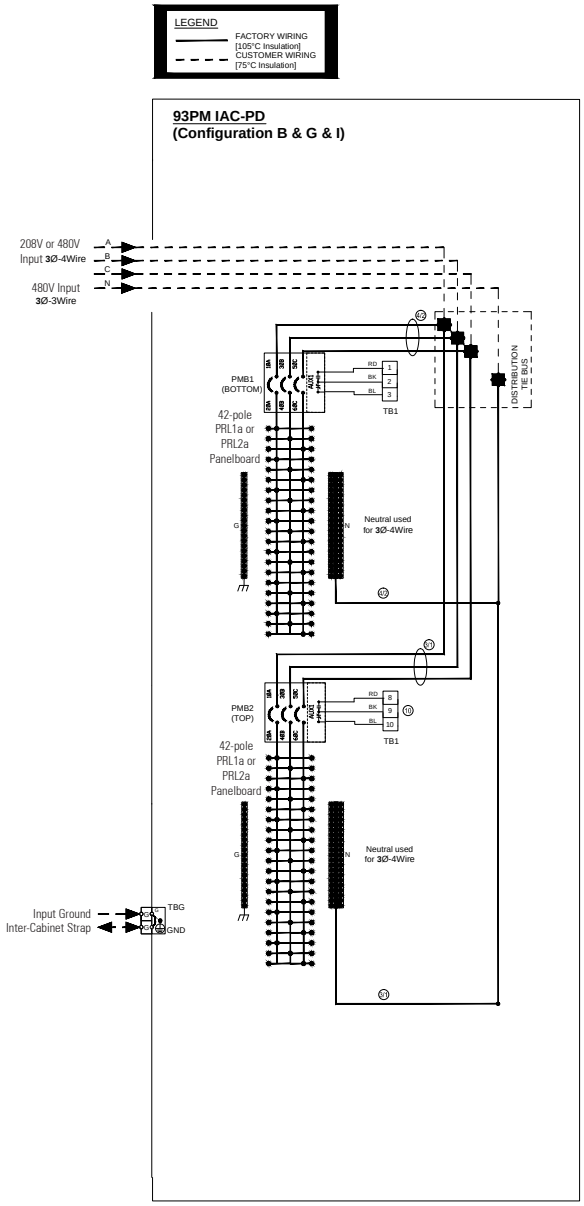



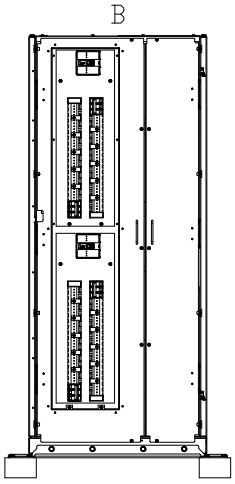

Top - Empty
Bottom - 225A Panelboard
PRL1a or PRL2a Panelboard



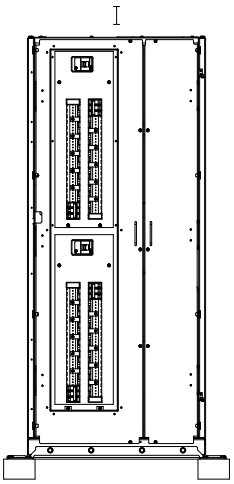

Top - Empty
Bottom - 400A Panelboard
PRL1a  Panelboard

**Figure 27. 93PM IAC-PD Configuration B, G, and I Schematic**

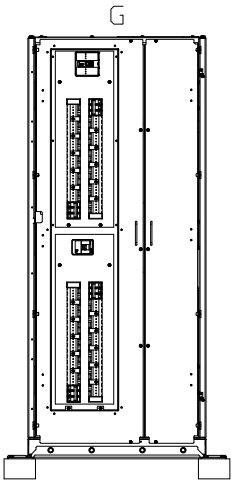



Top - 225A Panelboard
Bottom - 225A Panelboard
PRL1a or PRL2a Panelboard

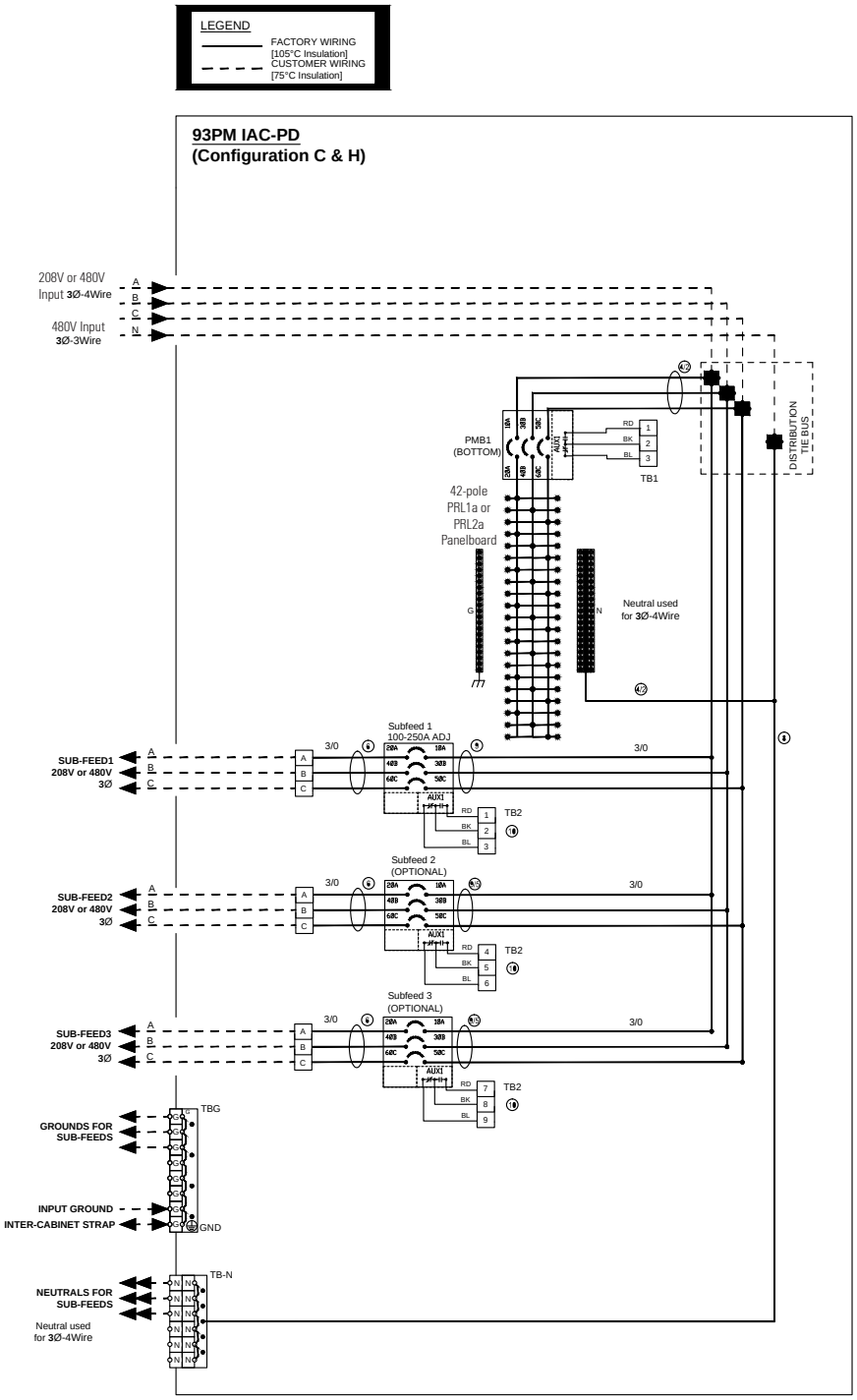


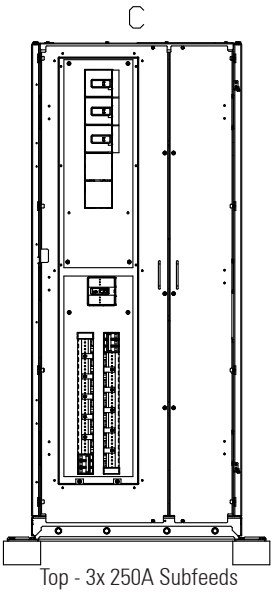

Top - 400A Panelboard
Bottom - 400A Panelboard
PRL1a Panelboard



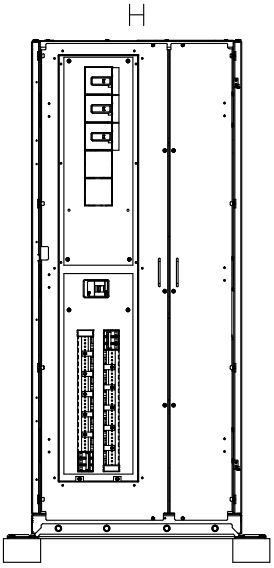

Top - 225A Panelboard
Bottom - 400A Panelboard
PRL1a or PRL2a Panelboard

**Figure 28. 93PM IAC-PD Configuration C and H Schematic**



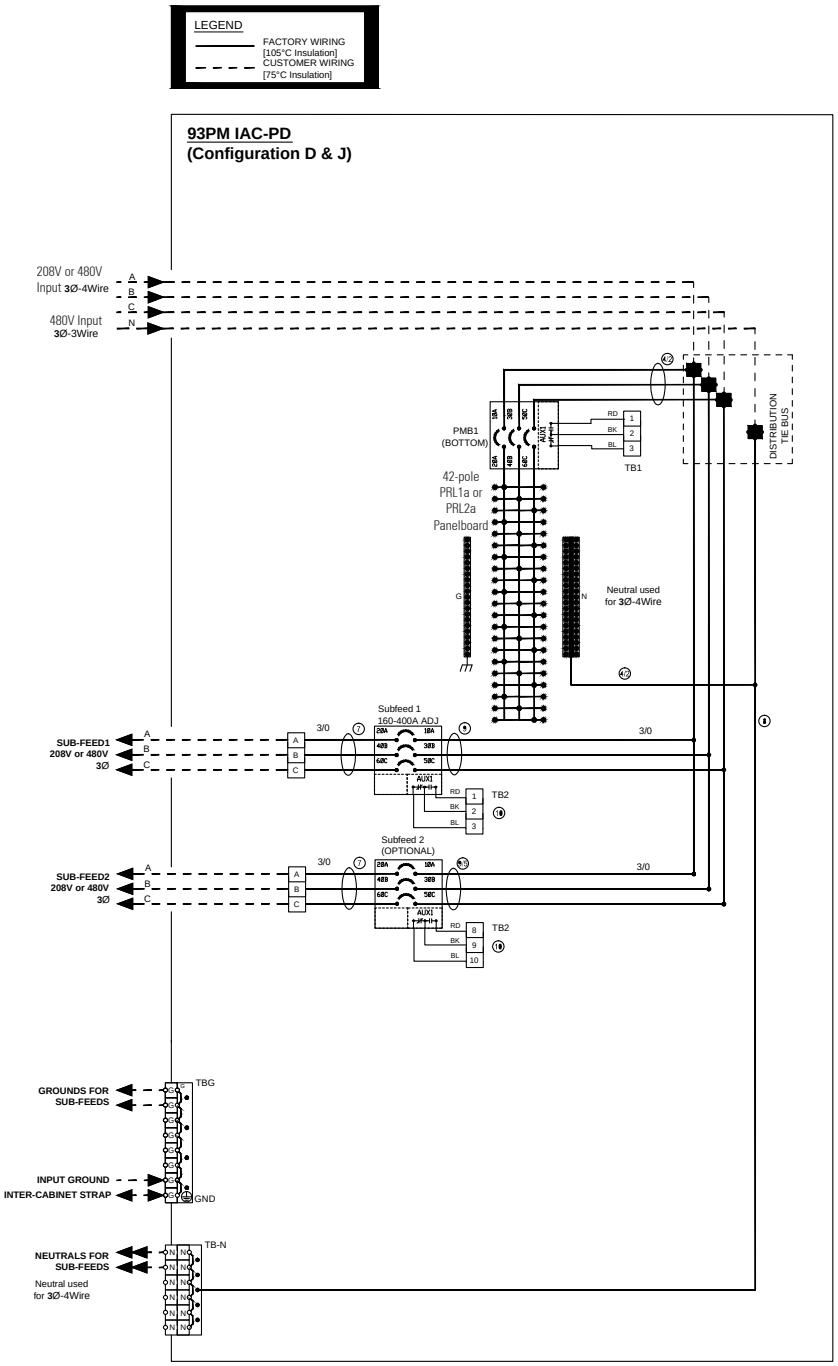



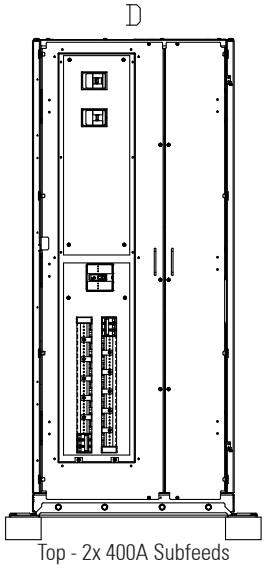

Top - 3x 250A Subfeeds
Bottom - 225A Panelboard
PRL1a or PRL2a Panelboard



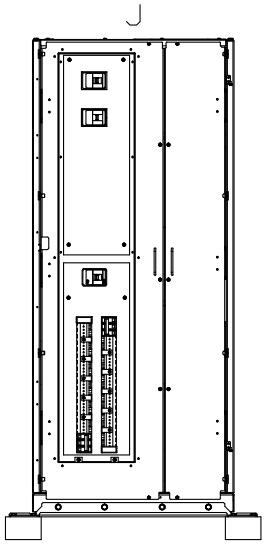

Top - 3x 250A Subfeeds
Bottom - 400A Panelboard
PRL1a Panelboard

**Figure 29. 93PM IAC-PD Configuration D and J Schematic**



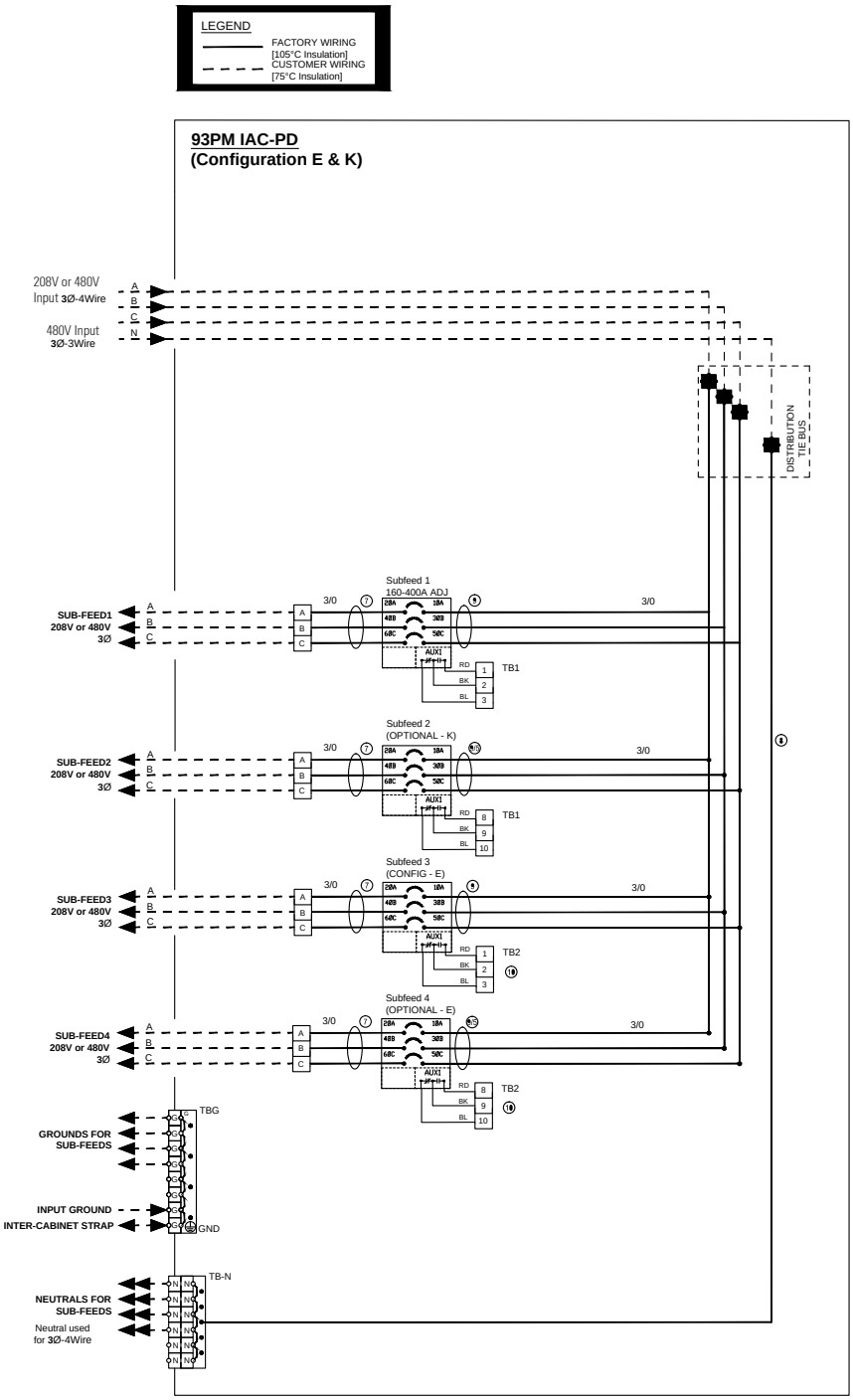



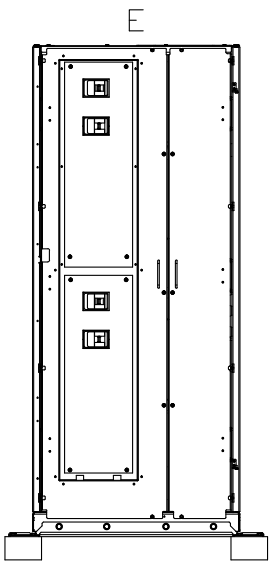
Top - 2x 400A Subfeeds
Bottom - 225A Panelboard
PRL1a or PRL2a Panelboard



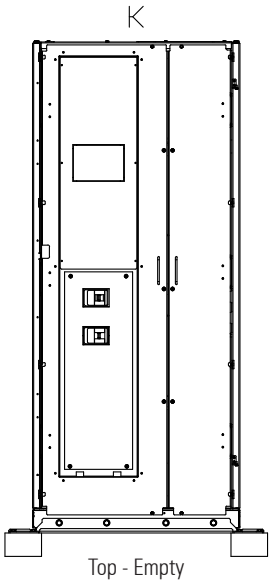
Top - 2x 400A Subfeeds
Bottom - 400A Panelboard
PRL1a Panelboard

**Figure 30. 93PM IAC-PD Configuration E and K Schematic**




Top - 2x 400A Subfeeds
Bottom - 2x 400A Subfeeds




Top - Empty
Bottom - 2x 400A Subfeeds

# Chapter 6 Operation

## 6.1 Integrated Accessory Cabinet-Power Distribution Operating Instructions

This section describes how to operate the Integrated Accessory Cabinet-Power Distribution (IAC-PD).

**NOTE 1** Before using the IAC-PD, ensure all installation tasks are complete and a preliminary startup has been performed by authorized service personnel. The preliminary startup verifies all electrical interconnections to ensure the installation was successful and the system operates properly.

**NOTE 2** Read this section of the manual and have thorough knowledge of IAC-PD operation before attempting to operate any of the controls.

### 6.1.1 IAC-PD Breakers

Figure 31 through Figure 33 identify and show the location of the breakers on the IAC-PD.

The IAC-PDs can contain the following breakers:

- **Distribution Panel Input Breaker** – Controls input to the distribution panel
- **Distribution Panel Branch Breakers** – Provides up to 42 branch circuits per panel to distribute the output power to the loads
- **Subfeed Breakers** – Up to four optional subfeed breakers for high current loads

### 6.1.2 IAC-PD Operation

To operate the IAC-PD:

1. Open the front door by lifting the latch from the bottom and turning to the right (counterclockwise) and swing the door open.
2. Verify that the IAC-PD circuit breakers are set as follows:

| Breaker | Switch Position |
|---|---|
| Distribution Panel Input Breaker | **OPEN** |
| Distribution Panel Branch Breakers | **OPEN** |
| Subfeed Breakers (if installed) | **OPEN** |

3. Start the UPS. Refer to the applicable Eaton 93PM UPS manual listed in paragraph 1.7 *For More Information* for UPS operating procedures.
4. Close the distribution panel input breaker.
5. Close the distribution panel branch breakers
6. Close the subfeed breakers (if installed).
7. Close the door and secure the latch.

**Figure 31. 93PM IAC-PD Breakers – Two Panelboards**

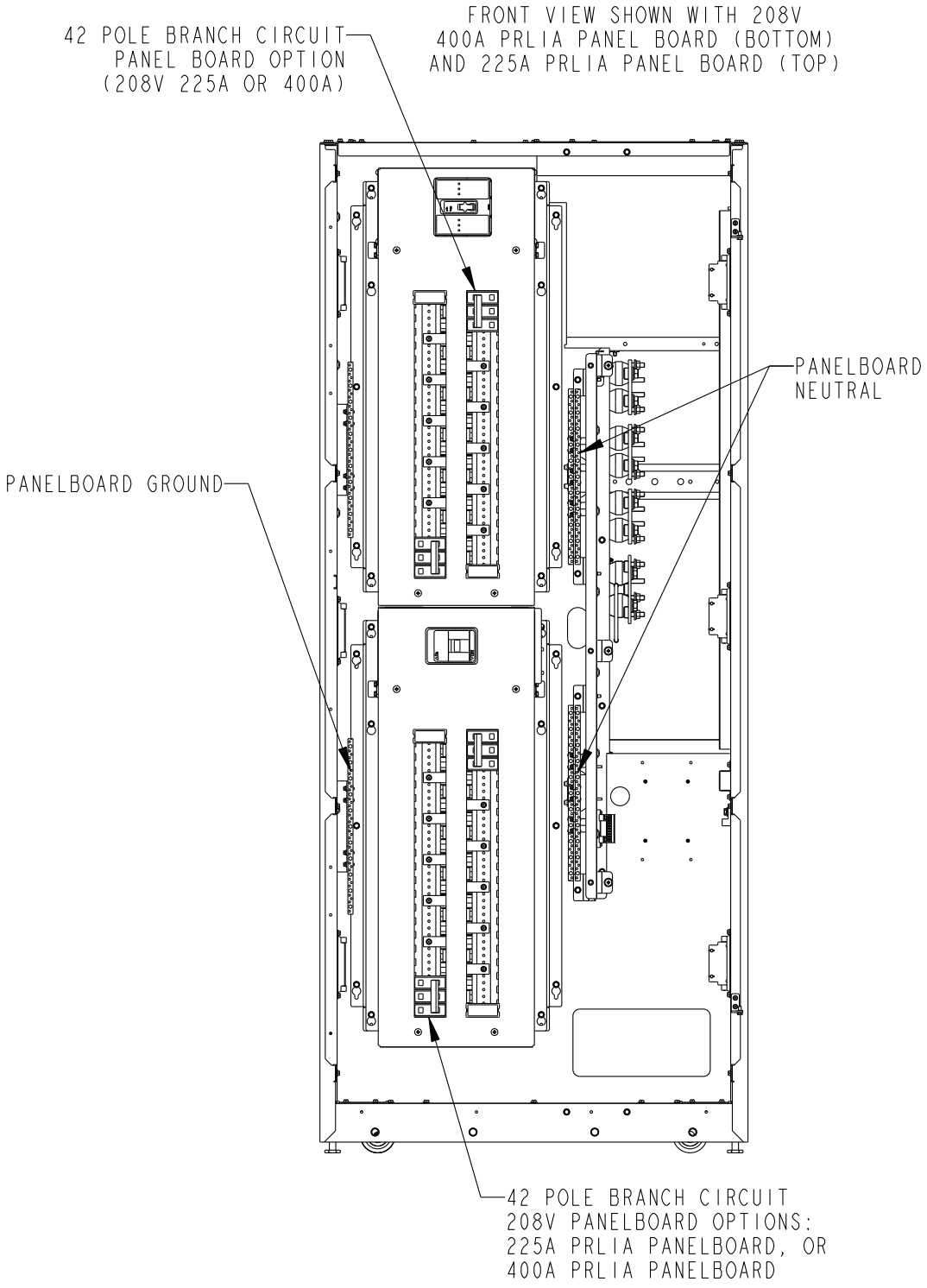


**Figure 32. 93PM IAC-PD Breakers – Top Subfeed Breakers with Bottom Panelboard**

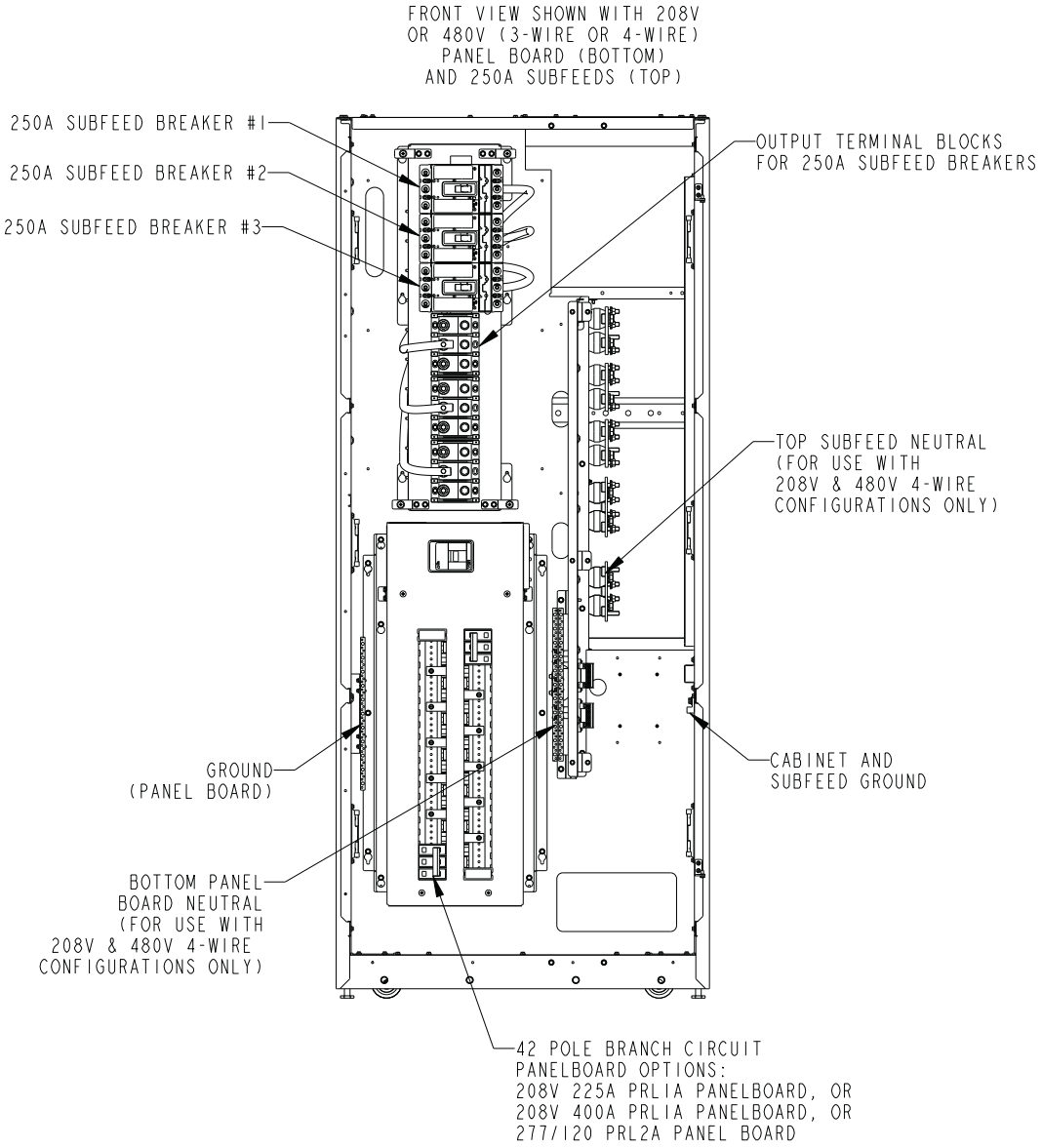
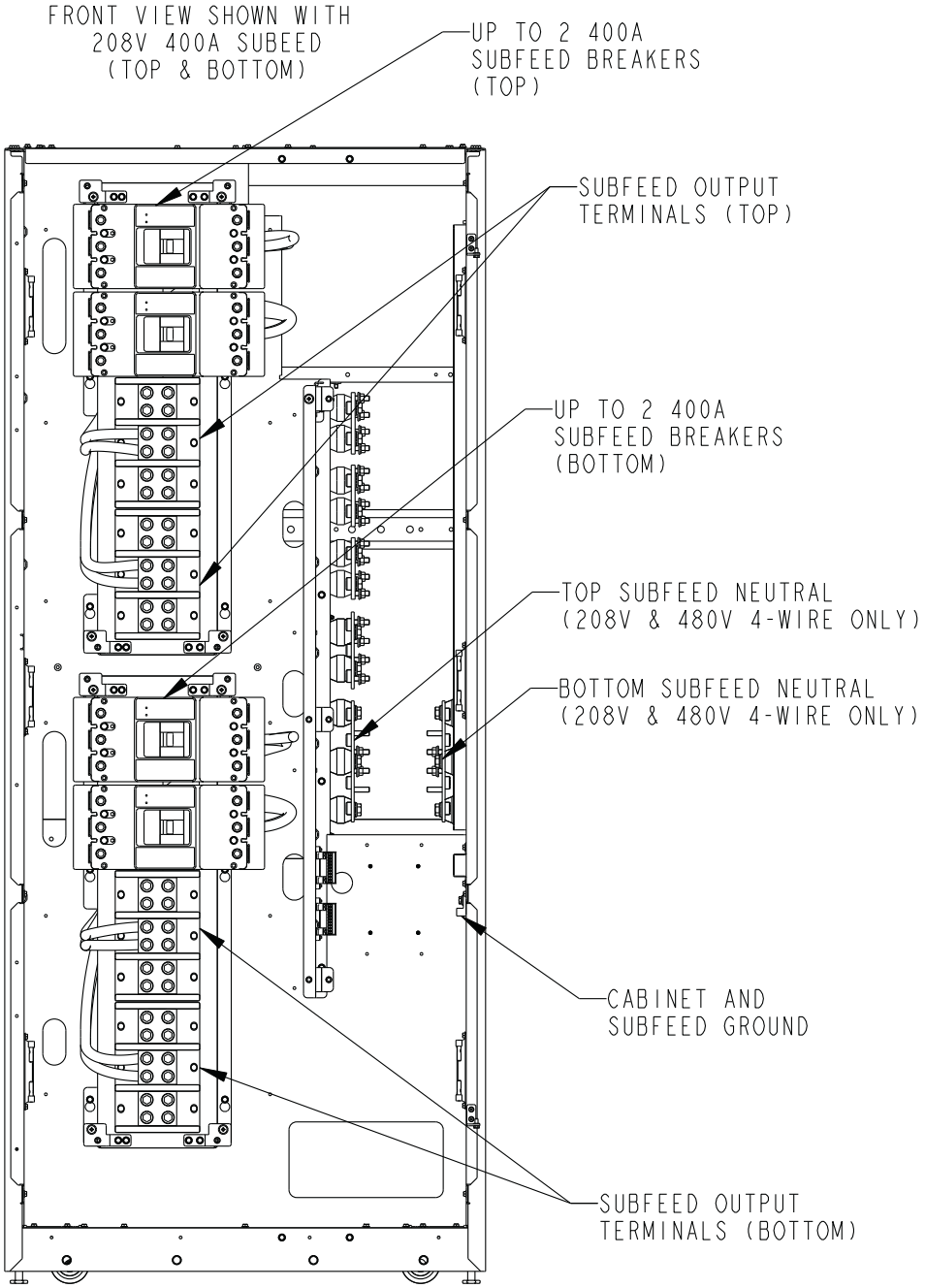


**Figure 33. 93PM IAC-PD Breakers – Subfeed Breakers**



# Chapter 7 Maintenance

## 7.1 Maintenance

The components inside the IAC-D are secured to a sturdy metal frame. All repairable parts and assemblies are located for easy removal, with very little disassembly. This design allows authorized service personnel to quickly perform routine maintenance and servicing.

You must schedule periodic performance checks of the UPS system to keep it running properly. Regular routine checks of operation and system parameters enable your system to function efficiently for many trouble-free years.

### 7.1.1 Important Safety Instructions

Remember that your UPS system is designed to supply power **EVEN WHEN DISCONNECTED FROM THE UTILITY POWER**.

**WARNING**

- No user serviceable components.
- Servicing and maintenance should be performed by qualified service personnel only.
- LETHAL VOLTAGE PRESENT. This unit should not be operated with the cabinet doors open or protective panels removed. Do not make any assumptions about the electrical state of any cabinet in the UPS system.

## 7.2 Performing Preventive Maintenance

The UPS system requires very little preventive maintenance. However, the system should be inspected periodically to verify that the units are operating normally. Record maintenance results and any corrective actions in a suitable log.

### 7.2.1 DAILY Maintenance

Perform the following steps daily:

1. Check the area surrounding the UPS system. Ensure the area is not cluttered, allowing free access to the unit.
2. Ensure the air intakes on the accessory cabinets are not blocked.
3. Ensure the operating environment is within the parameters specified in paragraph 3.2.1 *Environmental and Installation Considerations* and Chapter 8.1 , "Product Specifications."

### 7.2.2 PERIODIC Maintenance

Periodic inspections of the IAC-D should be made to determine if components, wiring, and connections exhibit evidence of overheating. Particular attention should be given to the compression lug connections. Maintenance procedures should specify that the compression lug connections be retorqued to values listed in this manual.

### 7.2.3 ANNUAL Maintenance

Annual preventive maintenance should be performed only by authorized service personnel familiar with maintenance and servicing of the UPS system. Contact an Eaton service representative for more information about service offerings.

## 7.3 Maintenance Training

A basic training course, available from Eaton Corporation, gives you a competent working knowledge of the UPS system operation and teaches you how to perform first level corrective maintenance. For more information about training and other services, contact the Help Desk (see paragraph 1.8 *Getting Help*).

# Chapter 8 Product Specifications

## 8.1 Product Specifications

This section provides the following specifications:

- Models
- Input specifications
- Output specifications
- Environmental and safety specifications

### 8.1.1 Models

The Integrated Accesssory Cabinet-Power Distribution (IAC-PD) is available in various model configurations to meet the needs of the Eaton 93PM UPS product line.

| Integrated Accessory Cabinet-Power Distribution (IAC-PD) Models |
|---|
| Eaton 93PM IAC-PD with (1) 400A Panelboard (Bottom) (Top Empty) |
| Eaton 93PM IAC-PD with (2) 400A Panelboards |
| Eaton 93PM IAC-PD with (1) 400A Panelboard and (1) 400A Subfeed Breaker |
| Eaton 93PM IAC-PD with (1) 400A Panelboard and (2) 400A Subfeed Breakers |
| Eaton 93PM IAC-PD with (1) 400A Panelboard and (1) 250A Subfeed Breaker |
| Eaton 93PM IAC-PD with (1) 400A Panelboard and (2) 250A Subfeed Breakers |
| Eaton 93PM IAC-PD with (1) 400A Panelboard and (3) 250A Subfeed Breakers |
| Eaton 93PM IAC-PD with (2) 400A Subfeed Breakers (2–Breakers each) |
| Eaton 93PM IAC-PD with (1) 400A Subfeed Breaker (2–Breaker), Top Empty |

### 8.1.2 Specifications

The following sections detail the input, output, and environmental and safety specifications for the IAC-PD.

#### 8.1.2.1 Input

| | |
|---|---|
| **Operating Input Voltage Range** | 208V nominal (60 Hz)<br>or<br>480V nominal (60 Hz) |
| **Input Wiring:** | 208 Vac: 4–Wire + Ground<br><br>480 Vac: 3–Wire + Ground<br>or<br>4–Wire + Ground |
| Operating Input Frequency Range | 60 Hz ± 5 Hz |
| **Operating Input Current** | See Table 5 |

#### 8.1.2.2 Output

| | |
|---|---|
| **Operating Output Voltage** | 120/208V, 480V 3W, or 480V 4W Vac nominal |
| **Output Wiring:** | 208 Vac: 4–Wire + Ground<br>480 Vac: 3–Wire + Ground<br>or<br>4–Wire + Ground |
| Operating Output Frequency Range | 60 Hz ± 5 Hz |
| **Output Current** | See Table 6 |

#### 8.1.2.3 Environmental and Safety Specifications

| | |
|---|---|
| **Operating Temperature** | 41°F to 104°F (5°C to 40°C). |
| **Transit Temperature** | -13°F to 140°F (-25°C to 60°C) |
| **Storage Temperature** | -13°F to 131°F (-25°C to 55°C) |
| **Operating Altitude** | Maximum 1500m (5000 ft) at 40°C without derating |
| **Transit Altitude** | 15000m (49213 ft) |
| **Ventilation** | Convection air cooling for rear venting<br>Convection air cooling for top venting |
| **Relative Humidity** (operating and storage) | 5 to 95%, noncondensing |
| **Acoustical Noise** | Not applicable |
| **Safety Conformance** | UL1778 5th edition |
| **Agency Markings** | cULus |
| **EMC (Class A)** | FCC Part 15 Class A and 62040-2 c3 |

# Chapter 9 Warranty

## 9.1 Warranty

To view the UPS warranty please click on the link or copy the address to download from the Eaton website:
UPS Product Warranty

https://www.eaton.com/content/dam/eaton/products/backup-power-ups-surge-it-power-distribution/backup-power-ups/portfolio/eaton-three-phase-ups-warranty.pdf

**EQUIPMENT REGISTRATION**

Please visit www.eaton.com/pq/register to register your new Eaton UPS / Eaton UPS Accessory.

**Model Number:**

**Serial Number:**

P-164000694 02