



Powerware Plus 36

Operator's Manual

1 Introduction

The Powerware Plus 36 UPS is a high-performance, online, microprocessor-controlled UPS designed to protect your equipment from corruption or loss of information because of electrical-line disturbances. During a power failure, the UPS supplies backup power from maintenance-free batteries, providing additional time to complete computer activity and safely store data. When commercial power is present, the UPS supplies filtered and regulated power to your equipment and maintains the battery in a charged condition. The advanced switching technology used in this UPS enables the unit to handle a wide range of input voltages and frequencies.

Special Features

All Powerware Plus 36 UPS models come with the following special features:

- True online, double-power conversion operation for complete load protection
- Reliable, high-quality power whether operating from utility, battery, or generator
- Local/Remote Emergency Power-Off (EPO/REPO) feature that can disconnect your protected equipment from all power sources
- External maintenance bypass keeps the critical load up and running, even if the UPS needs removing
- Front access to input, output, and battery circuit breakers and maintenance bypass switch
- Complete service access from only one side
- Options Cabinet houses any combination of external wrap-around maintenance bypass, power distribution panel, 10% input current filter
- Sealed, maintenance-free batteries
- Casters for easy installation and mobility
- 30-pole built-in power distribution panel allows bolt-in or snap-in breakers to be installed
- 20% additional output kVA for nonlinear load applications
- Two-year Best Power limited warranty and extended warranty service (USA and Canada)

System Overview

During normal operation, incoming commercial power is filtered to reduce noise and spikes. The rectifier provides isolated, regulated, and filtered DC power to the inverter. A portion of the input power to the rectifier is used to charge the battery. The inverter provides further regulated and filtered AC power to the load. In the event of a severe overload or unit failure, the Auto Bypass feature (if enabled) switches the load to the filtered input power. If bypass is not available, the inverter can still support difficult loads for a short period of time.

If utility power falls out of tolerance, the UPS remains online, deriving power from the battery. During extended power outages, the battery supplies power until nearly discharged at which time the UPS shuts off power to the load. When the utility power returns within tolerance, the UPS automatically restarts and supplies power to your protected equipment while recharging the battery.

System Requirements

Determine the total load requirements, in volt-amperes, of the equipment you intend to protect with your UPS. The UPS load should not exceed the UPS rating. See Figure 1 and the following procedure to determine the total load requirements:

1. Obtain the load ratings from either the nameplate or operator's manual of the equipment you intend to protect. The ratings are listed in either watts (W), amperes or amperes max (A), or volt-amperes (VA).
2. If the rating is in watts, multiply by 1.4 to obtain the VA requirement (this is the typical relationship between watts and volt-amperes ratings in most computing equipment).

If the rating is in amperes or amperes max, multiply by the input voltage (200, 208, 220, 230, or 240 VAC) to obtain the VA requirement.

3. Add all of the resultant VA ratings together to obtain the total load requirements of the equipment to be protected.

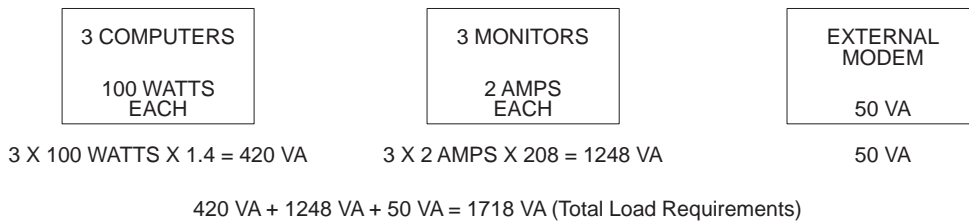


Figure 1. Volt-Amperes Calculations Example

If the total load requirements of your protected equipment exceeds the capacity of your UPS, you must either reduce the number of pieces of equipment you are protecting, or use a UPS with a larger load capacity.

When deciding on which pieces of equipment to remove from UPS protection, remember that printers generally have a lower priority. Computers, monitors, and modems typically have a higher priority because they could be processing or transmitting data when a power outage occurs.

NOTE: Your UPS is designed to work with three-phase, AC power sources.

You need to install the Options Cabinet if your requirements include: 220/380 VAC, 230/400 VAC, 240/415 VAC, 277/480 VAC, an external maintenance bypass, power distribution unit (PDU), or input filter.

Estimated Battery Run Times

The estimated accuracy of the battery support times is $\pm 10\%$. Battery times (in minutes) are shown according to the output watts and UPS configuration.

Output Watts	One Battery Cabinet	Two Battery Cabinets	Three Battery Cabinets
8000	30	80	128
9000	25	72	110
10000	22	65	98
11000	20	57	88
12000	18	50	78
13000	15	45	70
14000	14	40	62
15000	13	35	56
16000	12	30	50
17000	11	27	47
18000	10	24	43
19000	9	22	40
20000	8	20	37
21000	7	18	35
22000	6	17	33
23000	5	16	31
24000	5	15	30

Special Symbols

These common symbols may be found on your UPS:



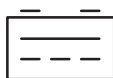
On indicates the on position of a switch.



Off indicates the off position of a switch.



Bypass indicates bypass control switches.



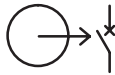
Battery indicates that the power provided to the load is coming from batteries.



Input Breaker indicates an input circuit breaker.



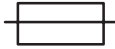
DC Breaker indicates a DC circuit breaker.



Output Breaker indicates an output breaker.



Battery Connector indicates the 2-position connector for battery input.



Fuse indicates a fuse.



Input Neutral Configuration Switch indicates the input neutral configuration switch.



Bypass Reset Switch indicates the bypass reset switches.



Ground indicates the customer ground connections.



Emergency Power-off indicates an EPO switch or connection.



Delta indicates the switch position for a delta (3-wire) input.



Wye indicates the switch position for a wye (4-wire) input.



Input indicates the input connections.



Output indicates the output connections.



Inverter indicates the inverter module.



Risk Of Electric Shock indicates that a risk of electric shock is present and the associated warning should be observed.



Caution: Refer To Operator's Manual – Refer to your operator's manual for additional information.

2 UPS Control Panel

The following sections identify the controls and indicators on the front panel (see Figure 2) and the front panel display functions.

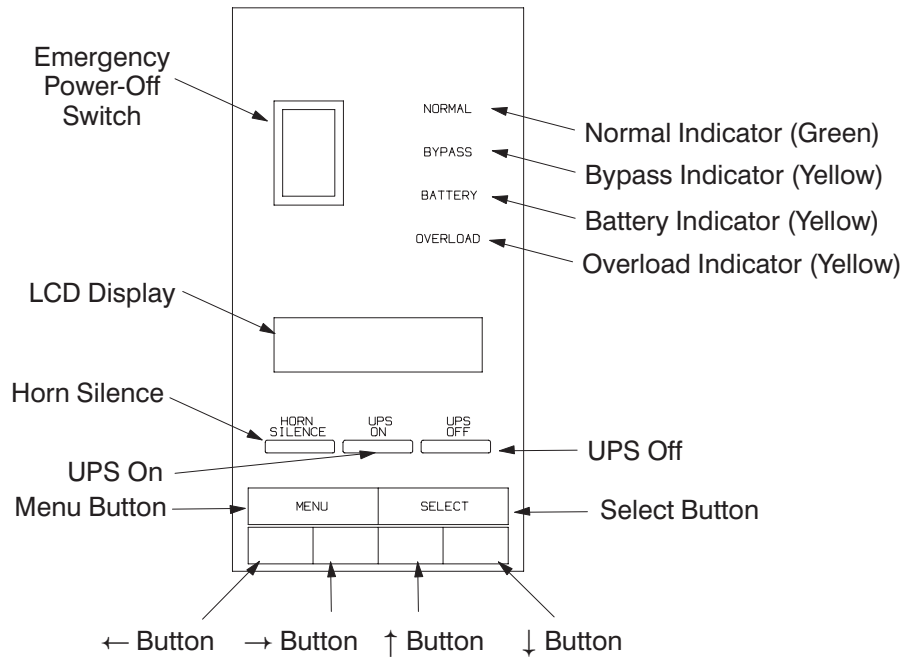


Figure 2. Front Panel Controls

Control Keys and Indicators

These pushbutton controls are on the front panel:

Emergency Power-Off

Press the EPO switch to turn off the load power during an emergency condition. The UPS must be restarted after an EPO.

UPS On

Press to start up the UPS.

Horn Silence

Press to silence the audible alarm, to perform a lamp test, or to test audible alarm.

Press the Horn Silence button for approximately 12 seconds to perform the Horn and Lights test. During the first four seconds, the panel indicators illuminate. During the next four to six seconds, one or more of the indicators go out. During the last few seconds, the alarm sounds. The test ends when you release the Horn Silence button after the alarm sounds.

UPS Off

Press to shut down the UPS.

Menu Button

Press the Menu button to return to previous menu level. If you are not sure which menu is currently displayed, press the Menu button repeatedly until the Main Menu displays **1. UPS Status**.

Select Button

Selects the currently displayed item shown on the second line of the LCD Display or enters the next menu level. For example, if the display shows **MAIN MENU** on the top line and **2. Meters** on the second line, pressing the Select button enters the Meters menu and shows the **INPUT VOLTS (L–N)** option.

Up or Down Arrow Buttons

Changes the cursor position within the menus, status screen, or event queue. For example, if the display shows **MAIN MENU** on the top line of the LCD Display and **1. UPS Status** on the second line, press the down arrow button to move to the next menu item, **2. Meters**.

Right or Left Arrow Buttons

Shows possible device settings in menus and scrolls through the screen messages; or moves the cursor position when entering the password or the date and time. For example, if the LCD Display shows **Password** on the top line and AAAAAA on the second line, press the right arrow button to move the cursor one position to the right (**AA**AAAA).

See “UPS Control Panel Functions” on page 17 for information on the Normal, Bypass, On-Battery, and Overload indicators.

Using the Front Panel Display

You can use the front panel display to set up and monitor the UPS. The display has a Main Menu and a System Setup Menu with several user-selectable options.

The Main Menu

The Main Menu contains the following options:

- 1. UPS Status
- 2. Meters
- 3. Alarm Queue
- 4. Active Alarms
- 5. Battery Data
- 6. S. W. Versions
- 7. System Setup

Use the up and down arrow buttons to display the Main Menu options. Press the Select button to enter one of the submenus.

1. UPS Status

The UPS Status option displays the number of currently active alarms and the conditions. The following table describes the different UPS conditions.

System Normal	Inverter supplying load (bypass available)
UPS On Battery	UPS is on battery
Load On Inverter	Inverter supplying load (bypass not available)
Syncing To Bypass	Inverter has ramped, but load is still on bypass
Inverter Ramping Up	Inverter has been started and is ramping
Rectifier Ramping Up	Rectifier has been started and is ramping
UPS On	Rectifier or inverter on but not supplying load
UPS Off	Rectifier and inverter off
Inverter Overload	Overload condition indicated from inverter
Rectifier Overload	Overload condition indicated from rectifier
Output Brkr Open	Output breaker open (O); UPS not supplying power to the load
UPS On Bypass	Bypass is supplying power to the load

2. Meters

The Meters option displays system meter values obtained through the internal serial communications network or calculated from the values obtained through the network. Use the up and down arrow buttons to view the following metered values:

- **Input Volts (L–N)**, input voltage (each phase and line-to-neutral)
- **Input Volts (L–L)**, input voltage (each phase and line-to-line)
- **Output Volts (L–N)**, output voltage (each phase and line-to-neutral)
- **Output Volts (L–L)**, output voltage (each phase and line-to-line)
- **Average Battery Voltage**
- **DC Link Voltage**
- **Inverter Frequency**
- **Input Frequency**
- **Output kW**, shown as bar graphs with each block representing approximately 10% of capacity
- **Output kVA**, shown as bar graphs with each block representing approximately 10% of capacity (*50/60-Hz units only*)
- **Phase Load Current**, load currents (phase A, B, and C) are shown as bar graphs with each block representing approximately 10% of capacity (*50/60-Hz units only*)
- **Time & Date**, displayed in the MM/DD/YY; HH:MM:SS or the DD/MM/YY; HH:MM:SS format

3. Alarm Queue

The Alarm Queue option displays the 200 most recent alarms and events in chronological order (most recent first). Use the right and left arrow buttons to pan across the screen and view entire descriptions. Use the up and down arrow buttons to scroll through the queue. The alarms are displayed in the following format: sequence number, date, time, and description of the alarm.

4. Active Alarms

The Active Alarms option displays a description of each active alarm.

5. Battery Data

The Battery Data option displays information about the battery. If the UPS is running with normal utility, the Battery Charge bar chart is displayed. If the UPS is running on battery, the Battery Time Remaining bar chart is displayed. Each block on the bar chart represents approximately 10% of the total time. This calculation assumes a constant load on the UPS. If custom batteries are selected, the battery voltage is displayed.

6. S. W. Versions

The S. W. Versions option displays the software versions for the front panel, inverter, and rectifier.

7. System Setup

Select the System Setup option to enter the System Setup Menu. This menu is password-protected and prompts you for the System Setup password. After entering a valid password, the System Setup Menu appears.

NOTE: *The default password is MEMORY. It is recommended to change the default password to ensure security (see page 16). Contact your field service representative if you have misplaced your password.*

The System Setup Menu

From the System Setup Menu, use the Menu button to return to the Main Menu. When altering settings under the System Setup Menu, the Select button saves a change and the Menu button cancels the change (unless otherwise indicated). An asterisk (*) displayed on the left side of the item indicates that the item is currently selected.

The System Setup Menu contains the following options:

- 1. Select Type
- 2. H. W. Modules
- 3. Sync Range
- 4. Adj Out Volts
- 5. Comm Setup
- 6. Relay Setup
- 7. Set Language
- 8. Set Time & Date
- 9. Contrast Adj
- 10. Horn Volume
- 11. Clr Alarm Queue
- 12. Set User PWD
- 13. Battery Cfg

Use the up and down arrow buttons to display the System Setup options. Press the Select button to enter one of the submenus.

1. Select Type

Use the Select Type option to select the output voltage and output frequency type for the UPS. The UPS kVA rating is displayed for information only, it cannot be changed.

Use the right and left arrow buttons to display all options for each category. Press the Select button to save an option. In this submenu, pressing the Menu button does not cancel changes; it returns the cursor to the previous menu.

The UPS must be off and the output breaker must be open (O) in order to change the Select Type setting; otherwise, you can only view the type setting.

After selecting a new type option, press the Menu button to exit the Select Type submenu before turning on the UPS.

The Select Type submenu contains the following options:

- **Output Voltage**
 - 115/200V, 200V
 - 120/208V, 208V
 - 127/220V, 220V
 - 220/380V, 380V
 - 230/400V, 400V
 - 240/415V, 415V
 - 277/480V, 480V
- **Output Frequency**
 - 50 Hz
 - 60 Hz
 - 400 Hz (*this option is factory-configured and cannot be changed by the user*)
- **Model Number**

} These options are preselected during installation and cannot be changed by the user.

2. H. W. Modules

Use the H. W. Modules option to view and change the present system hardware configuration. This option contains the following entries:

- Bypass Installed
- Number of Output Phases
- Inverter Installed
- Rectifier Installed
- Comm Board Installed

Use the up and down arrow buttons to view the entries. Only the Comm Board Installed option can be changed by the user. Use the left and right arrow buttons to change the value. Press the Select button to save your changes.

The UPS must be off and the output breaker must be open (O) in order to change the H. W. Modules setting. If the UPS is not off and the output breaker is closed (I), you can only view the H. W. Modules.

After selecting a new value, press the Menu button to exit the H. W. Modules submenu before turning on the UPS.

3. Sync Range

Use the Sync Range option to select a deviation of the utility frequency from the nominal inverter frequency. The inverter tracks the utility within the range entered in this option. If the utility is outside of range, the inverter operates at nominal frequency. The ranges are:

- ± 0.5 Hz
- ± 1.0 Hz
- ± 1.5 Hz
- ± 2.0 Hz
- ± 2.5 Hz
- ± 3.0 Hz

Use the up and down arrow buttons to view the entries. Use the left and right arrow buttons to change the value. Press the Select button to save your changes.

The UPS must be off and the output breaker must be open (O) in order to change the Sync Range setting. If the UPS is not off and the output breaker is closed (I), you can only view the Sync Range submenu.

After selecting a new value, press the Menu button to exit the Sync Range submenu before turning on the UPS.

4. Adj Out Volts

Use the Adjust Output Volts option to adjust the output voltage to $\pm 5\%$ of the nominal output voltage. The UPS must be in Normal mode while adjusting the output voltage.

Use the up arrow button to increase the percentage; the down arrow button to decrease the percentage. The changes are made in real-time and remain effective after you exit the Adjust Output Volts submenu. The Menu button does not cancel changes within this submenu.

NOTE: *As an exception in the 127/220V configuration, the output voltage may **not** be adjusted up.*

5. Comm Setup

Use the Comm Setup to set up the serial port for communication with a terminal and printer or in a computer mode. Output modes are for ASCII computer, binary computer, terminal, and printer. The I/O port must have the following parameters correctly set to establish and maintain communication: baud rate, data size, hardware handshake, software handshake, and parity. Two standard sets of I/O port parameters are available for two-wire terminal (no handshaking) and terminal with software handshake. All I/O port parameters can be customized.

Use the up or down arrow buttons to view the list of setup parameters. Use the right and left arrow buttons to view other settings. See Chapter 5, "UPS Communications" for more information on the communication interface.

6. Relay Setup

Use the Relay Setup option to display and change the LAN Relay Interface configuration. Standard configurations include: AS/400[®], Novell[®], and AT&T[®]/Default 1. All relays can also be customized. Use the up and down arrow buttons to view the list of options. Refer to the *Powerware Plus Communications Manual* for more information on the relay setup.

7. Set Language

Use the Set Language option to select a language for the display. You can select English, French, German, Portuguese, or Spanish. Use the up and down arrow buttons to view the options.

8. Set Time & Date

Use the Set Time & Date option to set the time, date, and format of the values. Use the right and left arrow buttons to change the format (for example, MM/DD/YY to DD/MM/YY). Use the up and down arrow buttons to change the numeric values.

9. Contrast Adj

Use the Contrast Adjust option to change the contrast on the display. This option may not be available for some Plus 36 models. Use the up and down arrow buttons to adjust the contrast. Press the Select button to save the setting.

10. Horn Volume

Use the Horn Volume option to set the alarm horn volume. Two volume settings are available for the UPS alarm: loud and soft. Use the left or right arrow button to view the setting.

11. Clr Alarm Queue

Use the Clear Alarm Queue option to empty the list of alarms in the alarm queue. Press the Select button to clear the alarm queue.

12. Set User PWD

Use the Set User PWD option to modify the user password for the System Setup Menu. When entering this option, **AAAAAA** appears on the display. Use the left and right arrow buttons to move the cursor position in the password field. Use the up and down arrow buttons to scroll through the character values. To save the password, you must press the Select button.

13. Battery Cfg

Use the Battery Cfg option to set your battery configuration or set up the system for custom batteries. See page 60 to use this option for configuring remote batteries. The following configurations are available for the Battery Cfg option:

- No battery
- Custom battery
- 1 EBC50
- 2 EBC50s
- 3 EBC50s

Use the up and down arrow buttons to change the value. To save the value, press the Select button.

3 UPS Operations

This chapter describes the UPS front panel control functions, UPS operating modes and alarm conditions, and the Bypass and Emergency Power-Off features.

UPS Control Panel Functions

The front panel indicators illuminate only when one of the following conditions is present:

- **NORMAL:** Green when UPS is in Normal operating mode. If Bypass is enabled, the Normal indicator flashes when Bypass is unavailable.
- **BYPASS:** Yellow when UPS is in Bypass mode. The Bypass indicator flashes in the event of a phase rotation (installation) alarm or loss of one phase.
- **BATTERY:** Yellow when UPS is operating in the On-Battery mode. The Battery indicator flashes when there is approximately two minutes or less of battery time remaining. If the UPS is not operating on battery, this indicator flashes when the UPS battery is disconnected (battery breaker open or battery disconnected).
- **OVERLOAD:** Yellow when UPS is in an Overload condition.

NOTE: If all the indicators flash simultaneously, there is a problem with the UPS. Please contact your field service representative.

The UPS automatically switches between Normal, On-Battery, and Bypass modes, as required, with no operator intervention. Sophisticated detection and switching logic ensures that any change in mode of operation is automatic and transparent to the load.

Operating Modes

After you install and startup the Powerware Plus 36 UPS, the UPS filters and regulates incoming AC power, eliminating noise and voltage spikes, and provides consistent power to your equipment (see Figure 3).

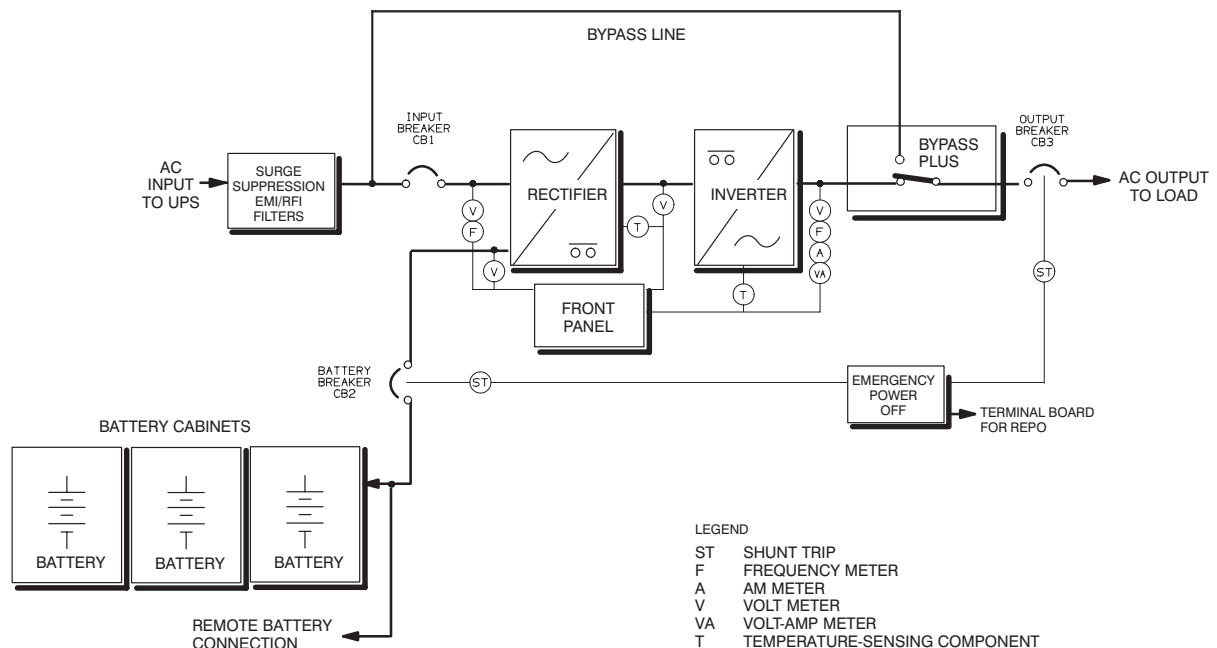


Figure 3. UPS Block Diagram

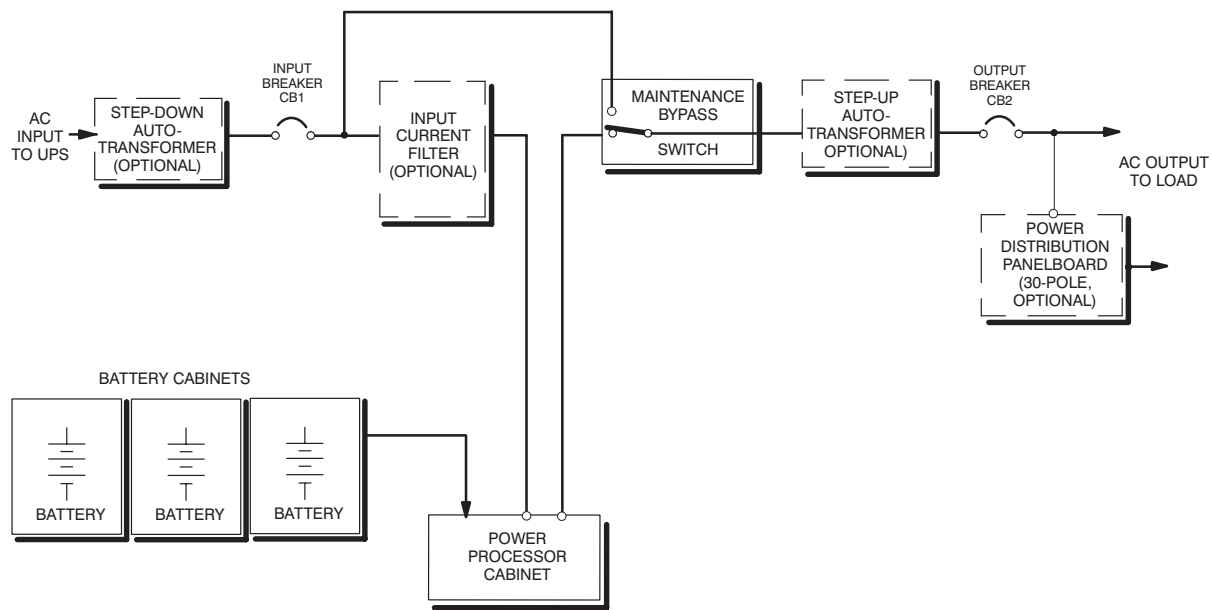


Figure 4. Options Cabinet Block Diagram

Normal Mode

In Normal mode, incoming AC commercial power is filtered to reduce spikes and noise. A portion of the utility power is automatically redirected to charge the battery, and the battery charge condition is monitored. If the utility AC fails or falls out of specified limits, the UPS automatically goes to On-Battery mode. The UPS automatically returns to Normal mode when the utility power returns to within specified limits.

If Automatic Bypass is enabled and the utility goes out of specified limits, the Normal indicator flashes and Bypass is not available.

On-Battery Mode

In On-Battery mode, the battery system provides DC power that is converted to conditioned AC by the UPS. Depending upon the battery capacity, the system operates in the On-Battery mode until the battery is fully drained. Output power is then no longer available to the load. If incoming power returns within specified parameters, the UPS automatically returns to Normal mode.

When the utility fails and the unit transfers to On-Battery mode, the Normal indicator goes off, the Battery indicator illuminates, and the alarm sounds. Press the Horn Silence button to turn off the alarm. The Battery indicator flashes and the alarm sounds again when the battery is almost discharged. When the battery reserves are depleted, the Battery indicator goes off and the UPS no longer provides power.

Overload Mode

The Overload indicator illuminates when the system goes into an overload condition due to one of the following conditions: overload current is between 106% to 124% of rating for 10 minutes, 125% to 149% for 30 seconds, or greater than 150% of the output current rating for 10 cycles. The alarm sounds. Push the Horn Silence button to turn off the alarm. If the Bypass feature is disabled or not available, the unit shuts down. If Bypass is enabled, the unit transfers to Bypass mode in an overload condition.

Bypass Mode *(not available on 400-Hz units)*

In the Bypass mode, the UPS transfers the critical load directly to the filtered utility power, provided the bypass source is available. The transfer occurs due to one of the following conditions:

- Load current is between 106% to 124% of rating for 10 minutes, 125% to 149% for 30 seconds, or greater than 150% for 10 cycles. (The UPS attempts three restarts.)
- UPS internal temperature exceeds safe operating range. (The UPS does not attempt a restart.)
- UPS output falls out of the specified voltage limits. (The UPS does not attempt a restart.)
- Output real power exceeds specified limits. (The UPS does not attempt a restart.)
- Load current inrush (surge) exceeds peak current capability. (The UPS continuously tries to restart.)

When the unit is in Normal mode and automatically transfers to Bypass due to a load current overload condition, the UPS attempts to return to Normal mode. If three auto-start attempts fail (due to overload current) within a 10-minute period, the UPS remains on Bypass. When the unit transfers to Bypass due to an overtemp, real-power overload, or inverter failure, the UPS remains on Bypass and does not attempt a restart. When a surge current causes the unit to transfer to Bypass, the UPS continuously tries to restart.

To switch to Bypass (with Bypass Configuration switch enabled), hold the UPS Off button for three seconds. The Normal indicator goes off and the Bypass indicator illuminates.

Caution: If the alarm sounds when the UPS Off button is pressed, then Bypass is not available. If the UPS Off button is pressed for three seconds with Bypass not available, the UPS enters Load Power-Off mode.

If the Bypass mode was entered from Normal mode, wait approximately one minute before trying to return to Normal mode. The UPS waits for internal voltages to bleed down before proceeding to Normal mode of operation. Press the UPS On button once to return to the Normal mode.

Load Power-Off Mode

To switch to Load Power-Off from Bypass mode, hold the UPS Off button for three seconds. The alarm sounds while the UPS Off button is held, and the Bypass indicator goes off when the bypass voltage is removed from the load. Press the UPS On button once to return to Bypass mode.

If Bypass is not enabled or the Bypass indicator is blinking (indicating that Bypass is not available), the UPS enters Load Power-Off mode from Normal mode. To switch to Load Power-Off from Normal mode, hold the UPS Off button for three seconds. The alarm sounds while the UPS Off button is held, and the Normal indicator goes off when the voltage is removed from the load. The UPS waits for internal voltages to bleed down before proceeding to Normal mode of operation. Press the UPS On button once to return to the Normal mode.

Load Power-Off can also be entered by turning off (O) the output breaker.

Audible Alarm

An audible alarm sounds a pulsing tone when the UPS is in Overload or On-Battery mode. When there is one minute or less of battery time remaining, a constant tone sounds. The alarm also sounds a constant tone if the UPS is **not** on battery and the UPS battery is disconnected (battery breaker is open or battery disconnected).

Bypass Plus *(50/60-Hz inputs and outputs only)*

The UPS Bypass Plus feature contains two features in one: Automatic Bypass and Maintenance Bypass. The UPS Bypass Plus features are available only when the Bypass Configuration switch is enabled; this switch is factory-configured according to your order.

Bypass operation requires that input and output voltage and frequency are the same. If the UPS is operating as a voltage and/or frequency converter, bypass must be disabled. See “Final Configuration” on page 44.

Automatic Bypass *(not available on 400-Hz units)*

The UPS automatically transfers the protected equipment directly to the utility AC power, provided the bypass source is available, when one of the following conditions is true:

- Load current is between 106% to 124% of rating for 10 minutes, 125% to 149% for 30 seconds, or greater than 150% for 10 cycles.
- UPS internal temperature exceeds safe operating range.
- UPS output falls outside of the specified limits of voltage.
- Output real power exceeds specified limits.
- Load current inrush (surge) exceeds peak current capability.

When the unit is in Normal mode and automatically transfers to Bypass mode due to an overload condition, the UPS attempts to return to Normal mode. After output real-power overload failure or any other abnormal condition, return to Normal mode must be done manually (system startup). The UPS remains in Bypass mode if three auto-start attempts fail within a 10-minute period.

Maintenance Bypass *(not available on 400-Hz units)*

To implement the Maintenance Bypass feature, perform the steps in the “Onsite Maintenance Bypass” procedure. If you installed an Options Cabinet, use the “Options Cabinet Maintenance Bypass” procedure on page 21.

Onsite Maintenance Bypass

The Maintenance Bypass switch is located behind the front door panel of the UPS (see Figure 13 on page 46). When activated, this switch allows for onsite servicing of the UPS. Be sure that the output breaker is turned on (I).

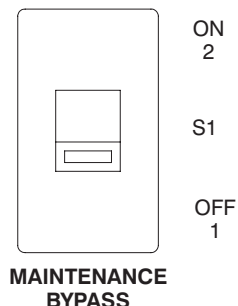
Danger: This equipment is always electrically live. Users must remove utility power by external means.

Caution: Failure to follow instructions could result in load power interruption.

Caution: When operating in Maintenance Bypass, your equipment is not protected from power outages.

To transfer the load to Maintenance Bypass:

1. Hold the UPS Off button until the Normal indicator goes off and the Bypass indicator illuminates.
2. Wait until the Bypass indicator is the only indicator lit on the front panel.
3. Turn the Maintenance Bypass switch (S1) to the ON position.



4. Open (O) the input breaker and battery breaker.

To transfer the load back to the UPS:

1. Close (I) the input breaker and battery breaker.
2. Wait until the Bypass indicator is the only indicator lit on the front panel.
3. Turn the Maintenance Bypass switch to the OFF position.
4. Press the UPS On button and wait until the Normal indicator illuminates indicating that the UPS is operating in Normal mode.

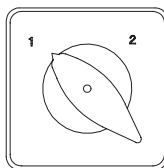
Options Cabinet Maintenance Bypass

The Options Cabinet Maintenance Bypass switch is located behind the front door panel of the Options Cabinet (see Figure 15 on page 48). When activated, this switch allows for the entire power processing unit to be replaced, while maintaining power to the critical load.

Warning: Failure to follow this procedure could result in serious damage to the unit.

To transfer the load to Maintenance Bypass:

1. Ensure that the Normal indicator illuminates (solid, not flashing) indicating that bypass voltage and frequency is within limits.
2. Press the UPS Off button to activate the Bypass mode. The Bypass indicator illuminates.
3. Turn the UPS Maintenance Bypass switch (S1) to the ON position.
4. Turn the Options Cabinet Maintenance Bypass switch to Position 2 (ON).



MAINTENANCE BYPASS SWITCH
(OPTIONS CABINET)

To transfer the load back to the UPS:

1. Ensure that the UPS is in Bypass mode. The Bypass indicator should be illuminated (solid, not flashing) indicating that Bypass is available.
2. Turn the Options Cabinet Maintenance Bypass switch to Position 1 (OFF).
3. Turn the UPS Maintenance Bypass switch (S1) to the OFF position.
4. Turn on the UPS by pressing the UPS On button.

Local/Remote Emergency Power-Off

The EPO feature disconnects the protected equipment from all power sources by opening (O) the UPS battery breaker and the output breaker. The EPO does not disconnect the UPS from the input AC power source.

To operate, press the EPO switch located on the UPS front panel (see Figure 2 on page 9).

NOTE: *After the EPO switch is pressed, the internal logic power supply is on if AC power is present at the UPS input.*

With the EPO feature, a REPO switch can be wired to the UPS. This allows a normally open, pushbutton switch to be wired to the UPS. This REPO switch can perform the same functions as the EPO switch located on the UPS front panel. See “Electrical Installation” on page 41 for information regarding its electrical ratings and installation.

After the EPO or REPO switch has turned off the UPS, you can restart the unit by first opening (O) all the circuit breakers (input, output, and battery) and proceeding with the system startup defined in “System Startup” on page 24.

4 UPS Startup and Shutdown

The following sections describe the UPS initial power-on, system startup, and system shutdown. Make sure you have completed the installation and configuration of your UPS before performing these procedures.

Before connecting your protected equipment to the UPS and starting the system, take a few minutes to identify all controls and indicators on the front panel (see Figure 2 on page 9).

Initial Power-on

Since the system type is factory-set according to your order, it is not mandatory that you set the type. See the label on the rear of the unit for type information. If you want to verify or change the system type, perform the following steps:

1. Open the breaker panel door of the UPS. Verify that all three breakers — input breaker, battery breaker, and output breaker — are in the OFF (O) position.
2. Apply AC input power and close (I) the input breaker in the UPS cabinet.

NOTE: *If you are using an options cabinet, also close the input breaker in the options cabinet.*

The front panel indicators come on and then go off. The alarm sounds, indicating that the battery breaker is open (O). Press the Horn Silence button to turn off the alarm.

3. Press the Menu button to display **MAIN MENU 1. UPS Status**.
4. Press the down arrow button until **MAIN MENU 7. System Setup** appears. Press the Select button. The prompt **Password AAAAAA** appears.

NOTE: *The default password is MEMORY. It is recommended to change the default password to ensure security (see page 16). Contact your field service representative if you have misplaced your password.*

5. Enter the password by using the up and down arrow buttons to scroll through the letters; press the right and left arrow buttons to move to other character positions.
6. Press the Select button after entering the password. The display shows **SYSTEM SETUP 1. Select Type**.
7. Press the Select button to display the **Output Voltage** option. Figure 5 shows the unit types and possible configurations provided by the **Output Voltage** option.

NOTE: *You can press the down arrow button to scroll through all of the menu options. The selected setting is indicated with an asterisk (*).*

Unit Type	Possible Configurations	Menu Selections
Low Voltage	115/200 VAC 120/208 VAC 127/220 VAC	Any of the three configurations may be selected.
High Voltage	220/380 VAC 230/400 VAC 240/415 VAC 277/480 VAC	Factory-configured. Not user-selectable. <i>This option is not available for 400-Hz units.</i>

Figure 5. Output Voltage Options

8. Press the right and left arrow buttons to view the possible settings for the **Output Voltage** option. Press the Select button to select an Output Voltage setting. The line-to-neutral (l–n) and line-to-line (l–l) voltages are displayed on the menu.
9. Press the down arrow button to view the **Output Frequency** option. Use the right and left arrow buttons to view the settings. Press the Select button to select an Output Frequency setting. *This option is not available for 400-Hz units.*

NOTE: *If an asterisk does not appear to the left of the newly selected output voltage or frequency setting, verify that the UPS is off and that the output breaker is off (O).*

10. Press the down arrow button to display the UPS Model number. This is a view only option; you cannot change this selection.
11. Wait 15 seconds for the UPS configuration to complete; then press the Menu button four times to return to normal operation. Press the Select button once to return to the **UPS Status** menu.

System Startup

Make sure that the UPS is off (all indicators are off). Start up your system according to one of the following procedures, depending on whether the Bypass feature is enabled or disabled.

With Bypass Disabled

The Bypass Configuration switch is in the DISABLE position. *This is a mandatory setting for 400-Hz units.*

1. Apply AC power to the UPS by opening the breaker panel door and turning on (I) the input breaker (all indicators illuminate for approximately ten seconds and then go off).

If an options cabinet is installed, also turn on (I) the options cabinet input breaker.
2. Turn on (I) the battery breaker.
3. Turn on (I) the output breaker of the power processor cabinet (and on the options cabinet, if supplied). Power is not supplied to the load yet.
4. Press the UPS On button; the alarm beeps and the Battery and Bypass indicators flash as the rectifier turns on.

After approximately 15 seconds, the Bypass and Normal indicators flash as the inverter turns on. When the UPS is on, the Normal indicator remains lit indicating that the UPS is operating in Normal mode.

With Bypass Enabled

The Bypass Configuration switch is in the ENABLE position. *This setting is not available for 400-Hz units.*

1. Apply AC power to the UPS by opening the breaker panel door and closing (I) the input breaker (all indicators illuminate for approximately 10 seconds and then turn off).
2. Turn on (I) the battery breaker.
3. Turn on (I) the output breaker of the power processor cabinet (and on the options cabinet, if supplied). The Bypass indicator remains on.

The UPS supplies incoming AC power to the load. The Bypass indicator flashes in the event of a phase rotation error. See page 41 for the appropriate input wiring.

4. Press the UPS On button. The alarm beeps and the Battery and Bypass indicators flash as the rectifier turns on.

After approximately 15 seconds, the Bypass and Normal indicators flash as the inverter turns on. When the UPS is on, the Normal indicator remains lit indicating that the UPS is operating in Normal mode.

NOTE: *If the Bypass and Battery, or Bypass and Normal indicators flash for more than one minute, or if the indicators flash in any combination other than those mentioned in this section, call your field service representative.*

System Shutdown

Shut down your system according to one of the following procedures, depending on whether the Bypass feature is enabled or disabled.

With Bypass Disabled

The Bypass Configuration switch is in the DISABLE position. *This is a mandatory setting for 400-Hz units.*

1. Press and hold the UPS Off button. The alarm sounds for three seconds and the Normal indicator goes off.
2. Turn off (O) the input breaker, battery breaker, and output breaker to ensure that all power is removed from the protected equipment.

With Bypass Enabled

The Bypass Configuration switch is in the ENABLE position. *This setting is not available for 400-Hz units.*

1. Press and hold the UPS Off button until the unit transfers to Bypass. The Bypass indicator illuminates and the alarm sounds.
2. Turn off (O) the input breaker, battery breaker, and output breaker to ensure that all power is removed from the protected equipment. The Bypass indicator turns off.

5 UPS Communications

The Powerware Plus 36 UPS has an RS-232 port that provides you with full RS-232 communication. It has selectable baud rates of 2400, 4800, 9600, or 19200 and operates in the modes described below.

Options for the LAN relay interface are available through the Relay Setup option in the System Setup Menu on the front panel display. It has programmable relays for Novell networks, as well as for the IBM AS/400. Each relay can be individually programmed by the customer.

Refer to the *Plus Communications Manual* for additional information about the RS-232 communication and the LAN relay interface.

Terminal Mode: This mode provides an alternate user interface to the UPS running data through an ANSI x3.64-compatible terminal such as a VT100. The displayed data is user-selectable by a menu screen. When a data screen is selected, it continuously updates to reflect the state of the UPS. The following options are available from the menu screen: Alarm/Event Queue, Active Alarms, Meters Screen, Mimic Screen, Battery Data, and Set Time and Date.

Printer Mode: This mode provides a hard copy of the alarm messages in the alarm history queue using a serial printer. After selection, Printer mode scans the current alarm history queue and prints all the alarm entries that have not been printed yet. Subsequent alarms are printed as they occur. Options exist to reprint the alarm queue, to print all active alarms, metered data, or machine configuration.

ASCII Computer Mode: This mode outputs information that reflects the state of the UPS. Using the factory-available protocol, you can write software to interface with the information provided by the front panel display.

Binary Computer Mode: This mode also outputs information that reflects the state of the UPS, and you can write software to interface with it. In addition, this computer mode allows the system to operate remotely by sending the UPS control commands.

6 Troubleshooting

If you have installed your UPS, and it does not perform properly, consult the chart below. If the condition persists, contact qualified service personnel.

Condition	Possible Cause	Action To Take
Power is applied to the UPS, but the UPS does not start up and the Bypass indicator is flashing.	Output type set incorrectly.	Reset the output voltage and frequency to match the inputs (see page 13).
	Input wiring not in proper rotation.	Have an electrician check the input phase rotation.
	Bypass overload protection tripped.	Press and then release bypass overload protection switches (S3 and S4).
Power is applied to the UPS, but the UPS does not start up and no indicators are on.	Improper voltage applied to the unit.	Check the utility input voltage.
	Output breaker is open (O).	Close (I) the output breaker.
	UPS is in Load Power-Off mode.	Press the UPS On button.
UPS starts, enters Normal mode, and then turns off; or Battery indicator flashes and alarm sounds while UPS is not on battery.	Battery not connected.	Contact qualified service personnel.
	Battery breaker is not closed (O).	Close (I) the battery breaker.
Normal indicator flashing (bypass not available).	Input (bypass) out of frequency or voltage limits.	Check set type and sync range.

If you have any questions or problems with your UPS, call for service at one of the following telephone numbers and ask for a UPS technical representative.

In the United States and Canada **1-800-356-5737**

Or **1-608-565-2100**

Or your nearest local Best Power office

Please have the following information ready when you call for service:

- Model number
- Serial number
- Version number (if available)
- Date of failure or problem
- Symptoms of failure or problem
- Customer return address and contact information

NOTE: For any warranty claim to be valid, the Warranty Registration Card must be on file, or Proof and Date of Purchase must be available.

7 Product Specifications

Powerware Plus 36 UPS Technical Specifications

Rating	3600-024K at .8 pf: 20 kVA, 16 kW 3600-024K at .67 pf: 24 kVA, 16 kW 3600-036K at .8 pf: 30 kVA, 24 kW 3600-036K at .67 pf: 36 kVA, 24 kW																																										
Nominal Input Voltage	115/200 VAC three-phase 120/208 VAC three-phase 127/220 VAC three-phase																																										
Input Power Factor	0.95 typical																																										
Nominal Frequency	50/60/400 Hz (400 Hz only available on special units) Note: Bypass functionality is not available for 400-Hz output.																																										
Nominal Input Phase Current*	<table> <tr> <td>3600-024K:</td> <td>115/200 VAC</td> <td>58A</td> </tr> <tr> <td></td> <td>120/208 VAC</td> <td>56A</td> </tr> <tr> <td></td> <td>127/220 VAC</td> <td>53A</td> </tr> <tr> <td></td> <td>220/380 VAC</td> <td>35A</td> </tr> <tr> <td></td> <td>230/400 VAC</td> <td>34A</td> </tr> <tr> <td></td> <td>240/415 VAC</td> <td>32A</td> </tr> <tr> <td></td> <td>277/480 VAC</td> <td>28A</td> </tr> <tr> <td>3600-036K:</td> <td>115/200 VAC</td> <td>87A</td> </tr> <tr> <td></td> <td>120/208 VAC</td> <td>84A</td> </tr> <tr> <td></td> <td>127/220 VAC</td> <td>79A</td> </tr> <tr> <td></td> <td>220/380 VAC</td> <td>53A</td> </tr> <tr> <td></td> <td>230/400 VAC</td> <td>51A</td> </tr> <tr> <td></td> <td>240/415 VAC</td> <td>49A</td> </tr> <tr> <td></td> <td>277/480 VAC</td> <td>42A</td> </tr> </table>	3600-024K:	115/200 VAC	58A		120/208 VAC	56A		127/220 VAC	53A		220/380 VAC	35A		230/400 VAC	34A		240/415 VAC	32A		277/480 VAC	28A	3600-036K:	115/200 VAC	87A		120/208 VAC	84A		127/220 VAC	79A		220/380 VAC	53A		230/400 VAC	51A		240/415 VAC	49A		277/480 VAC	42A
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	240/415 VAC	49A																																									
	277/480 VAC	42A																																									
Nominal Output Phase Current (at 0.67 pf)	<table> <tr> <td>3600-024K</td> <td>115/200 VAC</td> <td>67A</td> </tr> <tr> <td></td> <td>120/208 VAC</td> <td>67A</td> </tr> <tr> <td></td> <td>127/220 VAC</td> <td>62A</td> </tr> <tr> <td>3600-036K:</td> <td>115/200 VAC</td> <td>100A</td> </tr> <tr> <td></td> <td>120/208 VAC</td> <td>100A</td> </tr> <tr> <td></td> <td>127/220 VAC</td> <td>94A</td> </tr> </table>	3600-024K	115/200 VAC	67A		120/208 VAC	67A		127/220 VAC	62A	3600-036K:	115/200 VAC	100A		120/208 VAC	100A		127/220 VAC	94A																								
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	127/220 VAC	94A																																									
Output Power Factor	0.8, 1.0, 0.67 pf for all loads, including nonlinear loads																																										
Heat Dissipation (208V input full load at 0.8 pf)	3600-024K: 10,402 BTU/Hr (2,621 Kg-Cal/Hr) 3600-036K: 15,602 BTU/Hr (3,932 Kg-Cal/Hr)																																										
Neutral Current Capability	175% of phase current																																										
Crest Ratio	3:1																																										
Unbalanced Load Capability	100%, any phase(s)																																										
Operating Environment	Operating Temperature: 0° to 40°C Humidity: 5% to 95% (noncondensing) Elevation: 5000 ft maximum without derating																																										
*Input current is the same as the output current when load is powered through bypass.																																											

Powerware Plus 36 UPS Physical Specifications

Parameter	Power Processor Cabinet	Battery Cabinet	I/O Cabinet
Height	39" (99 cm)	39" (99 cm)	39" (99 cm)
Width	17.2" (43.7 cm)	17.2" (43.7 cm)	17.2" (43.7 cm)
Depth	37.2" (94.4 cm)	31" (78.7 cm)	37.2" (94.4 cm)
Weight	400 lb (182 kg)	900 lb (410 kg)	900 lb (410 kg)
Floor Loading	1.73 lb/in ² (0.12 kg/cm ²)	225 lb (103 kg)	225 lb (103 kg)

Powerware Plus 36 UPS with I/O Cabinet Technical Specifications

Rating (at .8 pf)	3600-024K: 20 kVA, 16 kW 3600-036K: 30 kVA, 24 kW	
Rating (at .67 pf)	3600-024K: 24 kVA, 16 kW 3600-036K: 36 kVA, 24 kW	
Nominal Input Voltage	220/380 VAC three-phase 230/400 VAC three-phase 240/415 VAC three-phase 277/480 VAC three-phase	
Input Power Factor	0.95 typical	
Nominal Frequency	50/60 Hz	
Nominal Input Phase Current*	3600-024K: 220/380 VAC 35A 230/400 VAC 34A 240/415 VAC 32A 277/480 VAC 28A 3600-036K: 220/380 VAC 53A 230/400 VAC 51A 240/415 VAC 49A 277/480 VAC 42A	
Nominal Output Phase Current (at .67 pf)	3600-024K: 220/380 VAC 36A 230/400 VAC 35A 240/415 VAC 33A 277/480 VAC 29A 3600-036K: 220/380 VAC 54.5A 230/400 VAC 52.2A 240/415 VAC 50A 277/480 VAC 43.3A	
Output Power Factor	0.8, 1.0, 0.67 pf for all loads, including nonlinear loads	
Heat Dissipation (208V input full load at 0.8 pf)	3600-024K: 10,402 BTU/Hr (2,621 Kg-Cal/Hr) 3600-036K: 15,602 BTU/Hr (3,932 Kg-Cal/Hr)	
Input Current Total Harmonic Distortion	<10% per phase (when input current filter option is installed); depends on input source impedance	

Power Distribution Panel Board	30-pole, rated 120/208 VAC (available from Exide Electronics)
Maintenance Bypass Switch	“Make-before-break” style, rated 200 A for 100% non-linear load applications. Position 1: UPS Output Position 2: Bypass Utility
Neutral Current Capability	175% of phase current
Crest Ratio	3:1
Unbalanced Load Capability	100%, any phase(s)
Operating Environment	Operating Temperature: 0° to 40°C Humidity: 5% to 95% (noncondensing) Elevation: 5000 ft maximum without derating
*Input current is the same as the output current when load is powered through bypass.	

Powerware Plus 36 UPS Battery Specifications

Nominal Battery-String Voltage	240 Vdc (120 cells)
Nominal Battery Current	3600-024K: 78A 3600-036K: 118A
Battery Type	Sealed, maintenance-free, high-rate discharge, lead-acid cells
Expected Life	5 years or a maximum of 200 deep discharges

Powerware Plus 36 Installation

Warning: Only qualified service personnel (such as a licensed electrician) should perform the UPS installation. Risk of electrical shock.

8 Installation

The following sections describe your UPS package and the installation and physical setup of the UPS, the options cabinet, and remote batteries.

Unpacking and Inspection

Upon receiving your UPS, optional battery cabinet(s), or options cabinet, carefully examine the packing containers for any signs of physical damage or leakage. Notify the carrier immediately if damage is present.

Carefully unpack the UPS and battery cabinets, making sure you retain the packaging materials for future shipment of the units. Examine each unit carefully. Immediately notify your distributor if you find any damage. Do not operate any unit that is leaking liquid, or if a white, powdery residue is present.

Site Preparation

For optimum system operation, be sure that your site conforms to the following specifications and requirements:

- The maximum elevation for normal operation is 5000 ft (1500 m). Derating is required for higher elevations.
- Equipment weights are provided for typical configurations (see page 32). Contact your local sales representative if additional information is needed.
- Additional battery cabinets may be added for extended battery time.
- The unit should be installed with these environmental specifications: operating temperature of 0° to 40° C and humidity of 5% to 95% (noncondensing).

Important Safeguards

- Do not tilt the cabinet more than 12 degrees; the unit may tip over.
- Do not connect more than three battery cabinets to the UPS unit to avoid fire and electrical shock hazard.

Installing the UPS and Battery Cabinets

Warning: Only qualified service personnel (such as a licensed electrician) should perform the UPS installation. Risk of electrical shock.

To perform the Powerware Plus 36 installation, you need a 5/16" hex-nut driver. Make sure that you read all of the caution and warning statements in "Safety Considerations" beginning on page *i* before performing the installation.

If your UPS is connected to a remote battery provided by another manufacturer, disregard all references to battery cabinets in this section and see "Installing Remote Batteries" on page 60 for more information on installation and configuration.

The following instructions assume you have already removed the unit and battery cabinets from the pallets according to the unloading instructions on the outside of the shipping box.

Use the following procedure to set up the UPS and battery cabinets:

1. Place the UPS and battery cabinet(s) near the operating site. Make sure the air vents and air exhausts are free of obstructions and the UPS is not near a heat source or in direct sunlight.

NOTE: *It is recommended to allow a minimum of 3' of space on the left side of the unit for access by qualified service personnel and a minimum of 8" of space on the rear side for proper ventilation.*

2. Remove the mounting bars from the pallets.
3. Steps 4–7 are for seismic mounting only. If you are not installing seismic mounting, skip to Step 8.
4. A seismic installation of the UPS requires that the mounting bars be bolted to the floor. See Figure 6 for a detailed drill and mounting pattern.

NOTE: *For Zone 4, it is recommended to use 5/16" self-drill bolts and hardware with 1 5/16" minimum embedment for 3000PSI-strength concrete. Refer to your local building codes for seismic mounting requirements.*

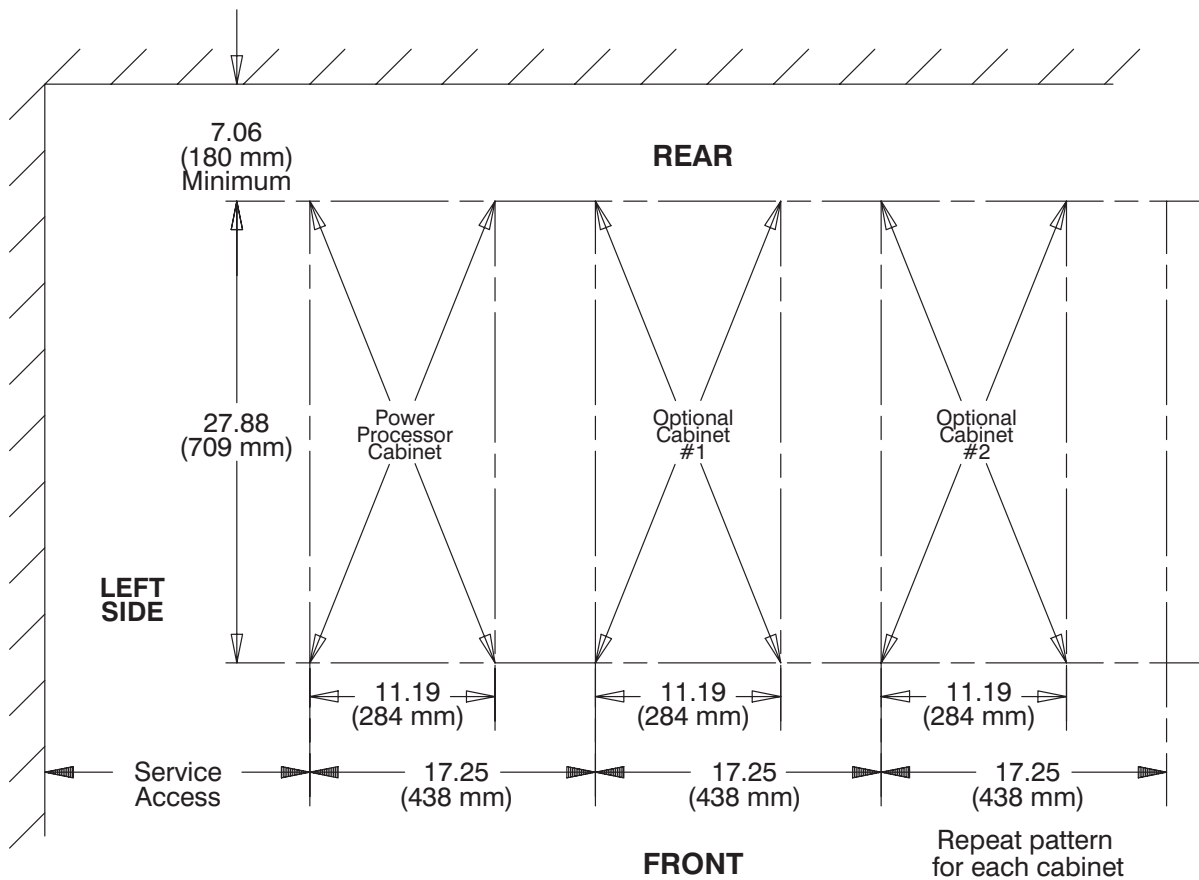


Figure 6. Seismic Installation Mounting Pattern

5. Attach one mounting bar with customer provided bolts to the floor for rear of each cabinet to be installed.

NOTE: The floor mounting bolts are customer provided and should fit the 0.438" diameter mounting holes on the mounting bars.

6. Position the cabinets into the approximate final operating position.
7. Attach mounting bar with customer provided bolts to the floor at the front of each cabinet as shown in Figure 7.

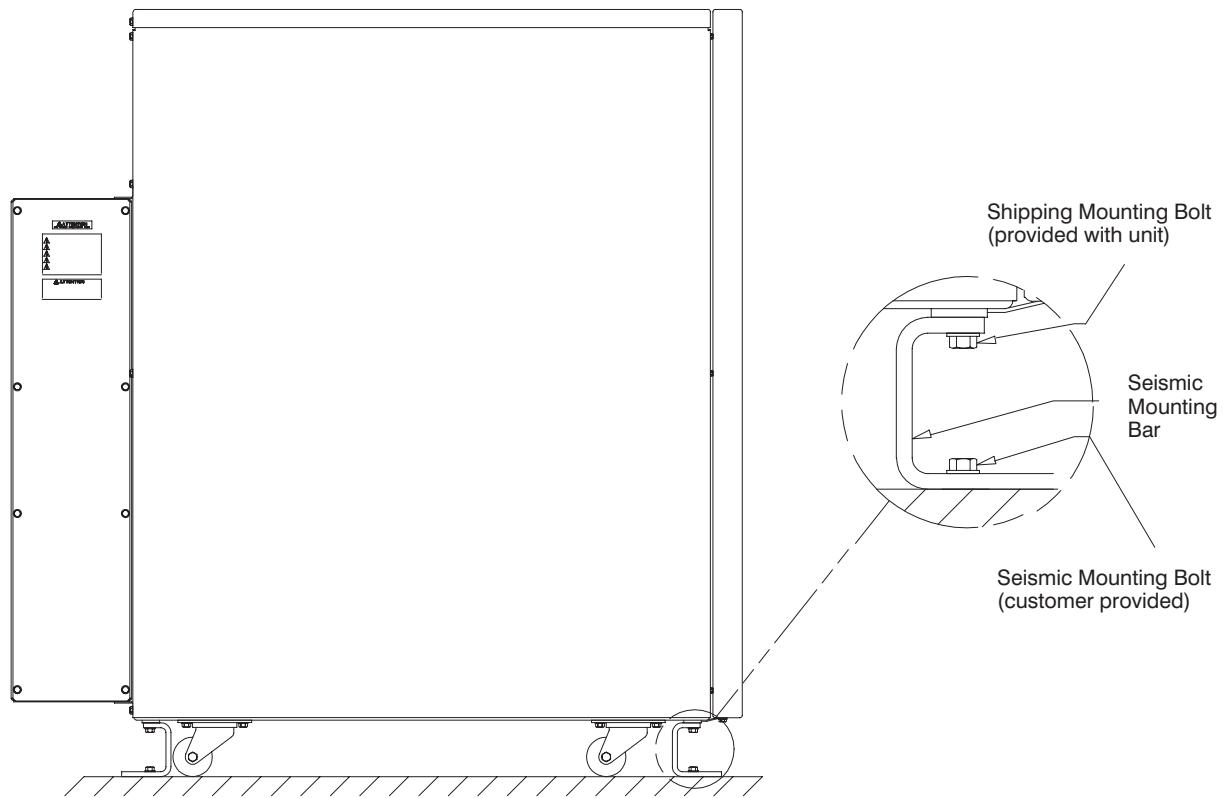


Figure 7. Seismic Mounting Detail (Left Side View)

- 8.** Secure cabinet to mounting bars with shipping mounting bolts.
- 9.** Position the cabinets into the approximate final operating position.
- 10.** Lower all leveling feet by turning leveling feet to the left. Lower leveling feet until the cabinet cannot roll on its casters.
- 11.** Tighten locking nuts against the cabinet on rear leveling feet only.

Electrical Installation

Warning: Only qualified service personnel (such as a licensed electrician) should perform the electrical installation. Risk of electrical shock.

Refer to your national and local electrical codes for acceptable external wiring practices. Material and labor for the external wiring are customer-supplied. An external protective device for the input source must be provided and sized for the currents indicated on the UPS nameplates.

NOTE: *The maximum permissible input fault-current is 65,000 amps. Upstream protection must be coordinated with the load current requirements under nominal as well as low-line and overload conditions. The recommended input stream service protection is 125 amps.*

The UPS must be grounded at the input terminal block to a single-point local or utility earth ground. The ground conductor should be sized according to your national and local electrical codes. In the United States, the output is a separately-derived source.

If you are using remote batteries, a DC breaker suitable for branch circuit protection is required. The DC breaker is customer-supplied and must be rated at 250V, 75A. The maximum fault current from a remote battery cannot be more than 6000 amps.

See Figure 8 for the location of the power cable terminal block and the conduit access. Use the following procedure to perform the electrical installation for your UPS.

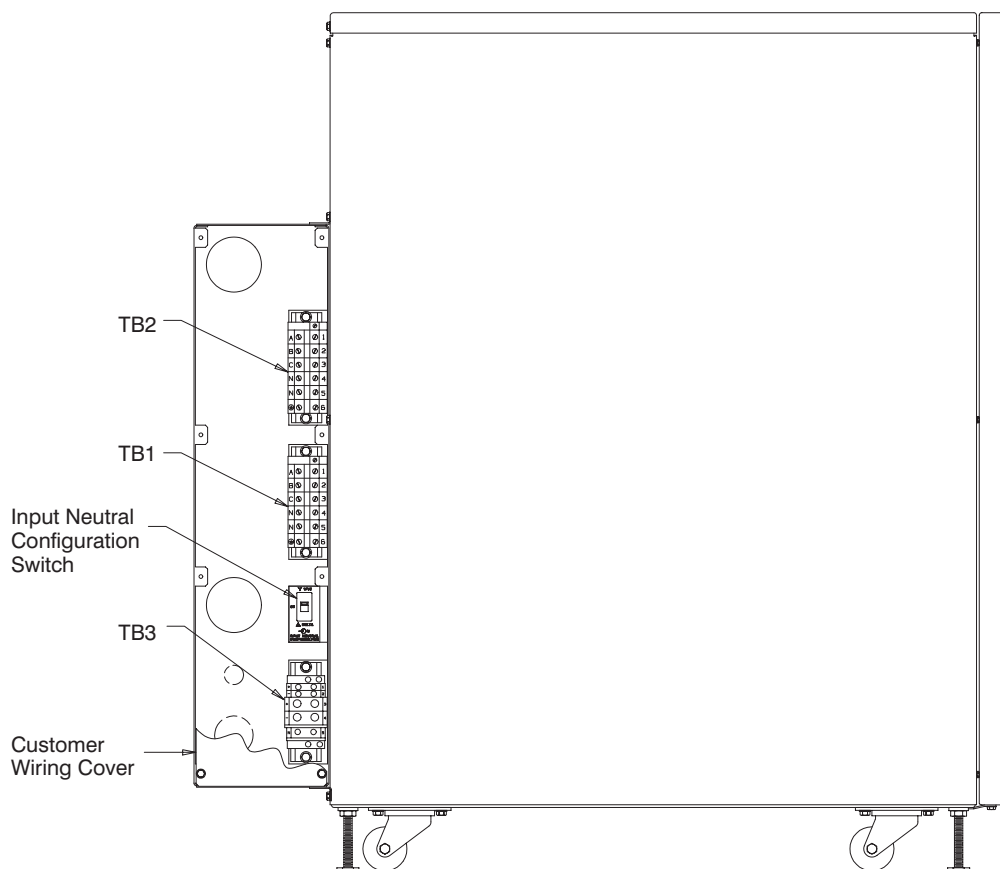


Figure 8. Power Processor Cabinet (Left Side View)

1. Determine your equipment's grounding requirements according to your local electrical code.
2. Remove the screws on the customer wiring cover of the power processor cabinet rear panel with a 5/16" hex-nut driver (see Figure 8 on page 41).
3. Hardwire the input and output terminations for the UPS. See the following table for specifications and Figure 9 for terminal blocks.

NOTE: If you are using an options cabinet, do not connect the input and output wiring. Continue to "Final Configuration" on page 44.

Caution: The UPS contains its one energy source (battery). There is high voltage present at terminals 8 and 9 (terminals for remote battery connection) when a battery cabinet is connected to the UPS.

Power Processor Cabinet Customer Cable Terminations				
Wire Function		Terminal Position	Terminal Wire Size Rating	Suggested Wire Size*
Input	Phase A	TB1-1	6 – 1/0 AWG (16 – 50 mm ²)	1/0 AWG (50 mm ²)
	Phase B	TB1-2		
	Phase C	TB1-3		
	Neutral**	TB1-4		
	Neutral**	TB1-5		
	Ground	TB1-6	6 – 2 AWG (16 – 35 mm ²)	6 AWG (16 mm ²)
Output	Phase A	TB2-1	6 – 1/0 AWG (16 – 50 mm ²)	1/0 AWG (50 mm ²)
	Phase B	TB2-2		
	Phase C	TB2-3		
	Neutral	TB2-4		
	Neutral	TB2-5		
	Ground	TB2-6	6 – 2 AWG (16 – 35 mm ²)	6 AWG (16 mm ²)
Remote EPO	+	TB3-1	18 – 8 AWG (0 – 6 mm ²)	10 AWG (6 mm ²)
	–	TB3-2		
Remote Battery	+	TB3-3	6 – 1/0 AWG (16 – 50 mm ²)	1/0 AWG (50 mm ²)
	–	TB3-4		
Neutral Bonding		TB3-5	8 – 4 AWG (6 – 16 mm ²)	Provided
<p>* Use 75°C copper wire. Suggested wire size is based on 3600-036K full load ratings applied to NEC Code Table 310-16. Both input and output neutral connections require a total of two wires at the suggested size (one wire per terminal position).</p> <p>** Input neutral is required if single-phase loads are to be supplied, and if the options cabinet has input or output auto-transformers (380–480V three phase).</p>				

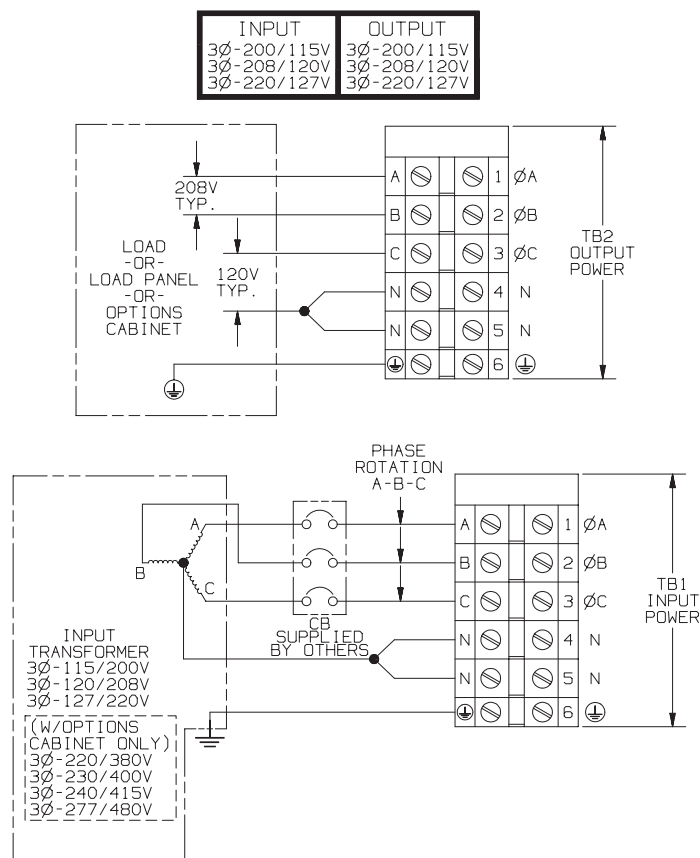


Figure 9. Power Cable Terminal Blocks (1 and 2)

4. As part of the branch circuit that supplies this unit, install an insulated grounding conductor. Use the following specifications for the grounding conductor that connects to input terminal block.
 - **Material and insulation thickness:** must be identical to the grounded and ungrounded branch-circuit supply conductors
 - **Color:** should be green with or without a yellow stripe(s)
 - **Ground:** should be grounded to the earth ground in the service equipment or in the supply transformer (if supplied by a separately-derived system)

NOTE: All attachment plug-receptacles on or connected to your UPS or system equipment must be a grounding type. The grounding conductors serving these receptacles must be connected to the earth ground in the service equipment.

5. The neutral conductor of the output circuit is bonded to the chassis/ground as configured at the factory. If the output neutral is not to be grounded, remove the bonding wire (green with yellow stripe) that runs from TB3-5 to the frame ground (see Figure 10).

NOTE: It is recommended to remove the bonding wire for a three-wire delta output.

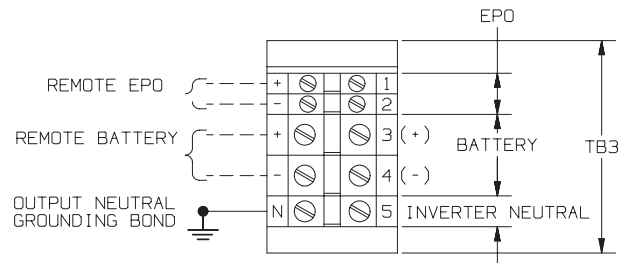


Figure 10. Terminal Block (3)

6. If you are using a Remote Emergency Power-Off switch, hardwire the terminal block positions 1 and 2. See the termination table on page 42 for proper connections. See Figure 8 on page 41 for the connection locations.

The REPO switch is a customer-supplied switch that can disconnect the UPS output voltage from your protected equipment. The REPO function activates when the REPO wires are shorted together. Use the following specifications for the REPO switch:

- The switch should be a wall-mounted, momentary-contact, normally open, pushbutton switch.
- Minimum ratings of 120 VAC and 125 mA.

Caution: The REPO wires are at high-voltage potential (240V). Refer to your local electrical code for proper installation of the high-voltage REPO wires.

7. Replace the terminal clock plate and the conduit plate on the UPS rear panel.
8. Continue to the following section, “Final Configuration.”

Final Configuration

After you have installed the UPS, perform the following steps for the bypass and input configuration.

Bypass Configuration

Caution: Any change to the bypass configuration must be made when there is no power to the unit. Failure to do so may result in damage to the load.

1. Determine the input and output voltage and frequency.
2. Locate the Bypass Configuration switch and Maintenance Bypass switch located behind the breaker panel door on the power processor cabinet (see Figure 13 on page 46).

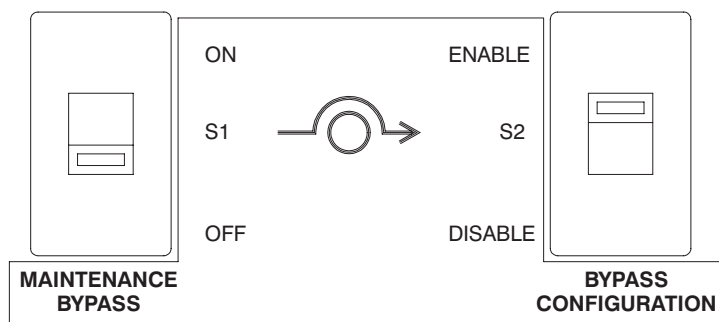


Figure 11. Maintenance Bypass and Bypass Configuration Switches

3. Set the Maintenance Bypass switch to the OFF (O) position.
NOTE: *If you are using an options cabinet, this is a mandatory setting.*
4. If your UPS uses automatic or maintenance bypass, set the Bypass Configuration switch to the ENABLE position.
5. If your UPS does not use automatic or maintenance bypass, set the Bypass Configuration switch to the DISABLE position. *This is a mandatory setting for 400-Hz units.*

Input Configuration

1. Locate the Input Neutral Configuration switch located on the rear wiring panel of the power processor cabinet (see Figure 8 on page 41).

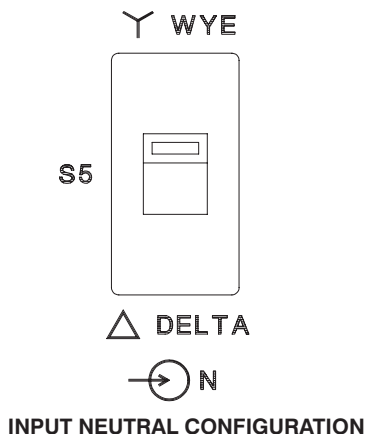


Figure 12. Input Neutral Configuration Switch

2. If the UPS has a neutral input (WYE input), set the switch to the WYE position.
3. If the UPS does not have a neutral input (DELTA input), set the switch to the DELTA position.
NOTE: *The unit is factory-configured with the switch in the WYE position.*
4. Make sure that the Maintenance Bypass switch is set to the OFF position.

Joining the Cabinets

1. Remove the screw located at the bottom of the power processor cabinet front cover (see Figure 13). Retain the screw.

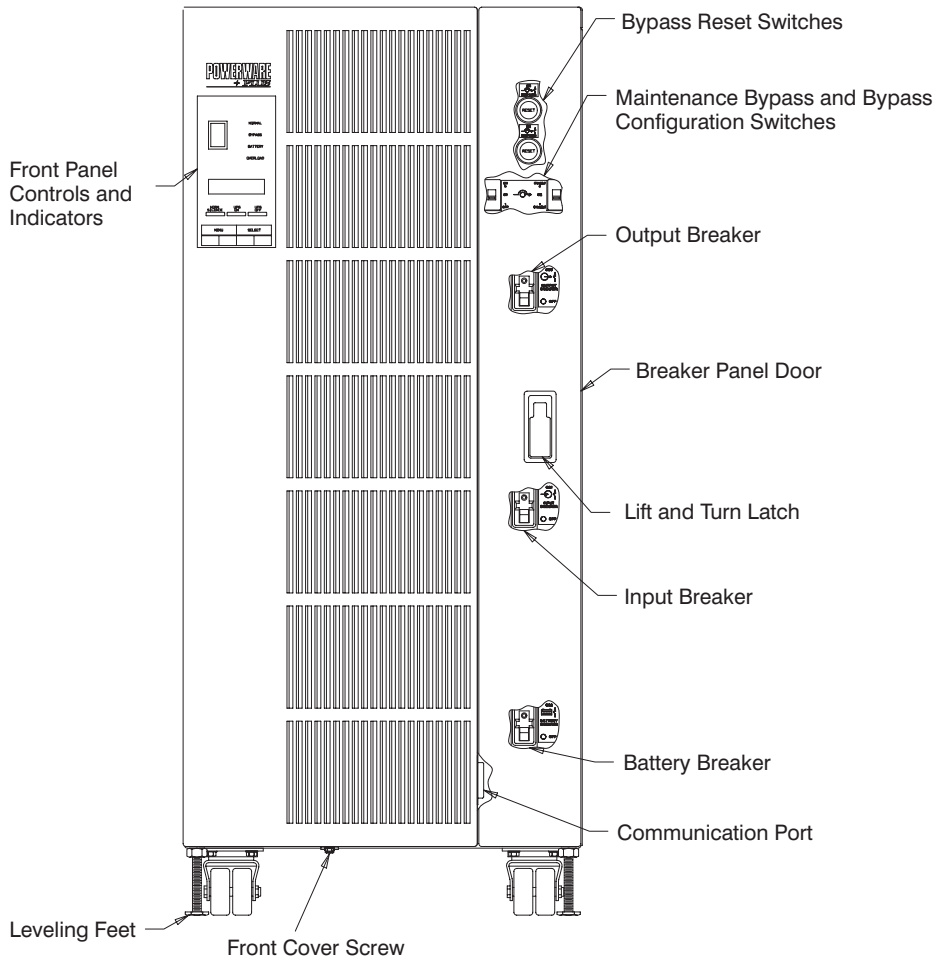


Figure 13. Power Processor Cabinet (Front View)

2. Open the breaker panel door and lift the front cover upward before pulling forward. Carefully pull the front cover of the power processor cabinet forward to expose the left front screw of the top cover. Note that the electrical connections to the front panel controls remain connected.
3. Remove the four #10 hex-head screws located behind the breaker panel door, the front cover, and in the back (see Figure 14). Retain the screws.

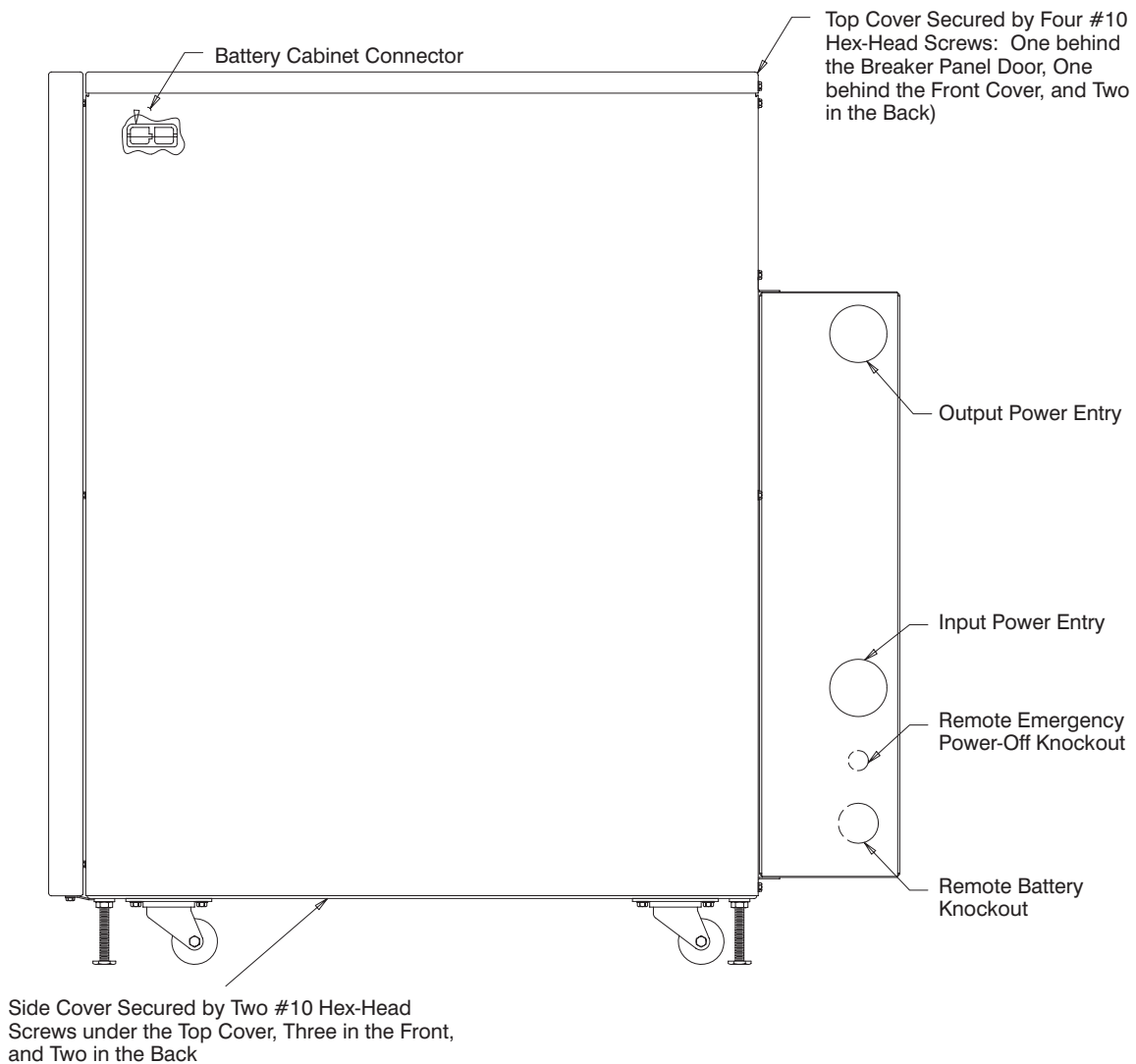


Figure 14. Power Processor Cabinet (Right Side View)

4. Lift and remove the top cover.
5. Temporarily put the front cover back on to avoid damage to the electrical connections during the remainder of the cabinet joining operation. It will need to be removed again when the top cover is replaced.
6. Remove the seven #10 hex-head screws for the right side cover (see Figure 14). Retain the screws.
7. Lift and remove the right side cover.
8. Roll the next cabinet(s) into place (options cabinet first, if one is to be installed).
9. Remove front and top covers of cabinets to be joined. Continue to Step 10 for removing the options cabinet covers. Skip to Step 14 on page 49 for removing battery cabinet covers.
10. Lift and turn the latch located on the front cover of options cabinet (see Figure 15).

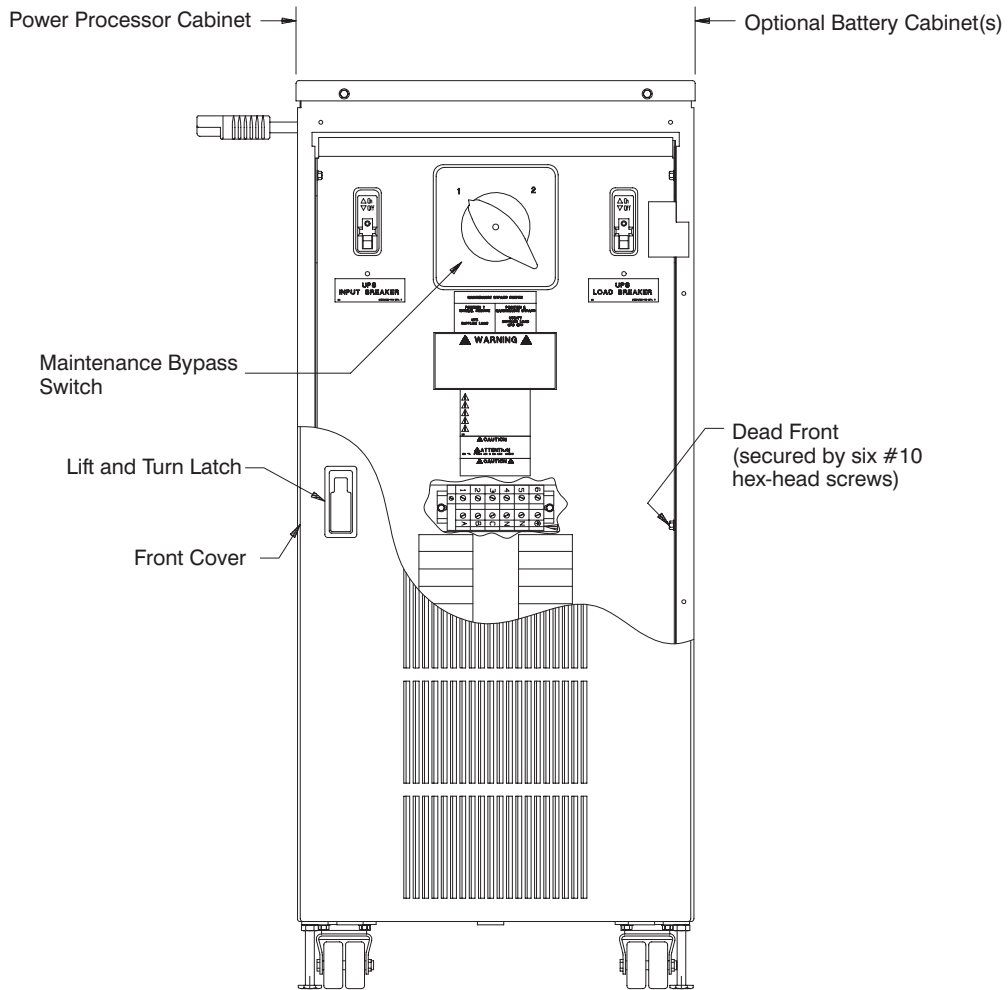


Figure 15. Options Cabinet (Front View)

11. Lift the front cover off the hinges.
12. Remove the two #10 hex-head screws in the back of top cover. Retain the screws.
13. Remove the two #10 hex-head screws located in the front of top cover behind the door. Retain the screws.

14. To remove the battery cabinet front cover, remove the #10 hex-head screw from front cover (see Figure 16).

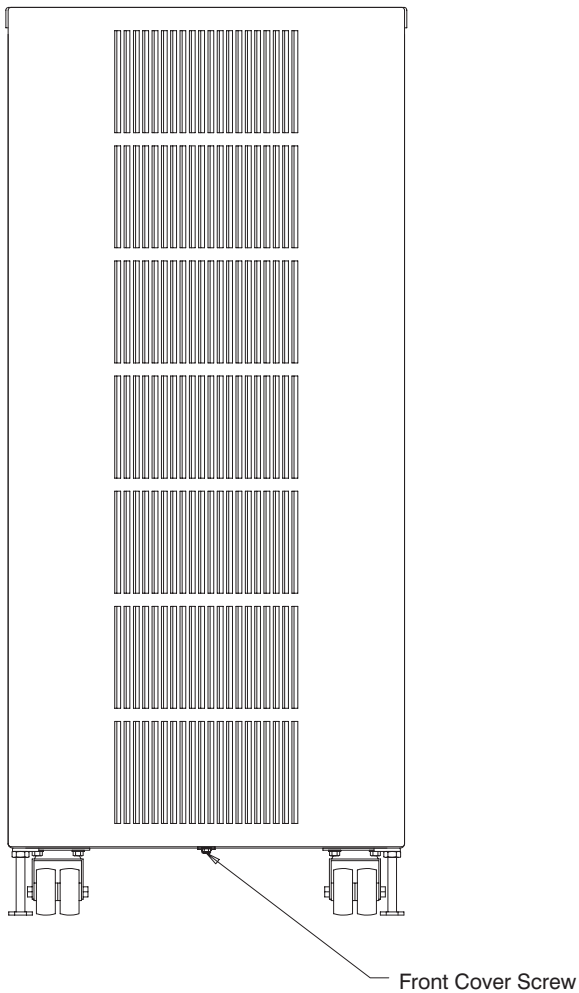


Figure 16. Battery Cabinet (Front View)

15. Lift the cover up and pull forward to remove.
16. To remove the battery cabinet top cover, remove the two #10 hex-head screws in back and then the two in front.
17. Lift the cover up and pull forward to remove.

18. Locate the joining kit secured to the back of the cabinet to be joined.
19. Remove the screws securing the adjoining top corners of the rear covers of both cabinets (see Figure 17).

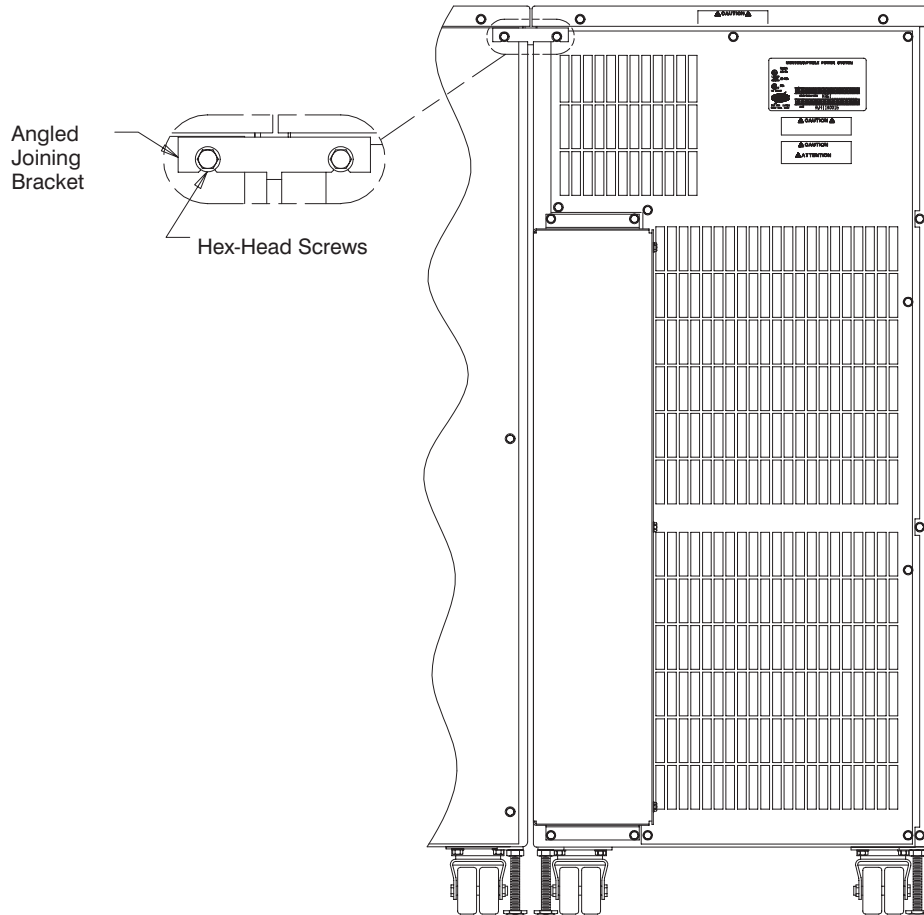


Figure 17. Cabinet Joining Detail (Rear View)

20. Install one of the angled joining brackets at that location with the screws just removed (see Figure 18).
21. Join the top front corners of the cabinets together with the other angled joining bracket.
22. Place the angled joining brackets over screw holes.
23. Replace the screws and tighten into place.

Securing the Joined Cabinets

1. For seismic mounting, continue to the following step. For normal mounting, skip to Step 4.
2. Attach a mounting bar to the floor at the front of the cabinet.
3. Secure the cabinet to both the front and rear mounting bars with the screws provided with the unit. Skip to Step 6.
4. Lower the leveling feet so that cabinet no longer rolls on its casters.
5. Tighten locking nuts against cabinet for rear wheels only.

- Place the flat joining racket above the locking nut on the front leveling feet (see Figure 17).

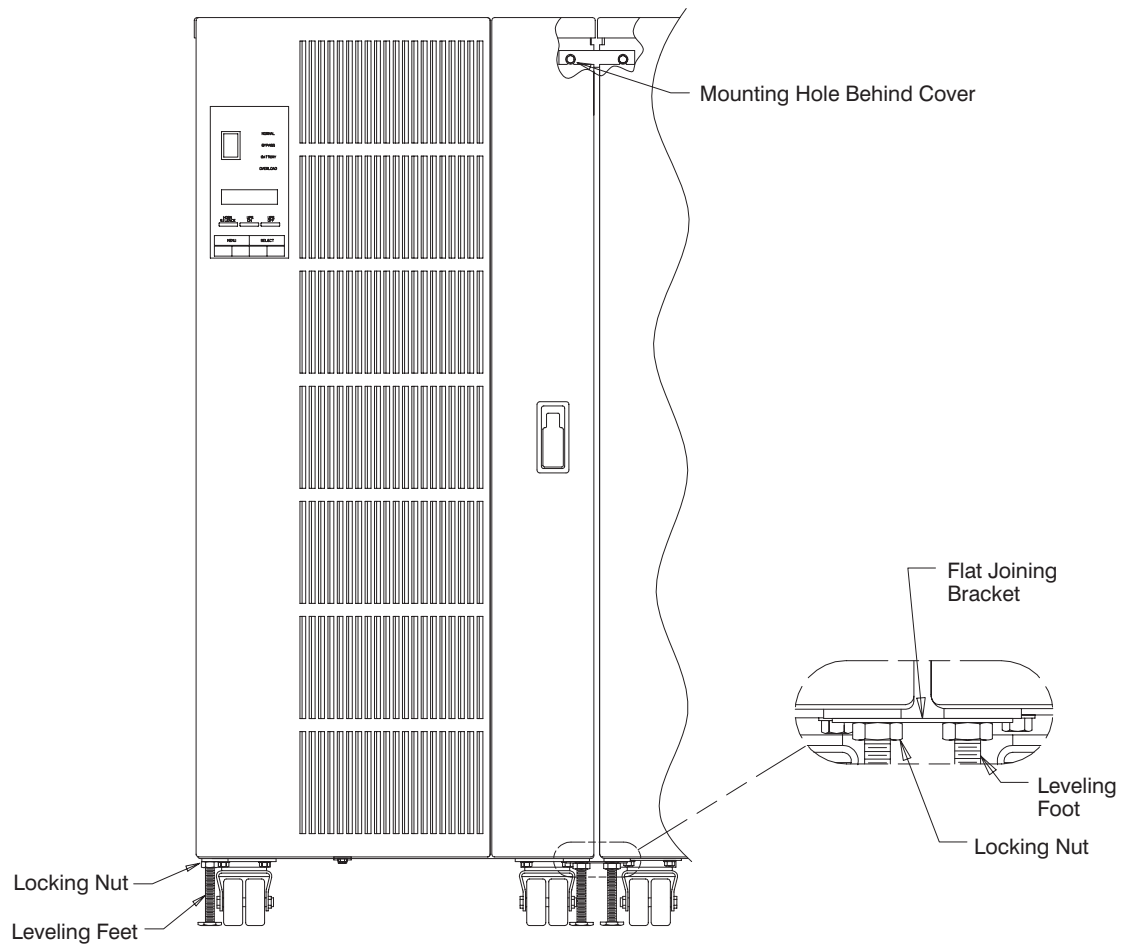


Figure 18. Cabinet Joining Detail (Front View)

- Tighten the locking nuts against the bracket.
- If you are installing an options cabinet, continue to “Installing the Options Cabinet” on page 52.
- Repeat the procedure as necessary until all cabinets are in place (beginning with Step 8 on page 47).
- Continue to “Wiring the Battery Cabinets” on page 59.

Installing the Options Cabinet

Warning: Only qualified service personnel (such as a licensed electrician) should perform the Options Cabinet installation. Risk of electrical shock.

For optimum system operation, be sure that your site conforms to the following specifications and requirements:

- The maximum elevation for normal operation is 5000 ft (1500 m). Derating is required for higher elevations.
- Equipment weights are provided for typical configurations (see page 32). Contact your local sales representative if additional information is needed.
- Additional battery cabinets may be added for extended battery time.
- The unit should be installed with these environmental specifications: operating temperature of 0° to 40° C and humidity of 5% to 95% (noncondensing).

Important Safeguards

- Do not tilt the cabinet more than 12 degrees; the unit may tip over.
- Do not connect more than three battery cabinets to the UPS unit to avoid fire and electrical shock hazard.

Refer to your national and local electrical codes for acceptable external wiring practices. Material and labor for the external wiring are customer-supplied. An external protective device for the input source must be provided and sized for the currents indicated on the UPS nameplates.

NOTE: *The maximum permissible input fault-current is 65,000 amps. Upstream protection must be coordinated with the load current requirements under nominal as well as low-line and overload conditions. For I-T neutral power sources, upstream protection must simultaneously disconnect the three-phase conductors and the neutral. The recommended input stream service protection is 125 amps for 115/200-127/220 VAC inputs and 63 amps for 220/380-277/480 VAC inputs.*

The UPS must be grounded at the input terminal block to a single-point local or utility earth ground. The ground conductor should be sized according to your national and local electrical codes. In the United States, the output is a separately-derived source.

If you are using remote batteries, a DC breaker suitable for branch circuit protection is required. The DC breaker is customer-supplied and must be rated at 250V, 75A. The maximum fault current from a remote battery cannot be more than 6000 amps.

Caution: Risk of electrical shock. Battery circuit is not isolated from AC input. Hazardous voltage may exist between battery terminals and ground. Test before touching.

1. Make sure that the source voltage matches input voltage specified on rating label of this cabinet (see Figure 19).

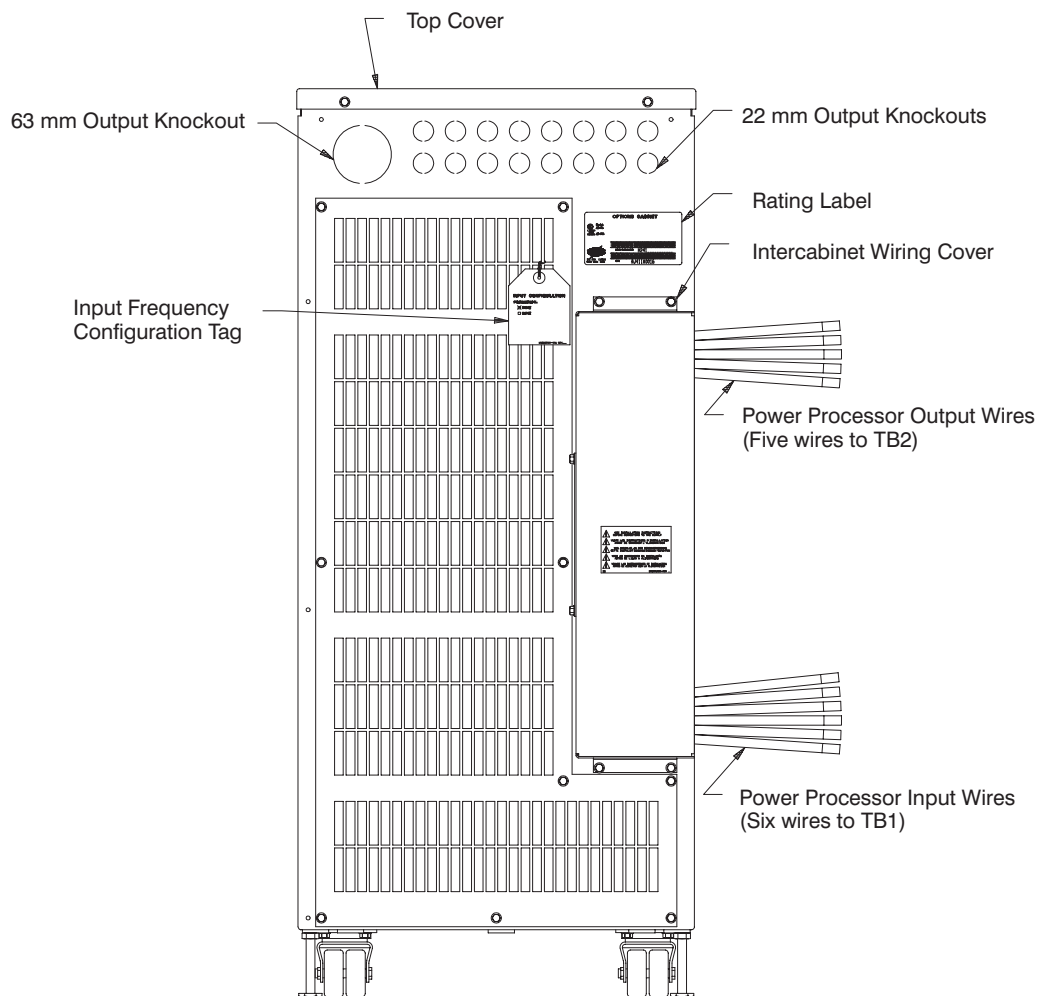


Figure 19. Options Cabinet Rear View

2. Remove the four #10 hex-head screws located on the top and bottom corners of the intercabinet wiring cover. Retain the screws.
3. Remove the intercabinet wiring cover and retain for later use.
4. Remove the eight #10 hex-head screw located on the corners and sides of the customer wiring cover on power processor cabinet (see Figure 8 on page 41).
5. Remove cover and retain screws. Refer to labels on inside of cover to torque specifications.
6. Pass the two sets of wires from options cabinet (Figure 19) through corresponding entry holes of power processor cabinet (input/output power entry) (Figure 8).
7. Line the rim of these entry holes with the grommet material provided in the options cabinet joining kit.

8. Connect all wires according to the “Cable Terminations to Power Processor” table located below.

Cable Terminations to Power Processor			
Wire Function		Wire Number (from Options Cabinet)	Terminal Position
Input to Power Processor	Phase A	51 or 54	TB1-1
	Phase B	52 or 55	TB1-2
	Phase C	53 or 56	TB1-3
	Neutral	57-1	TB1-4
	Neutral	57-2	TB1-5
	Ground	11	TB1-6
Output from Power Processor	Phase A	61	TB2-1
	Phase B	62	TB2-2
	Phase C	63	TB2-3
	Neutral	64	TB2-4
	Neutral	64	TB2-5

9. Reinstall the intercabinet wiring cover removed in Step 3.

Wiring to Options Cabinet Input

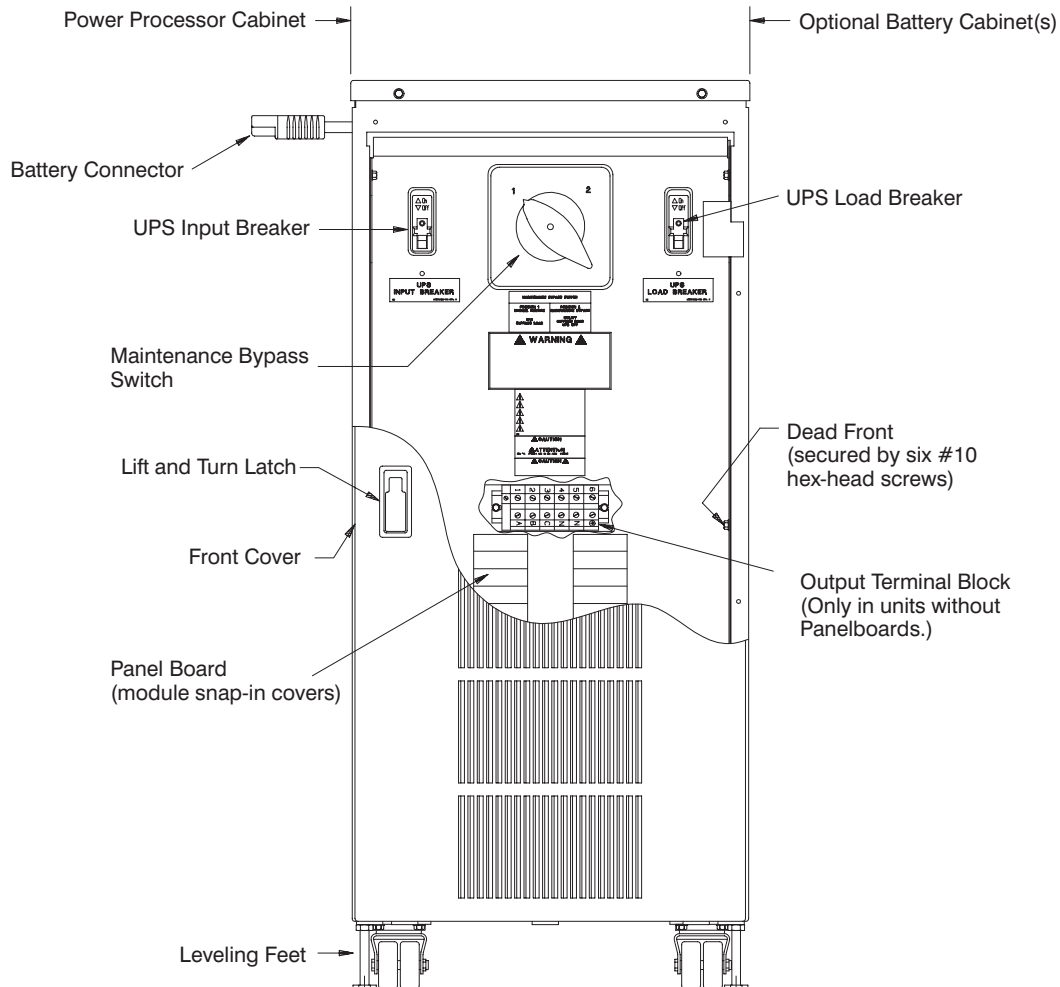


Figure 20. Options Cabinet (Front View)

1. Locate the input power terminal block access cover (see Figure 21).
2. Remove the four #10 hex-head screws located on the corners of the input power terminal block access cover. Remove the cover. Retain screws and cover for later use.

NOTE: Refer to label on the inside of the cover for torque specifications.

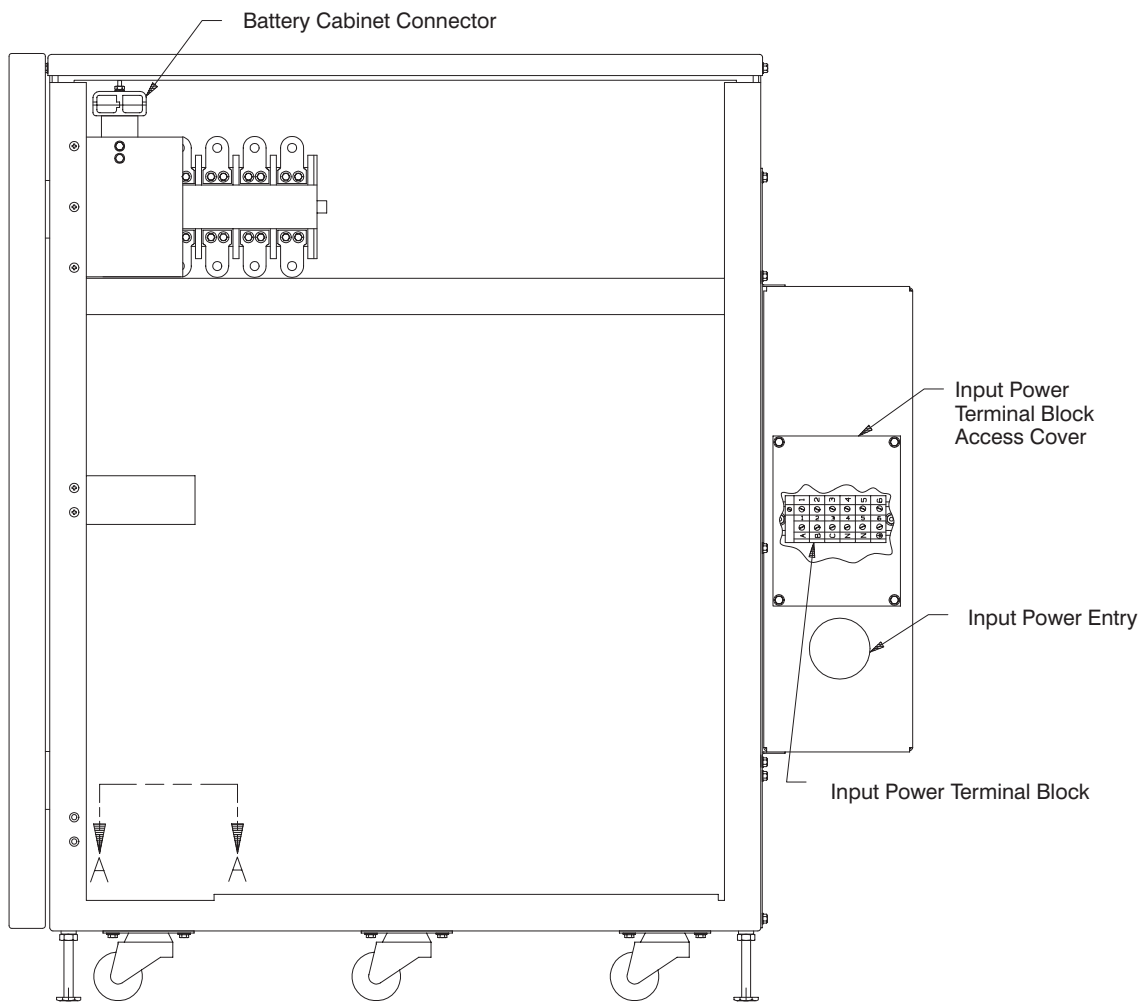


Figure 21. Options Cabinet Right Side View

3. Run conduit to the input power entry.

- Connect your voltage source to the input power terminal block TB1 of the options cabinet. Refer to the “Options Cabinet Customer Cable Terminations” table shown below.

Options Cabinet Customer Cable Terminations				
Wire Function	Terminal Position	Terminal Wire Size Rating	Suggested Wire Size*	
Input	Phase A	TB1-1	6 – 1/0 AWG (16 – 50 mm ²)	For 120/208 or 127/220 VAC inputs: 1/0 AWG (50 mm ²)
	Phase B	TB1-2		
	Phase C	TB1-3		
	Neutral**	TB1-4		
	Neutral**	TB1-5		
	Ground	TB1-6	6 – 2 AWG (16-35 mm ²)	6 AWG (16 mm ²)
Output (if no PDM options)	Phase A	TB2-1	6 – 1/0 AWG (16 – 50 mm ²)	For 120/208 or 127/220 VAC inputs: 1/0 AWG (50 mm ²)
	Phase B	TB2-2		
	Phase C	TB2-3		
	Neutral	TB2-4		
	Neutral	TB2-5		
	Ground	TB2-6	6 – 2 AWG (16 – 35 mm ²)	6 AWG (16 mm ²)

* Use 75°C copper wire. Suggested wire size is based on 3600-036K full load ratings applied to NEC Code Table 310-16. Both input and output neutral connections require a total of two wires at the suggested size (one wire per terminal position).

** Input neutral is required if single-phase loads are to be supplied, and if the options cabinet has input or output auto-transformers (380–480V three phase).

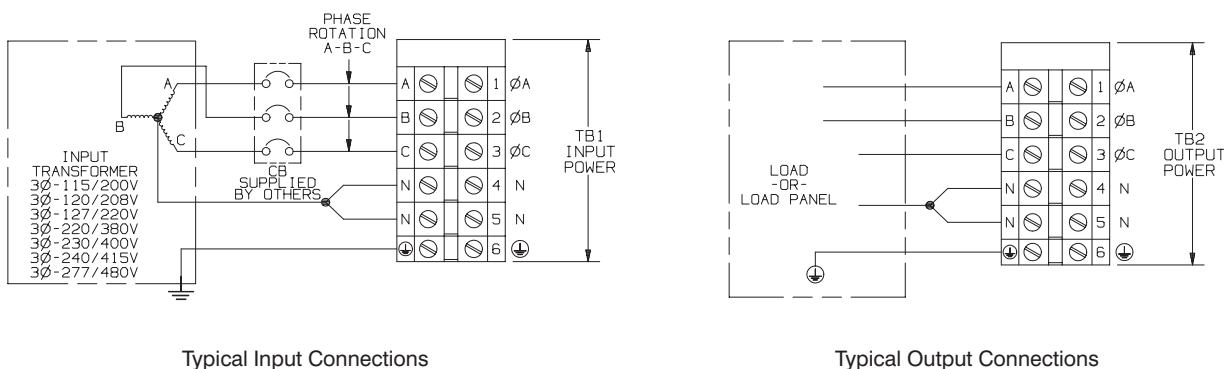


Figure 22. Typical Input and Output Connections

- Reinstall the input power terminal block access cover removed in Step 2.

Wiring to the Options Cabinet Output

- Remove the six #10 hex-head screws on the dead front cover (see Figure 20). Remove the panel. Retain the panel and screws.
- Prepare the knockouts for bottom entry (Figure 23) or back entry (see Figure 19).

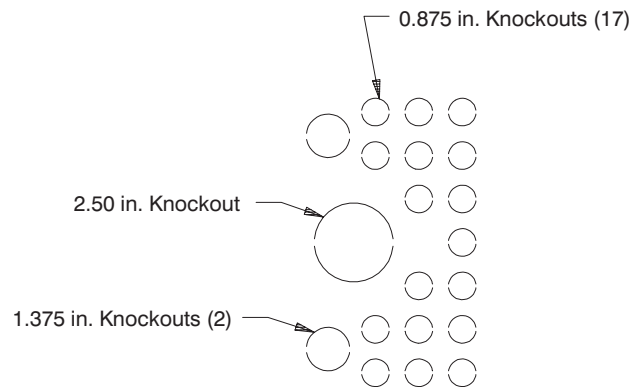


Figure 23. Bottom Entry Conduit Knockouts

3. If you do not have a PDM option, then connect your output wiring to the output terminal block TB2 according to the “Options Cabinet Customer Cable Terminations” table located on page 57.

Caution: The panelboard is still live when UPS input breaker is off. Turn off UPS load breaker when servicing.

4. If you have the PDM option, then install the output breakers into panelboard (see Figure 24).

NOTE: The panelboard is Square-D type NQOM and it can accept up to 30 single-pole Square-D type QO or type QOB breakers.

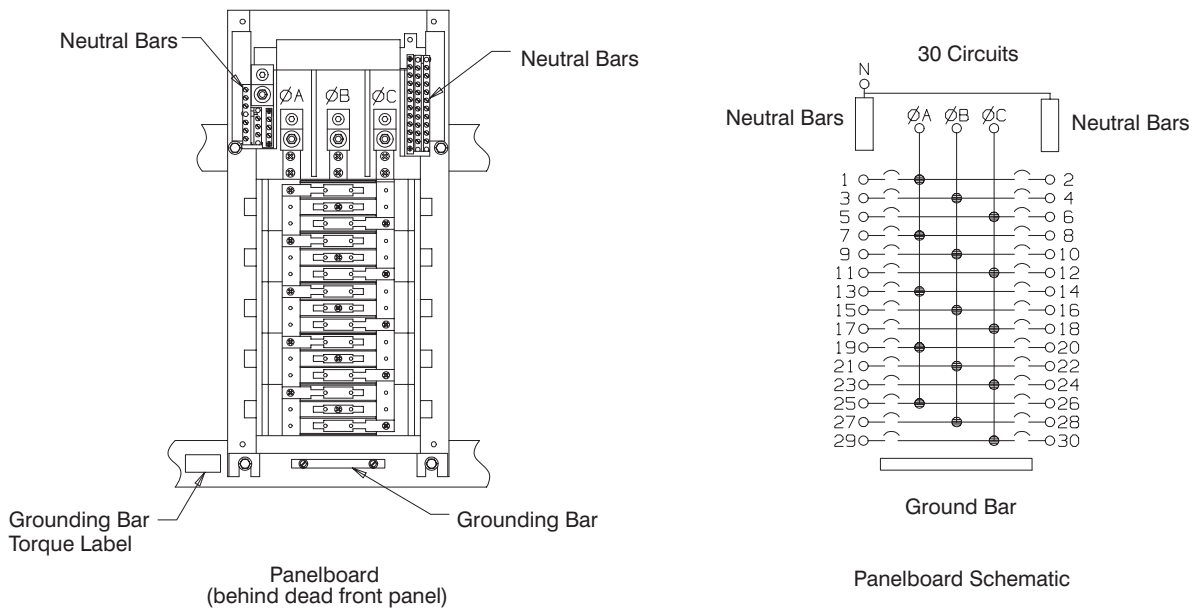


Figure 24. Panelboard and Panelboard Schematic

5. Install output wiring, referring to appropriate labels for wire size and tightening torques.
6. Remove one panelboard module snap-in cover (see Figure 15 on page 48) from the dead front panel for each breaker pole installed into the panelboard.
7. Reinstall the dead front panel removed in Step 1.
8. Continue to the following section, “Wiring the Battery Cabinets.”

Wiring the Battery Cabinets

To connect the battery cabinets to the UPS, perform the following procedure:

1. Cut the tie on the battery connector.
2. Take the battery cabinet connector (P1) from each battery cabinet and mate it to the matching J1 connector in the next cabinet to the left. (see Figure 25).
3. If another battery cabinet is positioned to the right, plug its tied connector to the battery cabinet receptacle (J1).

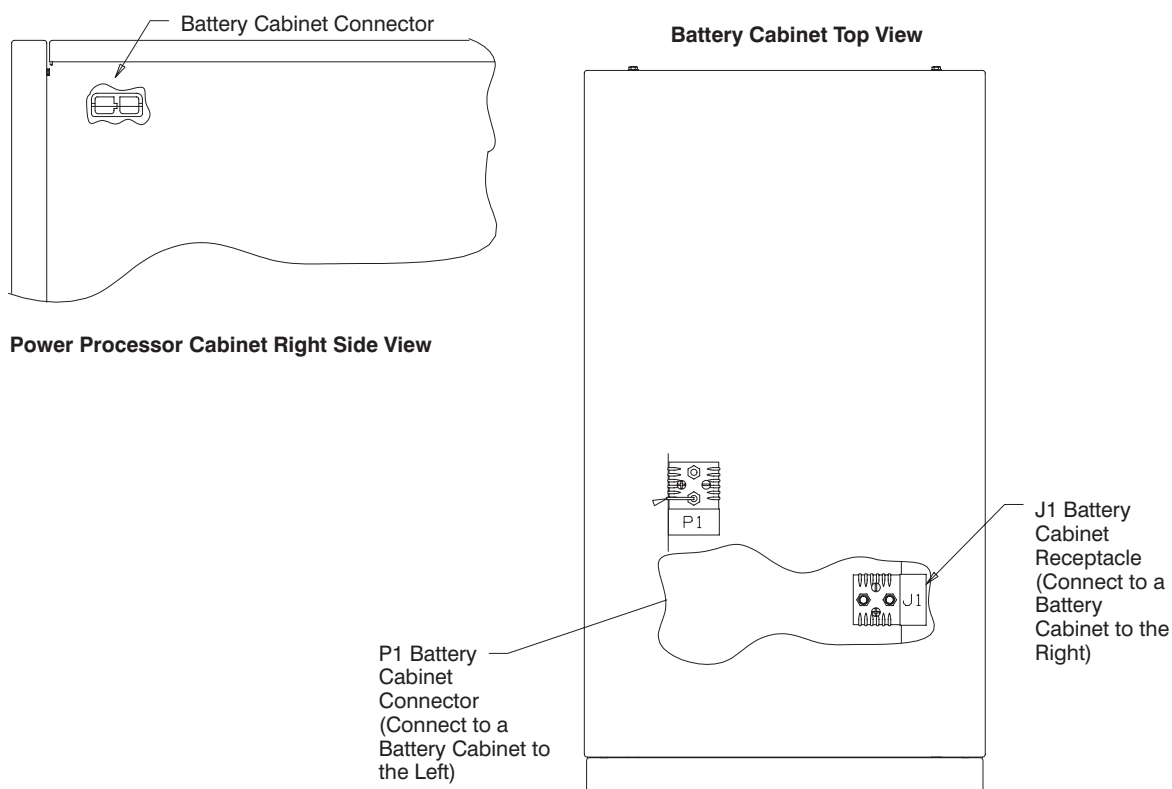


Figure 25. Battery Cabinet Connectors

Caution: Battery circuit is not isolated from AC input. Hazardous voltage may exist between battery terminals and ground. Test before touching.

Caution: All cabinets must be secured to prevent them from moving when installation is complete. Secure the cabinets either by lowering all leveling feet to take the weight off the casters, or by bolting the cabinets to the floor using the seismic installation procedure. Failure to do so violates safety rules and results in the unit losing its safety agency approvals.

Completing Installation

1. Make sure all front leveling feet are secured in place with the locking nuts secured against the cabinets.
2. Remount the side cover on the power processor cabinet.
3. Replace all top covers.
4. Replace all front covers.
5. Continue to “UPS Startup and Shutdown” on page 23 to start up your UPS.

Installing Remote Batteries

The following sections describe how to determine the battery capacity and install and configure the remote batteries.

Determining the Battery Capacity

When a battery cabinet is not supplied with the UPS, DC power can be supplied by remote batteries. It is recommended to use sealed maintenance-free, lead-acid type batteries. To determine the battery capacity you need for your UPS:

1. Determine the active load KW and load power factor PF of the critical load to be protected by the UPS. KW is calculated from the apparent power kVA and the load power PF as:

$$(KW) = (kVA) \times PF$$

2. Determine the power to be delivered by the battery KW_{Batt} . The efficiency of the UPS is taken into consideration and can be calculated using the following expression:

$$(KW_{Batt}) = \frac{(KW)}{0.85 - 0.05 \times (1 - PF)}$$

3. Nominal battery voltage is 240 Vdc (120 cells @ 2.0 Vdc). Float voltage should not exceed 270 Vdc.
4. Determine the desired backup time and the operating temperature.
5. The low-battery shutdown voltage is customer-selectable. It can be set between 1.67 Vdc/cell and 1.85 Vdc/cell. Select a value suitable for your application to size your battery and make sure you set the value when configuring the UPS.
6. Follow the battery manufacturer’s application notes and charts to calculate the battery capacity necessary for your application.
7. The UPS has a cyclic battery charger (turn on = 265 Vdc, turn off = 285 Vdc) that delivers a maximum current of 5 amps. The internal charger must be disabled when an external charger is used. For battery sizes above 75 AH, an external charger is recommended.

Remote Battery Installation

The following instructions assume you have already installed the UPS according to the instructions beginning on page 38.

Caution: Do not add remote batteries if a battery cabinet is already connected to the UPS.

1. Refer to the battery manufacturer's operator's manual for battery installation and maintenance instructions.
2. Remove the knock-out for the conduit as shown in Figure 26.

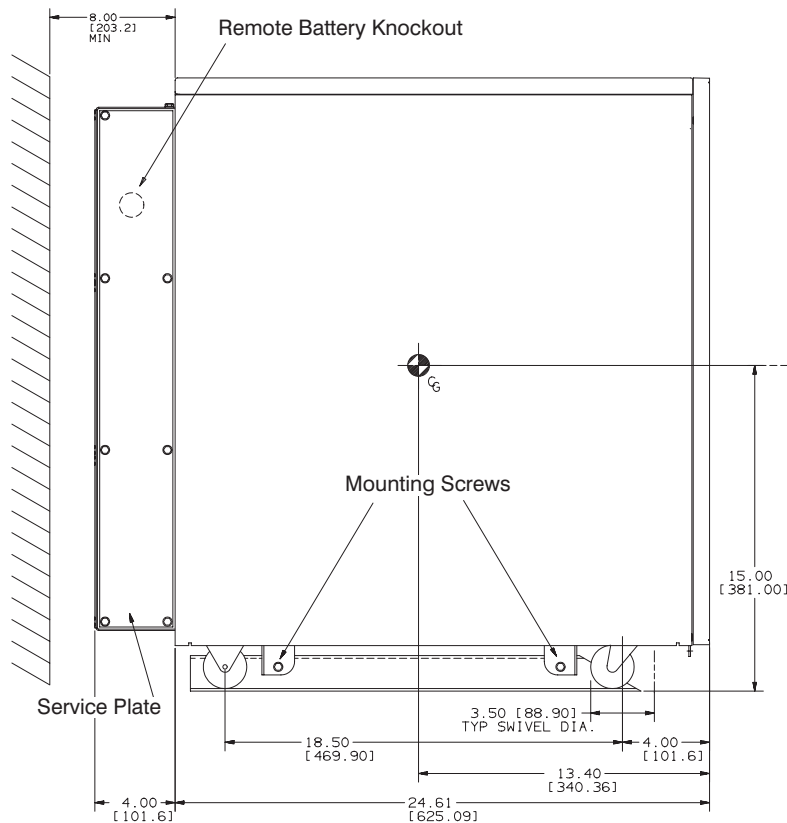


Figure 26. Remote Battery Access

3. Follow the wiring instructions in “Electrical Installation” on page 41.
4. Configure the Bypass and Input Configuration switches as described on page 44.
5. Continue to the following section, “Remote Battery Configuration,” to change the UPS setup.

Remote Battery Configuration

After the remote battery has been installed, change the UPS setup. See Chapter 4, “UPS Startup and Shutdown,” on page 23 before applying power to the unit for the first time. Perform the following steps without removing the AC input power:

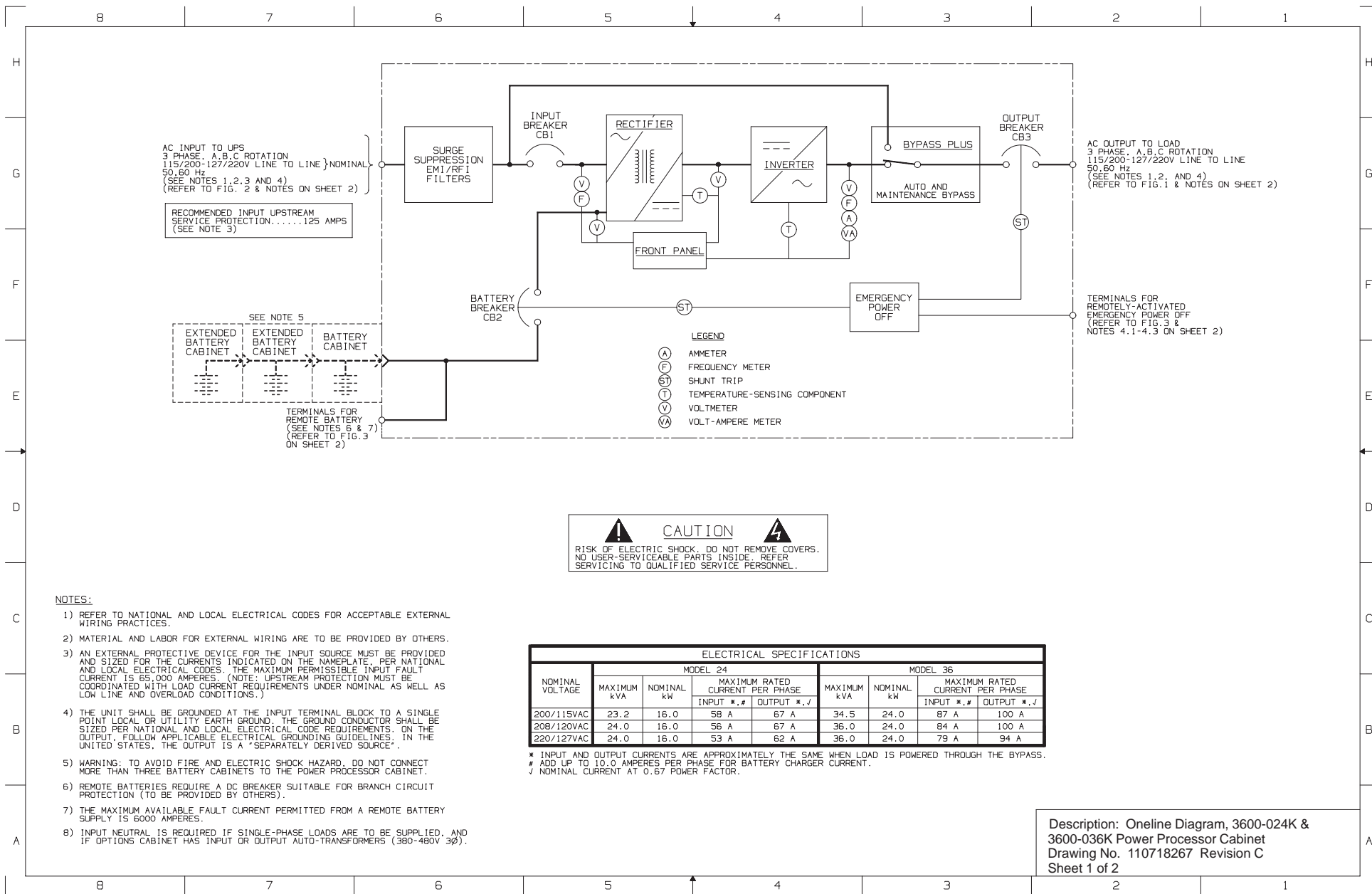
1. Verify the system type.
2. Press the Menu button. **MAIN MENU 1. UPS Status** appears.
3. Press the down arrow button until **MAIN MENU 7. System Setup** appears. Press the Select button. The prompt **Password AAAAAA** appears.

NOTE: *The default password is MEMORY. It is recommended to change the default password to ensure security (see page 16). Contact your field service representative if you have misplaced your password.*
4. Enter the password using the up and down arrow buttons to scroll through the letters. Use the right and left arrow buttons to move to another character position.
5. After you have entered the password, press the Select button. The display now shows **SYSTEM SETUP 1. Select Type**.
6. Press the down arrow button until **13. Battery Cfg** appears. Press the Select button.
7. Using the up and down arrow buttons, scroll to **Custom Battery**. Press the Select button.
8. A battery charger disable/enable menu appears that allows you to enable or disable the UPS built-in battery charger. Select either **Enable** or **Disable** by using the left and right arrow buttons. Press the Select button. An asterisk appears beside the newly selected option.

Press the down arrow button. A **Custom DCUV** menu appears that allows you to select the low-battery shutdown level.

Use the left and right arrow buttons to scroll through the different options. Press Select to choose the desired **DCUV** level. An asterisk appears to the left of the newly selected option.

NOTE: *If the Custom DCUV selection does not appear after selecting Custom Battery, verify that the UPS is off or on bypass.*
9. Press the Menu button four times to exit System Setup.



CAUTION
 RISK OF ELECTRIC SHOCK. DO NOT REMOVE COVERS.
 NO USER-SERVICEABLE PARTS INSIDE. REFER
 SERVICING TO QUALIFIED SERVICE PERSONNEL.

NOTES:

- 1) REFER TO NATIONAL AND LOCAL ELECTRICAL CODES FOR ACCEPTABLE EXTERNAL WIRING PRACTICES.
- 2) MATERIAL AND LABOR FOR EXTERNAL WIRING ARE TO BE PROVIDED BY OTHERS.
- 3) AN EXTERNAL PROTECTIVE DEVICE FOR THE INPUT SOURCE MUST BE PROVIDED AND SIZED FOR THE CURRENTS INDICATED ON THE NAMEPLATE. PER NATIONAL AND LOCAL ELECTRICAL CODES. THE MAXIMUM PERMISSIBLE INPUT FAULT CURRENT IS 65,000 AMPERES. (NOTE: UPSTREAM PROTECTION MUST BE COORDINATED WITH LOAD CURRENT REQUIREMENTS UNDER NOMINAL AS WELL AS LOW LINE AND OVERLOAD CONDITIONS.)
- 4) THE UNIT SHALL BE GROUNDED AT THE INPUT TERMINAL BLOCK TO A SINGLE POINT LOCAL OR UTILITY EARTH GROUND. THE GROUND CONDUCTOR SHALL BE SIZED PER NATIONAL AND LOCAL ELECTRICAL CODE REQUIREMENTS. ON THE OUTPUT, FOLLOW APPLICABLE ELECTRICAL GROUNDING GUIDELINES. IN THE UNITED STATES, THE OUTPUT IS A "SEPARATELY DERIVED SOURCE".
- 5) WARNING: TO AVOID FIRE AND ELECTRIC SHOCK HAZARD, DO NOT CONNECT MORE THAN THREE BATTERY CABINETS TO THE POWER PROCESSOR CABINET.
- 6) REMOTE BATTERIES REQUIRE A DC BREAKER SUITABLE FOR BRANCH CIRCUIT PROTECTION (TO BE PROVIDED BY OTHERS).
- 7) THE MAXIMUM AVAILABLE FAULT CURRENT PERMITTED FROM A REMOTE BATTERY SUPPLY IS 6000 AMPERES.
- 8) INPUT NEUTRAL IS REQUIRED IF SINGLE-PHASE LOADS ARE TO BE SUPPLIED, AND IF OPTIONS CABINET HAS INPUT OR OUTPUT AUTO-TRANSFORMERS (380-480V 3Ø).

NOMINAL VOLTAGE	ELECTRICAL SPECIFICATIONS							
	MODEL 24				MODEL 36			
	MAXIMUM kVA	NOMINAL kW	MAXIMUM RATED CURRENT PER PHASE		MAXIMUM kVA	NOMINAL kW	MAXIMUM RATED CURRENT PER PHASE	
		INPUT #, #	OUTPUT #, #			INPUT #, #	OUTPUT #, #	
200/115VAC	23.2	16.0	58 A	67 A	34.5	24.0	87 A	100 A
208/120VAC	24.0	16.0	56 A	67 A	36.0	24.0	84 A	100 A
220/127VAC	24.0	16.0	53 A	62 A	36.0	24.0	79 A	94 A

* INPUT AND OUTPUT CURRENTS ARE APPROXIMATELY THE SAME WHEN LOAD IS POWERED THROUGH THE BYPASS.
 # ADD UP TO 10.0 AMPERES PER PHASE FOR BATTERY CHARGER CURRENT.
 √ NOMINAL CURRENT AT 0.67 POWER FACTOR.

Description: Online Diagram, 3600-024K & 3600-036K Power Processor Cabinet
 Drawing No. 110718267 Revision C
 Sheet 1 of 2

INSTALLATION INSTRUCTIONS:

THE OUTPUT VOLTAGE AND FREQUENCY ARE SET USING THE FRONT PANEL. CONSULT THE OPERATOR'S MANUAL FOR DETAILS.

ONLY QUALIFIED SERVICE PERSONNEL SHOULD ATTEMPT TO CONFIGURE THIS EQUIPMENT.

INPUT	OUTPUT
3Ø-200/115V	3Ø-200/115V
3Ø-208/120V	3Ø-208/120V
3Ø-220/127V	3Ø-220/127V

1.0 GROUNDING AND NEUTRAL BONDING

- 1.1 DETERMINE YOUR SYSTEM'S GROUNDING REQUIREMENTS.
- 1.2 INSTALL, AS PART OF THE BRANCH CIRCUIT THAT SUPPLIES THIS UNIT, AN INSULATED GROUNDING CONDUCTOR THAT IS IDENTICAL IN INSULATION THICKNESS AND MATERIAL TO THE GROUNDED AND UNGROUNDED BRANCH-CIRCUIT SUPPLY CONDUCTORS. ITS COLOR SHOULD BE GREEN, WITH OR WITHOUT ONE OR MORE YELLOW STRIPES.
- 1.3 THE ABOVE-MENTIONED GROUNDING CONDUCTOR SHOULD BE GROUNDED TO EARTH AT THE SERVICE EQUIPMENT OR, IF SUPPLIED BY A SEPARATELY-DERIVED SYSTEM, AT THE SUPPLY TRANSFORMER.
- 1.4 ALL ATTACHMENT-PLUG RECEPTACLES IN THE VICINITY OF THIS UNIT OR SYSTEM ARE TO BE OF A GROUNDING TYPE, AND THE GROUNDING CONDUCTORS SERVING THESE RECEPTACLES ARE TO BE CONNECTED TO EARTH GROUND AT THE SERVICE EQUIPMENT.
- 1.5 IF OUTPUT NEUTRAL IS NOT TO BE GROUNDED, REMOVE THE BONDING WIRE (GREEN WITH YELLOW STRIPE) THAT RUNS FROM TB3-5 TO FRAME GROUND (IT IS RECOMMENDED THAT THIS BONDING WIRE BE REMOVED FOR A 3-WIRE DELTA OUTPUT). SEE FIGURE 3.

2.0 BYPASS CONFIGURATION

- 2.1 DETERMINE THE INPUT AND OUTPUT VOLTAGE AND FREQUENCY.
- 2.2 IDENTIFY THE BYPASS CONFIGURATION SWITCH S2, LOCATED BEHIND THE FRONT DOOR (SEE FIGURE 4).
- 2.3 IF THE INPUT AND OUTPUT VOLTAGE AND FREQUENCY ARE IDENTICAL, AND BYPASS IS DESIRED, SET THE BYPASS CONFIGURATION SWITCH S2 TO THE "ENABLE" POSITION.
- 2.4 IF THE INPUT AND OUTPUT VOLTAGE AND FREQUENCY ARE NOT IDENTICAL, OR IF BYPASS IS NOT DESIRED, OR IF THE INPUT FEED IS DELTA (3-WIRE) CONNECTED AND THE LOAD IS WYE (4-WIRE) CONNECTED, SET THE BYPASS CONFIGURATION SWITCH S2 TO THE "DISABLE" POSITION.

3.0 INPUT CONFIGURATION

- 3.1 MAKE SURE THAT INPUT CONFIGURATION SWITCH, LOCATED IN THE WIRING COMPARTMENT AT THE BACK OF THE UNIT, IS SET TO POSITION WYE (4-WIRE) INPUT, OR TO DELTA (3-WIRE) INPUT, AS YOUR INPUT DICTATES (SEE FIGURE 5 AND REFER TO THE LEFT SIDE VIEW OF DRAWING 110718268). THE UNIT IS SHIPPED WITH THE SWITCH SET FOR WYE INPUT.

4.0 REMOTE EMERGENCY POWER OFF

- 4.1 A REMOTE EMERGENCY POWER OFF (REPO) SWITCH IS A WALL-MOUNTED, NORMALLY-OPEN, MOMENTARY-CONTACT PUSH-BUTTON SWITCH SUPPLIED BY OTHERS.
- 4.2 MINIMUM RATINGS FOR A REPO SWITCH ARE 120 V AND 125 mA.
- 4.3 REPO WIRES ARE HIGH-VOLTAGE. REFER TO LOCAL ELECTRICAL CODES FOR PROPER INSTALLATION. SEE FIGURE 3.
- 4.4 POWER FOR THE REPO SWITCH IS SUPPLIED BY THE POWER PROCESSOR.

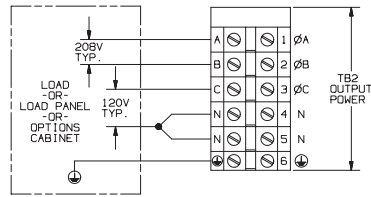


FIGURE 1

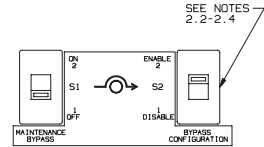


FIGURE 4

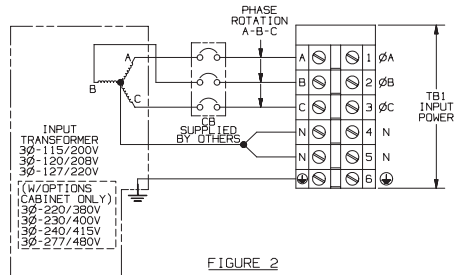


FIGURE 2

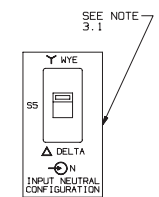


FIGURE 5

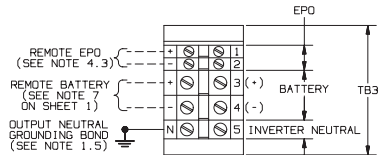
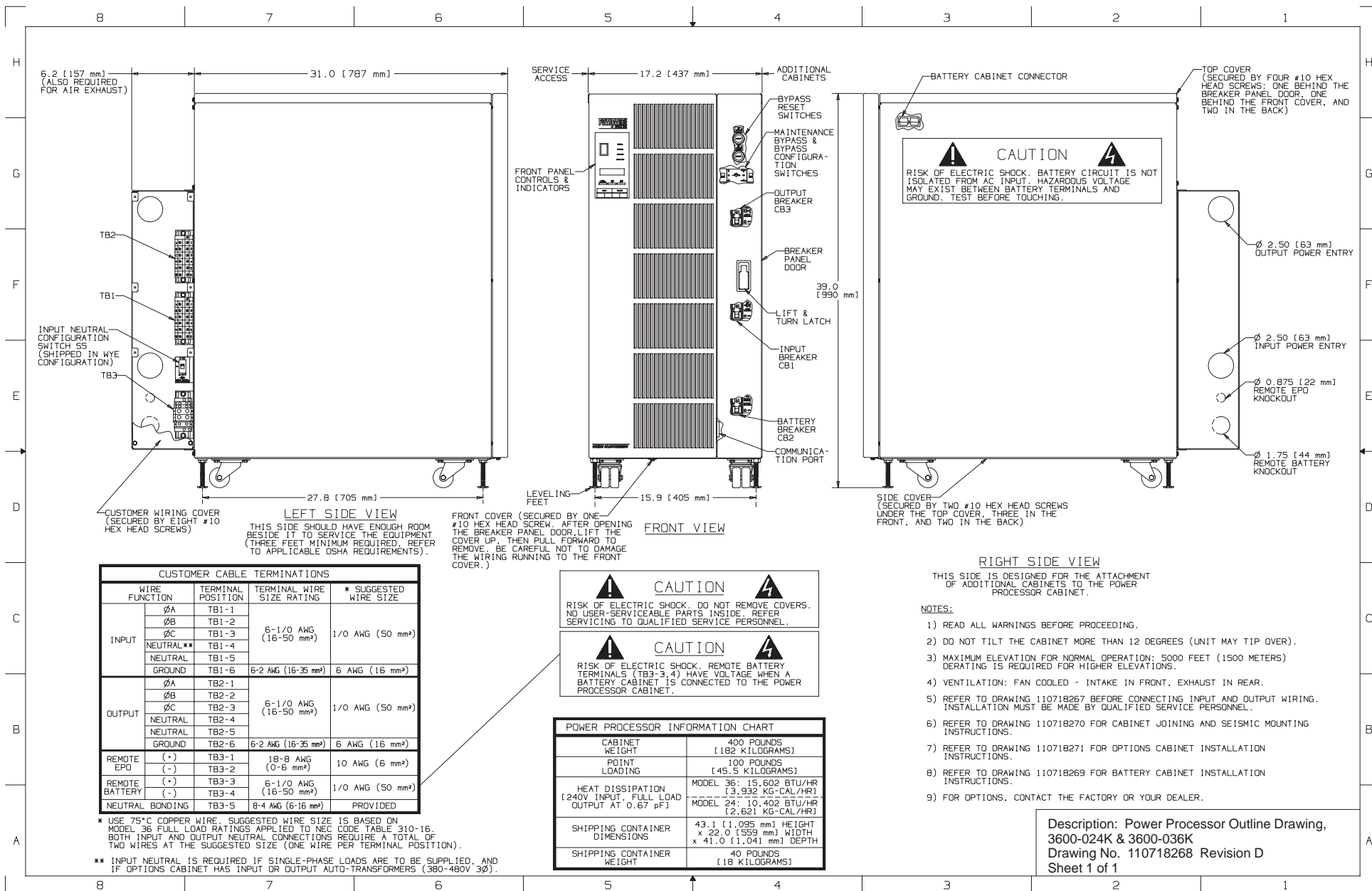


FIGURE 3

LEGEND
 REPO - REMOTE EMERGENCY POWER OFF
 CB - CIRCUIT BREAKER
 N - NEUTRAL

Description: Online Diagram, 3600-024K & 3600-036K Power Processor Cabinet
 Drawing No. 110718267 Revision C
 Sheet 2 of 2



THIS SIDE SHOULD HAVE ENOUGH ROOM BESIDE IT TO SERVICE THE EQUIPMENT (THREE FEET MINIMUM REQUIRED. REFER TO APPLICABLE OSHA REQUIREMENTS).

FRONT COVER (SECURED BY ONE #10 HEX HEAD SCREW. AFTER OPENING THE BREAKER PANEL DOOR LIFT THE COVER UP, THEN PULL FORWARD TO REMOVE. BE CAREFUL NOT TO DAMAGE THE WIRING RUNNING TO THE FRONT COVER.)

THIS SIDE IS DESIGNED FOR THE ATTACHMENT OF ADDITIONAL CABINETS TO THE POWER PROCESSOR CABINET.

CUSTOMER CABLE TERMINATIONS			
WIRE FUNCTION	TERMINAL POSITION	TERMINAL WIRE SIZE RATING	* SUGGESTED WIRE SIZE
INPUT	ØA TB1-1	6-1/0 AWG (16-50 mm²)	1/0 AWG (50 mm²)
	ØB TB1-2		
	ØC TB1-3		
	NEUTRAL** TB1-4		
	NEUTRAL TB1-5		
	GROUND TB1-6		
OUTPUT	ØA TB2-1	6-1/0 AWG (16-50 mm²)	1/0 AWG (50 mm²)
	ØB TB2-2		
	ØC TB2-3		
	NEUTRAL TB2-4		
	NEUTRAL TB2-5		
	GROUND TB2-6		
REMOTE EPO (+)	TB3-1	18-8 AWG (0-6 mm²)	10 AWG (6 mm²)
REMOTE BATTERY (-)	TB3-2	6-1/0 AWG (16-50 mm²)	1/0 AWG (50 mm²)
NEUTRAL BONDING	TB3-5	8-4 AWG (6-16 mm²)	PROVIDED

* USE 75°C COPPER WIRE. SUGGESTED WIRE SIZE IS BASED ON MODEL 36 FULL LOAD RATINGS APPLIED TO NEC CODE TABLE 310-16. BOTH INPUT AND OUTPUT NEUTRAL CONNECTIONS REQUIRE A TOTAL OF TWO WIRES AT THE SUGGESTED SIZE (ONE WIRE PER TERMINAL POSITION).

** INPUT NEUTRAL IS REQUIRED IF SINGLE-PHASE LOADS ARE TO BE SUPPLIED, AND IF OPTIONS CABINET HAS INPUT OR OUTPUT AUTO-TRANSFORMERS (380-480V 3Ø).

CAUTION
 RISK OF ELECTRIC SHOCK. DO NOT REMOVE COVERS. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

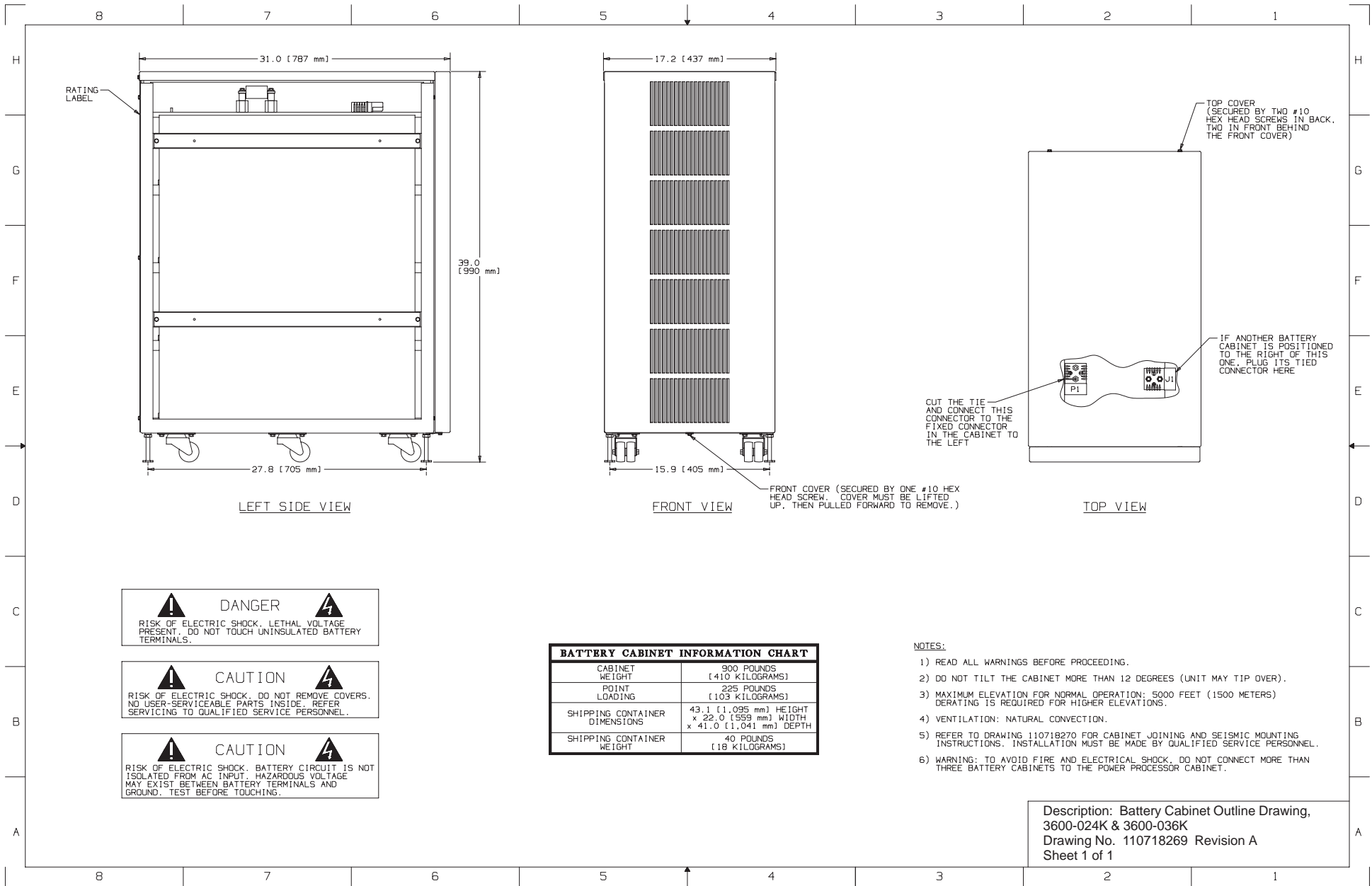
CAUTION
 RISK OF ELECTRIC SHOCK. REMOTE BATTERY TERMINALS (TB3-3,4) HAVE VOLTAGE WHEN A BATTERY CABINET IS CONNECTED TO THE POWER PROCESSOR CABINET.

POWER PROCESSOR INFORMATION CHART	
CABINET WEIGHT	400 POUNDS [182 KILOGRAMS]
POINT LOADING	100 POUNDS [45.5 KILOGRAMS]
HEAT DISSIPATION (240V INPUT, FULL LOAD OUTPUT AT 0.67 pF)	MODEL 36: 15,602 BTU/HR [3,932 KG-CAL/HR] MODEL 24: 10,402 BTU/HR [2,621 KG-CAL/HR]
SHIPPING CONTAINER DIMENSIONS	43.1 [1,095 mm] HEIGHT x 22.0 [559 mm] WIDTH x 41.0 [1,041 mm] DEPTH
SHIPPING CONTAINER WEIGHT	40 POUNDS [18 KILOGRAMS]

NOTES:

- 1) READ ALL WARNINGS BEFORE PROCEEDING.
- 2) DO NOT TILT THE CABINET MORE THAN 12 DEGREES (UNIT MAY TIP OVER).
- 3) MAXIMUM ELEVATION FOR NORMAL OPERATION: 5000 FEET (1500 METERS) DERATING IS REQUIRED FOR HIGHER ELEVATIONS.
- 4) VENTILATION: FAN COOLED - INTAKE IN FRONT, EXHAUST IN REAR.
- 5) REFER TO DRAWING 110718267 BEFORE CONNECTING INPUT AND OUTPUT WIRING. INSTALLATION MUST BE MADE BY QUALIFIED SERVICE PERSONNEL.
- 6) REFER TO DRAWING 110718270 FOR CABINET JOINING AND SEISMIC MOUNTING INSTRUCTIONS.
- 7) REFER TO DRAWING 110718271 FOR OPTIONS CABINET INSTALLATION INSTRUCTIONS.
- 8) REFER TO DRAWING 110718269 FOR BATTERY CABINET INSTALLATION INSTRUCTIONS.
- 9) FOR OPTIONS, CONTACT THE FACTORY OR YOUR DEALER.

Description: Power Processor Outline Drawing, 3600-024K & 3600-036K
 Drawing No. 110718268 Revision D
 Sheet 1 of 1



⚠ DANGER ⚠
 RISK OF ELECTRIC SHOCK. LETHAL VOLTAGE PRESENT. DO NOT TOUCH UNINSULATED BATTERY TERMINALS.

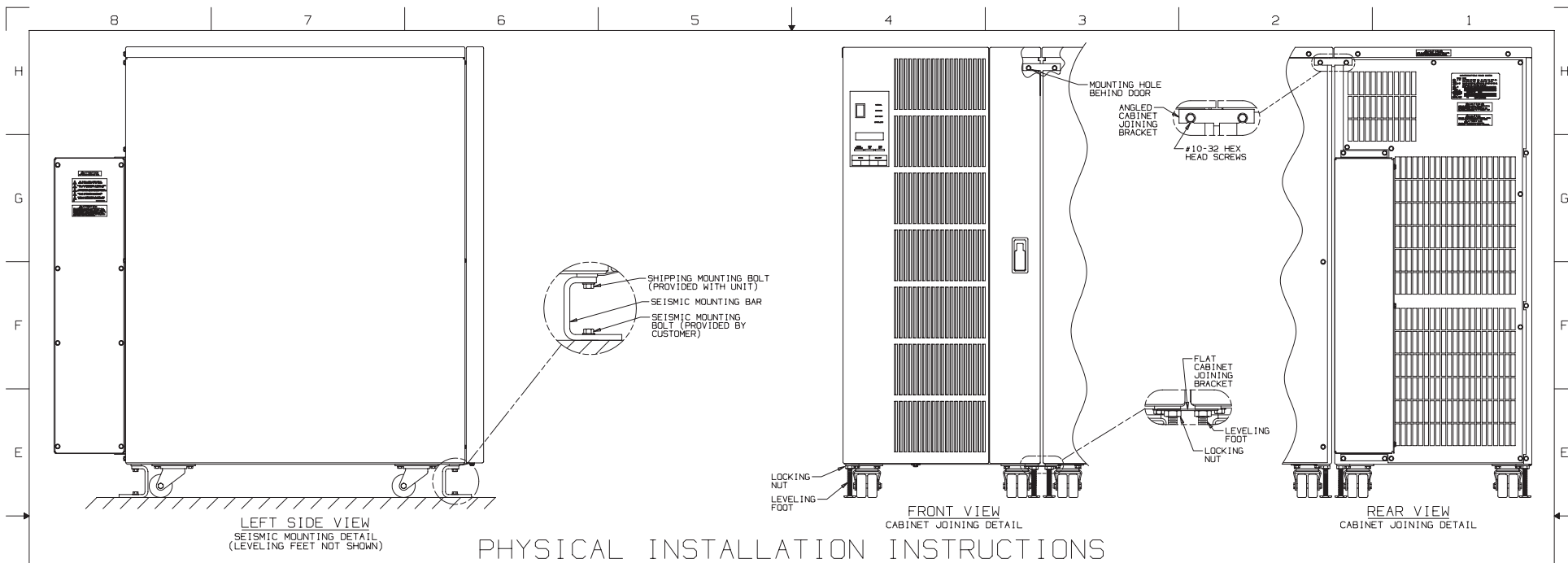
⚠ CAUTION ⚠
 RISK OF ELECTRIC SHOCK. DO NOT REMOVE COVERS. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

⚠ CAUTION ⚠
 RISK OF ELECTRIC SHOCK. BATTERY CIRCUIT IS NOT ISOLATED FROM AC INPUT. HAZARDOUS VOLTAGE MAY EXIST BETWEEN BATTERY TERMINALS AND GROUND. TEST BEFORE TOUCHING.

BATTERY CABINET INFORMATION CHART	
CABINET WEIGHT	900 POUNDS [410 KILOGRAMS]
POINT LOADING	225 POUNDS [103 KILOGRAMS]
SHIPPING CONTAINER DIMENSIONS	43.1 [1,095 mm] HEIGHT x 22.0 [559 mm] WIDTH x 41.0 [1,041 mm] DEPTH
SHIPPING CONTAINER WEIGHT	40 POUNDS [18 KILOGRAMS]

- NOTES:**
- 1) READ ALL WARNINGS BEFORE PROCEEDING.
 - 2) DO NOT TILT THE CABINET MORE THAN 12 DEGREES (UNIT MAY TIP OVER).
 - 3) MAXIMUM ELEVATION FOR NORMAL OPERATION: 5000 FEET (1500 METERS) DERATING IS REQUIRED FOR HIGHER ELEVATIONS.
 - 4) VENTILATION: NATURAL CONVECTION.
 - 5) REFER TO DRAWING 110718270 FOR CABINET JOINING AND SEISMIC MOUNTING INSTRUCTIONS. INSTALLATION MUST BE MADE BY QUALIFIED SERVICE PERSONNEL.
 - 6) WARNING: TO AVOID FIRE AND ELECTRICAL SHOCK, DO NOT CONNECT MORE THAN THREE BATTERY CABINETS TO THE POWER PROCESSOR CABINET.

Description: Battery Cabinet Outline Drawing,
 3600-024K & 3600-036K
 Drawing No. 110718269 Revision A
 Sheet 1 of 1



PHYSICAL INSTALLATION INSTRUCTIONS

ATTENTION

THIS EQUIPMENT MUST BE SECURED TO PREVENT UNWANTED ROLLING AFTER INSTALLATION BY EITHER ADJUSTING ALL LEVELING FEET TO TAKE THE WEIGHT OFF THE CASTERS, OR BY BOLTING THE UNITS TO THE FLOOR WITH THE SEISMIC MOUNTING BARS SHIPPED WITH EACH CABINET. FAILURE TO DO SO WILL VIOLATE SAFETY RULES AND WILL RESULT IN THE LOSS OF SAFETY AGENCY APPROVALS FOR THIS UNIT.

YOU MAY SKIP STEPS UNDER ANY HEADING THAT DOES NOT APPLY TO YOUR PARTICULAR INSTALLATION.

PREPARATION FOR SEISMIC MOUNTING

- * STEPS 1 AND 2 ARE FOR SEISMIC MOUNTING ONLY. IF YOU ARE NOT INSTALLING SEISMIC MOUNTING, GO DIRECTLY TO STEP 3.
- 1) PREPARE ALL FLOOR SEISMIC MOUNTING HOLES PER THE DRILL PATTERN DEPICTED IN THE OPERATOR'S MANUAL. FLOOR MOUNTING BOLTS ARE TO BE PROVIDED BY THE CUSTOMER. THE SEISMIC MOUNTING BARS HAVE 0.439" DIAMETER MOUNTING HOLES.
- 2) LOCATE THE SEISMIC MOUNTING BARS THAT SECURED EACH CABINET TO ITS PALLET. ATTACH ONE MOUNTING BAR TO THE FLOOR FOR THE REAR OF EACH CABINET TO BE INSTALLED.

SECURING THE POWER PROCESSOR CABINET

- 3) ROLL THE POWER PROCESSOR CABINET INTO PLACE. SEE DRAWING 110718268 FOR SPACE REQUIREMENTS.
- 4) (THIS STEP FOR SEISMIC MOUNTING ONLY) ATTACH A MOUNTING BAR TO THE FLOOR AT THE FRONT OF THE CABINET. THEN SECURE THE CABINET TO BOTH THE FRONT AND REAR MOUNTING BARS WITH THE HARDWARE PROVIDED WITH THE UNIT. GO DIRECTLY TO STEP 6.
- 5) LOWER ALL LEVELING FEET SUCH THAT THE CABINET WILL NO LONGER ROLL ON ITS CASTERS. FOR THE REAR LEVELING FEET ONLY. TIGHTEN THE LOCKING NUTS AGAINST THE CABINET.

PREPARING THE POWER PROCESSOR CABINET ELECTRICALLY

- 6) NOW READ "ELECTRICAL INSTALLATION" AND "FINAL CONFIGURATION" IN THE OPERATOR'S MANUAL. ON-LINE DRAWING 110718267, AND POWER PROCESSOR OUTLINE DRAWING 110718268 FOR WIRING AND CONFIGURATION INFORMATION. READ ALL WARNINGS BEFORE PROCEEDING.
 - A) CONFIGURE THE OUTPUT CIRCUIT GROUND BY READING "ELECTRICAL INSTALLATION" IN THE OPERATOR'S MANUAL AND STEP 1.5 OF ON-LINE DRAWING 110718267.
 - B) CONFIGURE THE BYPASS BY REFERRING TO "BYPASS CONFIGURATION" IN THE OPERATOR'S MANUAL AND STEPS 2.1-2.4 OF ON-LINE DRAWING 110718267.

- C) CONFIGURE THE INPUT BY REFERRING TO "INPUT CONFIGURATION" IN OPERATOR'S MANUAL AND STEP 3.1 OF ON-LINE DRAWING 110718267.
- D) VERIFY THAT THE MAINTENANCE BYPASS SWITCH IS SET IN THE OFF ('1') POSITION BY REFERRING TO "MAINTENANCE BYPASS" IN THE OPERATOR'S MANUAL AND FIGURE 4 OF ON-LINE DRAWING 110718267.
- E) IF YOU HAVE A REMOTE EMERGENCY POWER OFF. CONNECT IT BY REFERRING TO SECTION 2.5.1 IN THE OPERATOR'S MANUAL. STEPS 4.1-4.3 OF ON-LINE DRAWING 110718267. AND THE "CUSTOMER TERMINATION TABLE" OF OUTLINE DRAWING 110718268.
- F) IF YOU HAVE REMOTE BATTERIES, CONNECT THEM BY REFERRING TO NOTES 6-7 OF ON-LINE DRAWING 110718267 AND THE "CUSTOMER TERMINATION TABLE" OF OUTLINE DRAWING 110718268.
- G) (THIS STEP ONLY FOR WHEN AN OPTIONS CABINET WILL NOT BE INSTALLED) CONNECT INPUT AND OUTPUT WIRING TO THE POWER PROCESSOR, REFERRING TO ON-LINE DRAWING 110718267 AND OUTLINE DRAWING 110718268 FOR CONNECTION REQUIREMENTS.

PREPARING THE POWER PROCESSOR CABINET FOR JOINING

- 7) REMOVE THE FRONT COVER OF THE POWER PROCESSOR CABINET BY REMOVING THE SCREW IDENTIFIED IN DRAWING 110718268. OPENING THE BREAKER PANEL DOOR. THEN LIFTING THE FRONT COVER UPWARD BEFORE PULLING FORWARD. SAVE COVER AND SCREW FOR LATER USE.
- 8) REMOVE THE TOP COVER OF THE POWER PROCESSOR CABINET BY REMOVING THE FOUR SCREWS IDENTIFIED IN DRAWING 110718268. SAVE COVER AND SCREWS FOR LATER USE.
- 9) REMOVE THE RIGHT SIDE COVER OF THE POWER PROCESSOR CABINET BY REMOVING THE SEVEN SCREWS IDENTIFIED IN DRAWING 110718268. SAVE COVER AND SCREWS FOR LATER USE.

PREPARING THE CABINET TO BE JOINED

- 10) ROLL THE NEXT CABINET INTO PLACE (OPTIONS CABINET FIRST, IF THERE IS ONE).
- 11) REMOVE THE FRONT AND TOP COVERS OF THE CABINET TO BE JOINED. THE APPLICABLE OUTLINE DRAWING (110718271 FOR THE OPTIONS CABINET, 110718269 FOR THE BATTERY CABINET) LOCATES HARDWARE AND IDENTIFIES THE REMOVAL PROCEDURE. SAVE BOTH COVERS AND HARDWARE FOR LATER USE.
- 12) LOCATE THE JOINING KIT SECURED TO THE BACK OF THE CABINET TO BE JOINED.
- 13) REMOVE THE SCREWS SECURING THE ADJOINING TOP CORNERS OF THE REAR COVERS OF BOTH CABINETS AS SHOWN IN THE REAR VIEW ABOVE AND INSTALL ONE OF THE ANGLED JOINING BRACKETS AT THAT LOCATION WITH THE SCREWS JUST REMOVED.
- 14) JOIN THE TOP FRONT CORNERS OF THE CABINETS WITH THE OTHER ANGLED JOINING BRACKET AND THE PROVIDED HARDWARE AS SHOWN IN THE FRONT VIEW ABOVE.

SECURING THE JOINED CABINET

- 15) (THIS STEP FOR SEISMIC MOUNTING ONLY) ATTACH A MOUNTING BAR TO THE FLOOR AT THE FRONT OF THE CABINET. THEN SECURE THE CABINET TO BOTH THE FRONT AND REAR MOUNTING BARS WITH THE HARDWARE PROVIDED WITH THE UNIT. GO DIRECTLY TO STEP 17.
- 16) LOWER ALL LEVELING FEET SUCH THAT THE CABINET WILL NO LONGER ROLL ON ITS CASTERS. FOR THE REAR LEVELING FEET ONLY. TIGHTEN THE LOCKING NUTS AGAINST THE CABINET.
- 17) SECURE THE FRONT ADJOINING LEVELING FEET OF THE CABINETS TOGETHER WITH THE FLAT JOINING BRACKET AS SHOWN ABOVE. TIGHTEN THE LEVELING FEET LOCKING NUTS AGAINST THE BRACKET.
- 18) (THIS STEP FOR THE OPTIONS CABINET ONLY) FOLLOW THE INSTRUCTIONS ON SHEET TWO OF DRAWING 110718271 BEFORE PROCEEDING TO STEP 19.

JOINING ADDITIONAL CABINETS

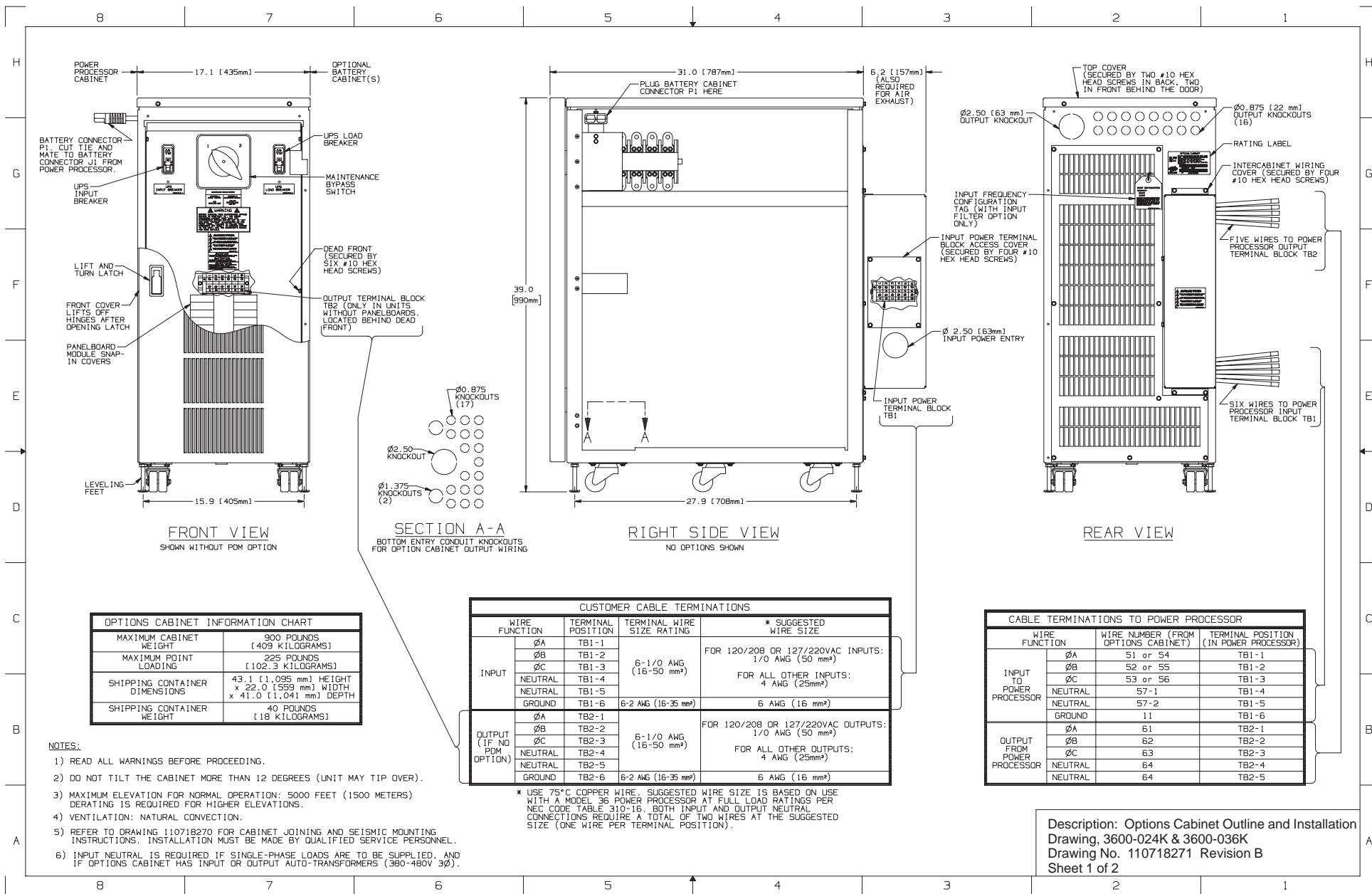
WIRING BATTERY CABINETS TO THE SYSTEM

- 19) REPEAT STEPS 10-17 AS NECESSARY UNTIL ALL CABINETS ARE IN PLACE.
- 20) COMPLETE THE SYSTEM WIRING BY TAKING CONNECTOR P1 FROM EACH BATTERY CABINET (IDENTIFIED IN THE TOP VIEW OF OUTLINE DRAWING 110718268) AND MATING IT TO THE MATCHING J1 CONNECTOR IN THE NEXT CABINET TO THE LEFT.

READYING THE SYSTEM FOR POWER-UP

- 21) MAKE SURE ALL FRONT LEVELING FEET ARE SECURED IN PLACE WITH THE LOCKING NUTS AGAINST THE CABINET.
- 22) INSTALL THE SIDE COVER REMOVED IN STEP 9 ONTO THE CABINET ON THE FAR RIGHT.
- 23) REPLACE ALL TOP COVERS REMOVED IN STEPS 8 AND 11.
- 24) REPLACE ALL FRONT COVERS REMOVED IN STEPS 7 AND 11.
- 25) YOU HAVE NOW COMPLETED INSTALLATION OF YOUR UPS SYSTEM AND ARE READY FOR INITIAL POWER-UP. REFER TO OPERATOR'S MANUAL SECTION 2.7.

Description: Installation Drawing, 3600-024K & 3600-036K
 Drawing No. 110718270 Revision D
 Sheet 1 of 1



OPTIONS CABINET INFORMATION CHART	
MAXIMUM CABINET WEIGHT	900 POUNDS (409 KILOGRAMS)
MAXIMUM POINT LOADING	225 POUNDS (102.3 KILOGRAMS)
SHIPPING CONTAINER DIMENSIONS	43.1 (1,095 mm) HEIGHT x 22.0 (559 mm) WIDTH x 41.0 (1,041 mm) DEPTH
SHIPPING CONTAINER WEIGHT	40 POUNDS (18 KILOGRAMS)

- NOTES:
- 1) READ ALL WARNINGS BEFORE PROCEEDING.
 - 2) DO NOT TILT THE CABINET MORE THAN 12 DEGREES (UNIT MAY TIP OVER).
 - 3) MAXIMUM ELEVATION FOR NORMAL OPERATION: 5000 FEET (1500 METERS) DERATING IS REQUIRED FOR HIGHER ELEVATIONS.
 - 4) VENTILATION: NATURAL CONVECTION.
 - 5) REFER TO DRAWING 110718270 FOR CABINET JOINING AND SEISMIC MOUNTING INSTRUCTIONS. INSTALLATION MUST BE MADE BY QUALIFIED SERVICE PERSONNEL.
 - 6) INPUT NEUTRAL IS REQUIRED IF SINGLE-PHASE LOADS ARE TO BE SUPPLIED, AND IF OPTIONS CABINET HAS INPUT OR OUTPUT AUTO-TRANSFORMERS (360-480V 3Ø).

CUSTOMER CABLE TERMINATIONS			
WIRE FUNCTION	TERMINAL POSITION	TERMINAL WIRE SIZE RATING	* SUGGESTED WIRE SIZE
INPUT	ØA	TB1-1	6-1/0 AWG (16-50 mm²)
	ØB	TB1-2	
	ØC	TB1-3	
	NEUTRAL	TB1-4	FOR ALL OTHER INPUTS: 4 AWG (25mm²)
	NEUTRAL	TB1-5	
	GROUND	TB1-6	6-2 AWG (16-35 mm²)
OUTPUT (IF NO PDM OPTION)	ØA	TB2-1	6-1/0 AWG (16-50 mm²)
	ØB	TB2-2	
	ØC	TB2-3	
	NEUTRAL	TB2-4	FOR ALL OTHER OUTPUTS: 4 AWG (25mm²)
	NEUTRAL	TB2-5	
	GROUND	TB2-6	6-2 AWG (16-35 mm²)

* USE 75°C COPPER WIRE. SUGGESTED WIRE SIZE IS BASED ON USE WITH A MODEL 36 POWER PROCESSOR AT FULL LOAD RATINGS PER NEC CODE TABLE 310-16. BOTH INPUT AND OUTPUT NEUTRAL CONNECTIONS REQUIRE A TOTAL OF TWO WIRES AT THE SUGGESTED SIZE (ONE WIRE PER TERMINAL POSITION).

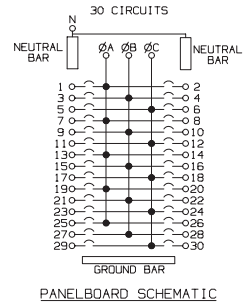
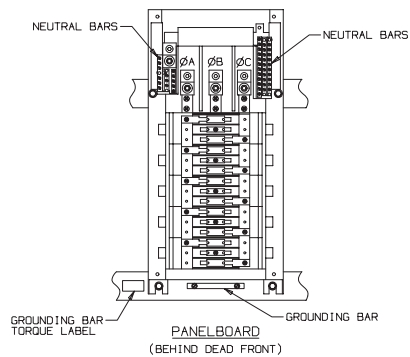
CABLE TERMINATIONS TO POWER PROCESSOR			
WIRE FUNCTION	WIRE NUMBER (FROM OPTIONS CABINET)	TERMINAL POSITION (IN POWER PROCESSOR)	
INPUT TO POWER PROCESSOR	ØA	51 or 54	TB1-1
	ØB	52 or 55	TB1-2
	ØC	53 or 56	TB1-3
	NEUTRAL	57-1	TB1-4
	NEUTRAL	57-2	TB1-5
	GROUND	11	TB1-6
OUTPUT FROM POWER PROCESSOR	ØA	61	TB2-1
	ØB	62	TB2-2
	ØC	63	TB2-3
	NEUTRAL	64	TB2-4
	NEUTRAL	64	TB2-5

Description: Options Cabinet Outline and Installation Drawing, 3600-024K & 3600-036K
 Drawing No. 110718271 Revision B
 Sheet 1 of 2

CAUTION
 RISK OF ELECTRIC SHOCK. DO NOT REMOVE COVERS.
 NO USER-SERVICEABLE PARTS INSIDE. REFER
 SERVICING TO QUALIFIED SERVICE PERSONNEL.

- 1) VERIFY THAT YOUR SOURCE VOLTAGE MATCHES THE INPUT VOLTAGE SPECIFIED ON THE RATING LABEL OF THIS CABINET (IDENTIFIED IN THE FRONT VIEW ON SHEET ONE).
WIRING BETWEEN THE OPTIONS CABINET AND THE POWER PROCESSOR
- 2) REMOVE THE INTERCABINET WIRING COVER (IDENTIFIED IN THE REAR VIEW ON SHEET ONE). SAVE THE COVER AND SCREWS FOR LATER USE.
- 3) REMOVE THE CUSTOMER WIRING COVER OF THE POWER PROCESSOR (IDENTIFIED IN THE LEFT SIDE VIEW OF DRAWING 110718268). REFER TO THE LABELS ON THE INSIDE OF THAT COVER FOR TORQUE SPECIFICATIONS. SAVE THE COVER AND SCREWS FOR LATER USE.
- 4) PASS THE TWO SETS OF WIRES FROM THE OPTIONS CABINET (SHOWN IN THE REAR VIEW ON SHEET ONE) THRU THE CORRESPONDING ENTRY HOLES OF THE POWER PROCESSOR (SHOWN IN THE RIGHT SIDE VIEW OF DRAWING 110718268. LINE THE RIM OF THESE ENTRY HOLES WITH THE GROMMET MATERIAL PROVIDED IN THE OPTIONS CABINET JOINING KIT). CONNECT ALL WIRES PER THE "CABLE TERMINATIONS TO POWER PROCESSOR" TABLE ON SHEET ONE.
- 5) REINSTALL THE INTERCABINET WIRING COVER REMOVED IN STEP 2.
WIRING TO THE OPTIONS CABINET INPUT
- 6) REMOVE THE INPUT POWER TERMINAL BLOCK ACCESS COVER (IDENTIFIED IN THE RIGHT SIDE VIEW ON SHEET ONE). REFER TO THE LABEL ON THE INSIDE OF THE COVER FOR TORQUE SPECIFICATIONS. SAVE THE COVER AND SCREWS FOR LATER USE.
- 7) AFTER RUNNING CONDUIT TO THE INPUT POWER ENTRY (SHOWN IN THE RIGHT SIDE VIEW OF SHEET ONE), CONNECT YOUR VOLTAGE SOURCE TO INPUT POWER TERMINAL BLOCK TBI OF THE OPTIONS CABINET. REFER TO THE "CUSTOMER CABLE TERMINATIONS" TABLE ON SHEET ONE FOR APPROPRIATE TERMINATIONS AND WIRE SIZES.
- 8) REINSTALL THE INPUT POWER TERMINAL BLOCK ACCESS COVER REMOVED IN STEP 6.
WIRING TO THE OPTIONS CABINET OUTPUT
- 9) REMOVE THE DEAD FRONT (IDENTIFIED IN THE FRONT VIEW OF SHEET ONE).
- 10) PREPARE THE KNOCKOUTS FOR BOTTOM ENTRY (SHOWN IN SECTION A-A OF THE RIGHT SIDE VIEW OF SHEET ONE) OR FOR BACK ENTRY (SHOWN IN THE REAR VIEW OF SHEET ONE).
WIRING TO A TERMINAL BLOCK (NO PDM OPTION)
 - A) CONNECT YOUR OUTPUT WIRING TO OUTPUT TERMINAL BLOCK TB2 (IDENTIFIED IN THE FRONT VIEW ON SHEET ONE) PER THE "CUSTOMER CABLE TERMINATIONS" TABLE (ALSO ON SHEET ONE).WIRING TO A PANELBOARD (PDM OPTION)

CAUTION
 RISK OF ELECTRIC SHOCK. PANELBOARD IS STILL
 LIVE WHEN UPS INPUT BREAKER IS OFF. FOR
 SERVICING, TURN OFF UPS LOAD BREAKER.



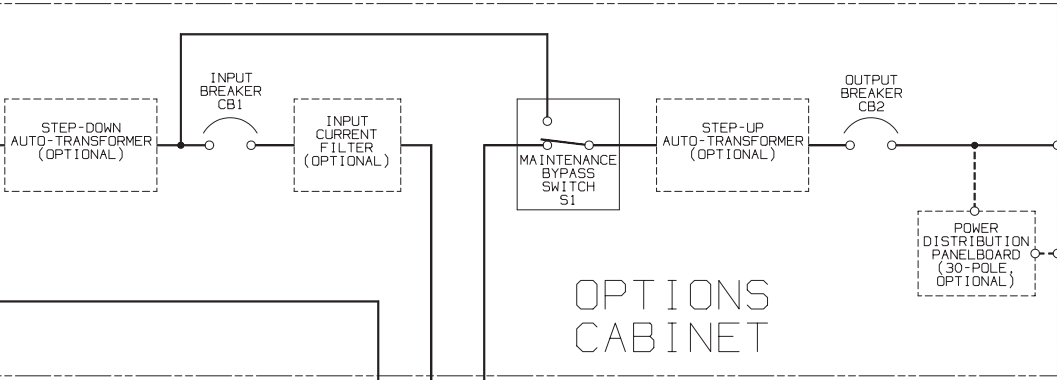
- A) INSTALL YOUR OUTPUT BREAKERS INTO THE PANELBOARD, REFERING TO THE SCHEMATIC ABOVE. THE PANELBOARD IS SQUARE D TYPE NQOM, AND IT CAN ACCEPT UP TO 30 SINGLE POLE SQUARE D TYPE QO OR TYPE QOB BREAKERS.
 - B) INSTALL YOUR OUTPUT WIRING, REFERING TO THE APPROPRIATE LABELS FOR WIRE SIZE AND TIGHTENING TORQUES.
 - C) REMOVE ONE PANELBOARD MODULE SNAP-IN COVER (IDENTIFIED IN THE FRONT VIEW ON SHEET ONE) FROM THE DEAD FRONT FOR EACH BREAKER POLE INSTALLED INTO THE PANELBOARD.
- 11) REINSTALL THE DEAD FRONT REMOVED IN STEP 9.
WIRING FOR BATTERY CABINETS
- 12) IF THIS SYSTEM IS TO BE CONNECTED TO BATTERY CABINETS, MATE BATTERY CONNECTOR P1 (IDENTIFIED IN THE FRONT VIEW ON SHEET ONE) TO BATTERY CONNECTOR J1 OF THE POWER PROCESSOR (SHOWN IN THE RIGHT SIDE VIEW OF DRAWING 110718268. READ THE CONNECTOR CAUTION ON THAT DRAWING BEFORE WIRING).
- COMPLETING SYSTEM INSTALLATION
- 13) NOW RETURN TO INSTALLATION DRAWING 110718270 AT STEP 19 TO COMPLETE PHYSICAL INSTALLATION OF THE SYSTEM.

Description: Options Cabinet Outline and Installation
 Drawing, 3600-024K & 3600-036K
 Drawing No. 110718271 Revision B
 Sheet 2 of 2

RECOMMENDED INPUT UPSTREAM SERVICE PROTECTION:
 125 AMPS FOR 115/200-127/220VAC INPUTS
 63 AMPS FOR 220/380-277/480VAC INPUTS
 (SEE NOTE 3)

AC INPUT TO UPS
 3 PHASE, A, B, C ROTATION
 115/200-277/480V LINE TO LINE } NOMINAL
 50, 60 Hz
 (SEE NOTES 1, 2, 3 AND 4)
 (REFER TO NOTES ON SHEET 2
 OF DRAWING 110718267)

SEE NOTE 5
 EXTENDED BATTERY CABINET
 EXTENDED BATTERY CABINET
 BATTERY CABINET

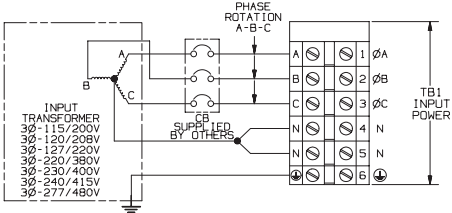


AC OUTPUT TO LOAD
 3 PHASE, A, B, C ROTATION
 115/200-277/480VAC LINE TO LINE
 50, 60 Hz
 (SEE NOTES 1, 2, AND 4)
 (REFER TO NOTES ON SHEET 2
 OF DRAWING 110718267)

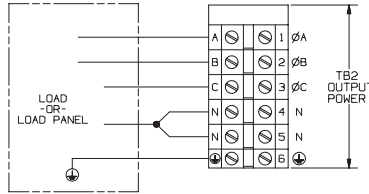
OPTIONS CABINET

POWER DISTRIBUTION PANELBOARD (30-POLE, OPTIONAL)

POWER PROCESSOR CABINET
 (REFER TO ONELINE DRAWING 110718267)



TYPICAL INPUT CONNECTIONS



TYPICAL OUTPUT CONNECTIONS

(SEE DRAWING 110718271-SHEET TWO FOR PANELBOARD INFORMATION)

CAUTION
 RISK OF ELECTRIC SHOCK. DO NOT REMOVE COVERS. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

NOTES:

- REFER TO NATIONAL AND LOCAL ELECTRICAL CODES FOR ACCEPTABLE EXTERNAL WIRING PRACTICES.
- MATERIAL AND LABOR FOR EXTERNAL WIRING ARE TO BE PROVIDED BY OTHERS.
- AN EXTERNAL PROTECTIVE DEVICE FOR THE INPUT SOURCE MUST BE PROVIDED AND SIZED FOR THE CURRENTS INDICATED ON THE NAMEPLATE. PER NATIONAL AND LOCAL ELECTRICAL CODES, THE MAXIMUM PERMISSIBLE INPUT FAULT CURRENT IS 65,000 AMPERES. (NOTE: UPSTREAM PROTECTION MUST BE COORDINATED WITH LOAD CURRENT REQUIREMENTS UNDER NOMINAL AS WELL AS LOW LINE AND OVERLOAD CONDITIONS. FOR I-T NEUTRAL POWER SOURCES, UPSTREAM PROTECTION MUST SIMULTANEOUSLY DISCONNECT THE THREE PHASE CONDUCTORS AND THE NEUTRAL.)
- THE UNIT SHALL BE GROUNDED AT THE INPUT TERMINAL BLOCK TO A SINGLE POINT LOCAL OR UTILITY EARTH GROUND. THE GROUND CONDUCTOR SHALL BE SIZED PER NATIONAL AND LOCAL ELECTRICAL CODE REQUIREMENTS. ON THE OUTPUT, FOLLOW APPLICABLE ELECTRICAL GROUNDING GUIDELINES. IN THE UNITED STATES, THE OUTPUT IS A 'SEPARATELY DERIVED SOURCE'.
- WARNING: TO AVOID FIRE AND ELECTRIC SHOCK HAZARD, DO NOT CONNECT MORE THAN THREE BATTERY CABINETS TO THE POWER PROCESSOR CABINET.
- REMOTE BATTERIES REQUIRE A DC BREAKER SUITABLE FOR BRANCH CIRCUIT PROTECTION (TO BE PROVIDED BY OTHERS).
- THE MAXIMUM AVAILABLE FAULT CURRENT PERMITTED FROM A REMOTE BATTERY SUPPLY IS 6000 AMPERES.
- INPUT NEUTRAL IS REQUIRED IF SINGLE-PHASE LOADS ARE TO BE SUPPLIED. AND IF OPTIONS CABINET HAS INPUT OR OUTPUT AUTO-TRANSFORMERS (380-480V 3Ø).

NOMINAL VOLTAGE	ELECTRICAL SPECIFICATIONS WITH AN OPTIONS CABINET							
	MODEL 24				MODEL 36			
	MAXIMUM kVA	NOMINAL kW	MAXIMUM RATED CURRENT PER PHASE		MAXIMUM kVA	NOMINAL kW	MAXIMUM RATED CURRENT PER PHASE	
		INPUT #, #	OUTPUT #, #			INPUT #, #	OUTPUT #, #	
115/200VAC	23.0	16.0	58 A	67 A	34.5	24.0	87 A	100 A
120/208VAC	24.0	16.0	56 A	67 A	36.0	24.0	84 A	100 A
127/220VAC	24.0	16.0	53 A	63 A	36.0	24.0	79 A	94.5 A
220/380VAC	24.0	16.0	35 A	36 A	36.0	24.0	53 A	54.5 A
230/400VAC	24.0	16.0	34 A	35 A	36.0	24.0	51 A	52.2 A
240/415VAC	24.0	16.0	32 A	33 A	36.0	24.0	49 A	50 A
277/480VAC	24.0	16.0	28 A	29 A	36.0	24.0	42 A	43.3 A

* INPUT AND OUTPUT CURRENTS ARE APPROXIMATELY THE SAME WHEN LOAD IS POWERED THROUGH THE BYPASS.
 # ADD UP TO 10.0 AMPERES PER PHASE FOR BATTERY CHARGER CURRENT FOR 115/200VAC, 120/208VAC, & 127/220VAC INPUTS. OR UP TO 7.0 AMPERES PER PHASE FOR 220/380VAC, 230/400VAC, 240/415VAC, & 277/480VAC INPUTS.
 √ NOMINAL CURRENT AT 0.67 POWER FACTOR.

Description: Online Diagram, 3600-024K & 3600-036K Options Cabinet
 Drawing No. 110718296 Revision B
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