

Eaton® 9355 Parallel UPS


10/15 kVA
User's Guide



p/n: 164201601
Revision F2

Class A EMC Statements

FCC Part 15

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

ICES-003

This Class A Interference Causing Equipment meets all requirements of the Canadian Interference Causing Equipment Regulations ICES-003.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

IEC 62040-2

Some configurations are classified under IEC 62040-2 as “C2 UPS for Unrestricted Sales Distribution.”



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Eaton EULA

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Chapter 1 Introduction

A parallel system with up to four uninterruptible power supplies (UPSs) can be installed to provide a parallel capacity and/or redundant system. This load sharing system provides more capacity than a single UPS and can provide backup, depending on the load and configuration. In addition, when one UPS is taken out of service for maintenance or is not operating properly, a redundant UPS continues to supply uninterrupted power to the critical load. A parallel Powerware Hot Sync® CAN Bridge Card provides connectivity for system metering and operational mode control. The parallel system consists of two to four UPSs, each with a parallel CAN Bridge Card and a parallel cabinet.

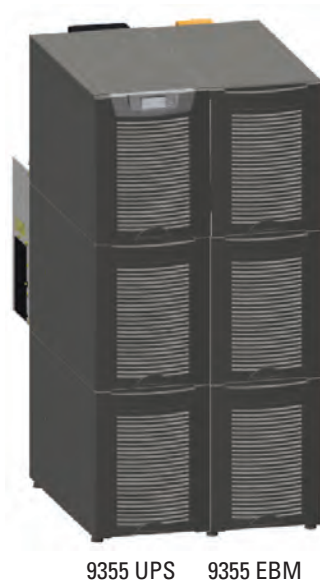
[Figure 1](#) shows the Eaton 9355 UPS and an optional Extended Battery Module (EBM).



IMPORTANT

Startup and operational checks must be performed by an authorized Eaton Customer Service Engineer, or the warranty terms specified on the product's resources page become void. See [Chapter 8 Warranty](#) for details. This service is offered as part of the sales contract for the UPS. Contact an Eaton service representative in advance (a minimum two-week notice is required) to reserve a preferred startup date.

Figure 1. The Eaton 9355 UPS and EBM (3-High Cabinets Shown)



9355 UPS 9355 EBM

Providing outstanding performance and reliability, the Eaton 9355 UPS's unique benefits including the following:

- Online UPS design with pure sine wave output. The UPS filters and regulates incoming AC power and provides consistent power to your equipment without draining the battery.
- More wattage in less space with a 0.9 power factor—protecting more equipment and leaving more room for expansion.
- Support for Powerware Hot Sync paralleling of multiple modules for redundancy or extra capacity.
- Input current total harmonic distortion (THD) of less than five percent, using active input power factor correction.

- ABM® technology that uses advanced battery management to increase battery service life, optimize recharge time, and provide a warning before the end of useful battery life.
- Up to three hours of extended runtime with added EBMs.
- Advanced power management with the Software Suite CD for graceful shutdowns and power monitoring.
- Emergency shutdown control through the remote emergency power-off (REPO) port.
- Start-on-battery capability for powering up the UPS even if utility power is not available.
- Standard communication options with a DB-9 serial port, relay output contacts, and programmable signal inputs.
- Optional X-Slot® cards with enhanced communication capabilities for increased power protection and control.

For further details on available options, see *Eaton 9355 UPS 10/15 kVA User's Guide*.

1.1 Using This Manual

This manual describes how to install and operate the Eaton 9355 UPS. Read and understand the procedures described in this manual to ensure trouble-free installation and operation. In particular, be thoroughly familiar with the REPO procedure or the LOAD OFF procedure, see **Chapter 6 UPS Operating Instructions**.

The information in this manual is divided into sections and chapters. The system, options, and accessories being installed dictate which parts of this manual should be read. At a minimum, **Chapter 1 Introduction** through **Chapter 4 UPS System Installation** and **Chapter 6 UPS Operating Instructions** should be examined.

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

1.2 Conventions Used in This Manual

This manual uses these type conventions:

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

Icon	Description
Note	Information notes call attention to important features or instructions.
[Keys]	Brackets are used when referring to a specific key, such as [Enter] or [Ctrl].

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

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

Left and right side notations are referenced standing in front of the cabinet.

1.3 Symbols, Controls, and Indicators

The following are examples of symbols used on the product to alert you to important information:



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



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



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



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



ON - Indicates that the switch is in the ON position.



OFF - Indicates that the switch is in the OFF position.



PHASE - The word "phase."

1.4 For More Information

Refer to the **Eaton 9355 UPS 10/15 kVA User's Guide** for the following additional information:

- Installation instructions, including site preparation, planning for installation, wiring and safety information, and detailed illustrations of cabinets with dimensional and connection point drawings
- Operation, including breakers, standard features and optional accessories, procedures for using the bypass functions, and information about maintenance

Refer to the **Eaton Remote Monitoring Device (RMD) Installation and Operation Manual** for additional installation and operating instructions.

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

1.5 Getting Help

If help is needed with any of the following:

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

Please call the Customer Reliability Center at:

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

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

- Model number
- Serial number
- Firmware version number
- Date of failure or problem
- Symptoms of failure or problem
- Customer return address and contact information

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

E-ESSDocumentation@eaton.com

1.6 Equipment Registration

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

Model Number:

Serial Number:

Chapter 2 Safety Warnings

IMPORTANT SAFETY INSTRUCTIONS - SAVE THESE INSTRUCTIONS

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

DANGER

This UPS contains **LETHAL VOLTAGES**. All repairs and service should be performed by **AUTHORIZED SERVICE PERSONNEL ONLY**. There are **NO USER SERVICEABLE PARTS** inside the UPS.

WARNING

- This UPS contains its own energy source (batteries). The UPS output may carry live voltage even when the UPS is not connected to an AC supply.
 - To reduce the risk of fire or electric shock, install this UPS in a temperature and humidity controlled, indoor environment, free of conductive contaminants. Ambient temperature must not exceed 40°C (104°F). Do not operate near water or excessive humidity (95% maximum).
 - To reduce the risk of fire, connect only to a circuit provided with 100 amperes maximum branch circuit overcurrent protection in accordance with the National Electrical Code® (NEC®), ANSI/NFPA 70.
 - Output overcurrent protection and disconnect switch must be provided by others.
-

CAUTION

- Batteries can present a risk of electrical shock or burn from high short circuit current. Observe proper precautions. Servicing should be performed by qualified service personnel knowledgeable of batteries and required precautions. Keep unauthorized personnel away from batteries.
 - Proper disposal of batteries is required. Refer to your local codes for disposal requirements.
 - Never dispose of batteries in a fire. Batteries may explode when exposed to flame.
-

2.1 Consignes de Sécurité

2.1.1 CONSIGNES DE SÉCURITÉ IMPORTANTES CONSERVER CES INSTRUCTIONS

DANGER

Cet onduleur contient des TENSIONS MORTELLES. Toute opération d'entretien et de réparation doit être EXCLUSIVEMENT CONFIEE A UN PERSONNEL QUALIFIE AGRÉÉ. AUCUNE PIÈCE RÉPARABLE PAR L'UTILISATEUR ne se trouve dans l'onduleur.

WARNING

- Cet onduleur renferme sa propre source d'énergie (batteries). Les prises de sortie peuvent être sous tension même lorsque l'onduleur n'est pas branché sur le secteur.
 - Pour réduire les risques d'incendie et de décharge électrique, installer l'onduleur uniquement à l'intérieur, dans un lieu dépourvu de matériaux conducteurs, où la température et l'humidité ambiantes sont contrôlées. La température ambiante ne doit pas dépasser 40 °C. Ne pas utiliser à proximité d'eau ou dans une atmosphère excessivement humide (95 % maximum).
 - La protection contre une surintensité pour le(s) circuit(s) de sortie de courant alternatif doit être fournie par un autre fournisseur.
 - Les interrupteurs de déconnexion convenables pour le(s) circuit(s) de sortie de courant alternatif doivent être fournis par un autre fournisseur.
-

CAUTION

- Les batteries peuvent présenter un risque de décharge électrique ou de brûlure par des courts-circuits de haute intensité. Prendre les précautions nécessaires.
 - Une mise au rebut réglementaire des batteries est obligatoire. Consulter les règlements en vigueur dans votre localité.
 - Ne jamais jeter les batteries au feu. L'exposition aux flammes risque de les faire exploser.
-

2.2 Advertencias de Seguridad

2.2.1 INSTRUCCIONES DE SEGURIDAD IMPORTANTES GUARDE ESTAS INSTRUCCIONES

DANGER

Este SIE contiene VOLTAJES MORTALES. Todas las reparaciones y el servicio técnico deben ser efectuados SOLAMENTE POR PERSONAL DE SERVICIO TÉCNICO AUTORIZADO. No hay NINGUNA PARTE QUE EL USUARIO PUEDA REPARAR dentro del SIE.

WARNING

- Este SIE contiene su propia fuente de energía (las baterías). Los receptáculos de salida pueden transmitir corriente eléctrica aun cuando el SIE no esté conectado a un suministro de corriente alterna (c.a.).
 - Para reducir el riesgo de incendio o de choque eléctrico, instale este SIE en un lugar cubierto, con temperatura y humedad controladas, libre de contaminantes conductores. La temperatura ambiente no debe exceder los 40°C. No trabaje cerca del agua o con humedad excesiva (95% máximo).
 - La protección contra exceso de corriente para el/los circuito(s) de CA de salida será suministrada por terceros.
 - Los interruptores de desconexión debidamente clasificados para el/los circuito(s) de CA de salida serán suministrados por terceros.
-

CAUTION

- Las baterías pueden presentar un riesgo de descargas eléctricas o de quemaduras debido a la alta corriente de cortocircuito. Preste atención a las instrucciones correspondientes.
 - Es necesario desechar las baterías de un modo adecuado. Consulte las normas locales para conocer los requisitos pertinentes.
 - Nunca deseche las baterías en el fuego. Las baterías pueden explotar si se las expone a la llama.
-

Safety Warnings

Chapter 3 UPS Installation Plan and Unpacking

Use the following basic sequence of steps to install the UPS:

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

The instructions are intended for the chief operator/system supervisor, electrical consultants, and installation electricians. Local regulations and electrical code must be followed during the UPS installation.

3.1 Creating an Installation Plan

Before installing the UPS system, read and understand how this manual applies to the system being installed. Use this chapter's procedures and illustrations and those in **Chapter 4 UPS System Installation** to create a logical plan for installing the system.

3.2 Preparing the Site

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

3.2.1 Environmental and Installation Considerations

The UPS system installation must meet the following guidelines:

- The system must be installed on a level floor suitable for computer or electronic equipment.
- The system must be operated at an altitude no higher than 1500m (5000 ft) without derating. For additional assistance with high altitude operation, contact an Eaton service representative (see paragraph [1.5 Getting Help](#)).
- The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.

CAUTION

Do not expose the UPS to overly aggressive environments, like salt mist or corrosive gases. High relative humidity accelerates the effects of contaminants. The UPS should be installed in a G1 environment (based on ANSI/ISA S-71.04 classifications). If the UPS is used in a more aggressive environment, it can cause reduced product life and possibly early failure. If the installation location does not meet the recommended environment, contact Eaton service representative for further information (see paragraph [1.5 Getting Help](#)).

- The environmental requirements specified below are for the air at the intake ports of the 93PM UPS, and are the maximum, not to exceed, ratings.
 - There shall be at least a 1.8°F (1.0°C) difference between the dry bulb temperature and the wet bulb temperature, at all times, to maintain a non-condensing environment.
 - The maximum rate of temperature change shall be limited to 3°F over 5 minutes (36°F/hour), based on the ASHRAE Standard 90.1-2013.

- The newer, more energy efficient data center cooling methods (such as air side economization) can create much wider ranges of temperature and Relative Humidity (RH) in the UPS room and/or data center. There are two aspects of this increased operating environment that can, if ignored, create issues.
 - One is the creation of microclimates, which are persistent variations of temperature and/or RH within a single room. For example one side of the room is always cooler than the other side, no matter the actual temperature.
 - The other aspect is the rate of change of temperature and/or RH, which can occur during transitions within the cooling system. Examples: changing the mixture ratio of inside versus outside air, or external changes in the outside air when going from night to day, and back to night.
 - When ignored, either one of these aspects can create an undesirable microclimate at the UPS location. If the environment created by this microclimate exceeds the UPS operating specification, the UPS reliability, over time, will be reduced. These same environmental extremes will also create reliability concerns for any servers that are exposed to them.

The basic environmental requirements for operation of the UPS are:

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

⚠ CAUTION

If battery systems are located in the same room as the UPS, the battery manufacturer's environmental requirements should be followed if they are more stringent than the UPS requirements. Operating temperatures above the recommended range will result in decreased battery life and performance, and may reduce or void the battery warranty.

The UPS ventilation requirements are shown in [Table 1](#). To allow for future power upgrades, Eaton recommends using air conditioning or ventilation sized for the fully rated UPS kW frame size installed instead of the derated kW ordered. Sizing the site cooling infrastructure to be capable of cooling the maximum kW frame size will allow a full power rating upgrade without having to modify the infrastructure.

Table 1. Air Conditioning or Ventilation Requirements During Full Load Operation

Model	UPS Rating	Minimum Required Cooling Air Flow
Eaton 9355 UPS	8–15 kVA	104 liter/sec (220 cfm)

The UPS equipment operating environment must meet the weight requirements shown in [Table 2](#) and the size requirements shown in [Table 3](#).

Table 2. UPS Cabinet Weights

Standard Model Floor Loadings (2-High/3-High Cabinets)		
Eaton 9355 UPS	Maximum Weight	Point Loading lb/in ² (kg/cm ²)
2-High UPS	381 lb (173 kg)	95 (6.7)
3-High UPS-32	587 lb (266 kg)	147 (10.3)
3-High UPS-64	619 lb (281 kg)	155 (10.9)
2-High EBM	480 lb (218 kg)	120 (8.4)
3-High EBM	710 lb (322 kg)	178 (12.5)

The UPS cabinet uses forced air cooling to regulate internal component temperature. Allow clearance in front of and in back of the cabinet for proper air circulation. The clearances required around the UPS cabinet are shown in the following table.

Table 3. UPS Cabinet Clearances

From Front of Cabinet	36" (91.4 cm) working space
From Back of Cabinet	6" (15.2 cm)
NOTE: For serviceability while on MBS, access to the landing feet (if lowered) and sufficient flexible conduit must be provided to move the unit to a location with the following service clearances.	
Service Clearance: From Side or Rear of Cabinet:	8" (20.3 cm) from each lowered rear landing foot
Service Clearance: From Top of Cabinet:	17" (43.2 cm)

For UPS cabinet and Extended Battery Module cabinet dimensions and center of gravity, see *Eaton 9355 10/15 kVA UPS User's Guide*.

3.3 Parallel UPS System Power Wiring Preparation

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

WARNING

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

- Refer to national and local electrical codes for acceptable external wiring practices.
- For external wiring, use 90°C copper wire.

IMPORTANT

This product has been evaluated for use with **copper wire only**. For external wiring, use only 90°C copper wire.

Wire sizes listed in [Table 4](#) are for copper wiring only. If wire is run in an ambient temperature greater than 40°C, larger size wire may be necessary. Wire sizes are based on using the specified breakers.

- Recommended wire sizes are based on NFPA National Electrical Code® (NEC®)70 Table 310.15(B)(16) 90° C ampacity with 40°C ambient correction factors.
- Input neutral must be wired for proper operation. Failure to connect an input neutral will void the warranty. If the optional input transformer is installed, an input neutral is not required.
- The Eaton 9355 UPS is a single-feed UPS only.

Table 4. Eaton 9355 10–15 kVA Parallel UPS: Recommended Terminal Block Wiring

Model	Voltage	Wire Function	Feeder Circuit Breaker Rating	L1, L2, L3, N Wire Size ¹	Ground Wire Size ¹	Tightening Torque	Conduit Size ^{2, 3} (Number of Conduits)
Eaton 9355 10 kVA UPS System	208	Input UPS Module, TB1 WYE / 4-Wire	45A	6 AWG	10 AWG	120 lb in (13.5 Nm)	1.00" conduit (1)
	220			8 AWG			
	208	Output UPS Module, TB1 WYE / 4-Wire	45A	6 AWG	10 AWG	120 lb in (13.5 Nm)	1.00" conduit (1)
	220			6 AWG			
Eaton 9355 15 kVA UPS System	208	Input UPS Module, TB1 WYE / 4-Wire	60A	4 AWG	10 AWG	120 lb in (13.5 Nm)	1.25" conduit (1)
	220			4 AWG			
	208	Output UPS Module, TB1 WYE / 4-Wire	60A	6 AWG	10 AWG	120 lb in (13.5 Nm)	1.00" conduit (1)
	220			6 AWG			

¹ Use only 90°C-rated copper wire. Minimum wire size is based on 120/208 full load ratings applied to National Electrical Code (NEC) Table 310-104(A). Code may require a larger AWG size than shown in this table because of temperature, number of conductors in the conduit, or long service runs. Follow local requirements.

² Per NEC article 300 20(a) for Ferrous Metal Raceways, all three-phase conductors must be run in the same conduit. Neutral and ground must be run in the same conduit as the phase conductors.

³ Conduit is sized to accommodate one neutral conductor the same size as the phase conductor and one #8 AWG ground conductor. If two neutral conductors or an oversized neutral conductor are to be installed, check the size of the conduit needed to accommodate the extra wire or size and use that conduit size in place of the conduit size listed. Conduit sizes were chosen from NEC Table C1, type letters RHH, RHW, RHW 2, TW, THW, THHW, THW 2.

**IMPORTANT**

If a 4-pole Automatic Transfer Switch (ATS) is used to connect the UPS to a generator or alternative input source, it may interrupt the UPS input neutral during its transition between sources. This UPS should always have an input source neutral connected at the bypass input terminals. This neutral must be continuous and uninterrupted; even if there are no phase-to-neutral loads connected to the UPS output. If the UPS is fed from a 4-pole ATS that interrupts the neutral, a delta-to-wye isolation transformer, with its secondary neutral bonded to ground, must be placed in line with the bypass input of the UPS. This will provide an uninterrupted neutral to the UPS, regardless of the position of the ATS neutral contact.

Note: if an overlapping neutral or make-before-break ATS switch is used, the neutrals must overlap for a minimum of 50 msec during the transition. In these cases, a transformer is not needed.

3.4 Inspecting the Equipment

If any equipment has been damaged during shipment, keep the shipping and packing materials for the carrier or place of purchase and file a claim for shipping damage. If you discover damage after acceptance, file a claim for concealed damage.

To file a claim for shipping damage or concealed damage: 1) File with the carrier within 15 days of receipt of the equipment; 2) Send a copy of the damage claim within 15 days to your service representative.

**NOTE**

Check the battery recharge date on the packaging label. If the date has expired and the batteries were never recharged, do not use the UPS. Contact your service representative.

Chapter 4 UPS System Installation

4.1 Preliminary Installation Information

WARNING

Installation should be performed only by qualified personnel.

Refer to the following while installing the UPS system:

- Review **Chapter 3 UPS Installation Plan and Unpacking**, for cabinet dimensions, equipment weight, wiring and terminal data, and installation notes.
- Do not tilt the cabinets more than $\pm 10^\circ$ during installation.
- Remove conduit landing plates to add conduit landing holes as required.
- If perforated floor tiles are required for ventilation, place them in front of the UPS.

4.2 Unloading the UPS Cabinet from the Pallet

The following tools are required for unloading the cabinet(s):

- 15 mm wrench or socket
 - 7 mm nut driver or socket
-

CAUTION

The UPS and EBM cabinets are heavy (see [Table 2](#)). Unloading the cabinets requires at least two people to safely remove the cabinets from the pallet. Be sure to support the front and rear of the cabinet during the entire unloading process.

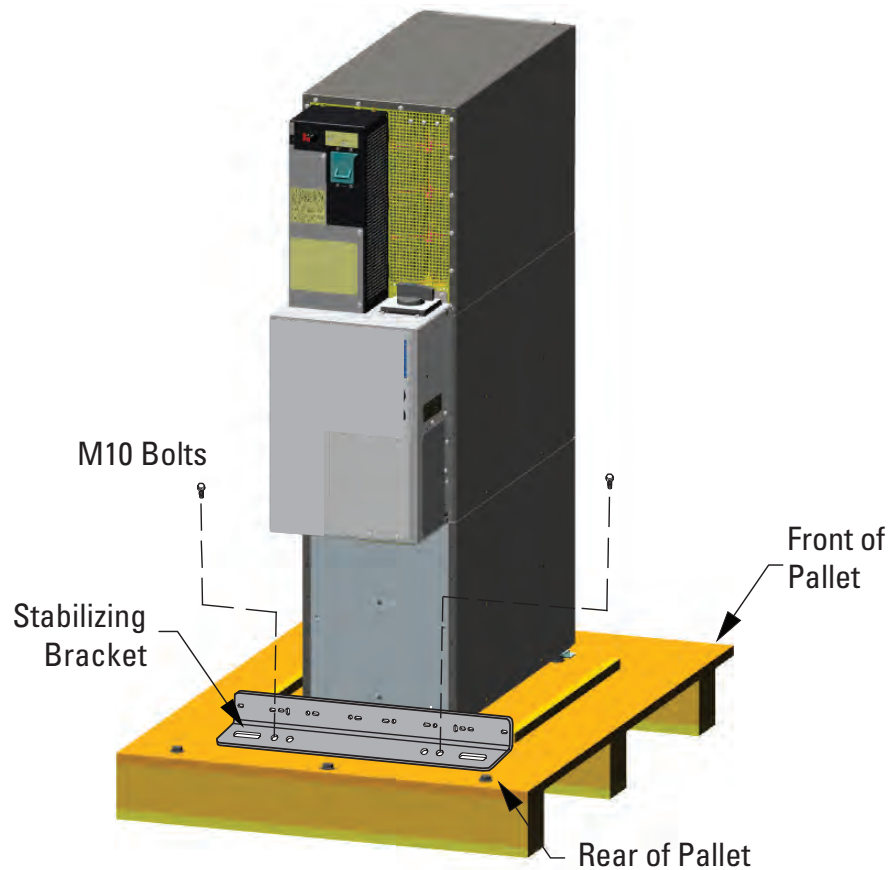
To unload three-high cabinets or two-high EBM cabinets, proceed to paragraph [4.2.1 Three-High Cabinets or Two-High EBM Cabinets](#). To unload two-high UPS cabinets, proceed to paragraph [4.2.2 Two-High UPS Cabinets](#).

4.2.1 Three-High Cabinets or Two-High EBM Cabinets

To remove a three-high cabinet or a two-high EBM cabinet from the shipping pallet:

1. Remove the two M10 bolts securing the stabilizing bracket to the pallet (see [Figure 2](#)).

Figure 2. Removing the Stabilizing Bracket Bolts



2. Remove the M10 bolts from the two Pallet Brackets securing the leveling feet to the pallet (see [Figure 3](#)).
3. Remove the four M4 screws securing the stabilizing bracket to the cabinet rear panel and remove the bracket (see [Figure 3](#)). Retain the hardware for later use.



NOTE

Retain the stabilizing bracket and hardware for later re-assembly onto the cabinet

4. Remove the front cover from the bottom cabinet to access the front shipping bracket.
Press and release the handle latch at the bottom of the cover and then lift the cover up and off the cabinet.

CAUTION

To maintain stability of the pallet, apply downward pressure to the front of the pallet when completing steps 5 through 7 to prevent tipping.

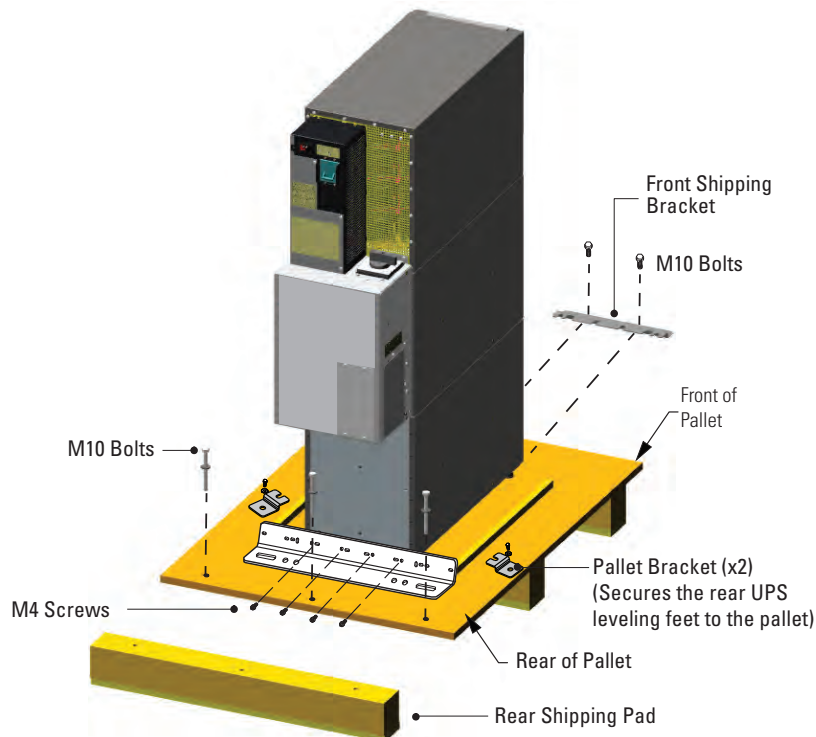
- Remove the three M10 bolts securing the rear shipping pad to the pallet and remove the shipping pad, see [Figure 3](#).

**NOTE**

Hold the back of the cabinet so that the bolts can be removed easily without the cabinet rolling backward.

- Remove the two M10 bolts securing the front shipping bracket and remove the bracket.
If needed, adjust the leveling feet to release the bracket.

Figure 3. Removing the Brackets and Shipping Pad



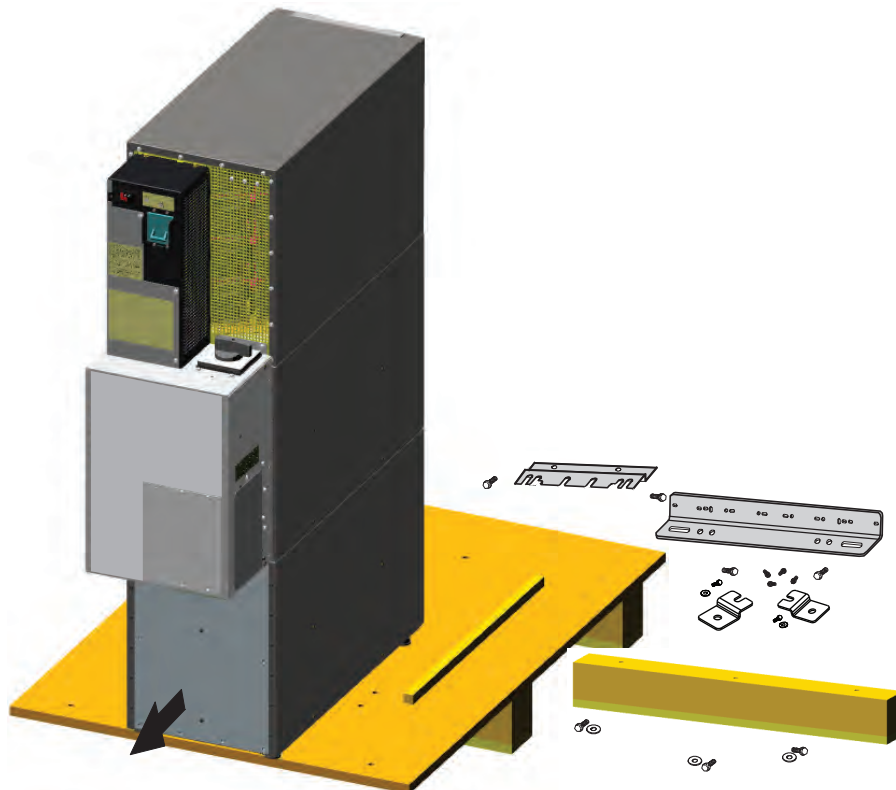
- Reinstall the front cover removed in [Step 4](#).
Hang the top edge of the cover on the cabinet first, then lower the bottom edge and snap into place.

 **IMPORTANT**

Support the front and back of the cabinet when rolling it off the pallet to prevent tipping.

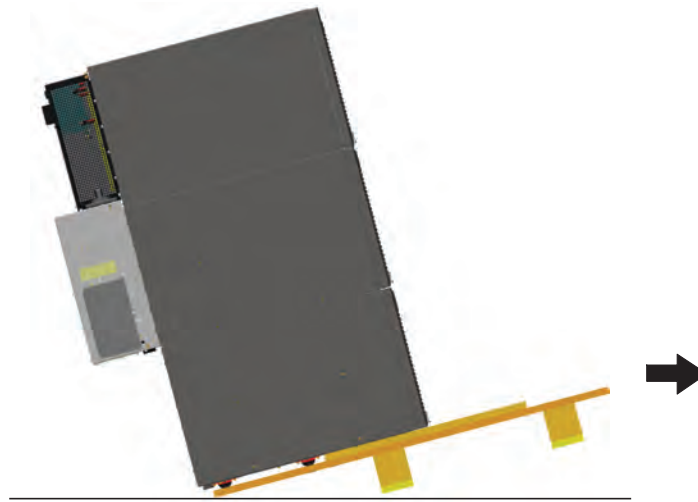
8. Slowly roll the cabinet toward the rear of the pallet. Once the pallet tilts, continue rolling the cabinet down the pallet until the cabinet touches the floor (see [Figure 4](#)).
If needed, adjust the leveling feet so that the cabinet rolls freely.

Figure 4. Unloading the Cabinet



9. With the cabinet supported, slowly pull the pallet away from the cabinet (see [Figure 5](#)).

Figure 5. Removing the Pallet



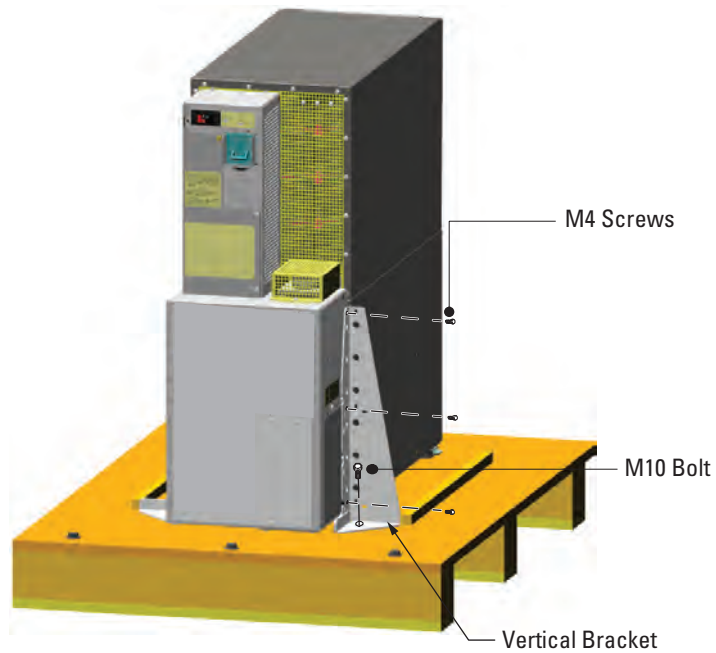
10. Roll the cabinet to the desired location.
11. Proceed to paragraph [4.3 External AC Power Wiring Installation](#).

4.2.2 Two-High UPS Cabinets

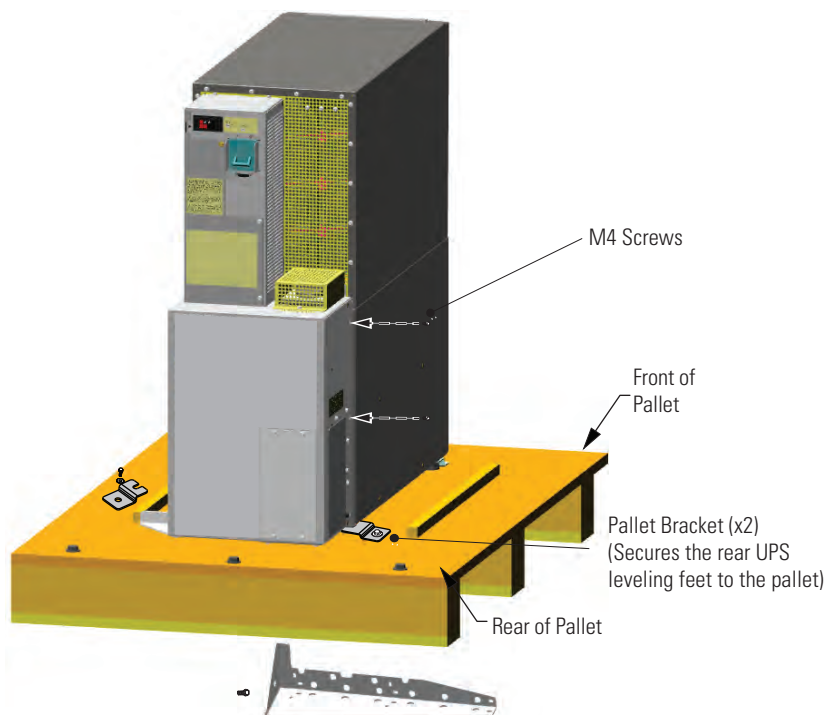
To remove a two-high UPS from the shipping pallet:

1. Remove the M10 bolt securing the vertical bracket to the pallet (see [Figure 6](#)).
2. Remove and retain the three M4 screws securing the vertical bracket to the UPS. Remove the vertical bracket.

Figure 6. Removing the Vertical Bracket



3. Reinstall the M4 screws to the UPS (see [Figure 7](#)).

Figure 7. Reinstalling the M4 Screws and Remove Pallet Brackets

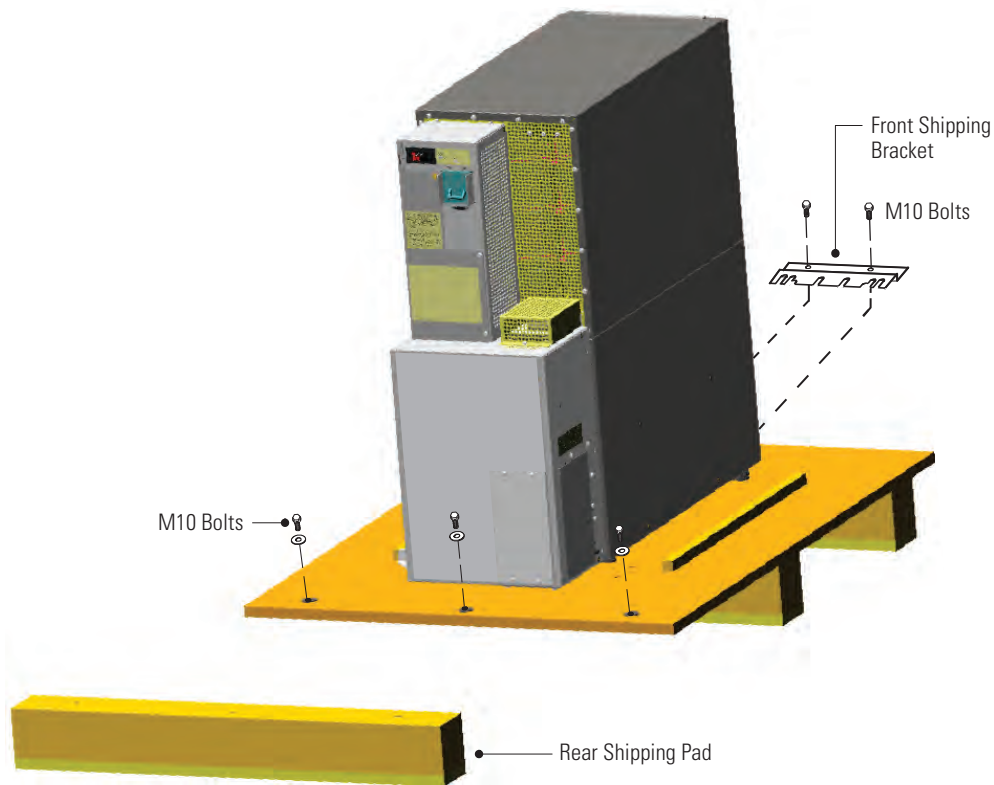
4. Remove the M10 bolts from the two Pallet Brackets securing the leveling feet to the pallet (see [Figure 7](#)).
5. Repeat [Step 1](#) through [Step 4](#) to remove the vertical bracket on the other side.
6. Remove the front cover from the bottom cabinet to access the front shipping bracket.
Press and release the handle latch at the bottom of the cover and then lift the cover up and off the cabinet.
7. Remove the three M10 bolts securing the rear shipping pad to the pallet and remove the shipping pad (see [Figure 8](#)).

**NOTE**

Hold the back of the cabinet so that the bolts can be removed easily without the cabinet rolling backward.

8. Remove the two M10 bolts securing the front shipping bracket and remove the bracket.
If needed, adjust the leveling feet to release the bracket.

Figure 8. Removing the Front Shipping Bracket and Shipping Pad



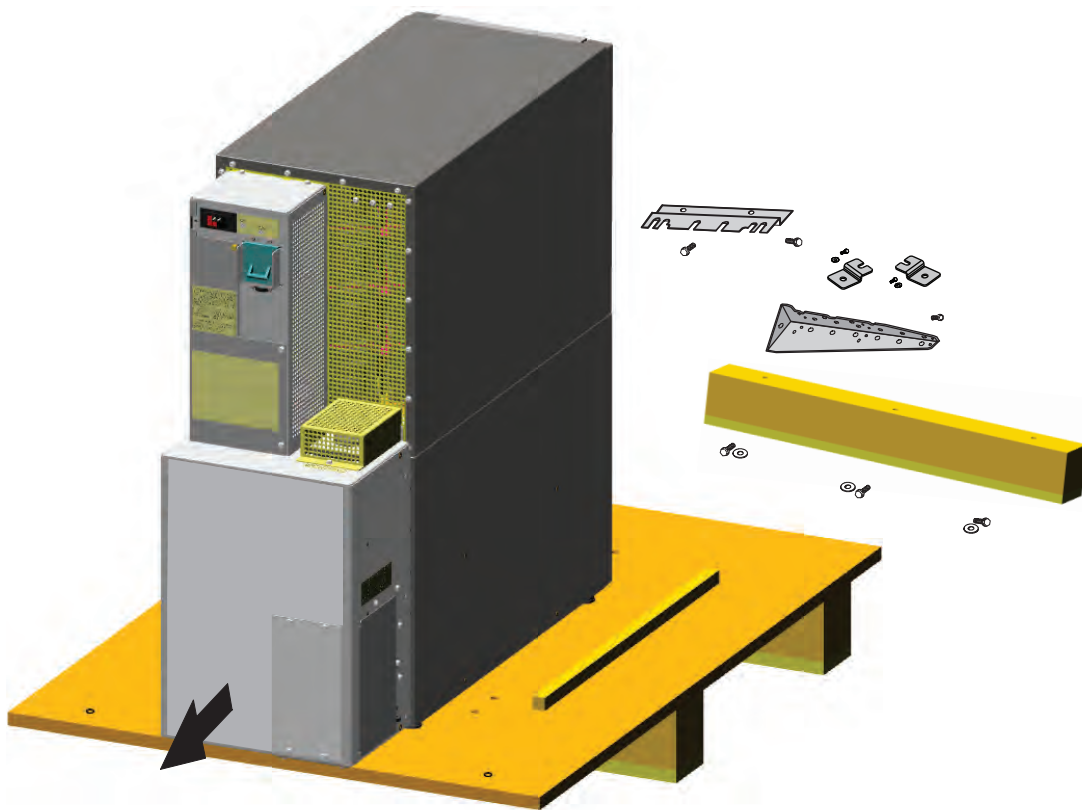
9. Reinstall the front cover removed in [Step 6](#).

Hang the top edge of the cover on the cabinet first, then lower the bottom edge and snap into place.

i NOTE Support the front and back of the cabinet when rolling it off the pallet to prevent tipping.

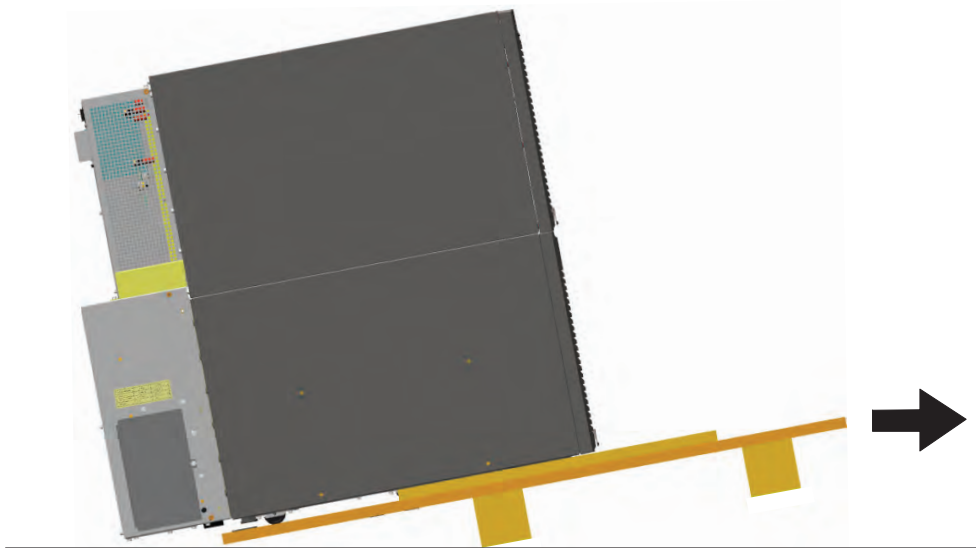
10. Slowly roll the cabinet toward the rear of the pallet. Once the pallet tilts, continue rolling the cabinet down the pallet until the cabinet touches the floor (see [Figure 9](#)).

If needed, adjust the leveling feet so that the cabinet rolls freely.

Figure 9. Unloading the Cabinet

11. With the cabinet supported, slowly pull the pallet away from the cabinet (see [Figure 10](#)).

Figure 10. Removing the Pallet



12. Roll the cabinet to the desired location.
13. Proceed to paragraph [4.3 External AC Power Wiring Installation](#).

4.3 External AC Power Wiring Installation

You are now ready to install the Eaton 9355 UPS. Select one of the following installation options according to your UPS configuration:

- To install the Version 1 Tie Cabinet, see paragraph [4.3.1 Version 1 Tie Cabinet Parallel Installation](#).
- To install the Version 2 Tie Cabinet, see paragraph [4.3.2 Version 2 Tie Cabinet Parallel Installation](#).

4.3.1 Version 1 Tie Cabinet Parallel Installation

The Eaton 9355 UPS has the following power connections:

- 3-phase (L1, L2, and L3), neutral, and ground connection for rectifier/bypass input
- 3-phase (L1, L2, and L3), neutral, and ground connection for load output

The nominal input/output voltages are:

- 120/208 or 127/220 Vac

Output overcurrent protection and disconnect switch must be provided by others.

WARNING

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

To hardwire the parallel system:

1. Verify that the electrical connections to the installation site have been properly installed.

2. A wall-mounted, user-supplied, readily-accessible disconnection device must be incorporated in the input wiring.

Compare the circuit breaker ratings to the ones in [Table 4](#).

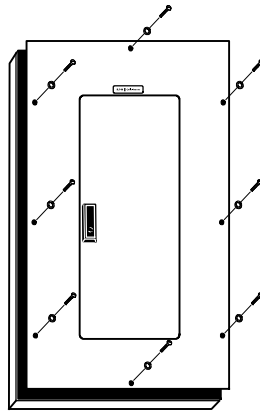


NOTE

To accommodate the feature of easy system expandability, it is recommended that initial installation of the Eaton 9355 UPS contain wiring to support the maximum capacity of the UPS cabinet.

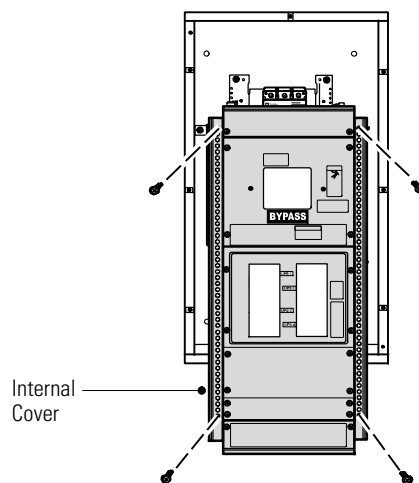
3. Switch off utility power to the distribution point where the parallel tie cabinet and UPSs will be connected. Be absolutely sure there is no power.
4. Determine your equipment's grounding requirements according to your local electrical code.
5. Remove the parallel tie cabinet front cover (see [Figure 11](#)).

Figure 11. Version 1 Parallel Tie Cabinet Front Cover



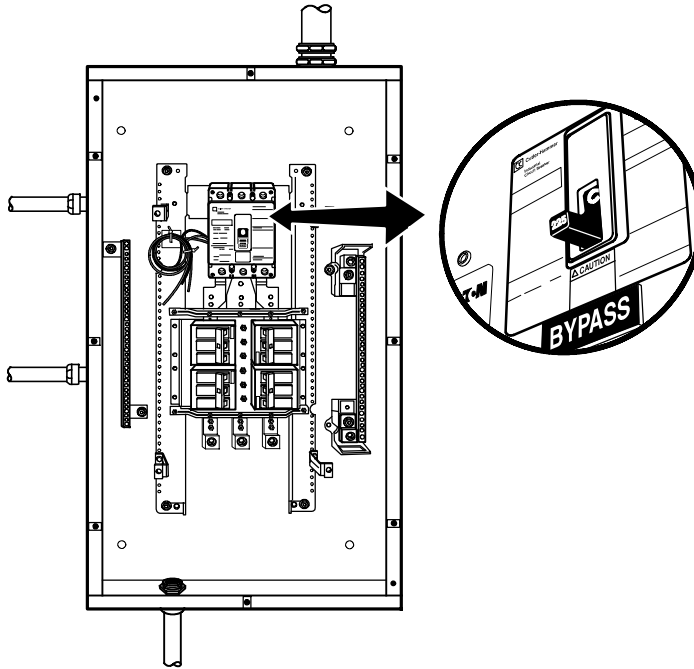
6. Remove the internal cover to gain access to the breakers (see [Figure 12](#)).

Figure 12. Version 1 Internal Cover



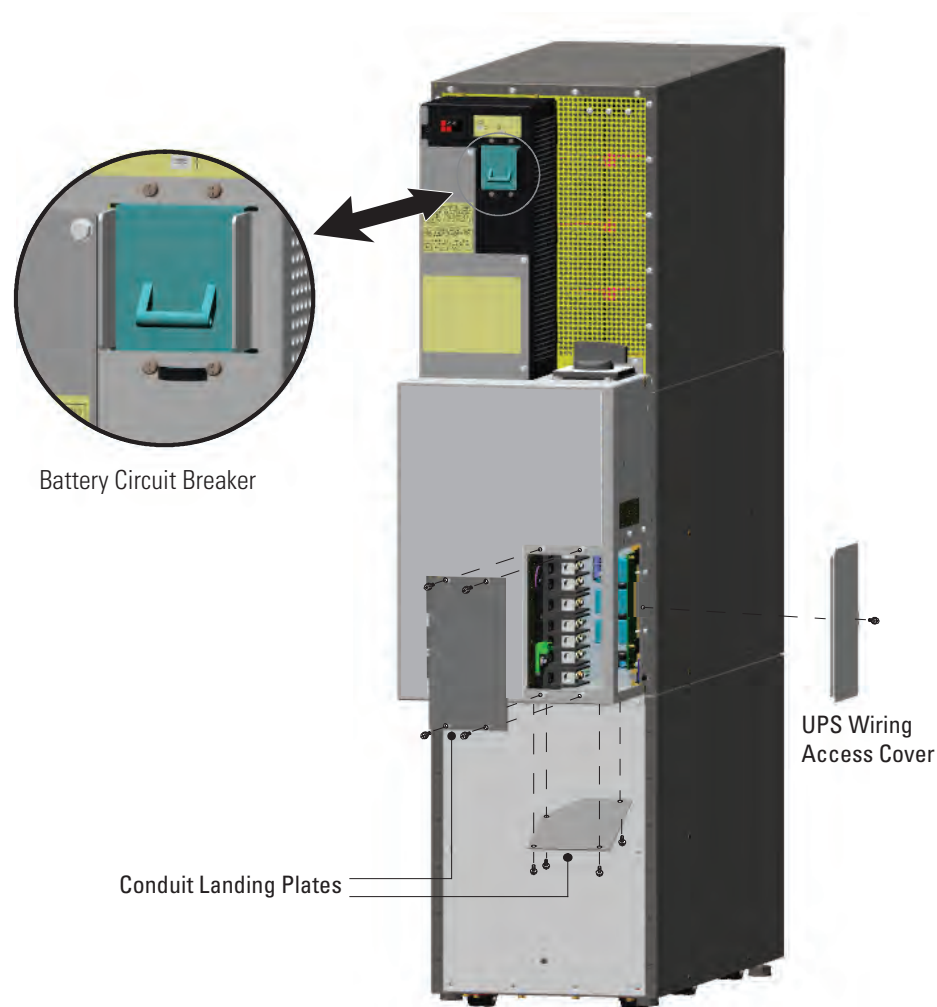
7. Punch holes for the conduit (AC input, UPS output, load connection, and maintenance bypass contact wires) using a Greenlee® punch or similar device.
8. Verify that the parallel bypass breaker is in the OFF position (see [Figure 13](#)).
9. Mount the parallel tie cabinet to the wall and install the conduit.

Figure 13. Version 1 Parallel Bypass Breaker



10. Verify that each UPS battery circuit breaker is in the OFF position (see [Figure 14](#)).
11. From each UPS, remove the UPS wiring access cover and one of the conduit landing plates and retain.
12. Punch two holes in the conduit landing plate for the input and output conduit using a Greenlee punch or similar device.

Figure 14. UPS Rear View (3-High Shown)



13. Hardwire the UPS input terminations.

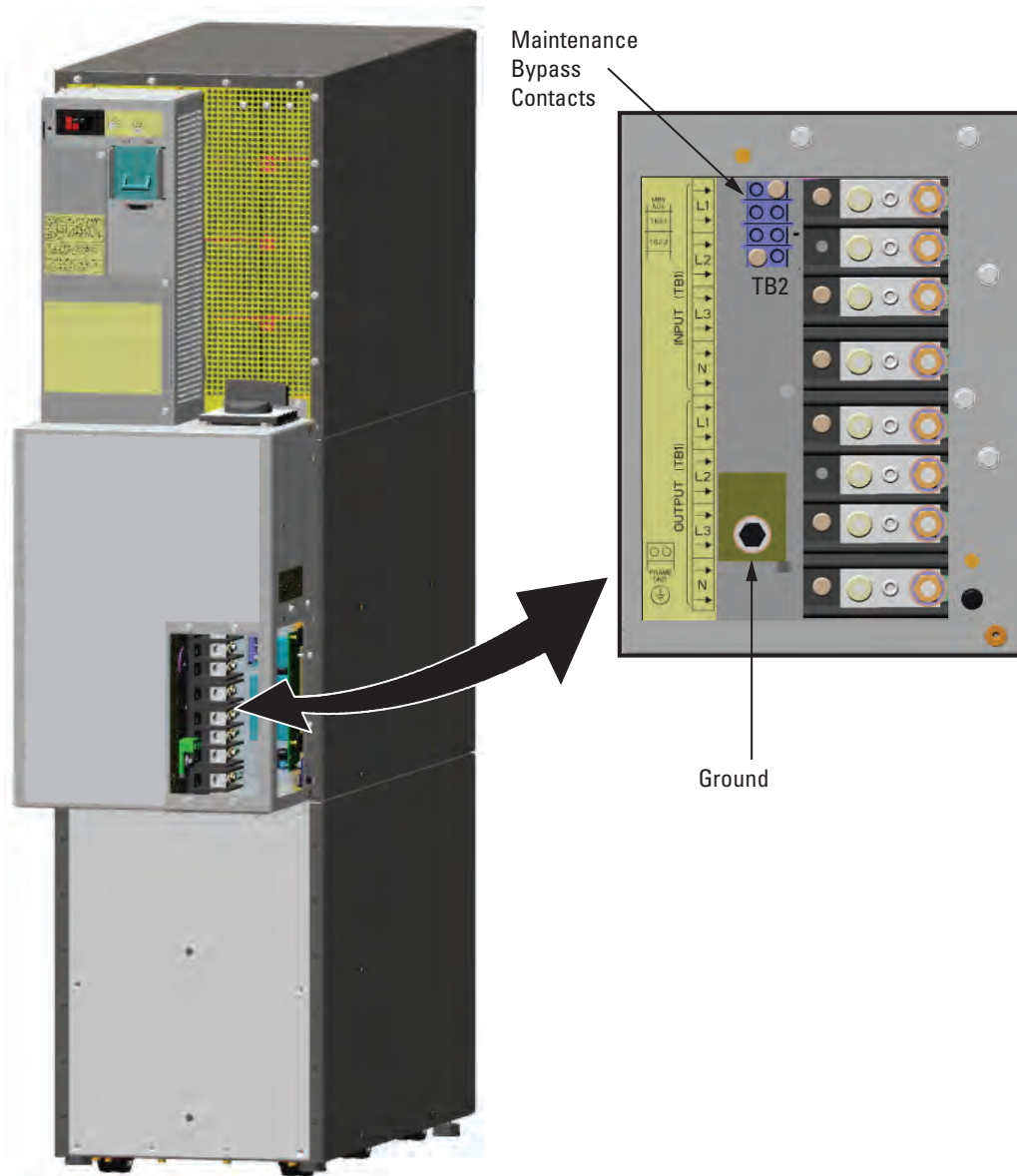
See [Table 4](#) for specifications and [Figure 15](#) for a detailed view of the UPS terminal block.



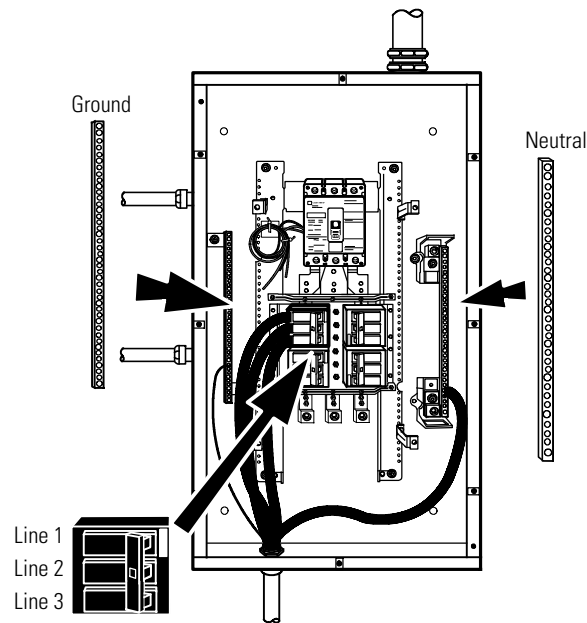
NOTE 1 Input neutral must be wired for proper operation. Failure to connect an input neutral will void the warranty. If the optional input transformer is installed, an input neutral is not required.

NOTE 2 The Eaton 9355 UPS is a single-feed UPS only.

Figure 15. UPS Terminal Block (3-High Shown)



14. Hardwire the output terminations from the UPS to the parallel tie cabinet (see [Figure 16](#)).

Figure 16. Version 1 UPS Output to Parallel Tie Cabinet Wiring

15. Hardwire the load to the parallel tie cabinet (see [Figure 17](#)).
16. Wire the maintenance bypass contacts and terminate to the maintenance bypass wires in the parallel tie cabinet (see [Figure 15](#)).

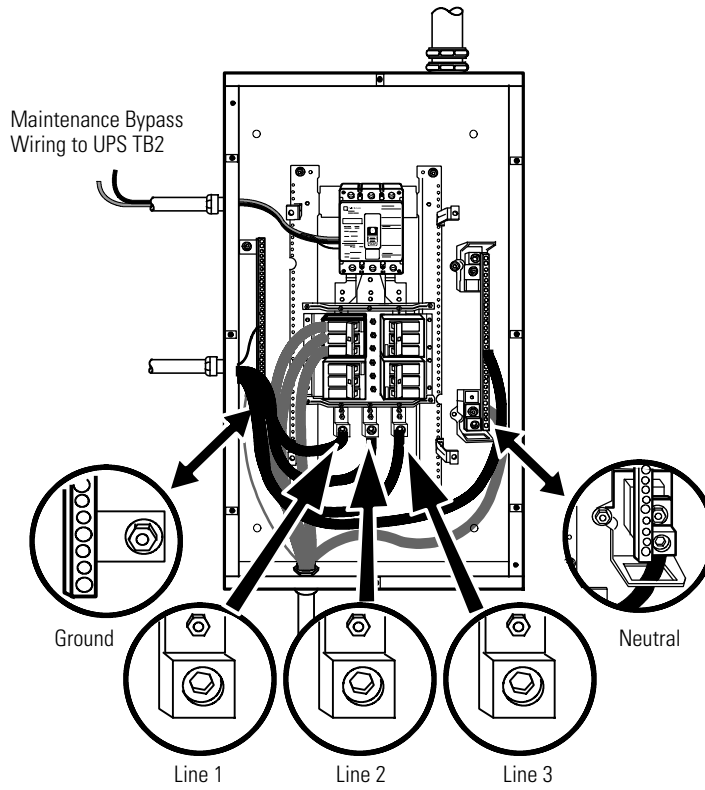
Connect the black and the red wire to TB2 on the UPS. Cap the blue wire.

**NOTE**

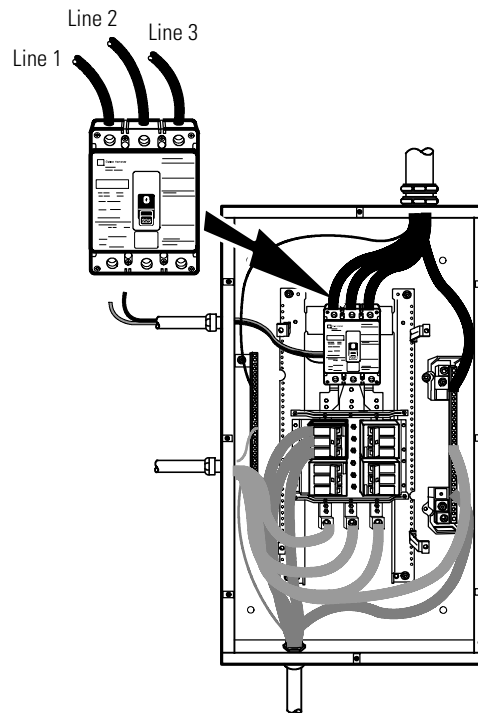
The maintenance bypass contacts are normally-open. To ensure proper bypass operation, DO NOT use the blue wire (it is normally-closed).

17. Replace the UPS wiring access cover and conduit landing plate.
18. Repeat [Step 12](#) through [Step 17](#) for each UPS.

Figure 17. Version 1 Load Connections



19. Wire the AC input to the bypass breaker (see [Figure 18](#)).

Figure 18. Version 1 Bypass AC Input Wiring

20. Verify the phase rotation for each UPS and the bypass input.
21. Reinstall the internal cover removed in [Step 6](#).
22. Reinstall the parallel tie cabinet front cover removed in [Step 5](#).
23. Proceed to paragraph [4.3.3 Installing Options](#) to continue the installation process.

4.3.2 Version 2 Tie Cabinet Parallel Installation

The Eaton 9355 UPS has the following power connections:

- 3-phase (L1, L2, and L3), neutral, and ground connection for rectifier/bypass input
- 3-phase (L1, L2, and L3), neutral, and ground connection for load output

The nominal input/output voltages are:

- 120/208 or 127/220 Vac

Output overcurrent protection and disconnect switch must be provided by others.



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

To hardwire the parallel system:

1. Verify that the electrical connections to the installation site have been properly installed.

2. A wall-mounted, user-supplied, readily-accessible disconnection device must be incorporated in the input wiring.

Compare the circuit breaker ratings to the ones in [Table 4](#).

**NOTE**

To accommodate the feature of easy system expandability, it is recommended that initial installation of the Eaton 9355 UPS contain wiring to support the maximum capacity of the UPS cabinet.

3. Switch off utility power to the distribution point where the parallel tie cabinet and UPSs will be connected. Be absolutely sure there is no power.
4. Determine your equipment's grounding requirements according to your local electrical code.
5. Unfasten the bypass cabinet front door latch and swing the door open (see [Figure 19](#)).
6. Follow the instructions on the inside of the door to open or remove the front cover (see [Figure 19](#) and [Figure 20](#)).

Figure 19. Version 2 Parallel Tie Cabinet Front Door and Cover

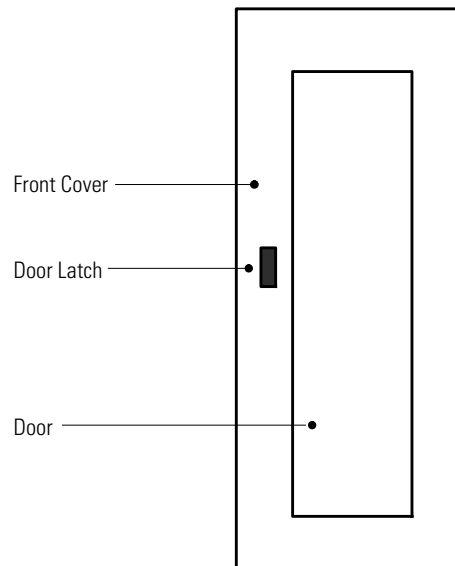
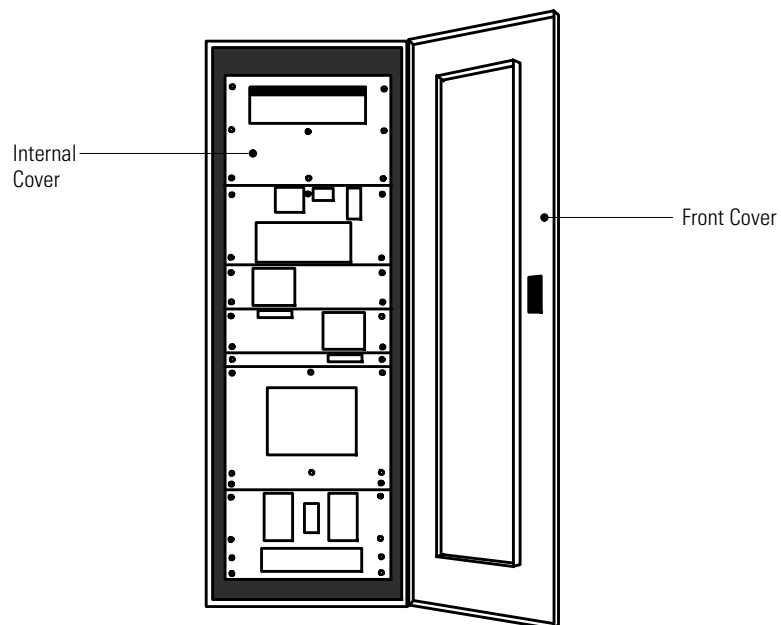
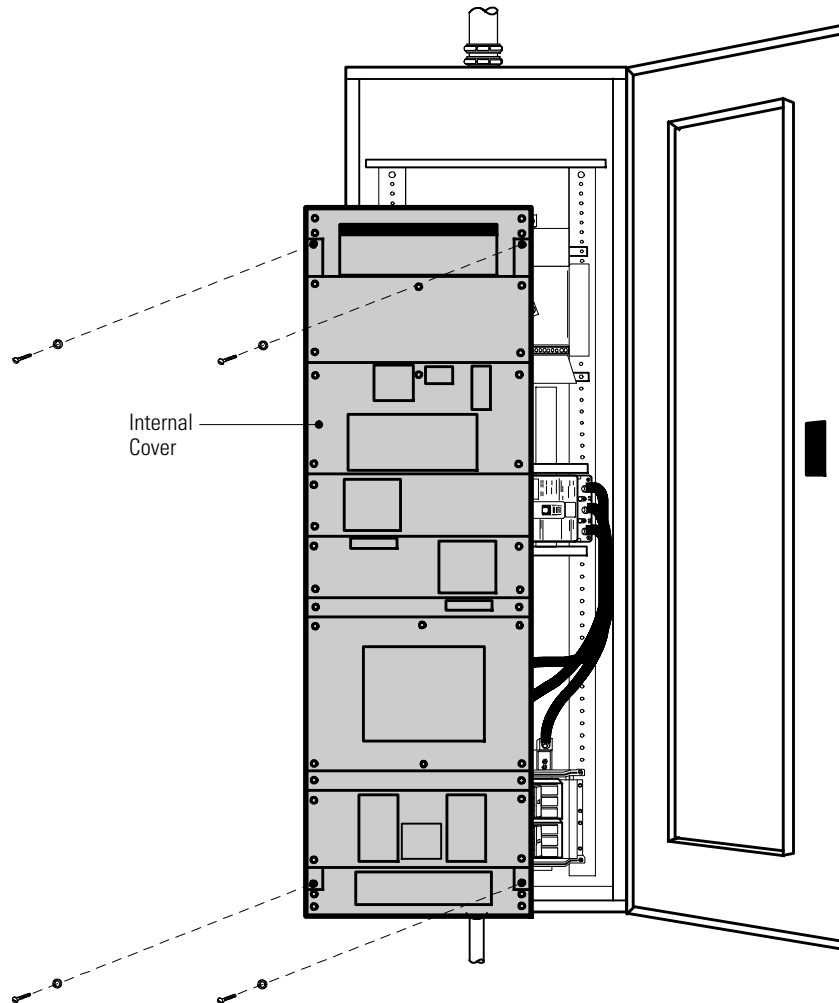


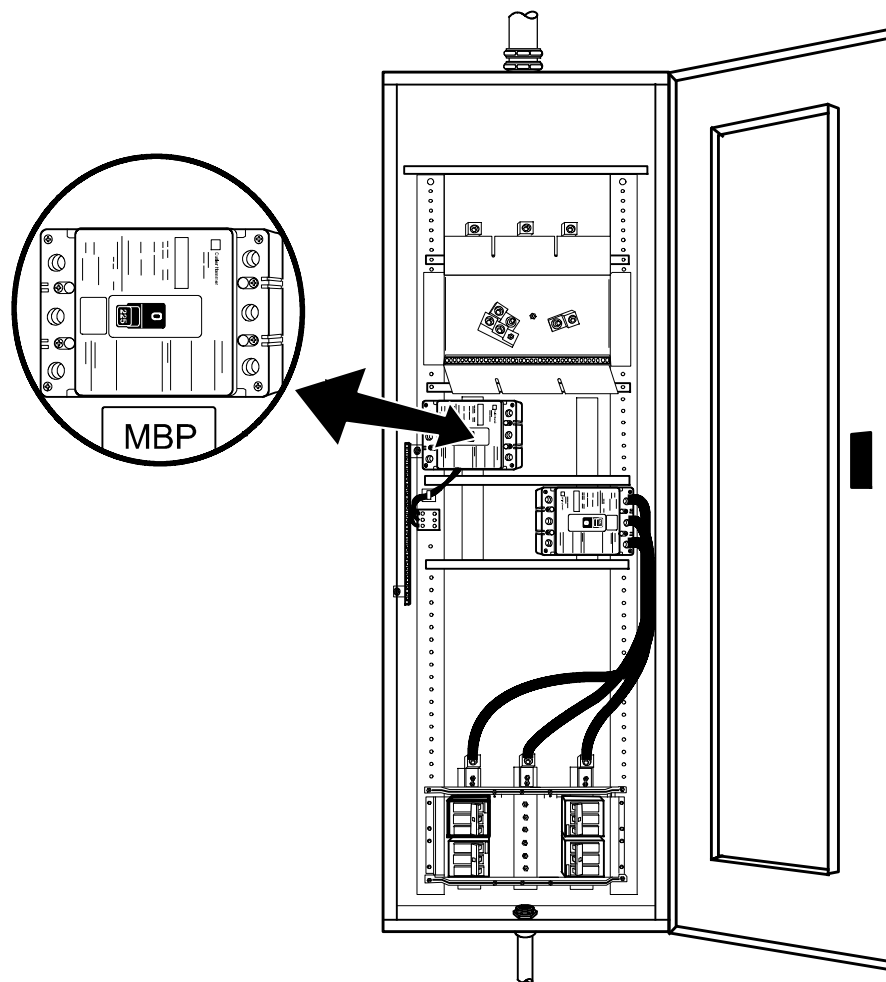
Figure 20. Version 2 Parallel Tie Cabinet Front Cover Open

7. Remove the internal cover to gain access to the breakers (see [Figure 21](#)).

Figure 21. Version 2 Parallel Tie Cabinet Internal Cover

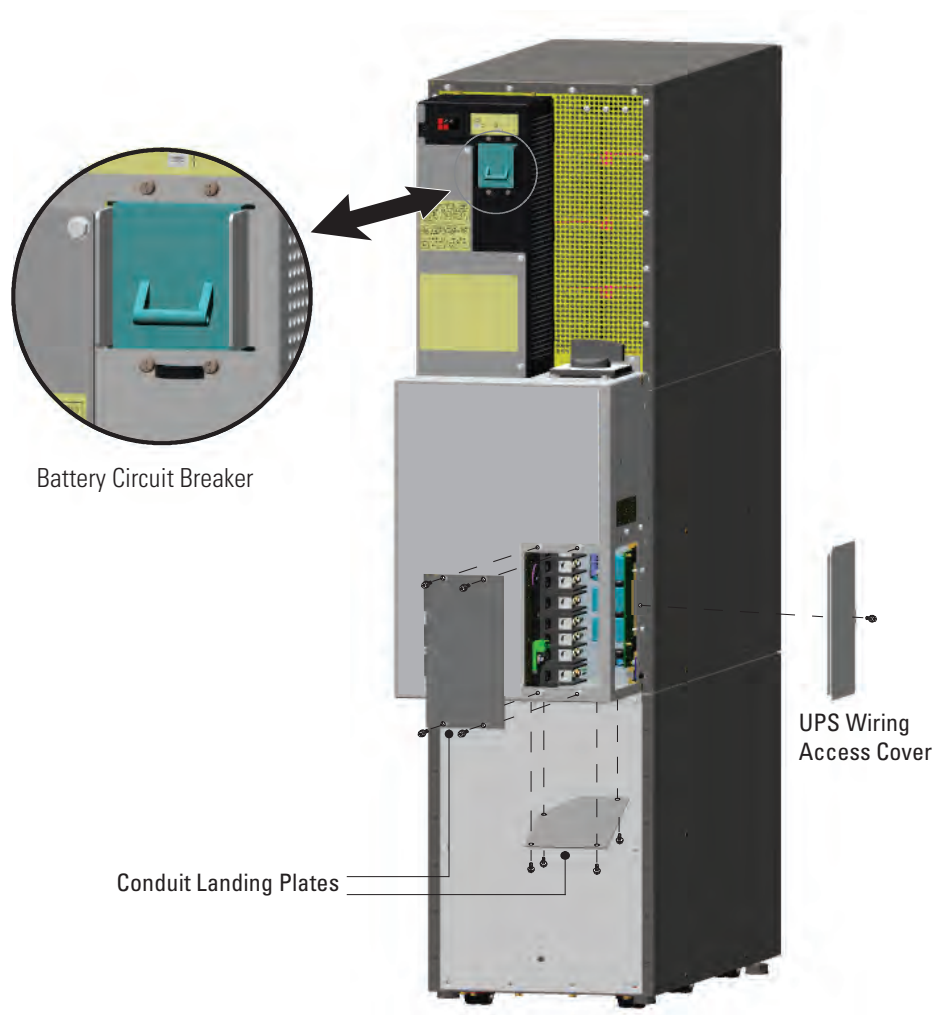


8. Punch holes for the conduit (AC input, UPS output, load connection, and maintenance bypass contact wires) using a Greenlee® punch or similar device.
9. Verify that the parallel bypass breaker is in the OFF position (see [Figure 22](#)).
10. Mount the parallel tie cabinet to the wall and install the conduit.

Figure 22. Version 2 Parallel Tie Cabinet Bypass Breaker

11. Verify that each UPS battery circuit breaker is in the OFF position (see [Figure 23](#)).
12. From each UPS, remove the UPS wiring access cover and one of the conduit landing plates and retain.
13. Punch two holes in the conduit landing plate for the input and output conduit using a Greenlee punch or similar device.

Figure 23. UPS Rear View (3-High Shown)



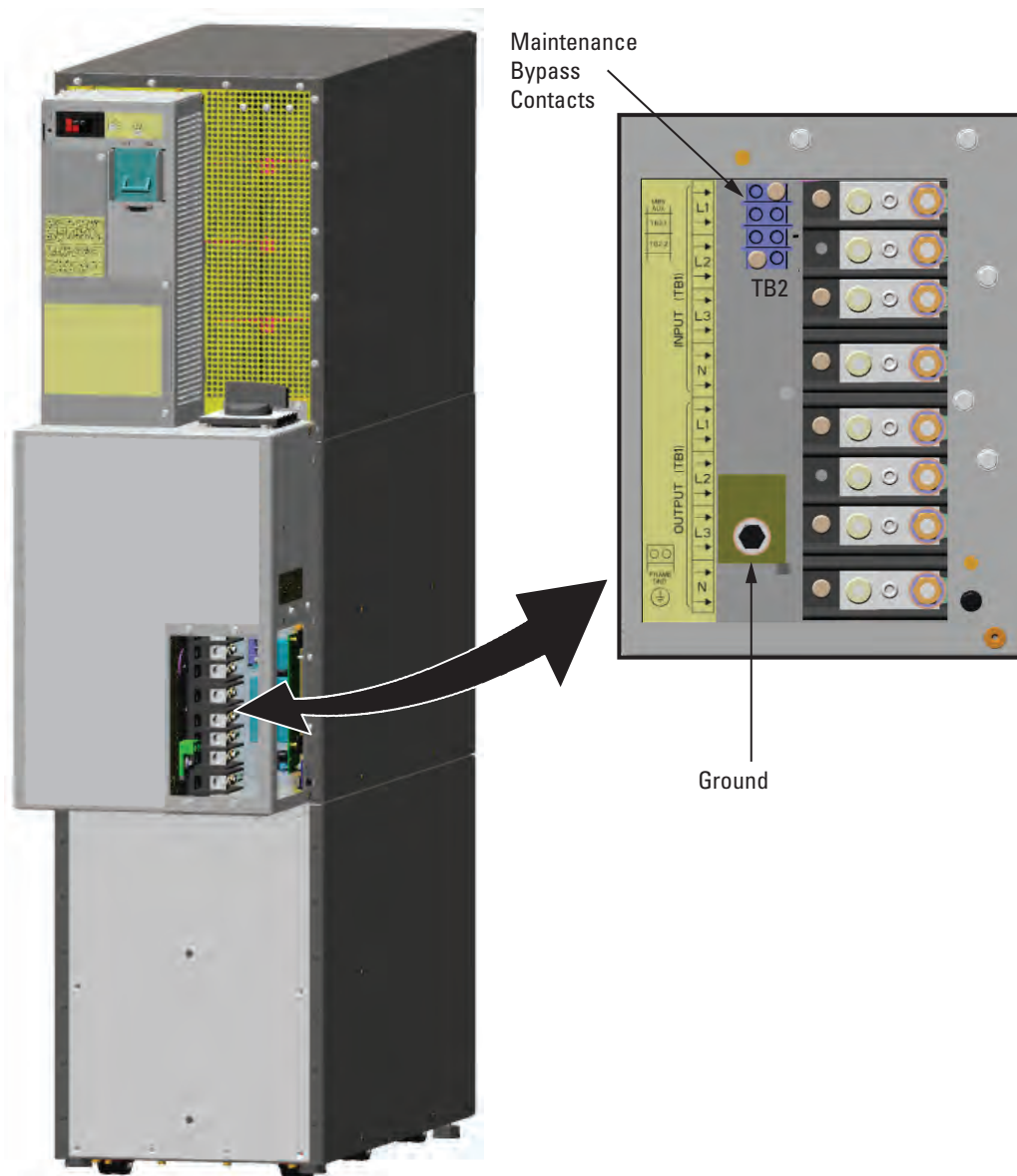
14. Hardwire the UPS input terminations.

See [Table 4](#) for specifications and [Figure 24](#) for a detailed view of the UPS terminal block.



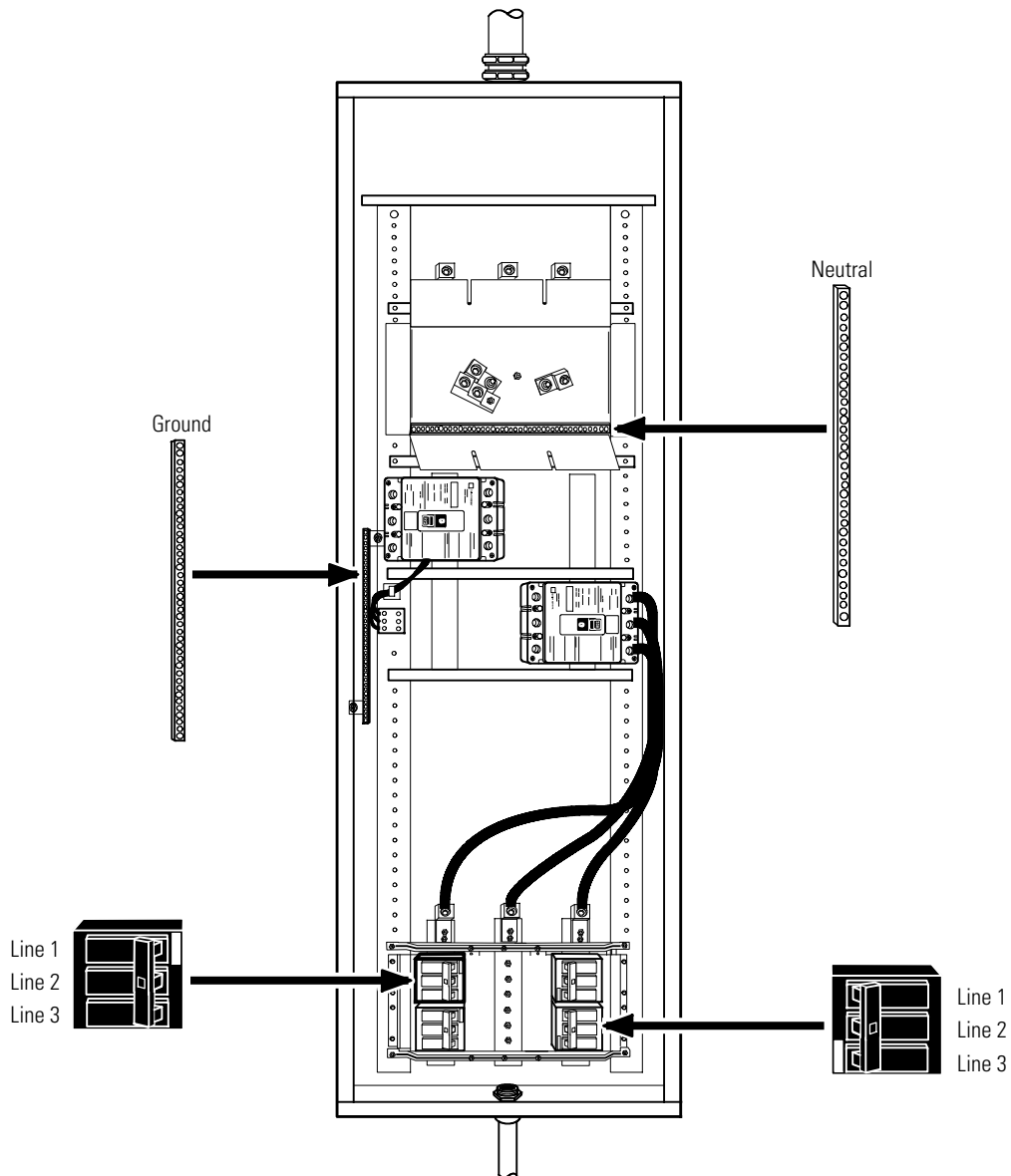
NOTE 1 Input neutral must be wired for proper operation. Failure to connect an input neutral will void the warranty. If the optional input transformer is installed, an input neutral is not required.

NOTE 2 The Eaton 9355 UPS is a single-feed UPS only.

Figure 24. UPS Terminal Block (3-High Shown)

15. Hardwire the output terminations from the UPS to the parallel tie cabinet (see [Figure 25](#)).

Figure 25. Version 2 Tie Cabinet UPS Output to Parallel Tie Wiring



16. Hardwire the load to the parallel tie cabinet (see [Figure 26](#)).
17. Wire the maintenance bypass contacts and terminate to the maintenance bypass wires in the parallel tie cabinet (see [Figure 24](#)).

Connect the black and the red wires from the terminal block on the Tie Cabinet to TB2 on the UPS.

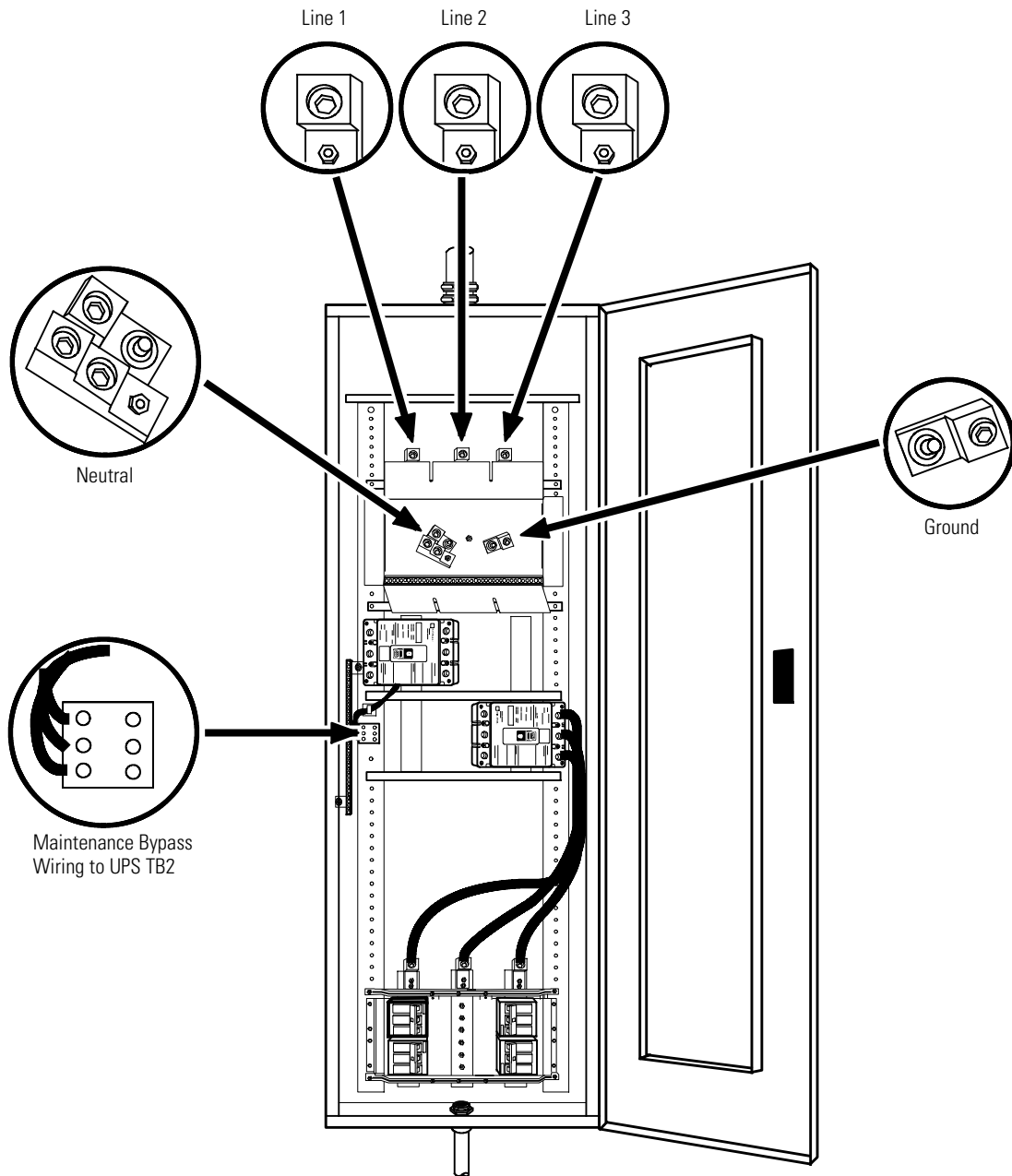


NOTE

The maintenance bypass contacts are normally-open. To ensure proper bypass operation, DO NOT use the blue wire (it is normally-closed).

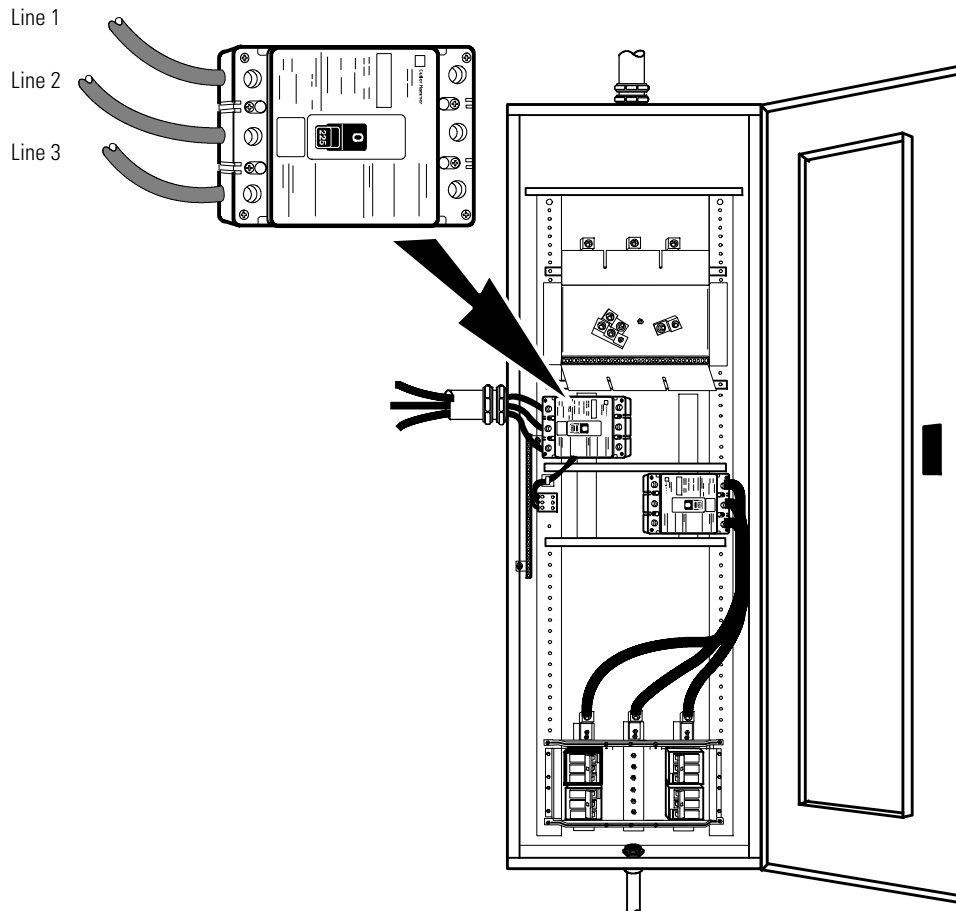
18. Replace the UPS wiring access cover and conduit landing plate.
19. Repeat [Step 13](#) through [Step 18](#) for each UPS.

Figure 26. Version 2 Tie Cabinet Load Connections



20. Wire the AC input to the bypass breaker (see [Figure 27](#)).

Figure 27. Version 2 Tie Cabinet Bypass AC Input Wiring



21. Verify the phase rotation for each UPS and the bypass input.
22. Reinstall the internal cover removed in [Step 7](#).
23. Reinstall the parallel tie cabinet front cover removed in [Step 5](#).
24. Proceed to paragraph [4.3.3 Installing Options](#) to continue the installation process.

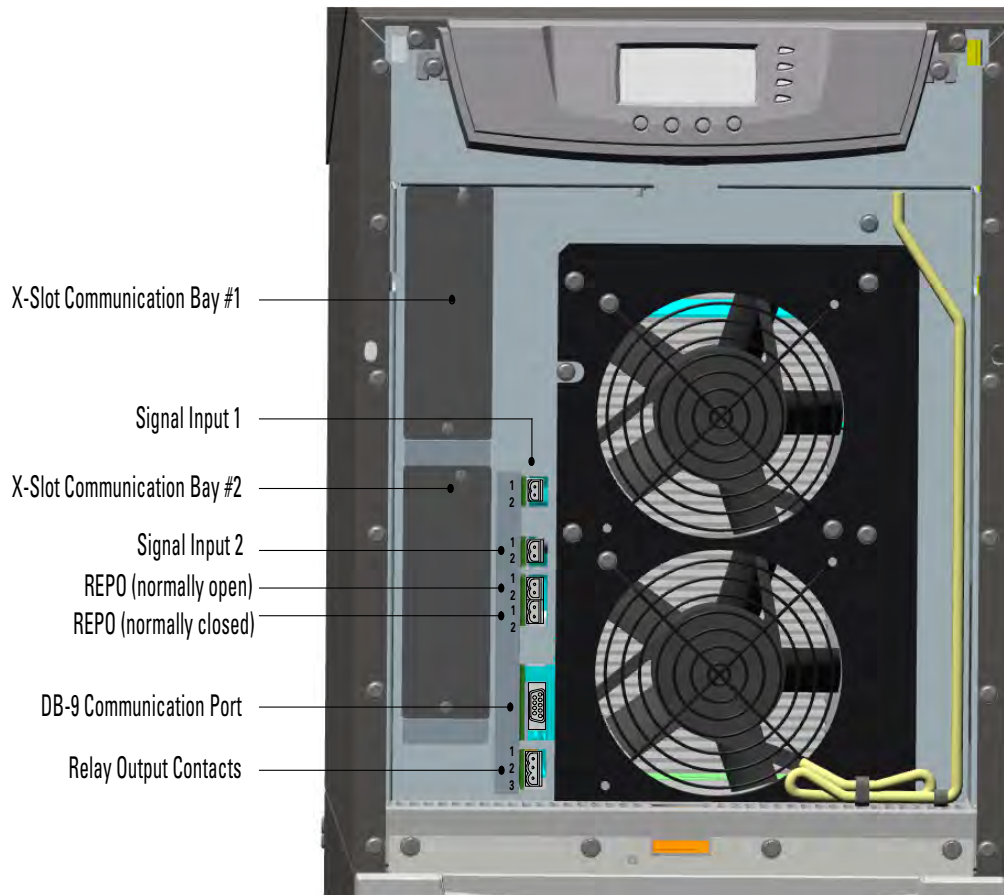
4.3.3 Installing Options

This section describes the Powerware Hot Sync CAN Bridge Card.

For other options, such as additional X-Slot cards, Power Management Software, remote emergency power-off (REPO), relay output contacts, or programmable signal inputs, refer to the *Eaton 9355 UPS (10/15 kVA) User's Guide*.

[Figure 28](#) shows the location of the communication options and control terminals on the UPS.

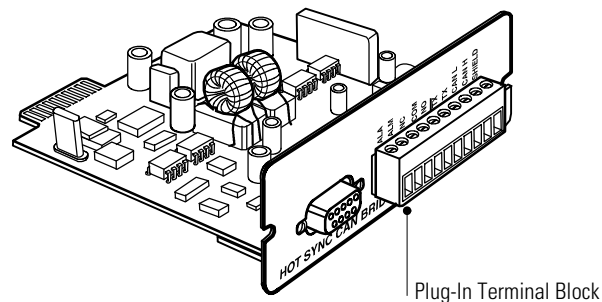
Figure 28. Communication Options and Control Terminals



4.3.3.1 Powerware Hot Sync CAN Bridge Card

The Powerware Hot Sync CAN Bridge Card, shown in [Figure 29](#), can be installed to provide connectivity for operational mode control and metering of a parallel system at any UPS in the system.

Figure 29. Powerware Hot Sync CAN Bridge Card

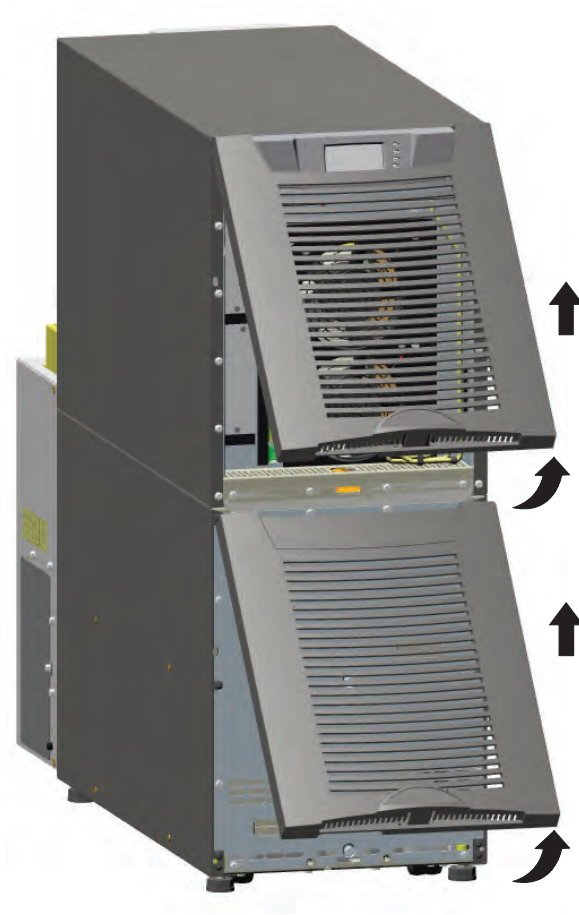


To install the Powerware Hot Sync CAN Bridge Card:

1. Remove the front covers of all cabinets, starting with the top cabinet.

Press and release the handle latch at the bottom of each cover and then lift the cover up and off the cabinet (see [Figure 30](#)).

Figure 30. Removing the Front Covers



2. Strip shielded, four-wire, twisted-pair wire for CAN Bridge Card wiring. Recommended wire size is 18 AWG maximum.
3. Install the CAN Bridge Card wiring between each UPS (see [Figure 31](#)). Verify correct polarity for Pins 8 and 9:
 - Connect SHIELD Pin 10 on all cards together.
 - Connect CAN H Pin 9 and CAN L Pin 8 (twisted pair) on all cards together.
 - Connect COM Pin 4 and NC Pin 3 (twisted pair) on all cards together.
4. Wire the factory-installed pull-chain wiring to Signal Input 2 on each UPS and daisy chain the wiring to each UPS as shown in [Figure 31](#). Verify correct polarity:
 - Connect COM Pin 4 to Signal Input 2 Pin 1 on each UPS.
 - Connect NC Pin 3 to Signal Input 2 Pin 2 on each UPS.

CAUTION

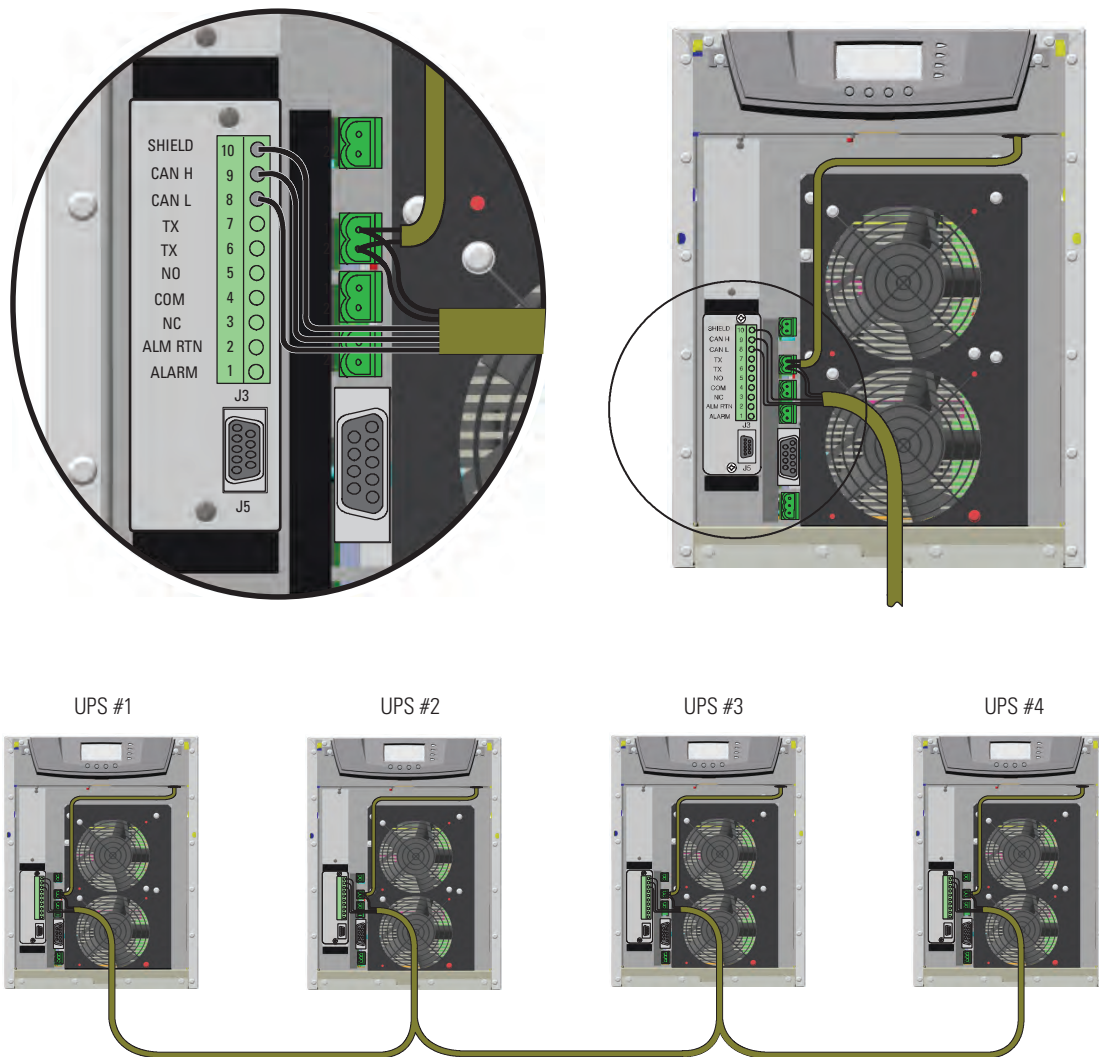
If polarity or wiring is not correct, the parallel system does not operate normally. For example, when shutting down one UPS, the remaining UPS transfers the load to bypass instead of supporting the load. Verify all CAN Bridge Card wiring is correct for proper operation



NOTE

Signal Input 2 can still be used for building alarms; it is automatically rerouted to the CAN Bridge Card.

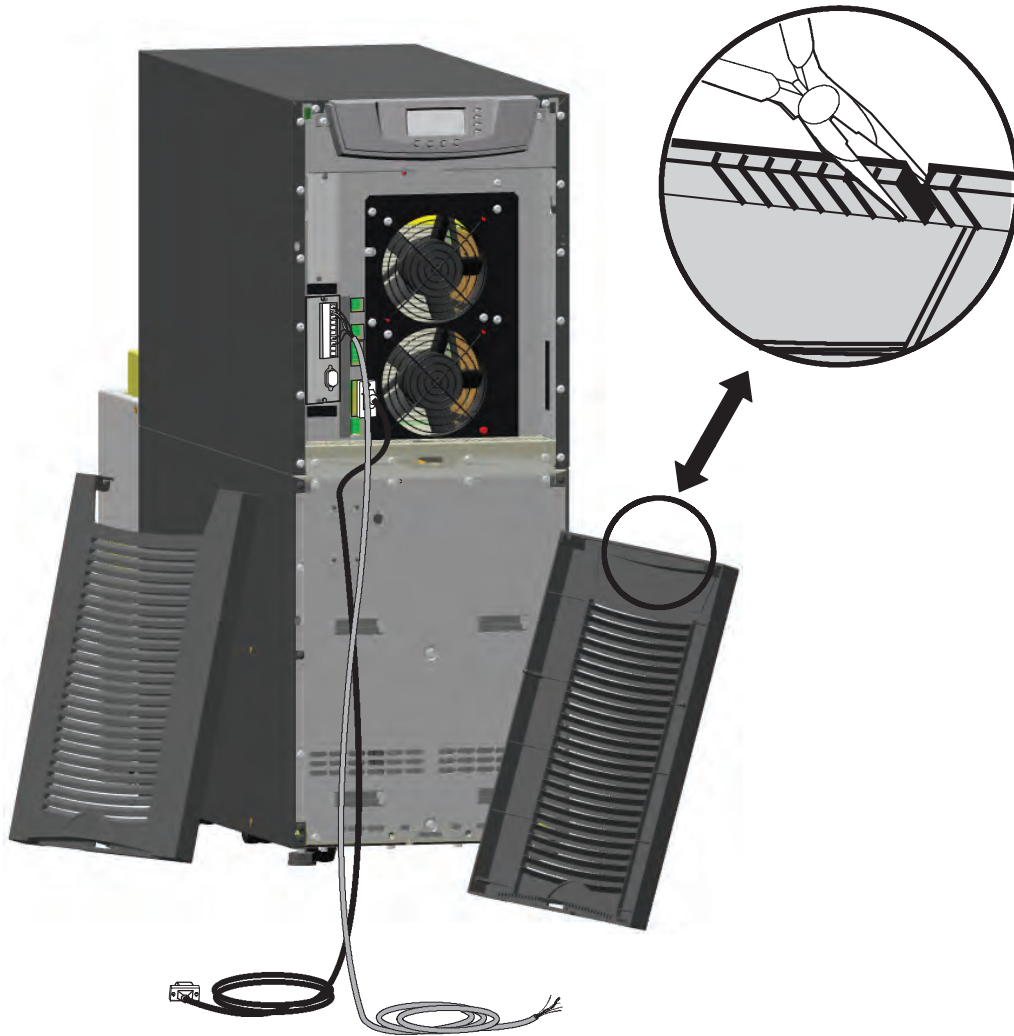
Figure 31. CAN Bridge Card Wiring



- On the bottom cover (and also the middle cover if 3-high), remove a knockout tab in the top edge of the cover for each cable:

With wire cutters, cut either side of the tab and twist down to remove the tab (see [Figure 32](#)).

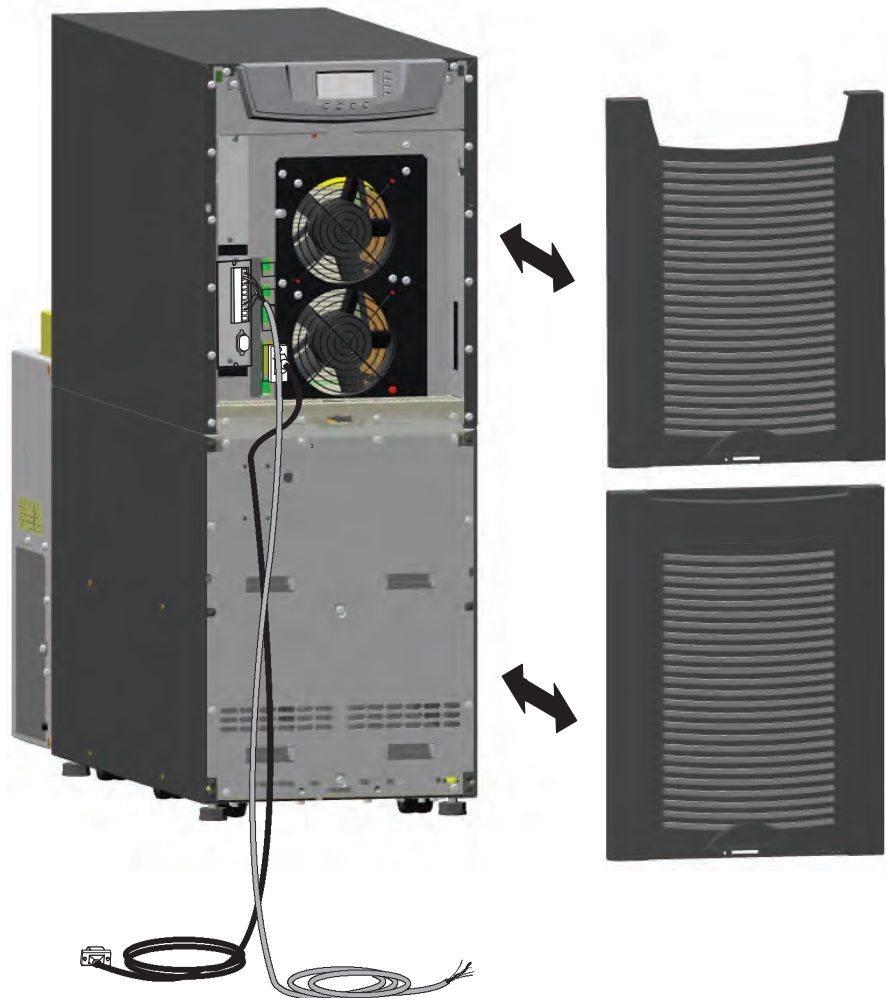
Figure 32. Removing Knockout Tabs



6. Route the cable(s) to the approximate location of the cover access holes.
7. Reinstall the front covers, starting with the bottom cabinet (see [Figure 33](#)).

Hang the top edge of the cover on the cabinet first, then lower the bottom edge and snap into place. Verify that the cables fit in the access holes in the covers.

Figure 33. Reinstalling the Front Covers



8. Proceed to paragraph [4.3.4 Stabilizing the Cabinet](#) to complete the parallel UPS installation.

**NOTE**

After UPS startup, ensure maximum battery runtime by configuring the UPS for the correct number of EBMs (see paragraph [6.3 Configuring the UPS for EBMs](#)).

4.3.4 Stabilizing the Cabinet

**NOTE 1**

For seismic installations, you **MUST** order and install an Eaton 9355 UPS seismic kit; do not use the following instructions.

NOTE 2

For non-seismic installations, you **MUST** install the stabilizing bracket on all 3-high cabinets. The stabilizing bracket is optional for 2-high cabinets.

To stabilize the cabinet(s):

1. Lower the leveling feet to prevent the cabinet from rolling.

Figure 34. Lowering the Leveling Feet



2. Attach the stabilizing bracket to the bottom of the cabinet rear panel using the retained hardware from the shipping pallet according to the cabinet configuration:
 - For one cabinet, see [Figure 35](#).
 - For two cabinets, see [Figure 36](#).
 - For three cabinets, see [Figure 37](#).



NOTE

No more than three cabinets can be attached together. For four cabinets, use two of the two-cabinet installations. For five cabinets, use one three-cabinet and one two-cabinet installation.

3. Use the holes and slots in the bottom of the bracket to attach the cabinet to the flooring if desired.
4. Continue to one of the following sections:
 - See paragraph [4.4 Extended Battery Module Installation](#) to install optional EBMs.
 - See [Chapter 6 Operation](#) to start up the UPS.



NOTE

After UPS startup, ensure maximum battery runtime by configuring the UPS for the correct number of EBMs (see paragraph [6.3 Configuring the UPS for EBMs](#)).

Figure 35. Stabilizing Bracket with One Cabinet

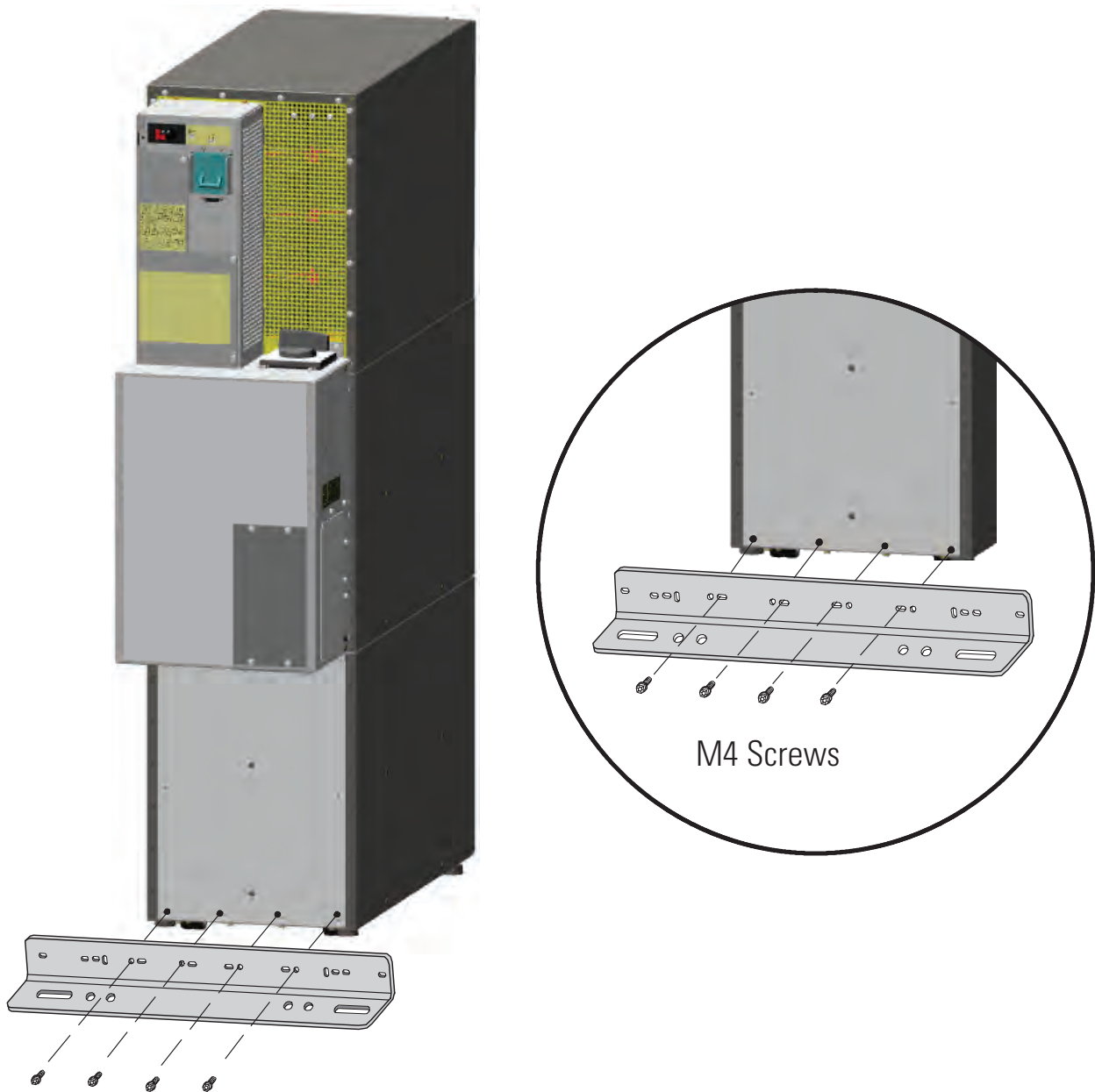


Figure 36. Stabilizing Bracket with Two Cabinets

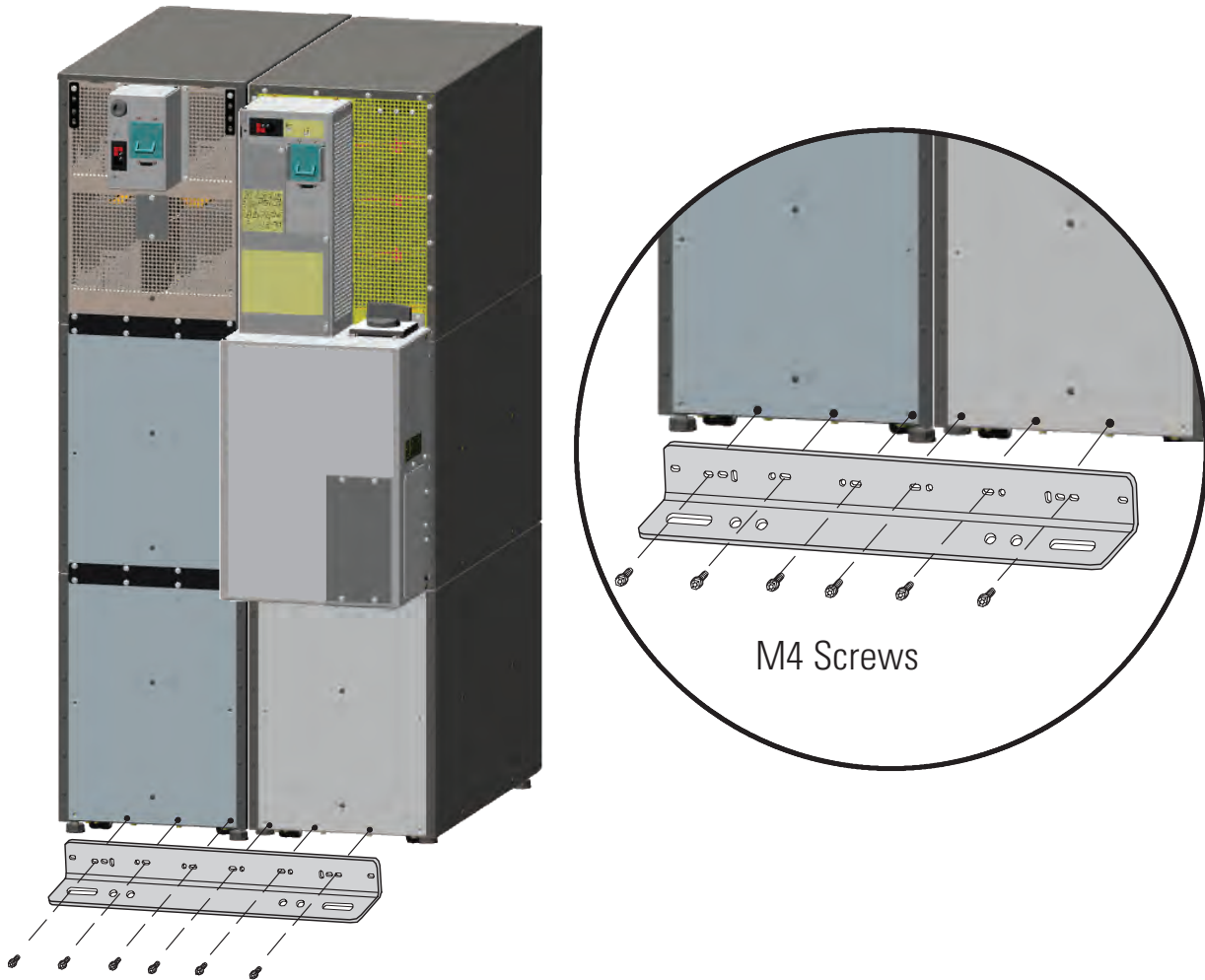
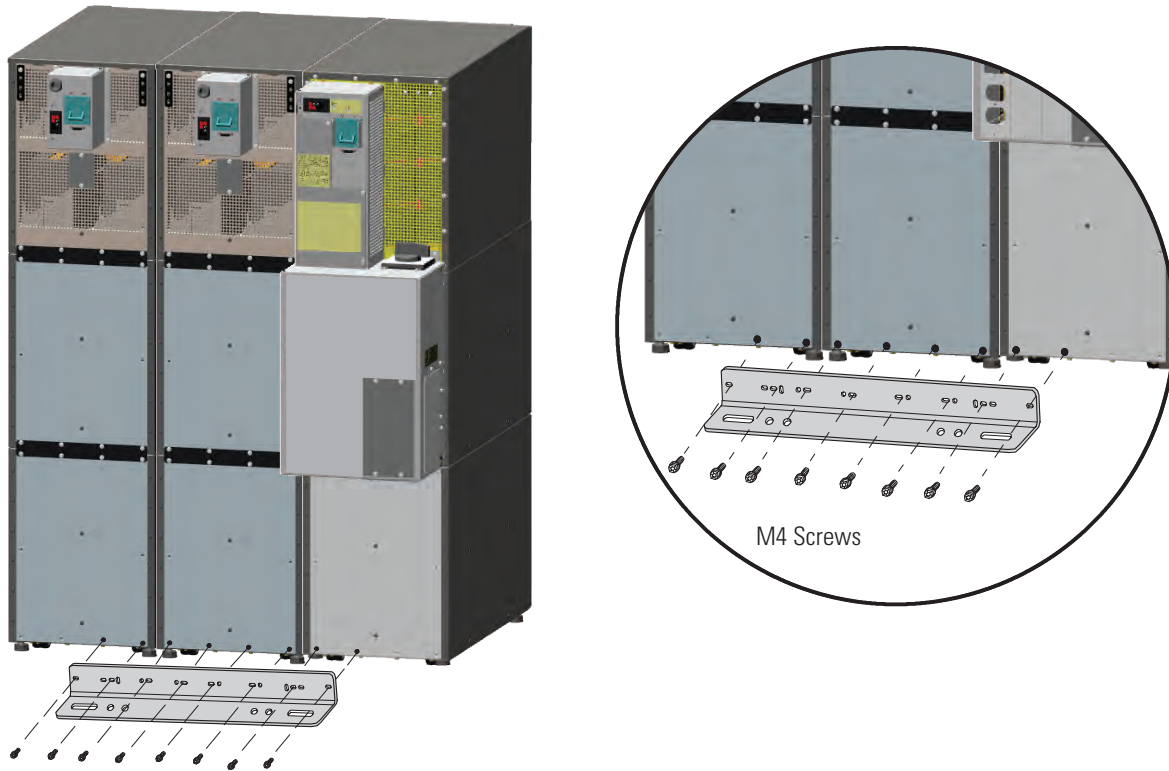


Figure 37. Stabilizing Bracket with Three Cabinets

4.4 Extended Battery Module Installation

NOTE 1 A maximum of 22 battery strings can be installed in one configuration, including UPS batteries (4 EBM-64 models or 3 EBM-96 models). UPS-32 models contain 2 strings; UPS-64 models contain 4 strings; EBM-64 models contain 4 strings; and EBM-96 models contain 6 strings.



NOTE 2 For non-seismic installations, you **MUST** install the stabilizing bracket on all 3-high cabinets. The stabilizing bracket is optional for 2-high cabinets.

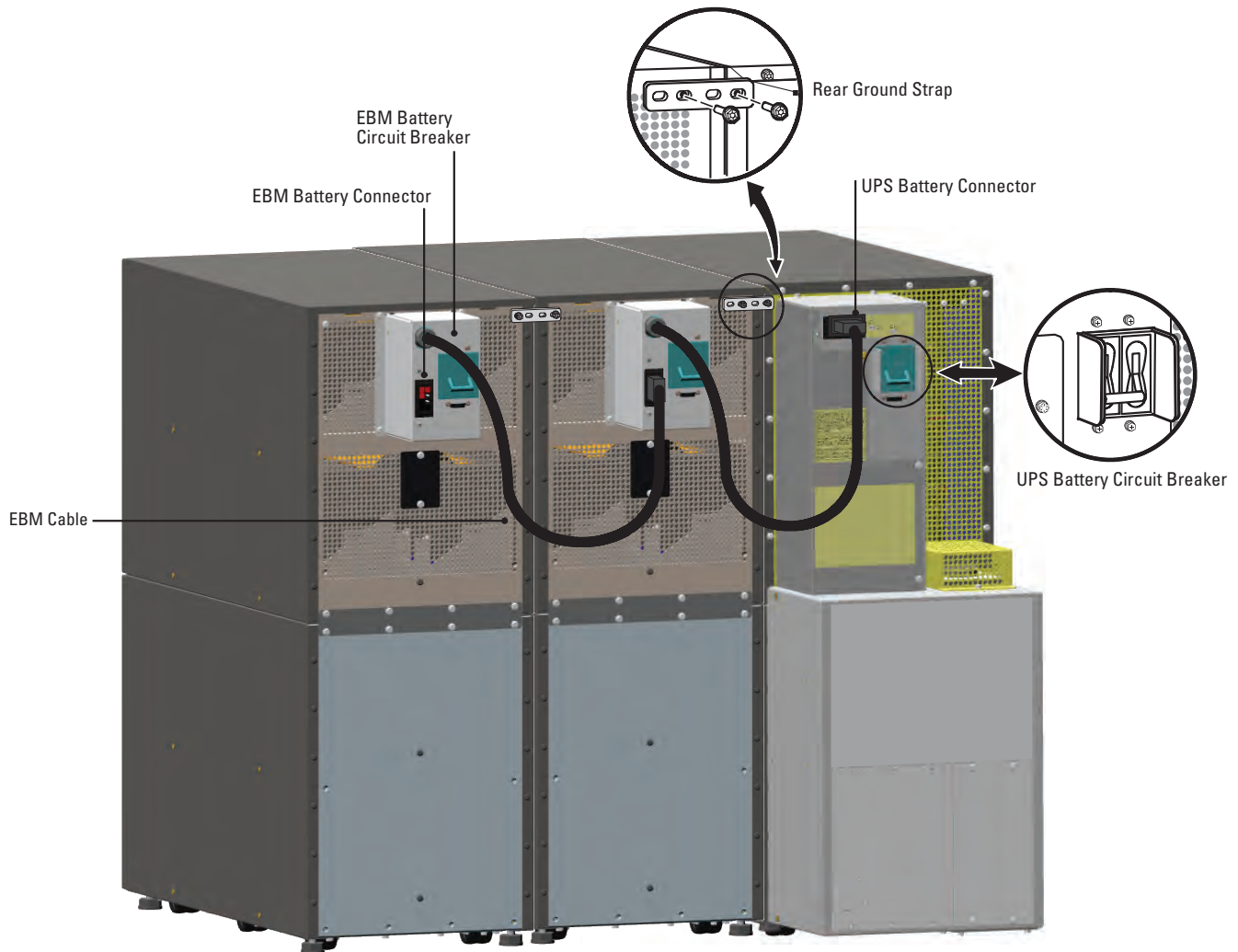
NOTE 3 In a parallel system, each UPS should have the same number of Extended Battery Modules (EBMs) to ensure equivalent runtimes.

To install the optional EBM:

1. Position the EBM adjacent to the next cabinet.
2. Verify that all battery circuit breakers are in the OFF position (see [Figure 38](#)).
3. Remove the two ground straps from the EBM rear panel.
4. Install one ground strap between the UPS and EBM rear panels as shown in [Figure 38](#).

5. If additional EBM s are installed, attach another ground strap between the first and second EBM as shown in [Figure 38](#). Repeat for each additional EBM.
6. Plug the EBM cable into the UPS battery connector.
7. If additional EBM s are installed, plug the EBM cable of the second cabinet into the battery connector on the first EBM. Repeat for each additional EBM.

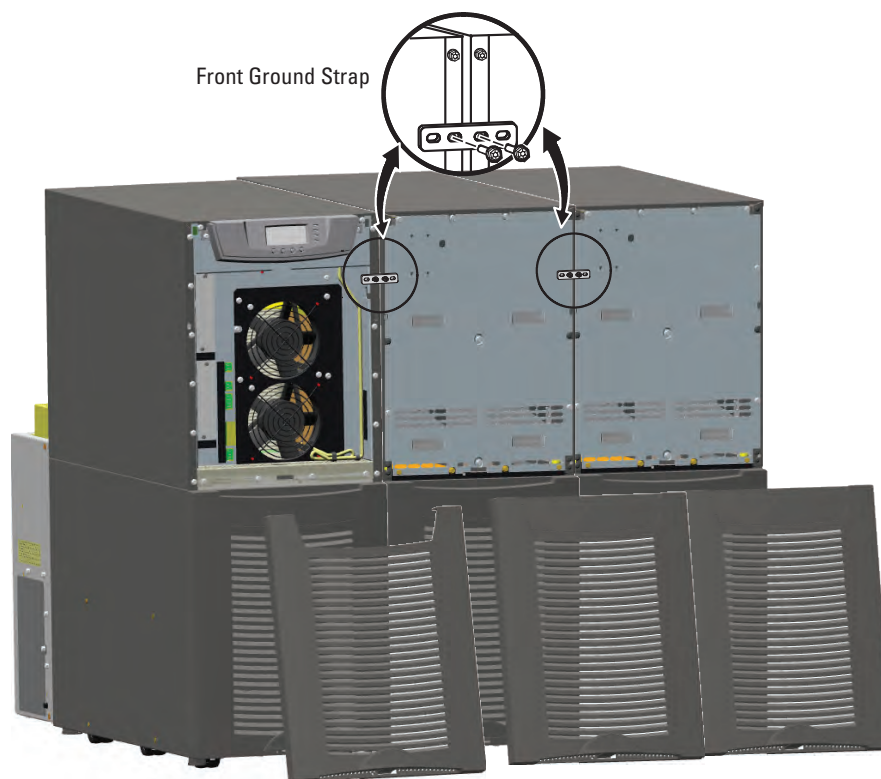
Figure 38. Typical EBM Installation (2-High Cabinets Shown)



8. Remove the top front covers of all cabinets.
Press and release the handle latch at the bottom of the cover and then lift the cover up and off the cabinet.
9. Install the remaining ground straps between each cabinet (see [Figure 39](#)).
10. Reinstall the top front covers removed in [Step 8](#).
Hang the top edge of the cover on the cabinet first, then lower the bottom edge and snap into place.
11. Proceed to [Chapter 6 Operation](#) to start up the UPS.

NOTE After UPS startup, ensure maximum battery runtime by configuring the UPS for the correct number of EBMs (see paragraph [6.3 Configuring the UPS for EBMs](#)).

Figure 39. Front Ground Strap Installation (2-High Cabinets Shown)



Chapter 5 UPS Wiring Diagram Schematics

Figure 40. Version 1 Tie Cabinet Parallel Wiring Diagram

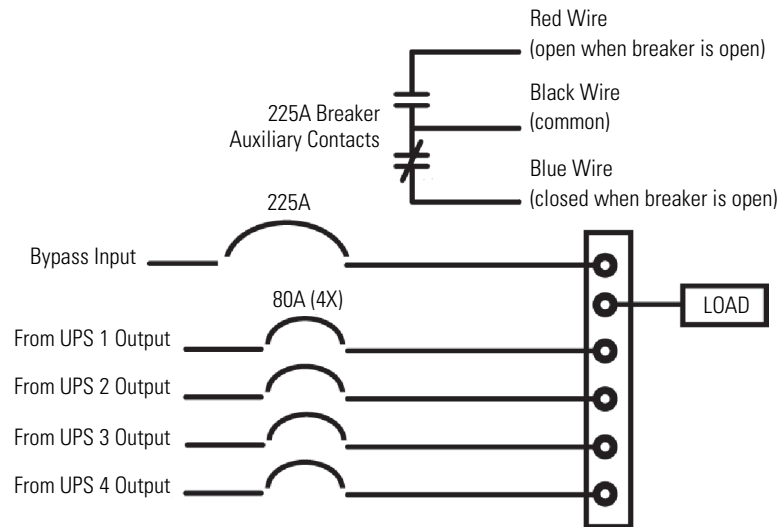


Figure 41. Version 1 Tie Cabinet Parallel UPS Schematic

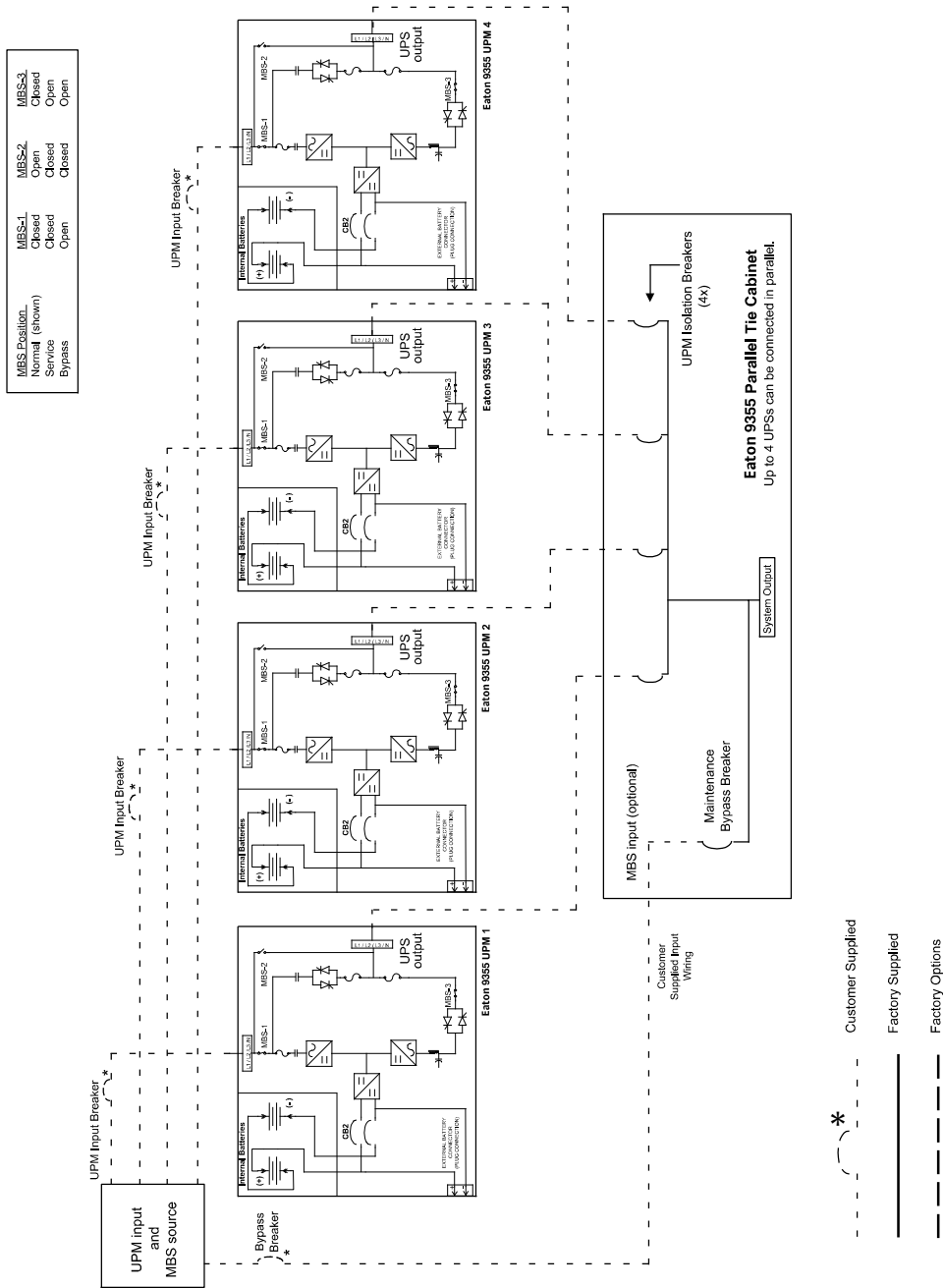


Figure 42. Version 2 Tie Cabinet Parallel Wiring Diagram – without Maintenance Isolation Switch (MIS)

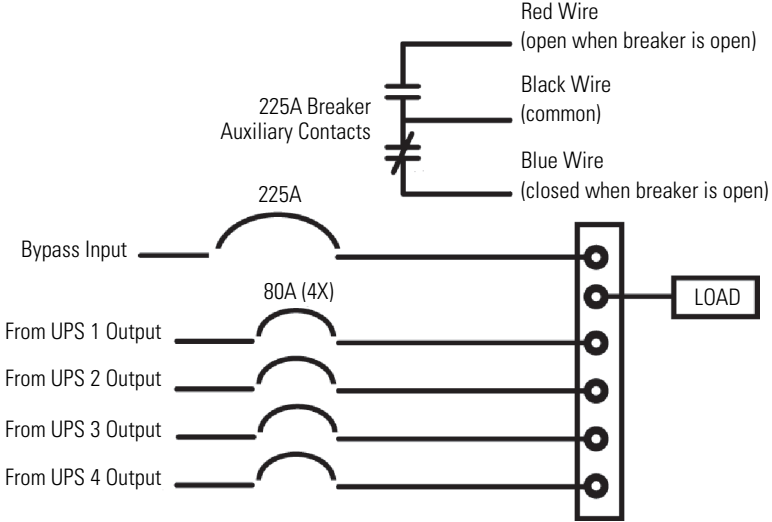


Figure 43. Version 2 Bypass Cabinet Bypass Wiring Diagram – with MIS

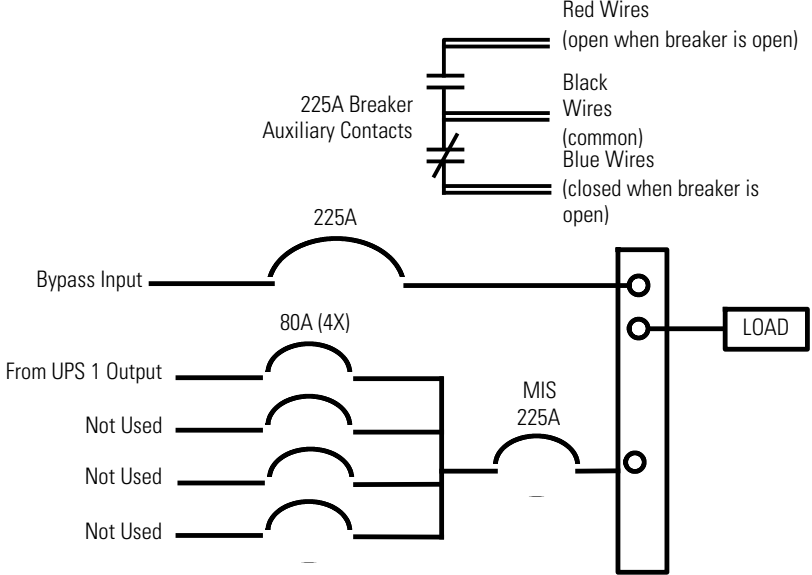
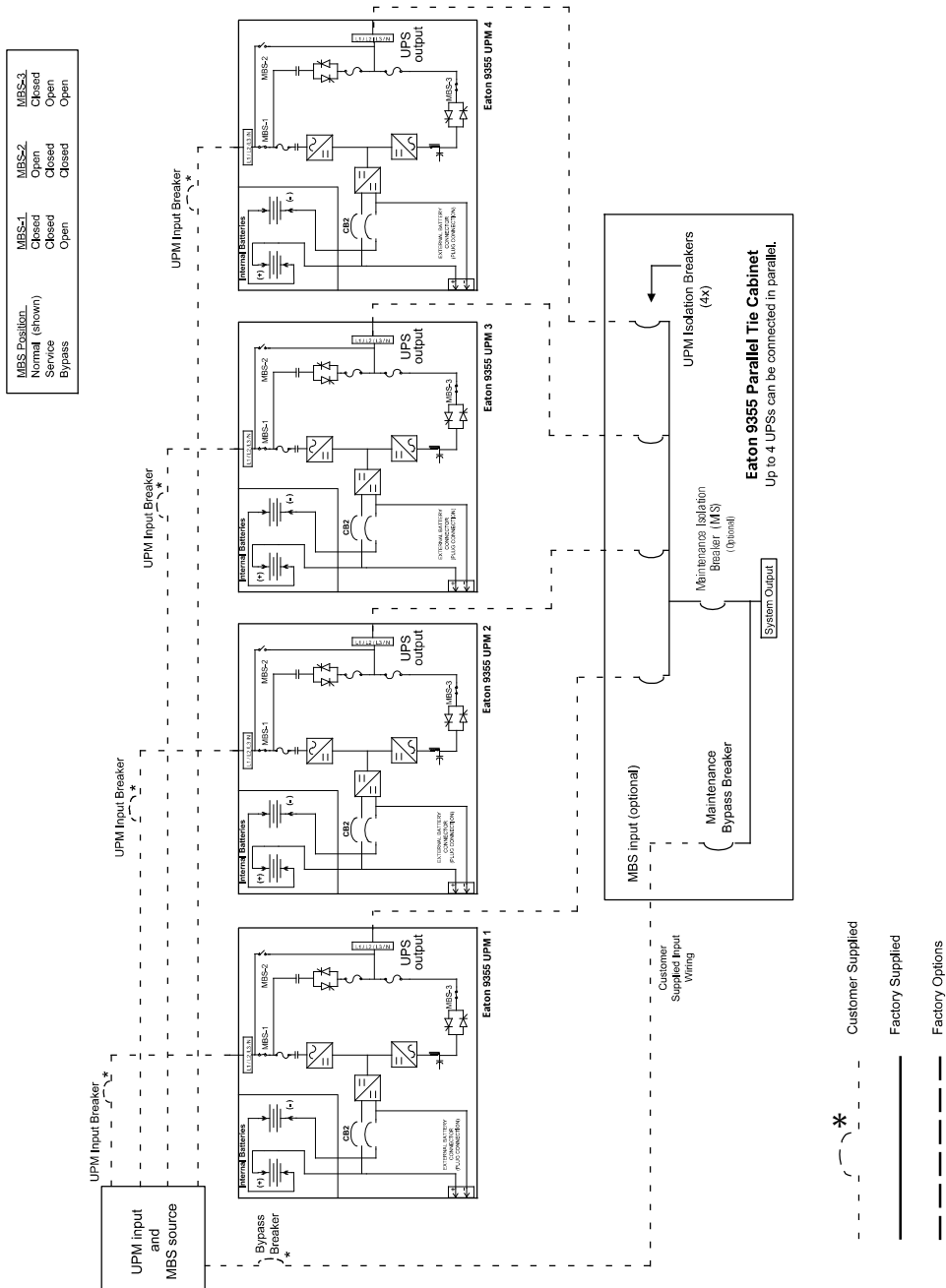


Figure 44. Version 2 Tie Cabinet Parallel UPS Schematic



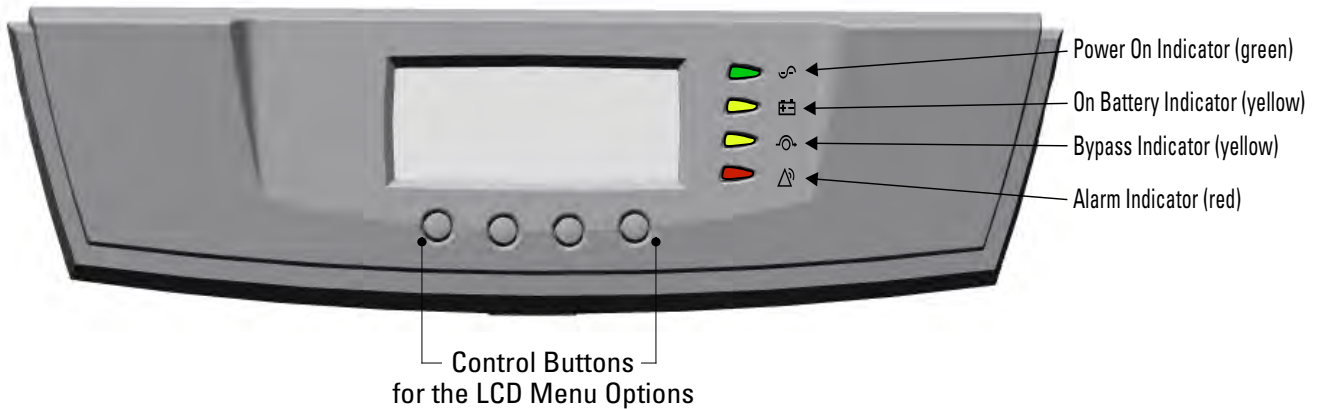
Chapter 6 Operation

This chapter contains information on how to use the Eaton 9355 UPS, including front panel operation, UPS startup and shutdown, and configuring the UPS for Extended Battery Modules (EBMs).





6.1 Control Panel Functions

The UPS has a four-button graphical LCD with backlight. It provides useful information about the UPS itself, load status, events, measurements, and settings (see [Figure 45](#)).

Figure 45. Eaton 9355 UPS Control Panel



The following table shows the indicator status and description.

Indicator	Status	Description
 Green	On	The UPS is operating normally.
	Flashing	A new information message is active.
	Off	The UPS is turned off and will not turn on automatically.
 Yellow	On	The UPS is in Battery mode.
 Yellow	On	The UPS is in Bypass mode.
 Red	On	The UPS has an active alarm.
	Flashing	There is a new UPS alarm condition. See Chapter 7 Troubleshooting for additional information.

6.1.1 Changing the Language

Press and hold the first button on the left for approximately five seconds to select the language menu. This action is possible from any LCD menu screen.

6.1.2 Display Functions

As the default or after 15 minutes of inactivity, the LCD displays the selectable startup screen. The default is the Eaton logo and can be changed to the Mimic screen in the User Settings menu.

The backlit LCD automatically dims after a long period of inactivity. Press any button to restore the screen.

Use the two middle buttons (↑ and ↓) to scroll through the menu structure. Press the → button to enter a submenu. Press the ← button to select an option. Press the **ESC** button to cancel or return to the previous menu.

The following table shows the basic menu structure.

Table 5. Menu Map for Display Functions

Main Menu	Submenu	Display Information or Menu Function
UPS Status		System normal / Battery floating UPS in Parallel mode / Parallel Unit Number x / Units on CAN Bus / Units on load
Event Log		Displays up to 127 events and alarms
Measurements	Parallel System	Voltage [by unit] / Voltage [Parallel total] / Output Voltage: L-N / Output Voltage L-L / Output Current / Output Frequency / Output Power
	Output	L-N and L-L / Current / Frequency / Power
	Battery	Voltage / Current / Runtime
	Input	L-N and L-L / Current / Frequency
	Bypass	L-N and L-L / Frequency
Control	Go to Bypass Mode	Transfers the UPS system to internal Bypass mode When this command is active, the option changes to Go to Normal Mode.
	Start Battery Test	Initiates a battery test
	Display Test	Four different selectable tests for the front panel functions: the LEDs cycle through, the alarm beep sounds, the backlight turns off and on, and the pixels scroll through to test the LCD.
Settings	User Settings	See Table 6 for detail.
	Service Settings	This screen is password-protected.
Identification		UPS Type / Part Number / Serial Number / Firmware / Display / CAN Bridge
Turn UPS ON/OFF	ON and OFF Options	UPS Off / System On / System Off

6.1.3 User Settings

The following table displays the options that can be changed by the user.



NOTE

Changes to the output voltage or frequency options should be made before turning on the UPS; otherwise, the changes do not take effect.

Table 6. User Settings

Description	Available Settings	Default Setting
Set Date and Time	Set Month Date: mm/dd/yyyy Time: 24:00	01/01/2003 00:00
Display Contrast	Adjust contrast with up/down arrow buttons	Moderate
Change Language	Select Language: <English> Elegir idioma <Español>	English
Set Nominal Output Voltage	Output: [120V/208V] [127V/220V]	120V/208V
Relay Config	Relay: [Alarm 1] [X-Slot 1-1/2/3/4] or [X-Slot 2-1/2/3/4] Setup: [Battery Low] [On Battery] [On Bypass] [UPS ok] [custom] [empty]	Alarm 1: empty X-Slots (1 or 2) #1: UPS ok #2: On Bypass #3: Summary Alarm #4: On Battery
Signal Inputs	[empty] [Logic] Signal Input must be wired to the CAN Bridge Card. For more information, refer to "Programmable Signal Inputs" in the <i>Eaton 9355 UPS (10/15 kVA) User's Guide</i> .	<empty>
Serial Port Config	Port: [X-Slot-1] [X-Slot-2/Serv] Speed: [19200] [9600] [2400] [1200]	19200
Modem Config	Modem Installation	<Not Installed>
	Set Modem Call Events	Event #0 Call modem: no
	Set Modem Init String	ATZ0
	Set Modem Call Command	None
	Set Modem Communication Password	None
Start Screen	Eaton logo Mimic screen	Eaton logo
User Password	Enabled/Disabled If Enabled is selected, the password is USER.	Disabled
Audible Alarms	Normal Sound/Disabled	Normal Sound
Battery Charging	ABM cycling/constant	ABM cycling
Automatic Battery Tests	Enabled/Disabled Enabled automatically runs the battery test once a month.	Enabled
Full Power Battery Test	Enabled/Disabled	Enabled
Number of Battery Strings	0 through 22	2 strings for UPS-32 models

Table 6. User Settings (Continued)

Description	Available Settings	Default Setting
	(see 6.3 Configuring the UPS for EBMs)	4 strings for UPS-64 models
Battery Capacity	1 through 65535 watts per cell	34 W/cell
Battery Low Alarm Level	1.750 through 1.950 volts per cell	1.880 V/cell
Bypass Voltage High Limit	+1 through +20% (1% increments)	120V +10%
Bypass Voltage Low Limit	-1 through -20% (1% increments)	120V -15%
Nominal Output Frequency	50 Hz or 60 Hz	60 Hz
Synchronization	Enabled/Disabled	Enabled
Synchronization Window	±0.5 through ±3.0 Hz (0.1 Hz increments)	±2.0 Hz
Unsynchronized Transfer to Bypass	Allowed/Not Allowed	Not Allowed
Output Frequency Slew Rate	0.1 through 5 hertz per second (0.1 Hz increments)	0.5 Hz/s
Usage of Bypass	Enabled/Disabled	Enabled
Transfer to Bypass When Overload	After a delay/Immediately	After a delay
Automatic Start Delay	-1 through 32767 seconds (-1 means disabled)	0s
Control Commands from X-Slot1	Allowed/Disabled	Allowed
Control Commands from X-Slot2/Serv	Allowed/Disabled	Allowed
X-Slot Signal Input Activation Delay	0 through 65 seconds	5s
Input signal delayed shutdown delay	1 through 65535 seconds	120s
Site Wiring Fault Notice	Enabled/Disabled	Enabled
Reset Custom Event Settings	0 through 32	Total: 0/32
Auto Output Configuration	Enabled/Disabled	Enabled for initial startup Disabled after initial startup

6.2 Initial Startup

Startup and operational checks must be performed by an authorized Eaton Customer Service Engineer, or the warranty terms specified on the product's resources page become void. See [Chapter 8 Warranty](#) for details. This service is offered as part of the sales contract for the UPS. Contact an Eaton service representative in advance (a minimum two-week notice is required) to reserve a preferred startup date.



Only qualified service personnel (such as a licensed electrician) should perform the UPS installation. Initial startup must be performed by an authorized Eaton Customer Service Engineer. Risk of electrical shock.

6.2.1 Parallel UPS Startup

⚠ WARNING

Only qualified service personnel (such as a licensed electrician) should perform the UPS installation. Initial startup must be performed by an authorized Eaton Customer Service Engineer. Risk of electrical shock.

Verify that UPS installation has been carried out correctly and the UPS ground has been connected.




NOTE


In a parallel capacity system (2+0 or 2+1), determine the minimum number of UPSs required for capacity.








To start up the parallel system (Initial Startup or from complete System power off):

1. Verify that all UPS breakers on the parallel tie cabinet are in the OFF position.
2. Switch ON the utility power where the UPSs are connected.
3. Wait for the front panel LCD to illuminate.


The  indicator flashes on each UPS.

4. Verify fans have started.
5. Switch all battery circuit breakers to the ON position.

The  indicator stops flashing on each UPS.

6. Configure the UPS for parallel operation through the front panel:
 - Press any button on the front panel display to activate the menu options.
 - Using the  button, scroll to the Settings menu, and then press the  button twice to select the User Settings menu.
 - Use the  button to scroll to the Parallel Operation Mode option and press the  button to enter the menu.
 - Use the  button to scroll the desired option (either Redundant Mode or Capacity Mode).
 - Press the  button to save the setting.
7. Press the  button until the Eaton® logo or Mimic screen appears.
8. Repeat Steps 6 and 7 for the remaining UPSs in the parallel system.
9. Shut down each UPS:
 - Switch the UPS battery circuit breaker to the OFF position.
The UPS is disconnected from the batteries and is on logic power only.
10. Cycle the utility power to the distribution point where the parallel tie cabinet and UPSs are connected. Wait until the LCD is off before reapplying utility power.
11. Switch the UPS breakers on the parallel tie cabinet to the ON position.
12. Switch all battery circuit breakers to the ON position.




- Verify that no alarms appear on the UPS front panel display.


If the  indicator is flashing, do not proceed until all alarms are clear. Check the UPS status from the front panel to view the active alarms. Correct the alarms and restart if necessary.

- Verify the phase rotation for each UPS.
- From the UPS Status menu, select the Units on CAN Bus option and verify that all UPSs appear in the list.

If all UPSs appear in the list, press the  button until the Eaton logo or Mimic screen appears.

If any UPS is missing, verify the Powerware Hot Sync CAN Bridge Card connections and recheck the status from the UPS front panel.

- Press the  button on the front panel display and then press the  button to select the TURN UPS ON/OFF menu.
- Select the System On option; press and hold the  button for three seconds, until the UPS stops beeping.

The UPS goes to Bypass mode for five seconds, and then the  indicator illuminates. Each UPS should be in Normal mode.

- Press the  button until the Eaton logo or Mimic screen appears.







6.3 Configuring the UPS for EBM



NOTE



Each UPS in a parallel system must have its own EBM and the same number of EBMs to ensure consistent runtimes.

To ensure maximum battery runtime, configure the UPS for the correct number of EBMs:

- Press any button on the front panel display to activate the menu options.
- Using the  button, scroll to the Settings menu.
- Press the  button twice to select the User Settings menu.
- Using the  button, scroll to the Battery Setup option and press the  button.
- Use the  or  buttons to select the number of strings according to your UPS configuration:






All 2-High UPS and EBM Cabinets*	Number of Strings
UPS + 1 EBM	6
UPS + 2 EBMs	10
UPS + 3 EBMs	14
UPS + 4 EBMs	18
All 3-High UPS and EBM Cabinets*	Number of Strings
UPS + 1 EBM	10
UPS + 2 EBMs	16

All 2-High UPS and EBM Cabinets*	Number of Strings
UPS + 3 EBMs	22
*UPS-32 models contain 2 strings; EBM-64 models contain 4 strings. UPS-64 models contain 4 strings; EBM-96 models contain 6 strings.	

6. Press the  button to save the setting.
7. Press the  button until the Eaton logo or Mimic screen appears.





6.4 Parallel System Shutdown


To remove power to the parallel UPS system output:

1. Press any button on the front panel display to activate the menu options.
2. Press the  button on the front panel display and then press the  button to select the TURN UPS ON/OFF menu.
3. Press the  button to select the System Off option; press and hold the  button for three seconds, until the UPS stops beeping.
4. Repeat Step 3.
The input contactor opens.
The UPS removes power to the parallel UPS system output.
5. Press the  button until the Eaton® logo or Mimic screen appears.
6. Repeat Steps 1 through Step 5 for each UPS in the Parallel System.
7. Switch each of the UPS breakers on the parallel tie cabinet to the OFF position.
8. Switch all battery circuit breakers to the OFF position.
9. Switch OFF the utility power to the Parallel UPS system.


6.5 Individual UPS Shutdown

To shut down a single UPS in the parallel system:

1. Press any button on the front panel display to activate the menu options.
2. Press the  button on the front panel display and then press the  button to select the TURN UPS ON/OFF menu.
3. Press the  button to select the System Off option; press and hold the  button for three seconds, until the UPS stops beeping.
4. Repeat Step 3.
The input contactor opens.
5. Switch the UPS battery circuit breaker to the OFF position.
The UPS is disconnected from the batteries and is on logic power only.
6. Switch the UPS breaker on the parallel tie cabinet to the OFF position.

 **NOTE** If there is only one breaker for all UPSs, do not switch off utility power until all UPSs are shut down.

7. Switch OFF the utility power where the UPS is connected.

 **NOTE** If you are shutting down all the UPSs in a parallel system, repeat Steps 2 through 6 for each UPS then remove utility power.


6.6 Restarting the Parallel System

To restart the parallel system:


1. Verify that all UPS breakers on the parallel tie cabinet are in the OFF position.
2. Switch ON the utility power where the UPSs are connected.
3. Wait for the front panel LCD to illuminate.





The  indicator flashes on each UPS.


4. Switch all battery circuit breakers to the ON position.

The  indicator stops flashing on each UPS.

5. Switch the UPS breakers on the parallel tie cabinet to the ON position.
6. Verify that no alarms appear on the UPS front panel display.

If the  indicator is flashing, do not proceed until all alarms are clear. Check the UPS status from the front panel to view the active alarms. Correct the alarms and restart if necessary.




7. Press the  button once and then press the  button to select the TURN UPS ON/OFF menu.
8. Press the  button to select the System On option; press and hold the  button for three seconds, until the UPS stops beeping.



The UPS goes to Bypass mode for five seconds, and then the  indicator illuminates. Each UPS should be in Normal mode.

9. Press the  button until the Eaton® logo or Mimic screens appears.

6.7 Parallel Bypass Operation

To switch the parallel UPS from Normal mode to maintenance bypass :

1. From any UPS, set the system to internal Bypass mode:
 - Using the  button on the front panel display, scroll to the Control menu option and press the  button.
 - Press the  button to select the Go to Bypass Mode option.

The  indicator illuminates and the  indicator extinguishes, indicating the UPS system is operating in Bypass mode.


2. Switch the bypass breaker (may be designated MBP or CBP) in the parallel tie cabinet to the ON position.

3. If present, switch the maintenance isolation breaker (MIS) on the parallel tie cabinet to the OFF position; otherwise, switch the UPS breakers (may be designated MOB or UPS) on the parallel tie cabinet to the OFF position.

To return to Normal Mode from maintenance bypass:

1. Verify that the maintenance isolation breaker (if present) on the Tie Cabinet is in the OFF position or all of the UPS breakers are in the OFF position.
2. Switch on utility power where the UPSs are connected.

In a parallel capacity system (N+0 or N+1), apply utility to the minimum number of UPSs required for capacity.

The  indicator illuminates, indicating the UPS system is operating in Bypass mode.

The display indicates On Manual/Maintenance Bypass.

3. Verify voltage is present on the UPS output by checking that an output voltage reading present on the front panel LCD display.

The load is now powered by utility power.

4. If present, switch the maintenance isolation breaker (MIS) on the wall-mounted bypass cabinet to the ON position; otherwise, switch the UPS breakers (may be designated MOB or UPS) on the wall-mounted bypass cabinet to the ON position.


5. Switch the bypass breaker (may be designated MBP or CBP) in the wall-mounted bypass cabinet to the OFF position.

The UPS is now powering the load in Bypass mode.



NOTE

Use the same UPS that was used to set internal bypass to return the parallel system to Normal mode.

6. On the same UPS front panel, set the UPS to Normal mode:
 - Press the  button to select the Go to Normal Mode option.
 - Each UPS goes to Normal mode.






The UPS is now powering the load in Normal mode.

Chapter 7 Troubleshooting

The Eaton 9355 UPS is designed for durable, automatic operation and also alerts you whenever potential operating problems may occur. Usually the alarms shown by the control panel do not mean that the output power is affected. Instead, they are preventive alarms intended to alert the user. Use the following troubleshooting chart to determine the UPS alarm condition.

7.1 Typical Alarms and Conditions

The following table describes typical alarms and conditions; check the Event Log through the control panel for a list of active alarms. If an alarm appears with a service code, please contact the Help Desk (see [1.5 Getting Help](#)).

Alarm or Condition	Possible Cause	Action
On Battery  LED is on. 1 beep every second.	A utility failure has occurred and the UPS is in Battery mode.	The UPS is powering the equipment with battery power. Prepare your equipment for shutdown.
Battery Low  LED is on. Continuous beep for 10 seconds.	The battery is running low.	Five minutes or less of battery power remains (depending on load configuration and battery charge). Save your work and turn off your equipment. When utility power is restored, the UPS restarts automatically, provides power to the load, and charges the battery.
Battery Breaker  LED is on. 1 beep every second.	The UPS does not recognize the internal batteries.	Verify the battery circuit breaker is in the ON position. If the condition persists, contact your service representative.
Overload  LED is on. 1 beep every second.	Power requirements exceed the UPS capacity (greater than 100% of nominal).	Remove some of the equipment from the UPS. The UPS continues to operate, but may switch to Bypass mode if the load increases. The alarm resets when the condition becomes inactive.
Overtemperature  LED is on. 1 beep every second.	UPS internal temperature is too high or the fan has failed.	Turn the maintenance bypass switch to the SERVICE position. Otherwise, shut down the UPS. Clear vents and remove any heat sources. Allow the UPS to cool. Ensure the airflow around the UPS is not restricted. If the alarm disappears, turn the maintenance bypass switch back to the UPS position. If the condition persists, contact your service representative.
Battery test failed	The batteries need service.	Contact your service representative.
The UPS does not start.	The main utility breaker is off.	Verify that the main utility breaker is on.
	If an optional isolation transformer is installed, the input circuit breaker is off.	Verify that the isolation transformer input circuit breaker is on.

Alarm or Condition	Possible Cause	Action
	The remote emergency power-off (REPO) switch is active or the REPO connector is missing.	Reset the REPO switch and restart the UPS. Verify that the REPO connector is present.
Power is not available at the UPS output receptacles.	The UPS is in Standby mode.	Supply power to the connected equipment: Press any button on the front panel display to activate the menu options. Press the ↑ button on the front panel display and then press → the button to select the TURN UPS ON/OFF menu. Press the ↓ button to select the System On option; press the ← button. Press and hold the ← button for three seconds, until the UPS stops beeping.
The UPS does not provide the expected backup time.	The batteries need charging or service.	Apply utility power for 48 hours to charge the batteries. If the condition persists, contact your service representative.
	Battery circuit breakers are in the OFF position.	Switch all battery circuit breakers to the ON position.
Check Parallel Board	The UPS is not recognizing another parallel unit.	From the UPS Status menu, select the Units on CAN Bus option and verify that all UPSs appear in the list. If any UPS is missing, verify the Powerware Hot Sync® CAN Bridge Card connections and recheck the status from the UPS front panel. If all UPSs appear in the list, check the pull-chain wiring (see Figure 29). Set the system to internal Bypass mode (see paragraph 6.7 Parallel Bypass Operation). If the condition persists, contact your service representative.
Abnormal output voltage at startup	The UPS breaker on the parallel tie cabinet was not switched to the ON position properly.	Shut down the UPS where the alarm is indicated. Switch the UPS breaker on the parallel tie cabinet to the ON position. Start up the UPS. Select the System On option through the front panel of the UPS that was turned off.
Selective Trip	The Powerware Hot Sync® CAN Bridge Card is not wired correctly.	Verify the CAN wiring (see Figure 31). Verify the pull-chain wiring (see Figure 31). If the condition persists, contact your service representative.

7.2 Silencing the Alarm

Before silencing an alarm, check the alarm condition and perform the applicable action to resolve the condition.

Press any button on the front panel display to silence the alarm. If the alarm status changes, the alarm beeps again, overriding the previous alarm silencing.

Chapter 8 Warranty

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

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

EQUIPMENT REGISTRATION

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

Model Number:

Serial Number:



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