Eaton® 9355 UPS

10/15 kVA
User's Guide

Powering Business Worldwide

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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 respect et outes les exigences du Reglement sur le matériel brouilleur du Canada.

IEC 62040-2

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

Special Symbols

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.”

Table of Contents

Chapter 1 Introduction

The Eaton® 9355 UPS uninterruptible power supply (UPS) is a true online, double-conversion three-phase system that can be used to prevent loss of valuable electronic information and minimize equipment downtime. It is ideal for protecting essential information technology and electrical engineering infrastructure in corporate, telecom, health care, banking, and industrial applications.

The Eaton 9355 UPS continually monitors incoming electrical power and removes the surges, spikes, sags, and other irregularities that are inherent in commercial utility power. Working with a building's electrical system, the UPS supplies clean, consistent power that sensitive electronic equipment requires for reliable operation. During brownouts, blackouts, and other power interruptions, batteries provide emergency power to safeguard operation.

With the Eaton 9355 UPS, you can safely eliminate the effects of electrical line disturbances and guard the integrity of your systems and equipment. 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 page 79 become void. 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.

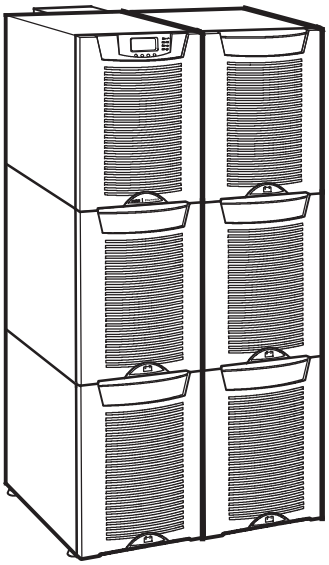

Figure 1. The Eaton 9355 UPS and EBM (3-High Cabinets Shown)

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.
- A UPS maintenance bypass switch that provides a Make-Before-Break (MBB) wrap-around bypass for UPS maintenance or service without shutting down the load.
- 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.

The following options for the Eaton 9355 UPS are available:

- **Remote Monitor Panel**

  The optional Remote Monitor Panel (RMP) provides monitoring of the operational status and alarm condition of the UPS from virtually any location within the facility. You can install multiple RMPs at remote locations to increase your monitoring capabilities.

- **Power Distribution Module**
- The optional Power Distribution Module (PDM) comes equipped with several different types of output receptacles.
- **Parallel Tie Cabinet**
- An optional parallel system with up to four 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 Controller Area Network 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 tie cabinet. Refer to the Eaton 9355 Parallel UPS (10/15 kVA) User's Guide for more information.
- **Wall-Mounted Bypass Switch**

  The optional wall-mounted bypass switch is used to bypass the UPS during maintenance or servicing, providing wrap-around bypass for UPS service without shutting down the load.

- **Input Isolation Transformer**

  The optional input isolation transformer is located at the bottom of a 3-high UPS model. The isolation transformer allows operation from a 480V or 600V 60-Hz source.

- **Seismic Kit**

  The optional seismic kit secures the UPS and optional EBMs for Zone 4 seismic installations.

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.

Consignes de Sécurité

CONSIGNES DE SÉCURITÉ IMPORTANTES
CONSERVER CES INSTRUCTIONS

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

DANGER!

Cet onduleur contient des TENSIONS MORTELLES. Toute opération d'entretien et de réparation doit être EXCLUSIVEMENT CONFIÉE A UN PERSONNEL QUALIFIÉ 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 fournie par un autre fournisseur.

ATTENTION!

- 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.

Advertencias de Seguridad

INSTRUCCIONES DE SEGURIDAD IMPORTANTES
GUARDE ESTAS INSTRUCCIONES

Este manual contiene instrucciones importantes que debe seguir durante la instalación y el mantenimiento del SIE y de las baterías. Por favor, lea todas las instrucciones antes de poner en funcionamiento el equipo y guarde este manual para referencia en el futuro.

⚠ PELIGRO

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.

⚠ PRECAUCIÓN

- 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.

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Chapter 3 UPS Setup

This chapter describes:

- Equipment inspection
- Floor loading and clearances
- Unloading the cabinet(s)

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.

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.

Floor Loading

When planning the installation, consider the UPS weight for floor loading. The strength of the installation surface must be adequate for point and distributed loadings. The approximate weights are shown in the following table.

Standard Model Floor Loadings (2-High/3-High Cabinets)

Eaton 9355 UPS	Maximum Weight	Point Loading lb/in² (kg/cm²)
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)

Clearances

The following clearances are recommended for the Eaton 9355 UPS:

From Front of Cabinet	36" (91.4 cm) working space
From Back of Cabinet	6" (15.2 cm) without PDM installed; with PDM installed, clearance determined by customer-supplied mating plug

Unloading the Cabinet(s)

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 are heavy (see page 7). Unloading the cabinets requires at least two people to safely remove the cabinets from the pallet.

To unload three-high cabinets or two-high EBMs, continue to the following section. To unload two-high UPS cabinets, proceed to page 11.

Three-High Cabinets or Two-High EBMs

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

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

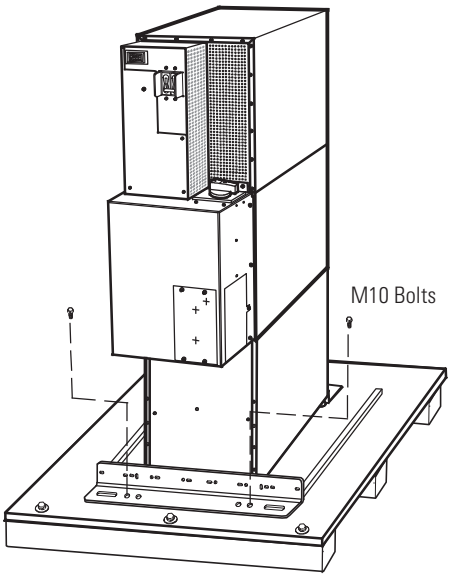

Figure 2. Removing the Stabilizing Bracket Bolts

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.
5. Remove the three M10 bolts securing the rear shipping pad to the pallet and remove the shipping pad.

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

6. Remove the two M10 bolts securing the front shipping bracket and remove the bracket.

   If needed, adjust the leveling feet to release the bracket.

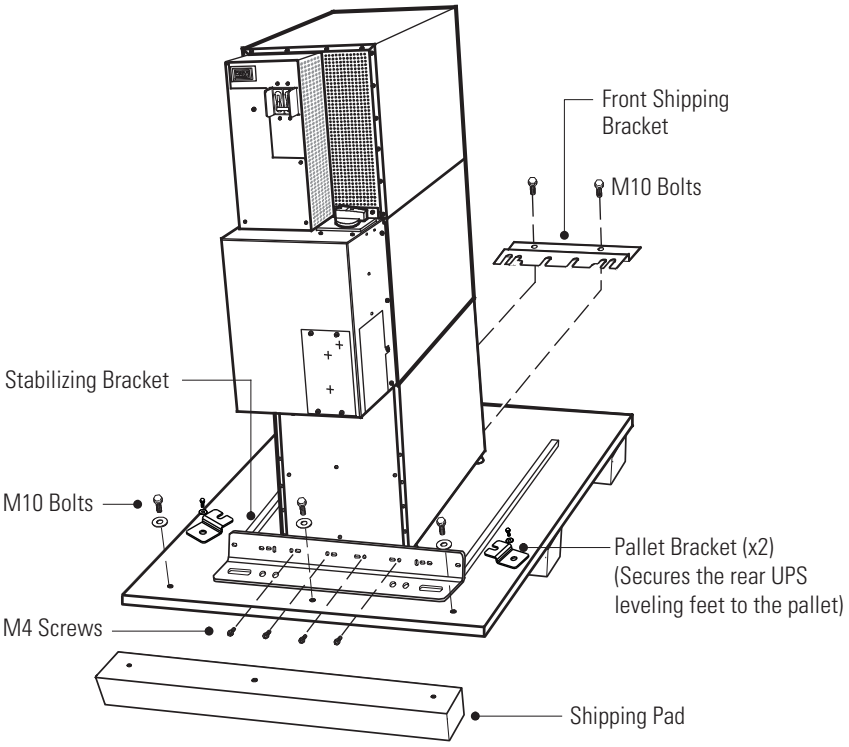

Figure 3. Removing the Brackets and Shipping Pad

7. 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.

Note: 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.

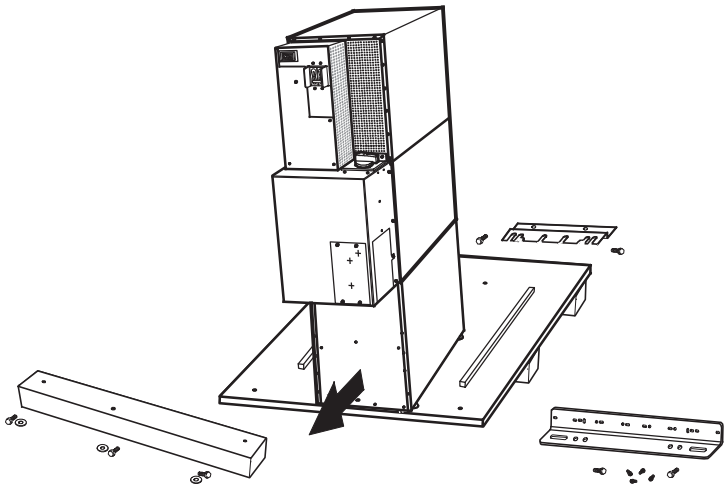

Figure 4. Unloading the Cabinet

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

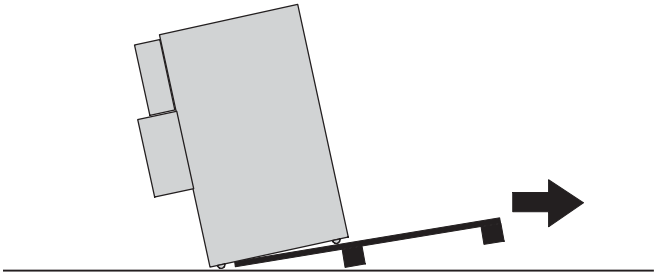

Figure 5. Removing the Pallet

10. Roll the cabinet to the desired location.
11. Continue to "Selecting an Installation Option" on page 13.

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.

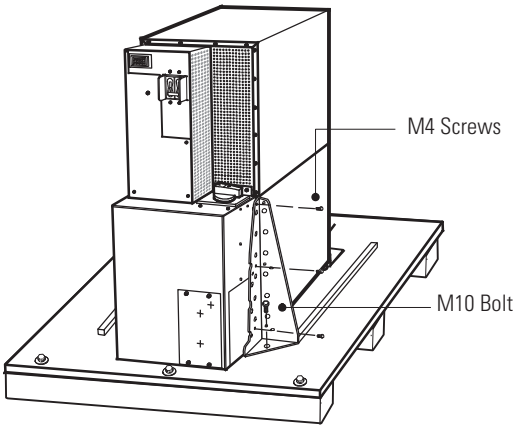

Figure 6. Removing the Vertical Bracket

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

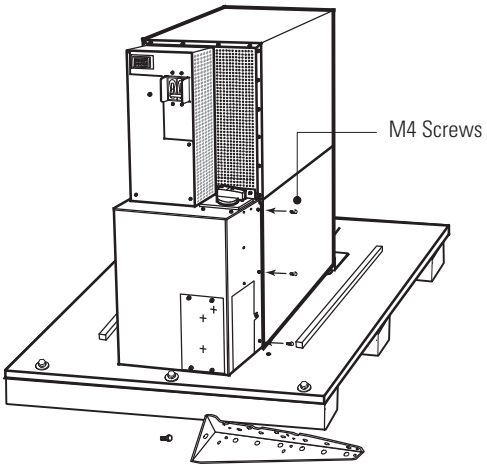

Figure 7. Reinstalling the M4 Screws

4. Repeat Steps 1 through 3 to remove the vertical bracket on the other side.
5. 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.
6. 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.

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7. Remove the two M10 bolts securing the front shipping bracket and remove the bracket.

   If needed, adjust the leveling feet to release the bracket.

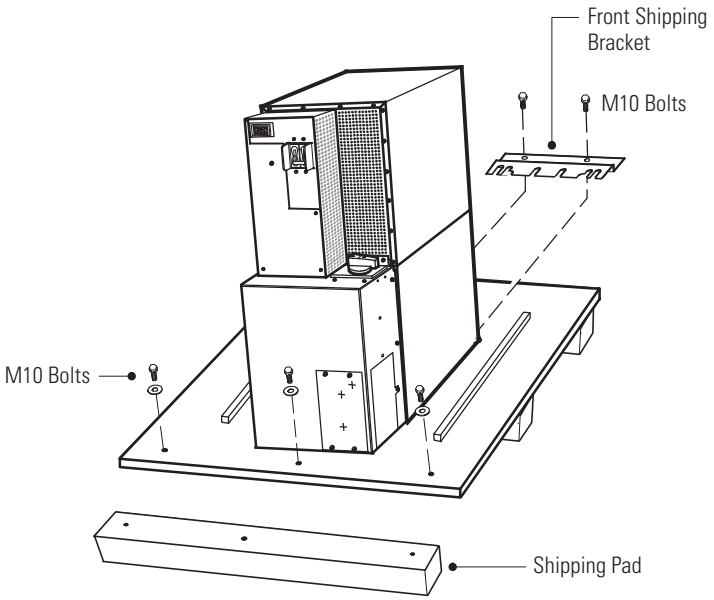

Figure 8. Removing the Front Shipping Bracket and Shipping Pad

8. Reinstall the front cover removed in Step 5.

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

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

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9. 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.

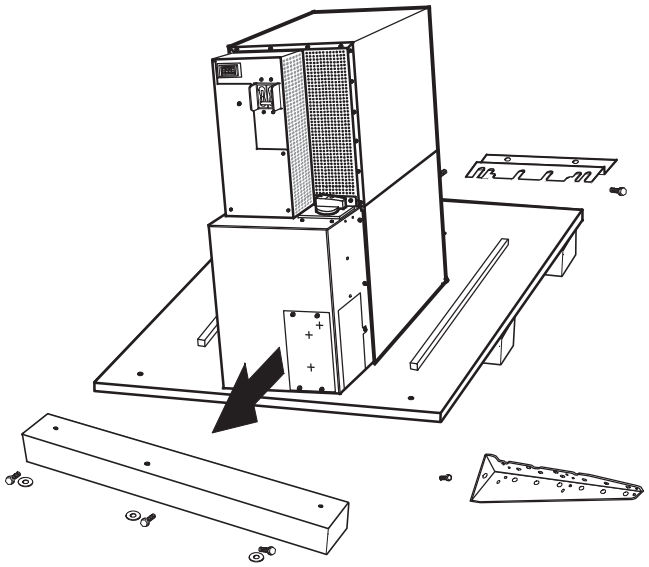

Figure 9. Unloading the Cabinet

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

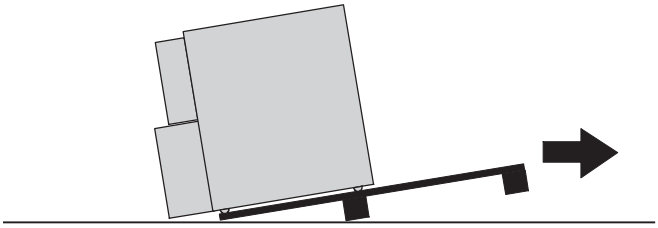

Figure 10. Removing the Pallet

11. Roll the cabinet to the desired location.
12. Continue to the following section, "Selecting an Installation Option."

Selecting an Installation Option

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

UPS Configuration	Installation Chapter
UPS only	Chapter 4, "UPS Installation" on page 15
UPS with an optional input isolation transformer	Chapter 4, "UPS Installation" on page 15
UPS with an optional wall-mounted bypass switch	Chapter 5, "Wall-Mounted Bypass Switch Installation" on page 23
Parallel UPS configuration	Refer to the *Eaton 9355 Parallel UPS (10/15 kVA) User's Guide*.

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Chapter 4 UPS 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
- 480V or 600V 60-Hz input is available using the optional input isolation transformer module

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

Figure 15 through Figure 17 beginning on page 20 show the oneline diagrams.

⚠ 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.

To hardwire the UPS:

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 1 on page 18.

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 UPS will be connected. Be absolutely sure there is no power.
4. Determine your equipment's grounding requirements according to your local electrical code.
5. Verify that the UPS battery circuit breaker is in the OFF position (see Figure 11).

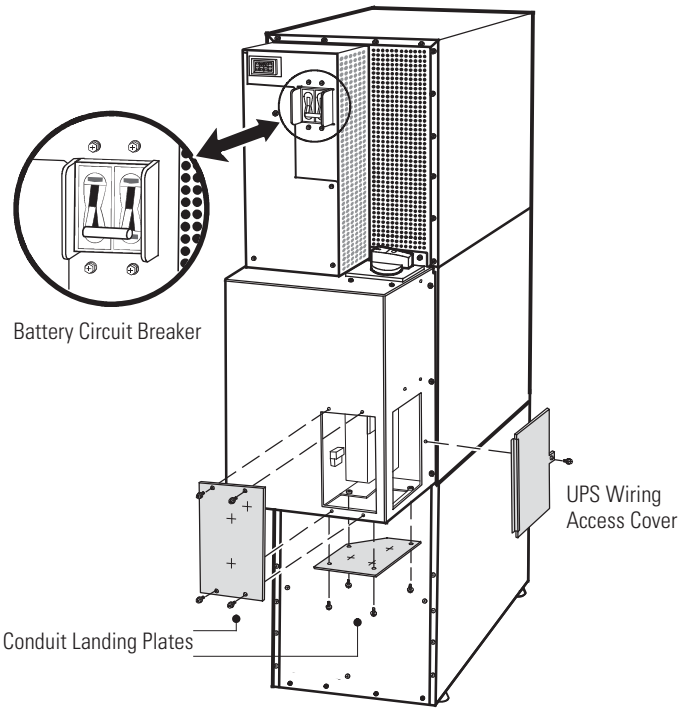

Figure 11. UPS Rear View (3-High Shown)

6. For UPS only installations, continue to Step 7; for UPS installations with an input isolation transformer, proceed to Step 10.
7. Remove the UPS wiring access cover and one of the conduit landing plates and retain (see Figure 11).
8. Punch two holes in the conduit landing plate for the input and output conduit using a Greenlee® punch or similar device.
9. Proceed to Step 12.

10. Verify that the input circuit breaker is in the OFF position (see Figure 12).
11. Remove the input isolation transformer wiring access cover and retain.

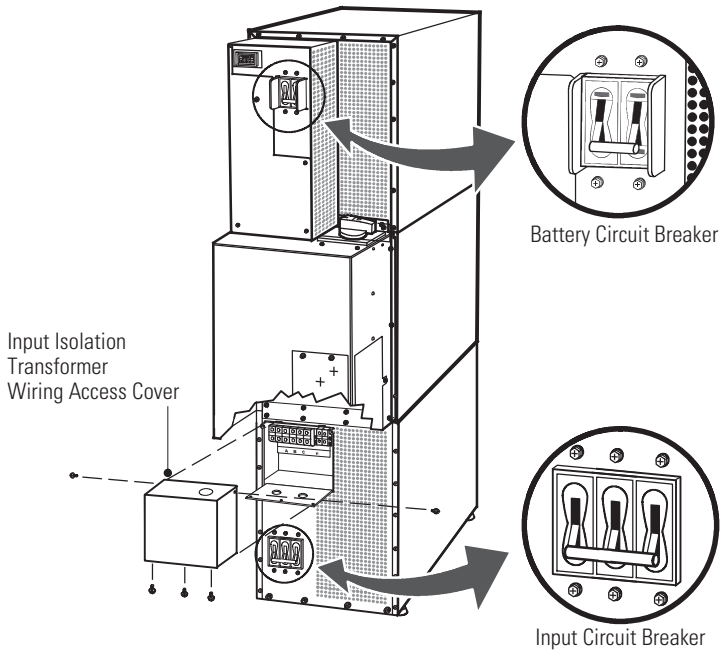

Figure 12. UPS with Input Isolation Transformer Rear View

12. Hardwire the input, output, and ground terminations for the UPS or input isolation transformer. See Table 1 for wiring specifications.

    For a detailed view of the terminal block, see Figure 13 or Figure 14 on page 19.

Note: 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: The Eaton 9355 UPS is a single-feed UPS only.

Table 1. Recommended Terminal Block Wiring

10 kVA System 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)
208	Input UPS Module,TB1 WYE / 4-Wire	45A	6 AWG	10 AWG	120 lb in (13.5 Nm)	1.00" conduit (1)
220						
480	Input XFMR Module Delta / 3-Wire	20A	12 AWG	12 AWG	120 lb in (13.5 Nm)	1.00" conduit (1)
600				14 AWG		
208	Output UPS Module,TB1 WYE / 4-Wire		6 AWG	10 AWG	120 lb in (13.5 Nm)	1.00" conduit (1)
220						
480 (with transformer)			8 AWG	10 AWG	120 lb in (13.5 Nm)	1.00" conduit (1)
600 (with transformer)						
15 kVA System 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)**
208	Input UPS Module,TB1 WYE / 4-Wire	60A	4 AWG	10 AWG	120 lb in (13.5 Nm)	1.25" conduit (1)
220						
480	Input XFMR Module Delta / 3-Wire	30A	10 AWG	10 AWG	120 lb in (13.5 Nm)	1.00" conduit (1)
600		25A				
208	Output UPS Module,TB1 WYE / 4-Wire		6 AWG	10 AWG	120 lb in (13.5 Nm)	1.00" conduit (1)
220						
480 (with transformer)			6 AWG	10 AWG	120 lb in (13.5 Nm)	1.00" conduit (1)
600 (with transformer)						

[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.

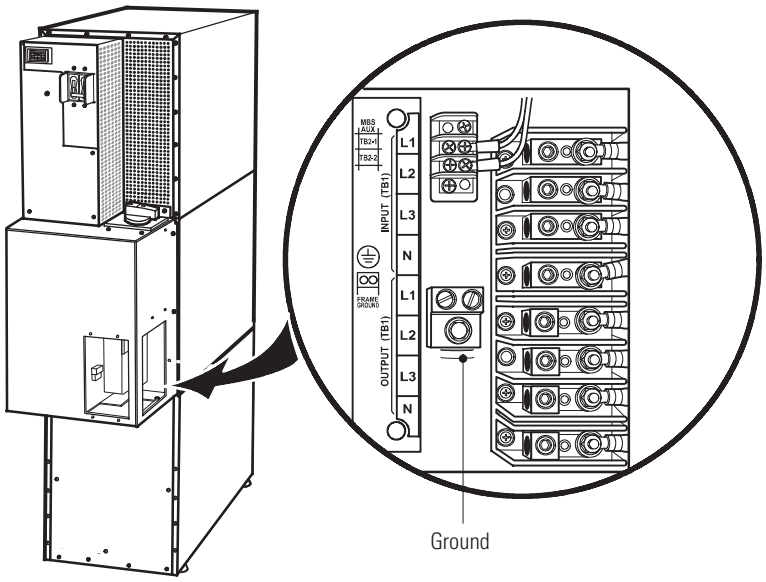

Figure 13. UPS Terminal Block (3-High Shown)

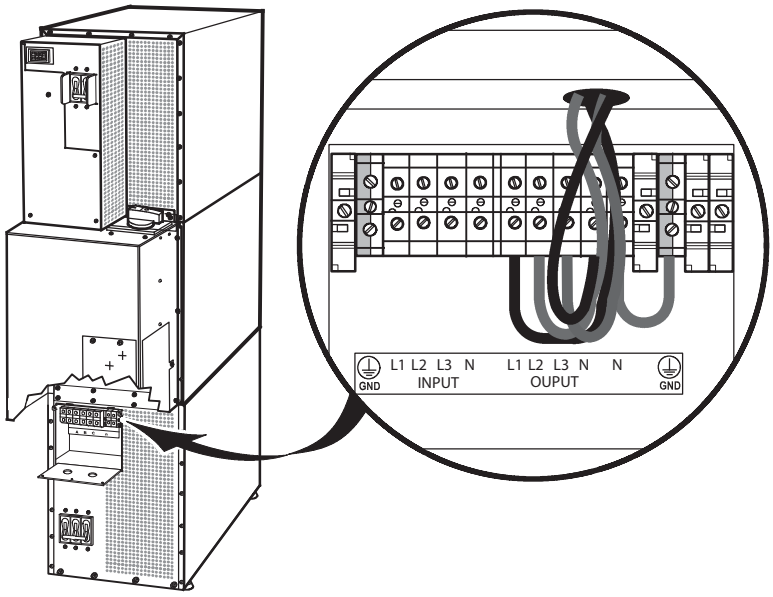

Figure 14. Input Isolation Transformer Terminal Block

13. For UPS only installations, replace the UPS wiring access cover and conduit landing plate.

    For UPS installations with an input isolation transformer, replace the transformer wiring access cover.

14. Continue to "Stabilizing the Cabinet" on page 43 to complete the UPS installation.

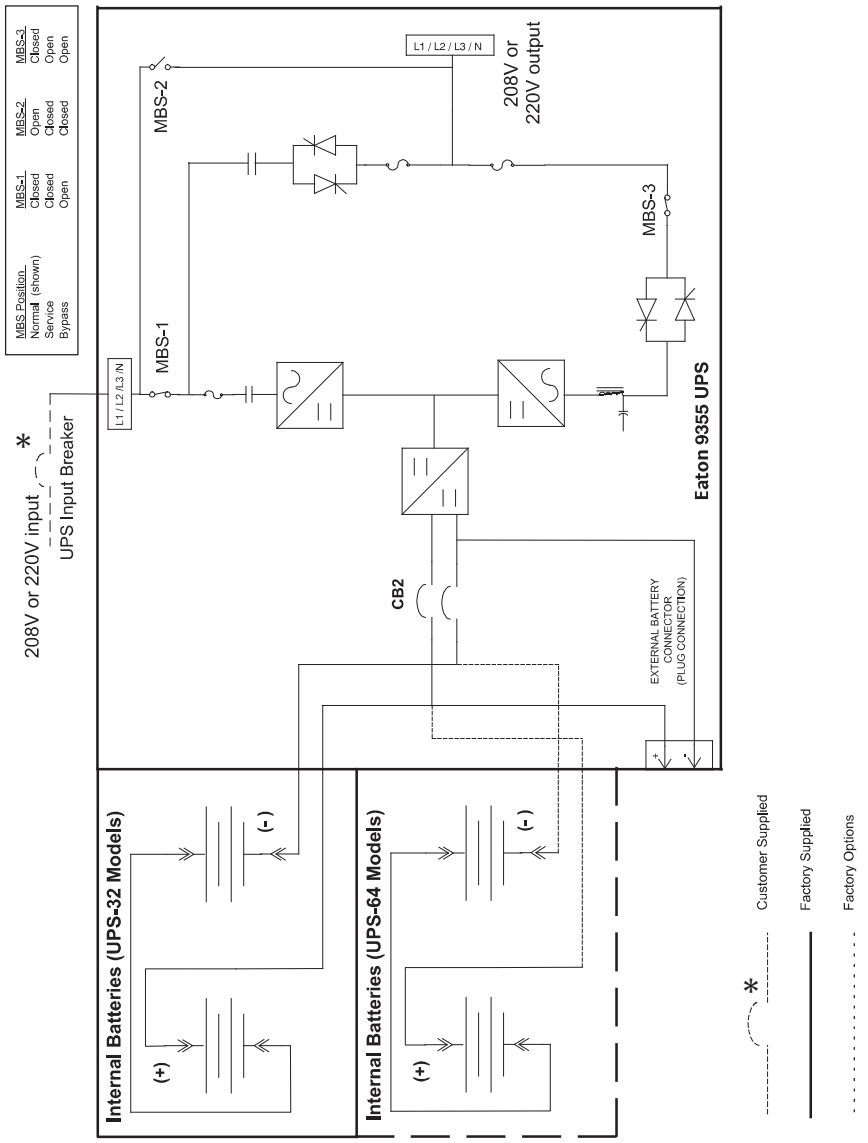

Figure 15. UPS Wiring Diagram

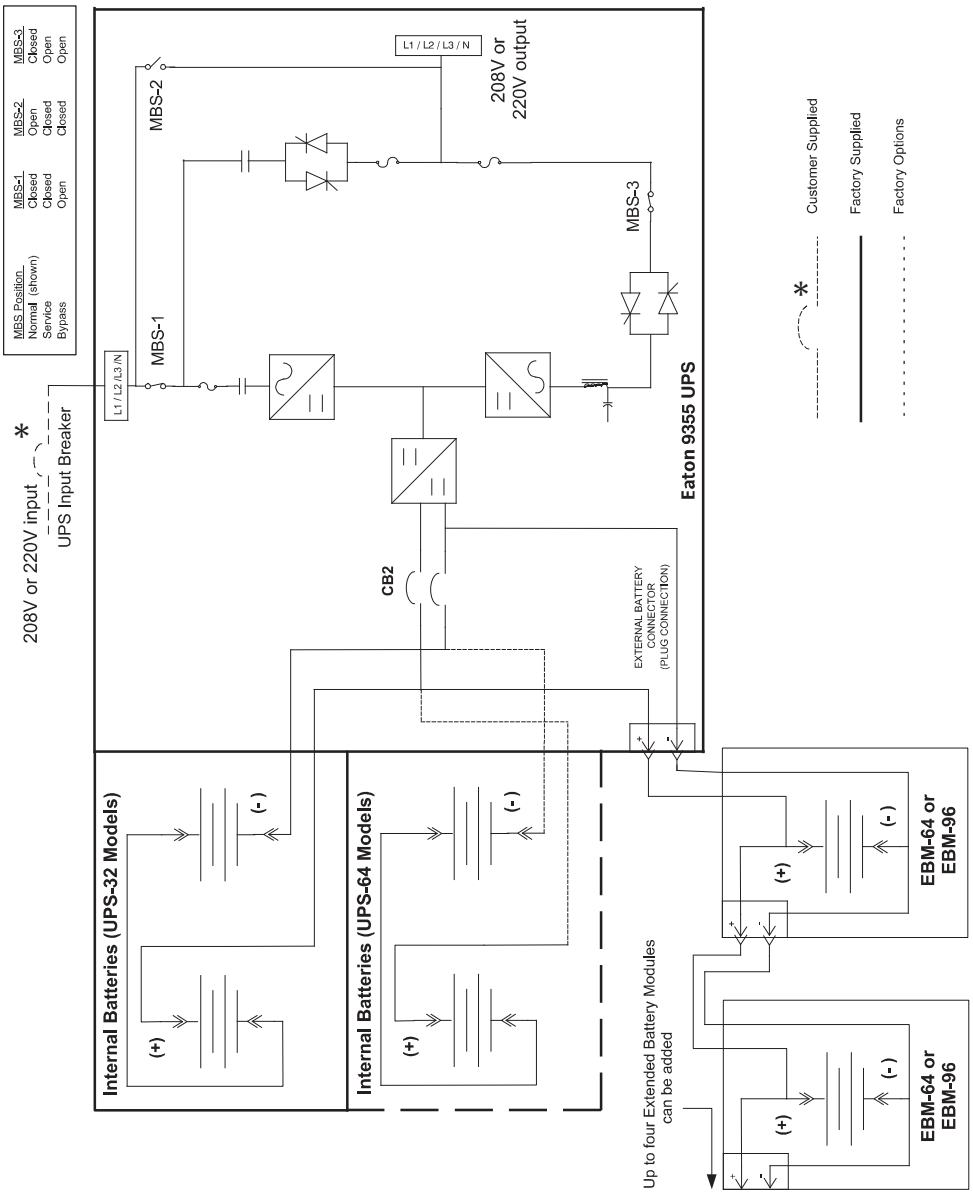

Figure 16. UPS with Extended Battery Modules Wiring Diagram

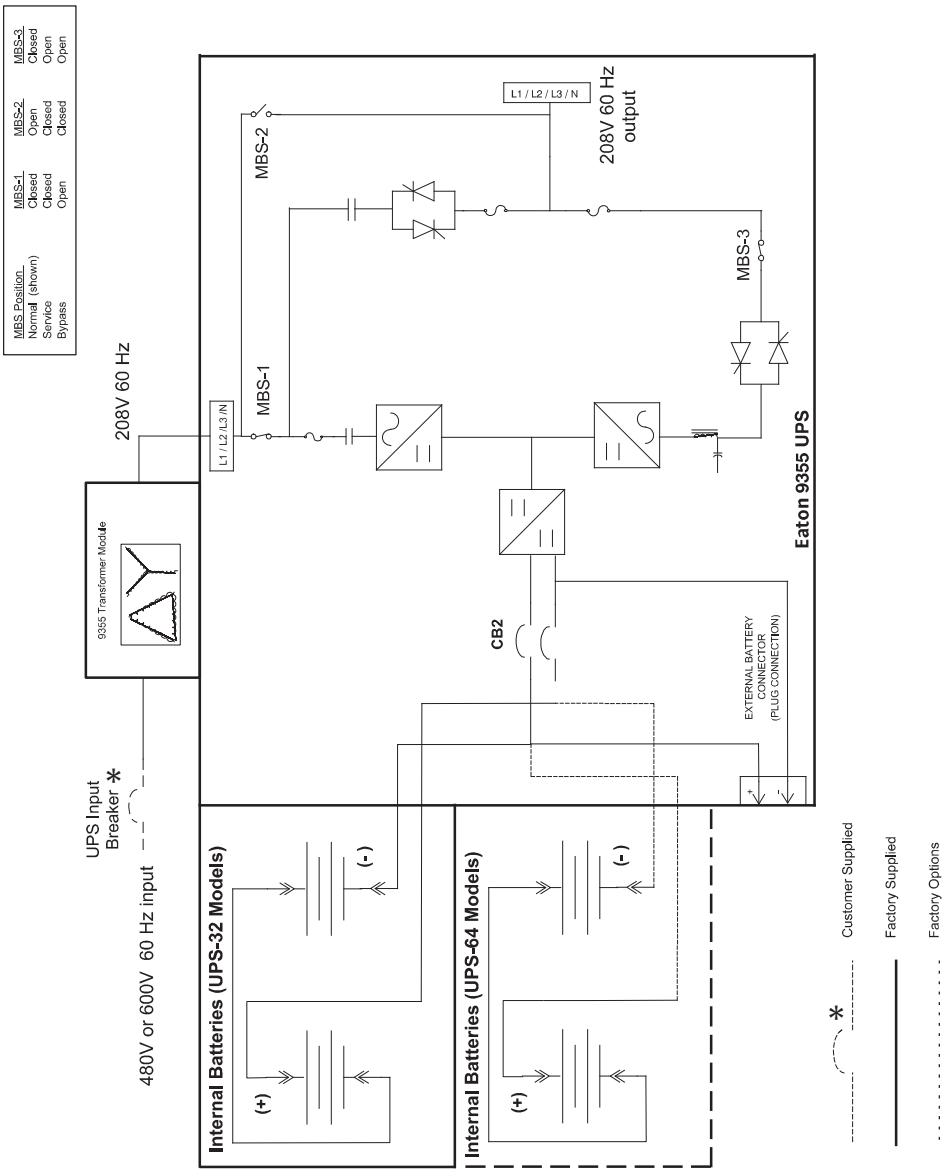

Figure 17. UPS with Input Isolation Transformer Wiring Diagram

Chapter 5 Version 1 Wall-Mounted Bypass Switch Installation

This chapter describes installing the wall-mounted bypass switch with the UPS. The wall-mounted bypass switch is a Make-Before-Break (MBB) maintenance bypass switch.

Note: The input isolation transformer cannot be used with the wall-mounted bypass switch.

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.

Figure 26 and Figure 27 beginning on page 29 show the oneline diagrams.

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.

To hardwire the bypass cabinet:

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 2 on page 26.
3. Switch off utility power to the distribution point where the bypass cabinet and UPS 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 bypass cabinet front cover (see Figure 18).

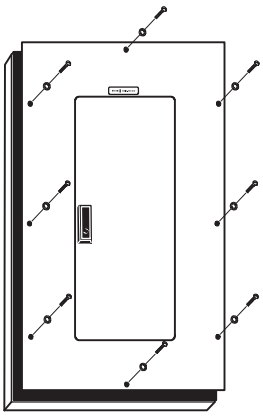

Figure 18. Version 1 Bypass Cabinet Front Cover

6. Remove the internal cover to gain access to the breakers (see Figure 19).

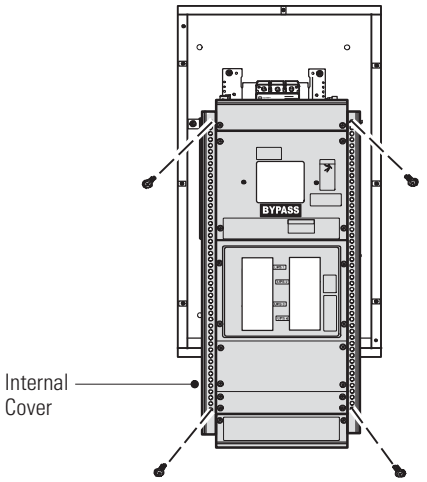

Figure 19. Version 1 Internal Cover

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 bypass breaker is in the OFF position (see Figure 20).
9. Mount the bypass cabinet to the wall and install the conduit.

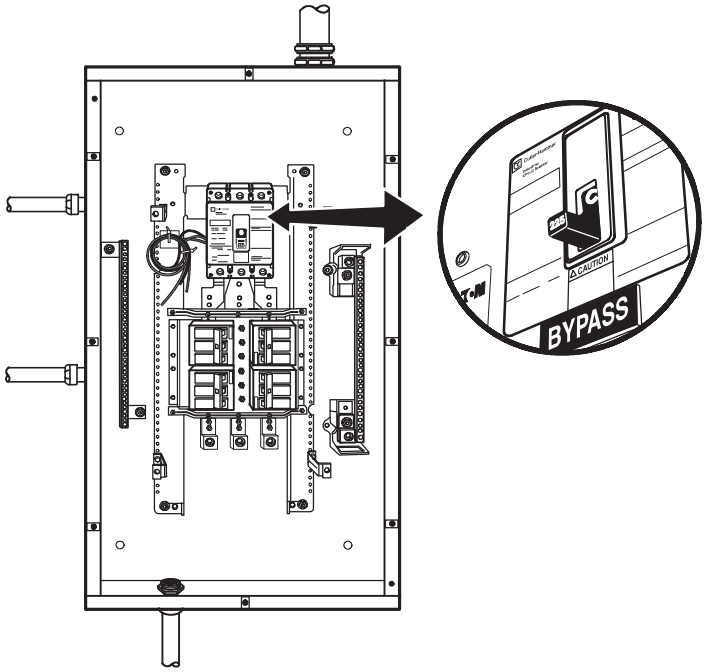

Figure 20. Version 1 Bypass Breaker

10. Verify that the UPS battery circuit breaker is in the OFF position (see Figure 21).
11. 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.

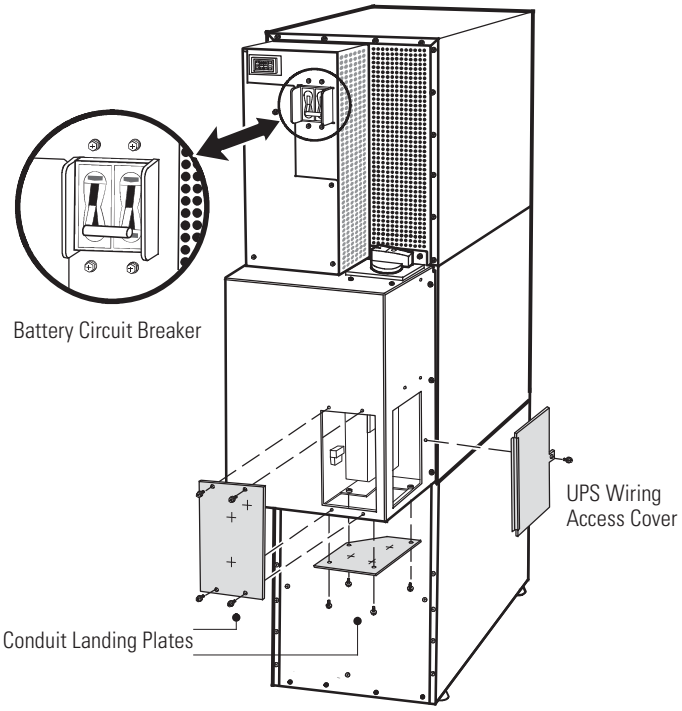

Figure 21. UPS Rear View (3-High Shown)

13. Hardwire the UPS input terminations.

    See Table 2 for specifications and Figure 22 for a detailed view of the UPS terminal block.

Note: 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: The Eaton 9355 UPS is a single-feed UPS only.

Table 2. UPS Terminal Block Wiring

10 kVA System Voltage	Wire Function	Feeder Circuit Breaker Size	L1, L2, L3, N Wire Size[1]	Ground Wire Size[1]	Tightening Torque	Conduit Size[2, 3] (Number of Conduits)
208	Input	45A	6 AWG	10 AWG	120 lb in (13.5 Nm)	1.00" conduit (1)
220			8 AWG			
208	Output		8 AWG	10 AWG	120 lb in (13.5 Nm)	1.00" conduit (1)
220						
15 kVA System Voltage	**Wire Function**	**Feeder Circuit Breaker Size**	**L1, L2, L3, N Wire Size[1]**	**Ground Wire Size[1]**	**Tightening Torque**	**Conduit Size[2, 3] (Number of Conduits)**
208	Input	60A	4 AWG	10 AWG	120 lb in (13.5 Nm)	1.25" conduit (1)
220						
208	Output		6 AWG	10 AWG	120 lb in (13.5 Nm)	1.00" conduit (1)
220						

[1] Use only 90°C-rated copper wire. Minimum wire size is based on 120/208 full load ratings applied to NEC Code 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.

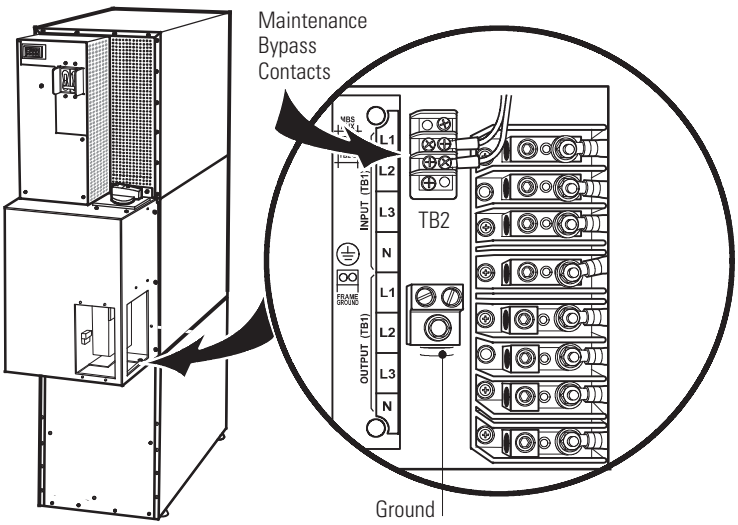

Figure 22. UPS Terminal Block (3-High Shown)

14. Hardwire the output terminations from the UPS to the bypass cabinet (see Figure 23).

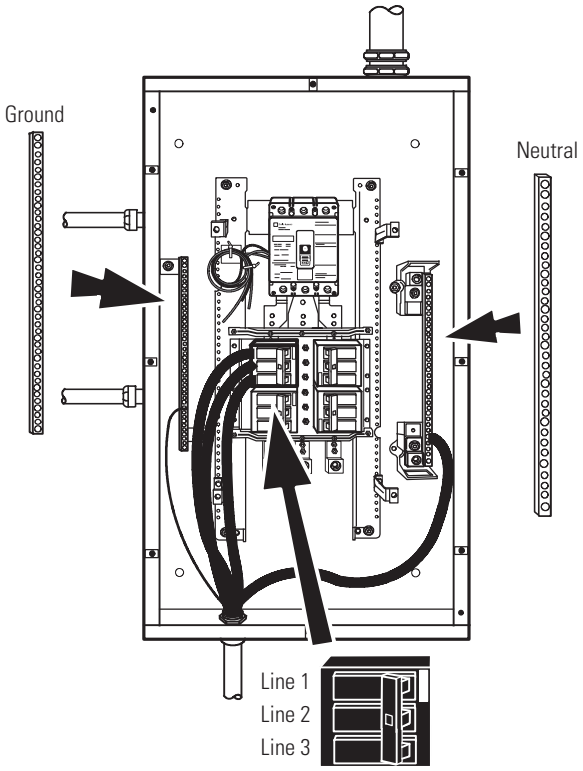

Figure 23. Version 1 UPS Output to Bypass Cabinet Wiring

15. Hardwire the load to the bypass cabinet (see Figure 24).
16. Route the maintenance bypass wires through the conduit to the UPS terminal block (see Figure 22 on page 26).

    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.

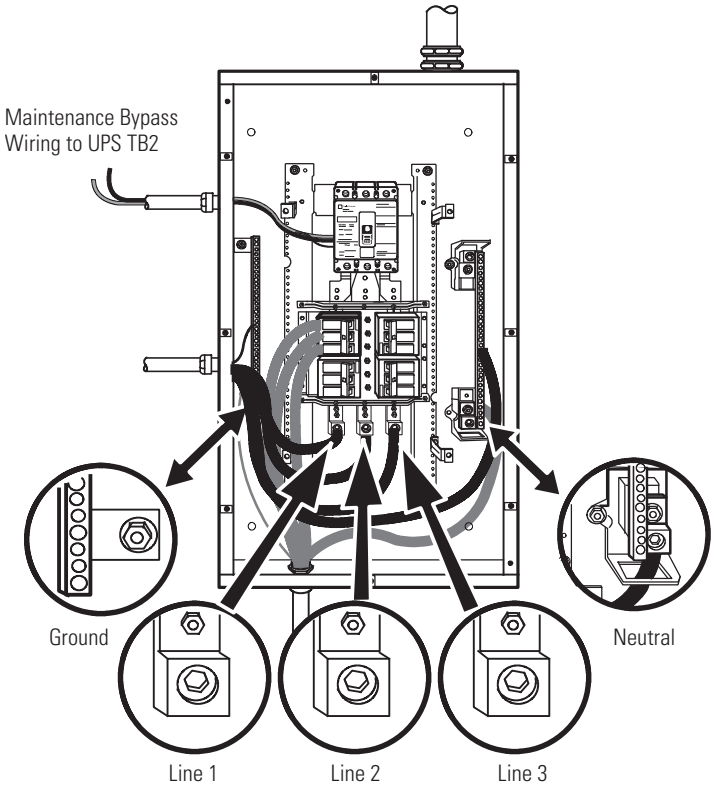

Figure 24. Version 1 Load Connections

18. Wire the AC input to the bypass breaker (see Figure 25).

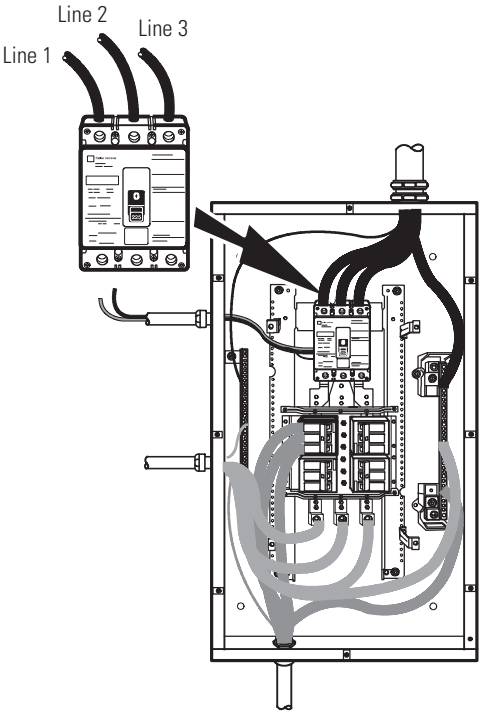

Figure 25. Version 1 Bypass AC Input Wiring

19. Verify the bypass input.
20. Reinstall the internal cover.
21. Reinstall the bypass cabinet front cover.
22. Continue to "Stabilizing the Cabinet" on page 43 to complete the UPS installation.

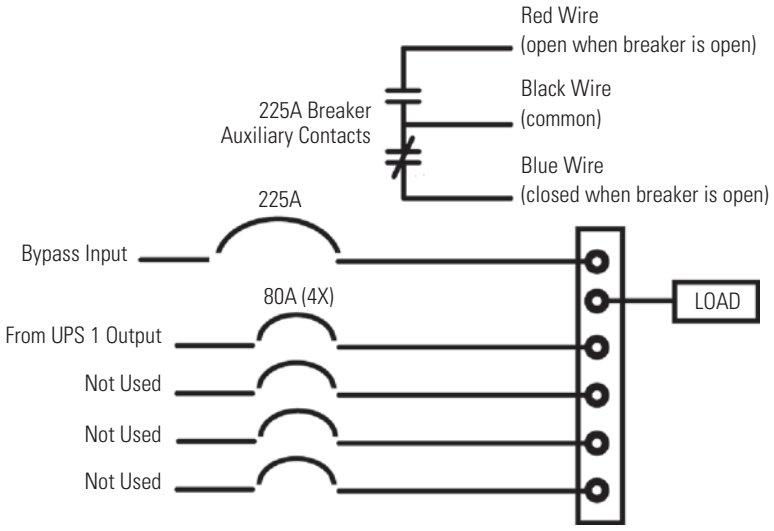

Figure 26. Version 1 Bypass Wiring Diagram

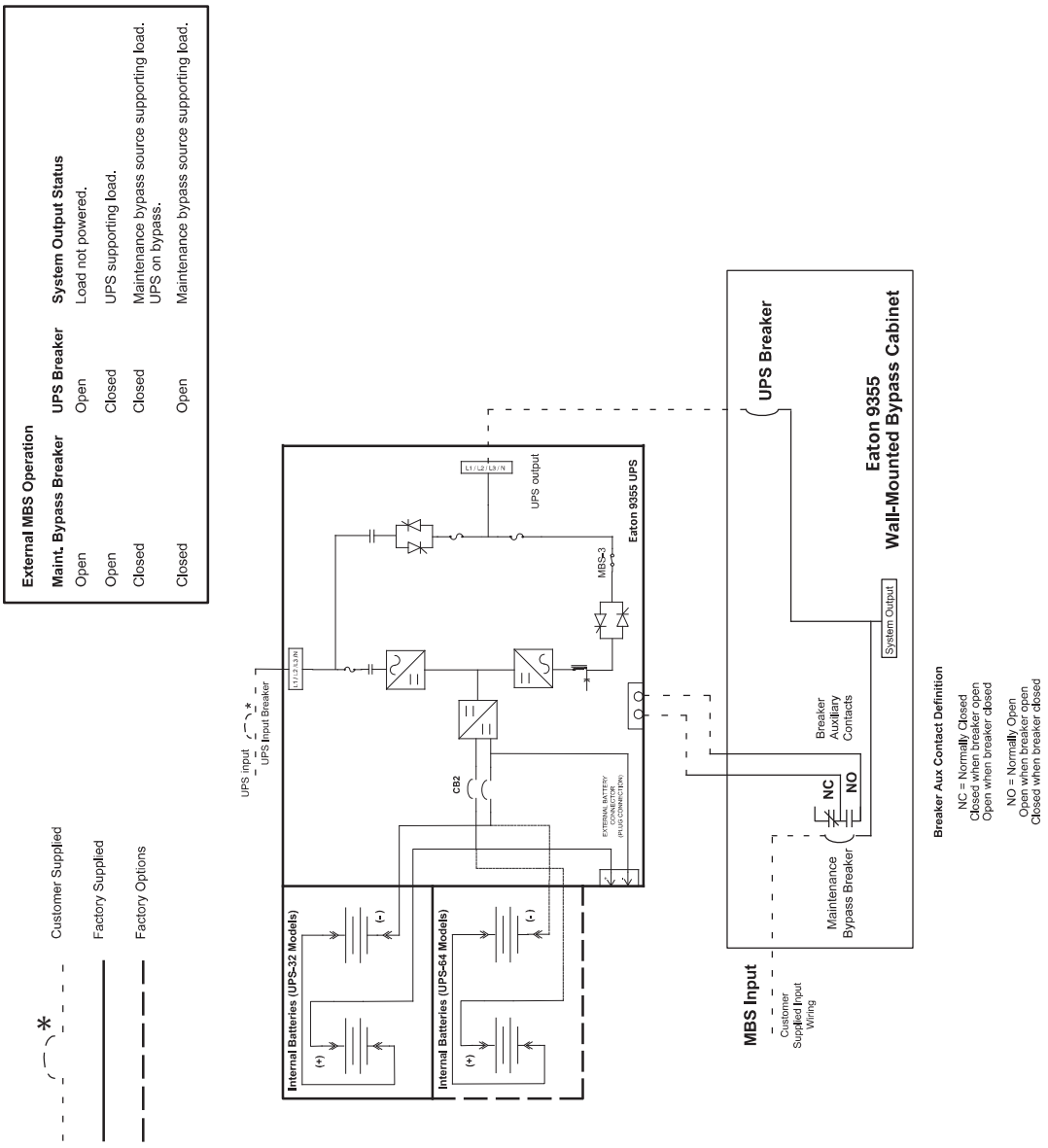

Figure 27. UPS with Input Isolation Transformer and Version 1 Wall Mounted Bypass Cabinet Wiring Diagram

Chapter 6 Version 2 Wall-Mounted Bypass Switch Installation

This chapter describes installing the wall-mounted bypass switch with the UPS. The wall-mounted bypass switch is a Make-Before-Break (MBB) maintenance bypass switch.

Note: The input isolation transformer cannot be used with the wall-mounted bypass switch.

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.

Figure 37 through Figure 39 beginning on page 40 show the oneline diagrams.

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.

To hardwire the bypass cabinet:

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 3 on page 36.
3. Switch off utility power to the distribution point where the bypass cabinet and UPS 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 28).
6. Follow the instructions on the inside of the door to open or remove the front cover (see Figure 28 and Figure 29).

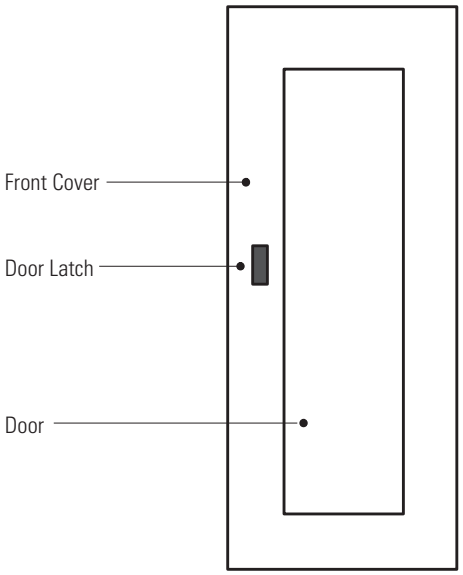

Figure 28. Version 2 Bypass Cabinet Front Door and Cover

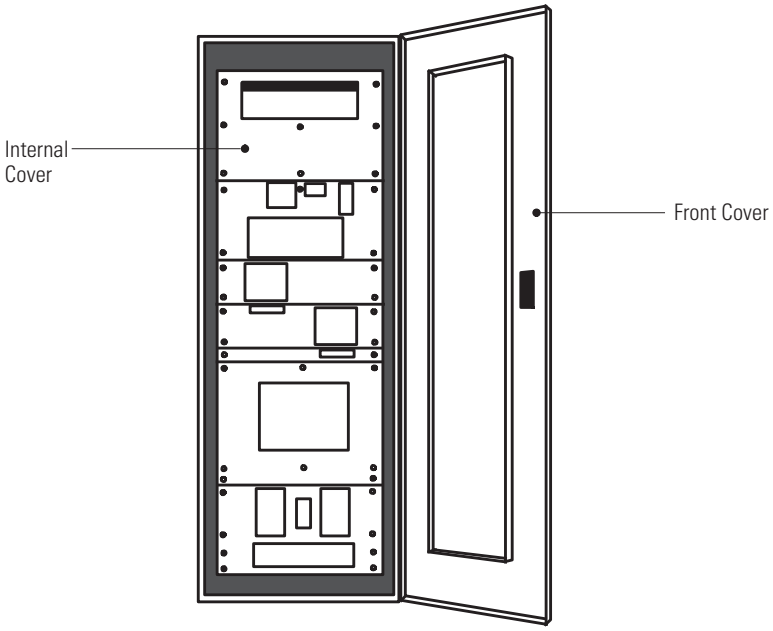

Figure 29. Version 2 Bypass Cabinet Front Cover Open

7. Remove the internal cover to gain access to the breakers (see Figure 30).

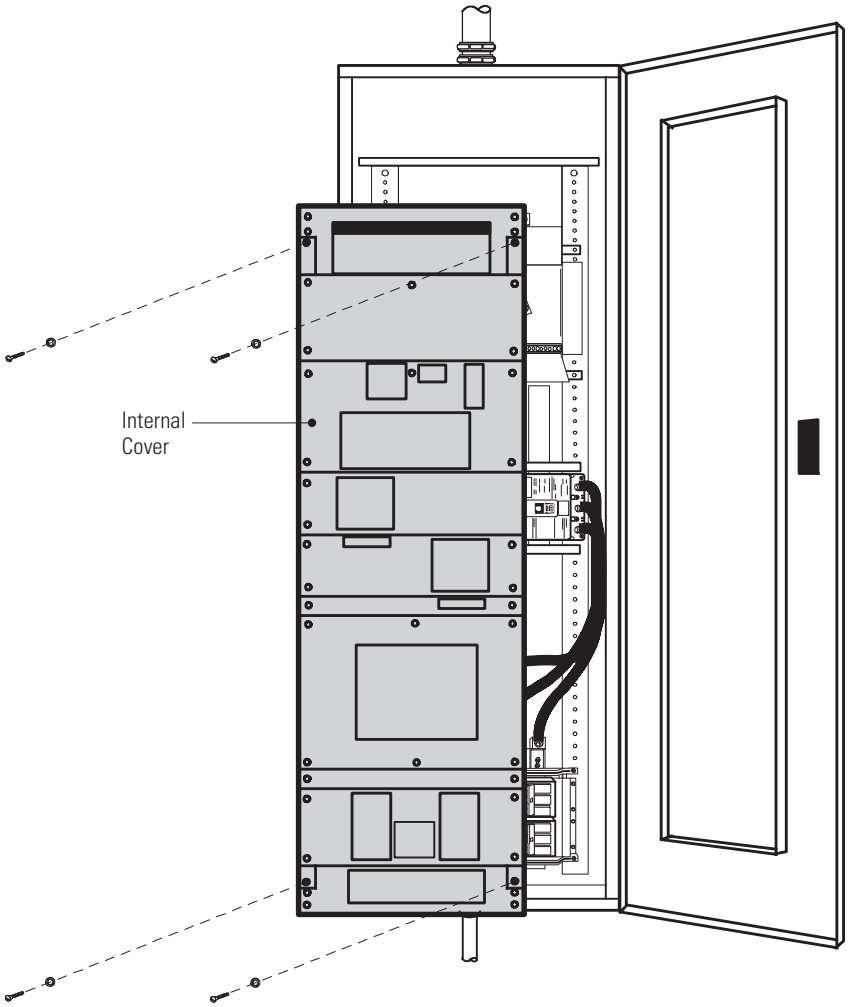

Figure 30. Version 2 Bypass Cabinet Internal Cover

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 bypass breaker is in the OFF position (see Figure 31).
10. Mount the bypass cabinet to the wall and install the conduit.

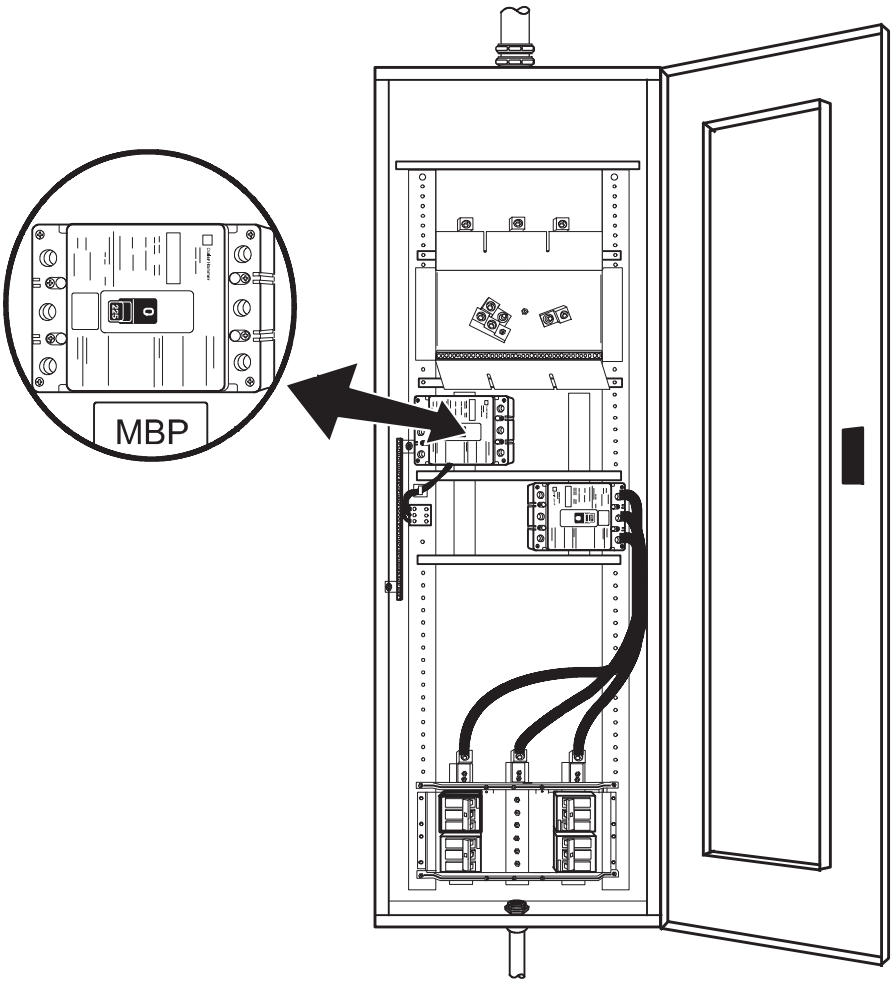

Figure 31. Version 2 Bypass Cabinet Bypass Breaker

11. Verify that the UPS battery circuit breaker is in the OFF position (see Figure 32).
12. 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.

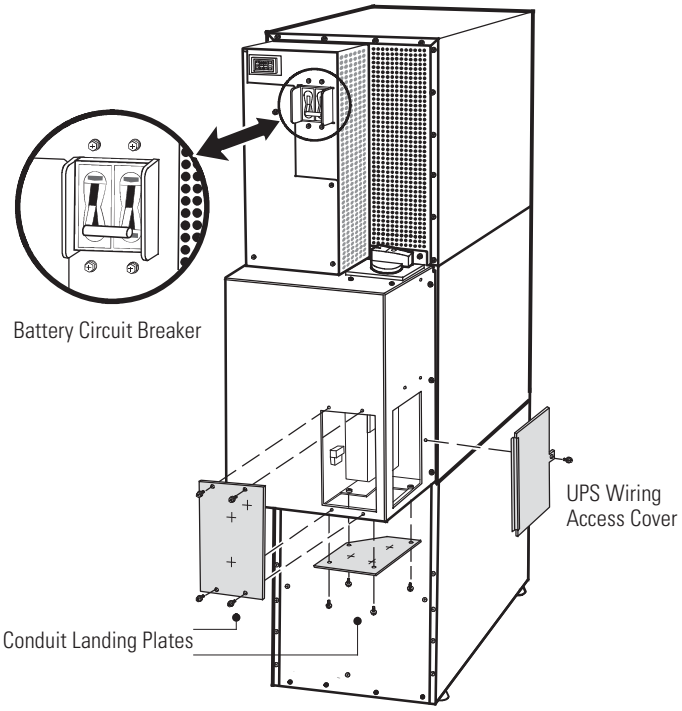

Figure 32. UPS Rear View (3-High Shown)

14. Hardwire the UPS input terminations.

    See Table 3 for specifications and Figure 33 for a detailed view of the UPS terminal block.

Note: 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: The Eaton 9355 UPS is a single-feed UPS only.

Table 3. UPS Terminal Block Wiring

10 kVA Input Voltage	Wire Function	Input Circuit Breaker Size	L1, L2, L3, N Wire Size[1]	Ground Wire Size[1]	Tightening Torque	Conduit Size[2, 3] (Number of Conduits)
208	Input	45A	6 AWG	10 AWG	120 lb in (13.5 Nm)	1.00" conduit (1)
220			8 AWG			
208	Output		8 AWG	10 AWG	120 lb in (13.5 Nm)	1.00" conduit (1)
220						
15 kVA Input Voltage	**Wire Function**	**Input Circuit Breaker Size**	**L1, L2, L3, N Wire Size[1]**	**Ground Wire Size[1]**	**Tightening Torque**	**Conduit Size[2, 3] (Number of Conduits)**
208	Input	60A	4 AWG	10 AWG	120 lb in (13.5 Nm)	1.25" conduit (1)
220						
208	Output		6 AWG	10 AWG	120 lb in (13.5 Nm)	1.00" conduit (1)
220						

[1] Use only 90°C-rated copper wire. Minimum wire size is based on 120/208 full load ratings applied to NEC Code 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.

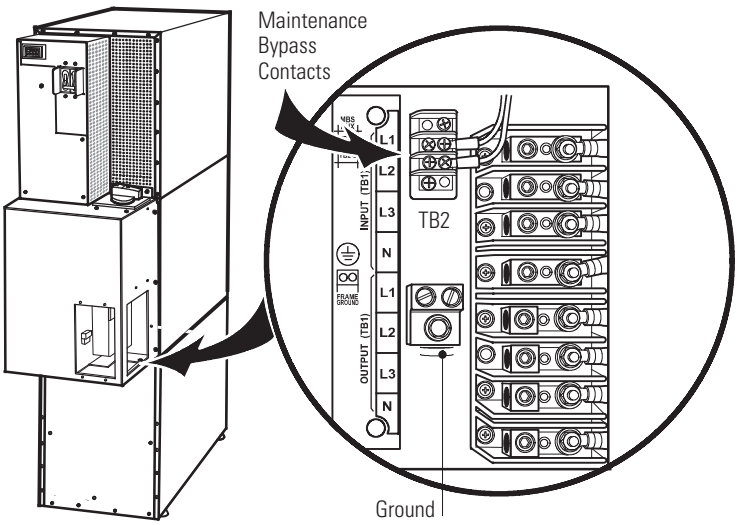

Figure 33. UPS Terminal Block (3-High Shown)

15. Hardwire the output terminations from the UPS to the bypass cabinet (see Figure 34).

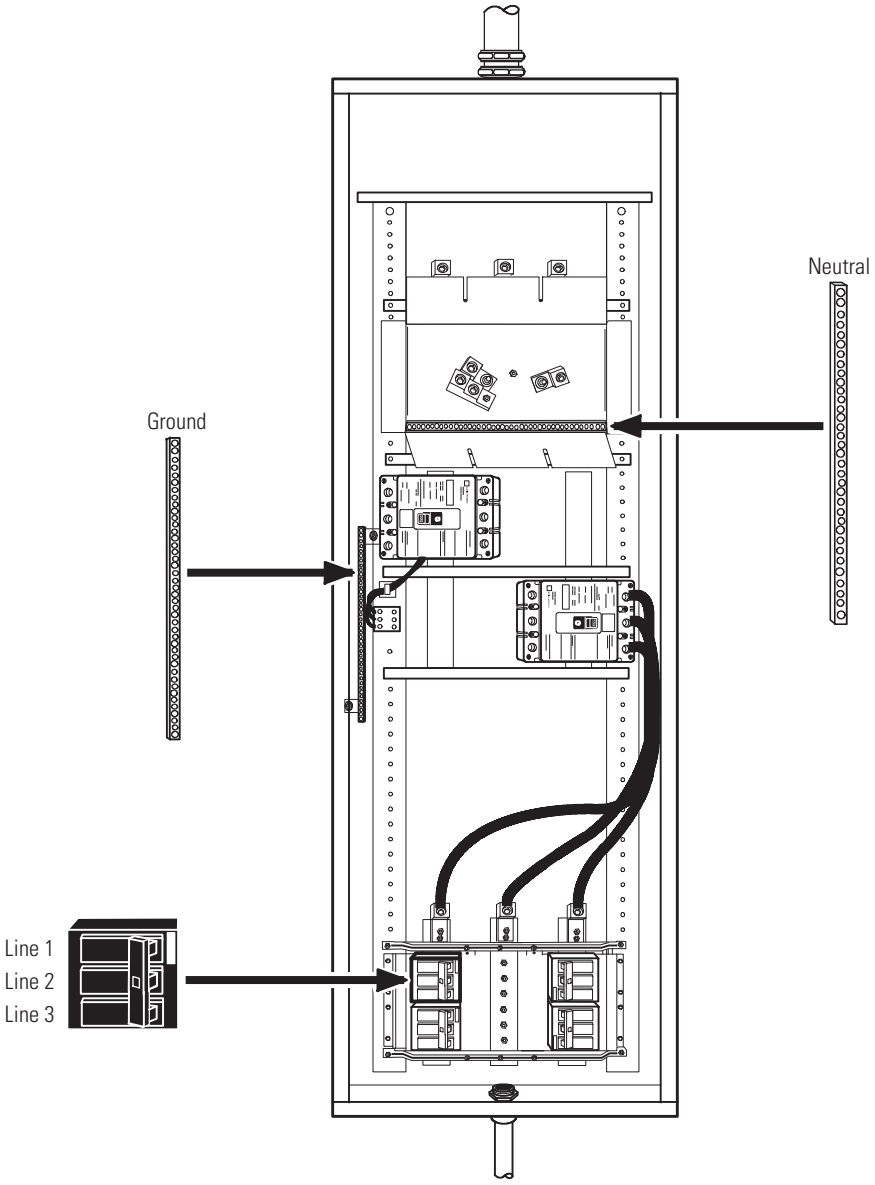

Figure 34. Version 2 Bypass Cabinet UPS Output to Bypass Wiring

16. Hardwire the load to the bypass cabinet (see Figure 35).
17. Route the maintenance bypass wires through the conduit to the UPS terminal block (see Figure 33 on page 36).

    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.

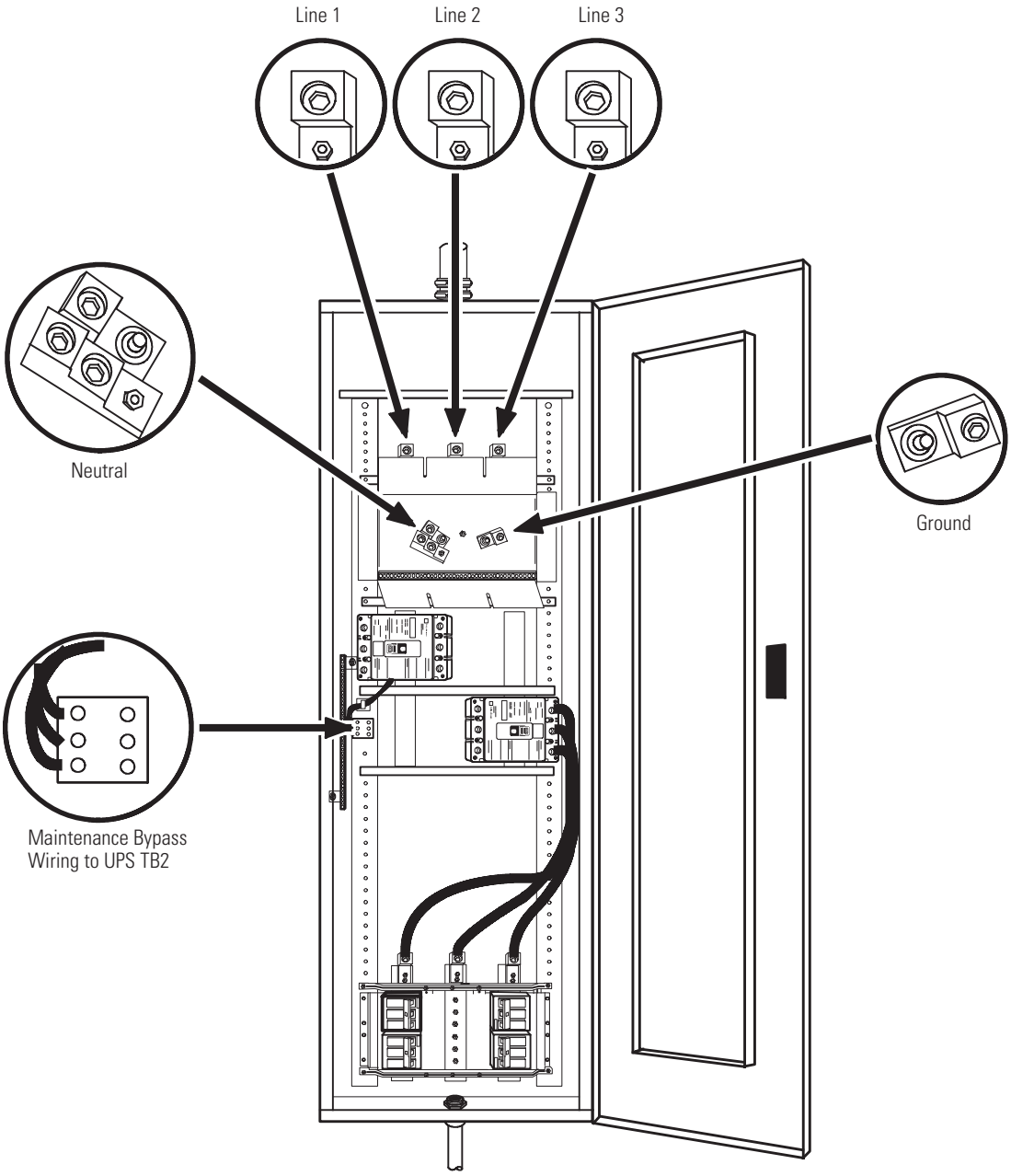

Figure 35. Version 2 Bypass Cabinet Load Connections

19. Wire the AC input to the bypass breaker (see Figure 36).

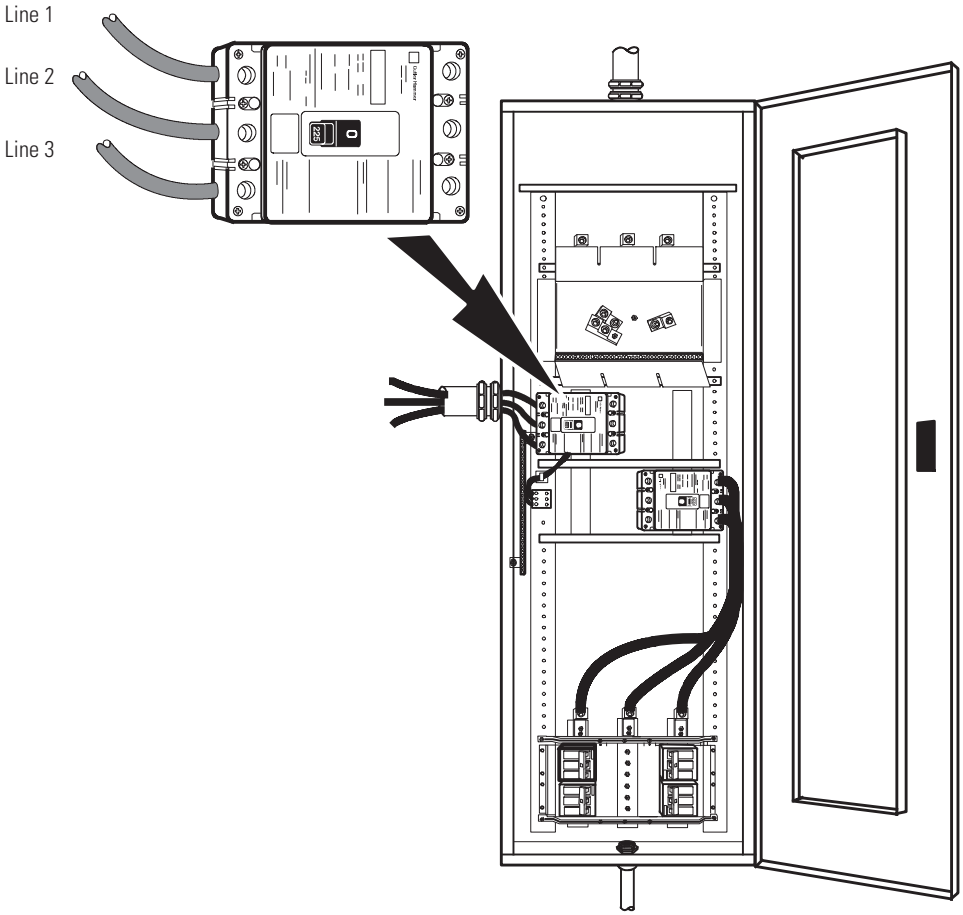

Figure 36. Version 2 Bypass Cabinet Bypass AC Input Wiring

20. Verify the phase rotation for each UPS and the bypass input.
21. Reinstall the internal cover.
22. Reinstall the bypass cabinet front cover.
23. Continue to "Stabilizing the Cabinet" on page 43 to complete the UPS installation.

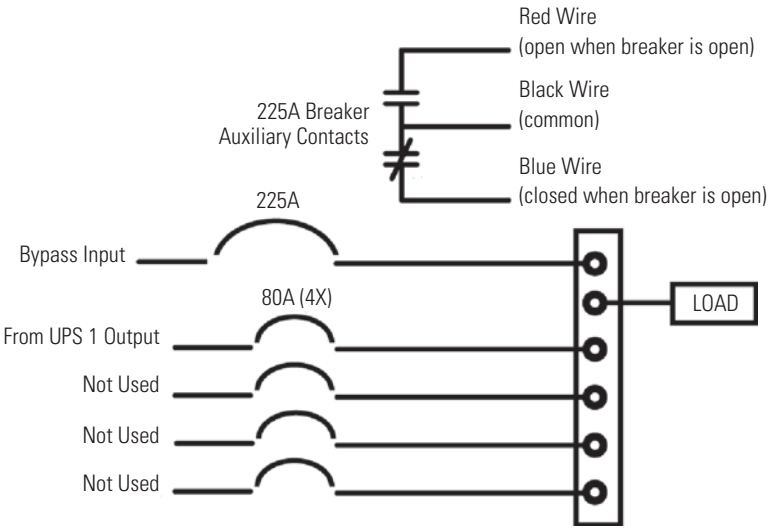

Figure 37. Version 2 Bypass Cabinet Bypass Wiring Diagram – without Maitenance Isolation Switch (MIS)

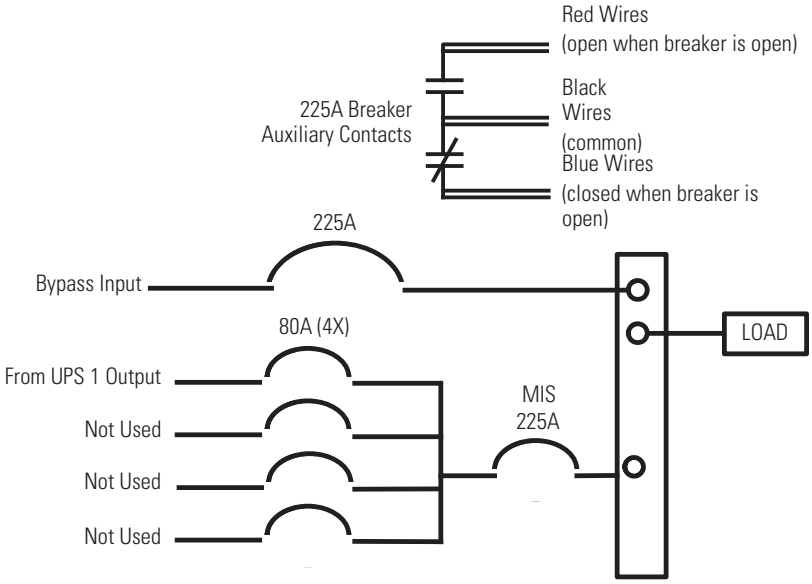

Figure 38. Version 2 Bypass Cabinet Bypass Wiring Diagram – with MIS

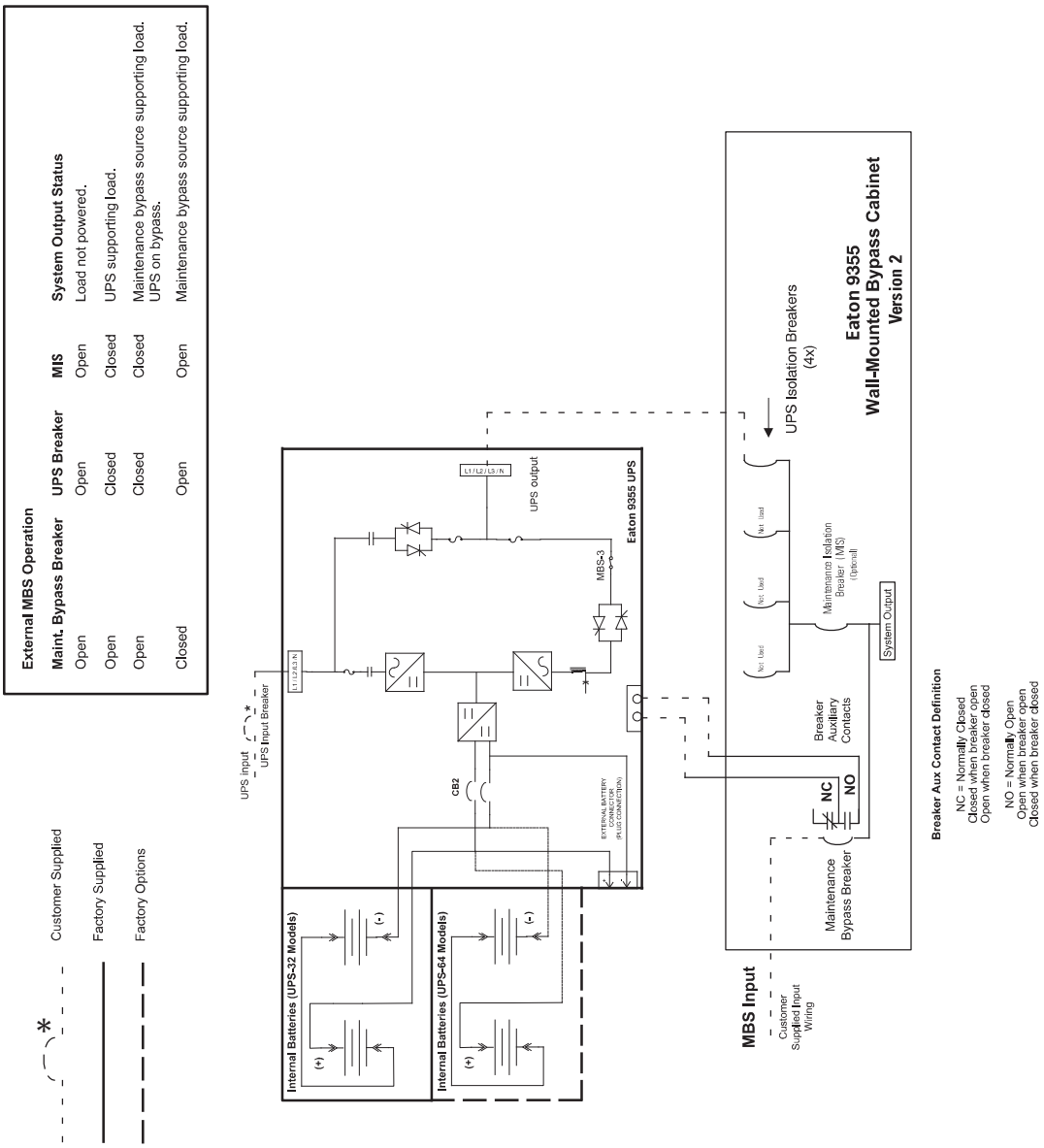

Figure 39. UPS with Input Isolation Transformer and Version 2 Wall Mounted Bypass Cabinet Wiring Diagram

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Chapter 7 Stabilizing the Cabinet

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

Note: 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.

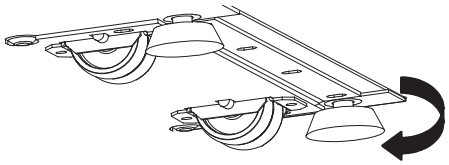

Figure 40. Lowering the Leveling Feet

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 41.
   - For two cabinets, see Figure 42.
   - For three cabinets, see Figure 43.

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:
   - "Extended Battery Module Installation" on page 47 to install optional EBMs.
   - "Communication" on page 49 to install UPS communication options, such as X-Slot cards or remote emergency power-off (REPO).
   - "Operation" on page 61 to start up the UPS.

Note: After UPS startup, ensure maximum battery runtime by configuring the UPS for the correct number of EBMs (see page).

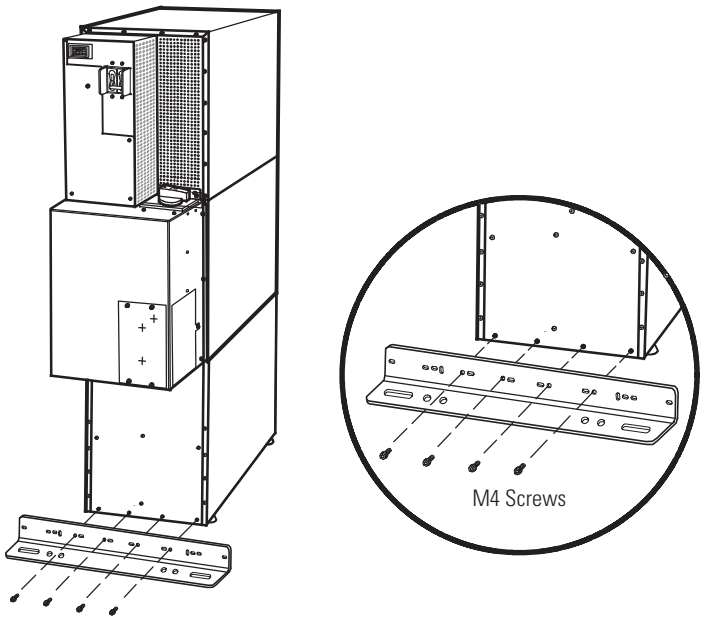

Figure 41. Stabilizing Bracket with One Cabinet

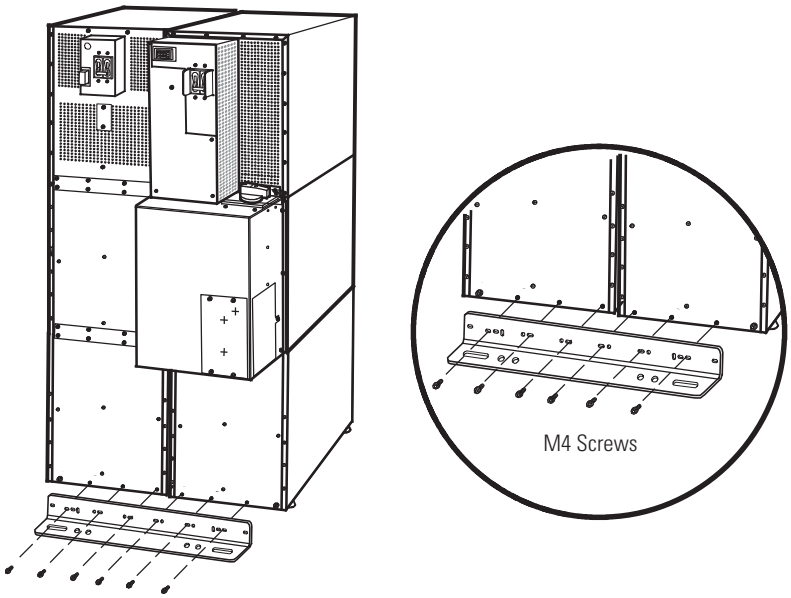

Figure 42. Stabilizing Bracket with Two Cabinets

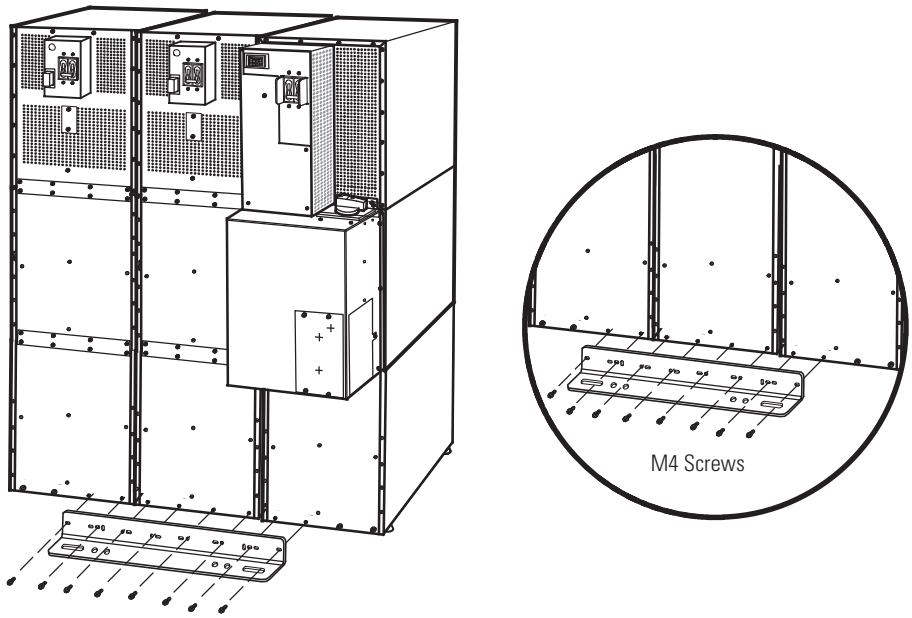

Figure 43. Stabilizing Bracket with Three Cabinets

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Chapter 8 Extended Battery Module Installation

Note: 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: 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 install the optional Extended Battery Module (EBM):

1. Position the EBM adjacent to the next cabinet.
2. Verify that all battery circuit breakers are in the OFF position (see Figure 44).
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 44.
5. If additional EBMs are installed, attach another ground strap between the first and second EBM as shown in Figure 44. Repeat for each additional EBM.
6. Plug the EBM cable into the UPS battery connector.
7. If additional EBMs are installed, plug the EBM cable of the second cabinet into the battery connector on the first EBM. Repeat for each additional EBM.

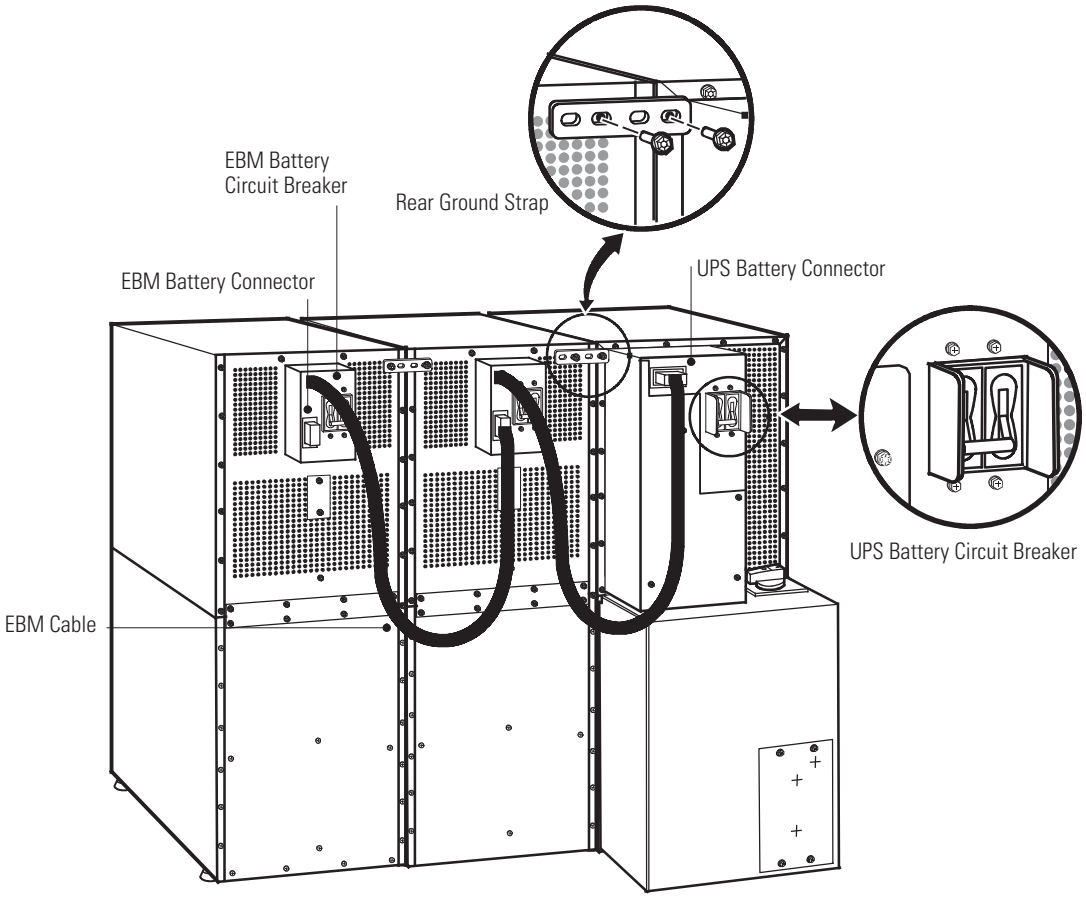


Figure 44. Typical EBM Installation (2-High Cabinets Shown)

8. Remove the top front covers of all cabinets.
9. Install the remaining ground straps between each cabinet (see Figure 45).
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. Continue to one of the following sections:
    - "Communication" on page 49 to install UPS communication options, such as X-Slot cards or remote emergency power-off.
    - "Operation" on page 61 to start up the UPS.

Note: After UPS startup, ensure maximum battery runtime by configuring the UPS for the correct number of EBMs (see page 67).

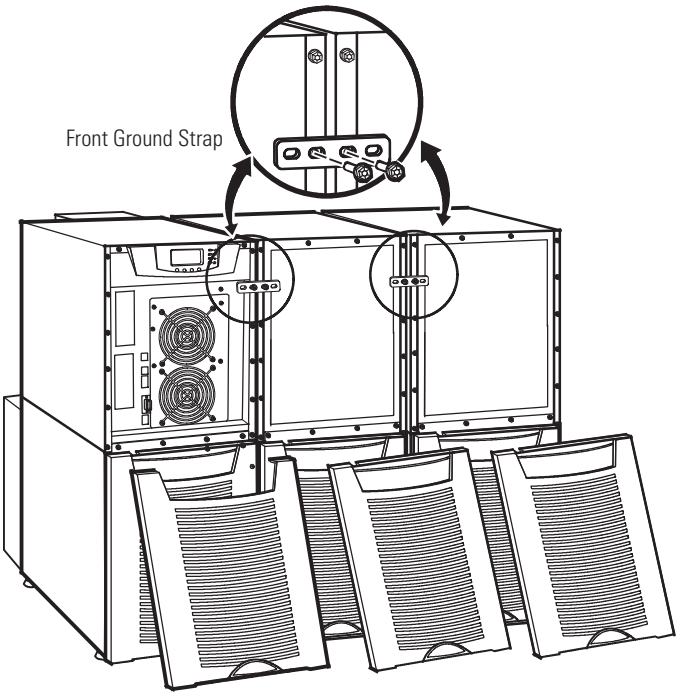


Figure 45. Front Ground Strap Installation (2-High Cabinets Shown)

Chapter 9 Communication

This section describes the:

- DB-9 communication port
- X-Slot cards
- Remote Monitor Panel and Industrial Relay Card (IRC)
- LanSafe Power Management Software
- Remote emergency power-off (REPO)
- Relay output contacts
- Programmable signal inputs

Figure 46 shows the location of the communication options and control terminals on the UPS.

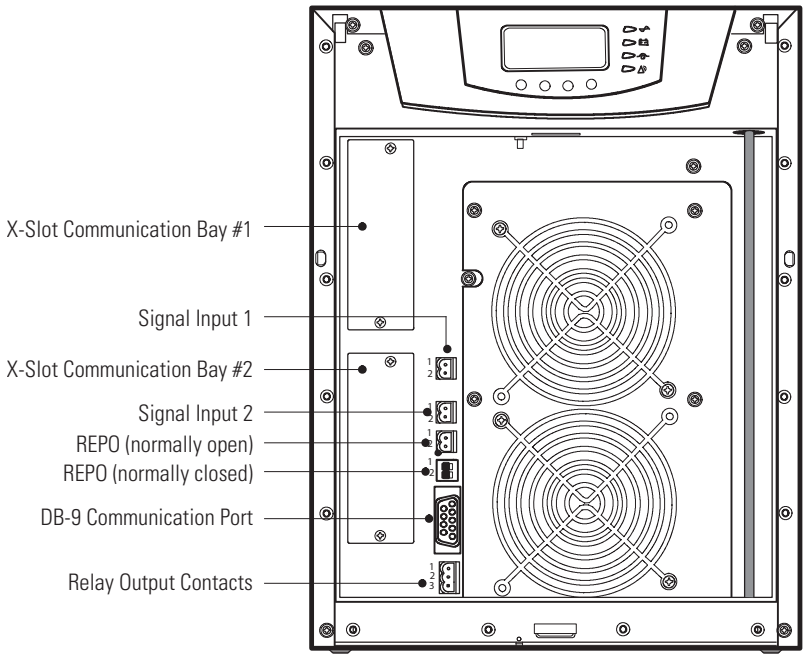


Figure 46. Communication Options and Control Terminals

Installing Communication Options and Control Terminals

To access and install the communication options and control terminals:

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 47).

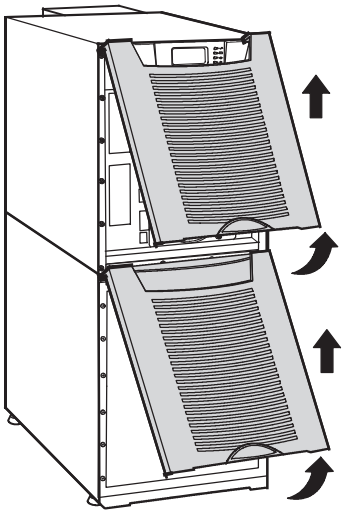


Figure 47. Removing the Front Covers

2. Install the appropriate X-Slot card and/or necessary cable(s) into the top cabinet (see Figure 46 and Figure 48).

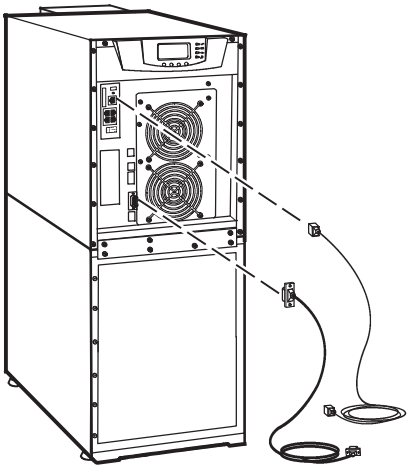


Figure 48. Installing Communication Cables

3. 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 49).

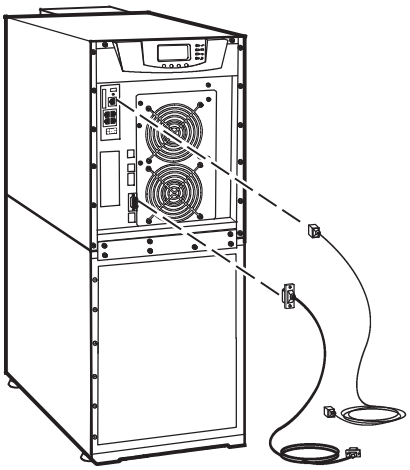


Figure 49. Removing Knockout Tabs

4. Route the cable(s) to the approximate location of the cover access holes.
5. Connect the cables to the appropriate location.

   See "Communication Options" on page 52 or "Control Terminals" on page 58 for detailed information.
6. Reinstall the front covers, starting with the bottom cabinet (see Figure 50).

   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.

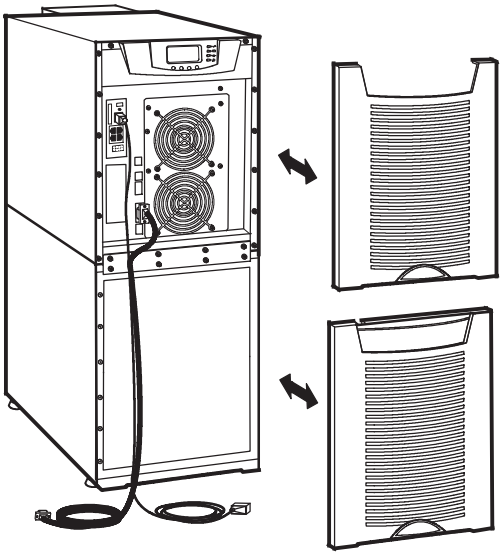


Figure 50. Reinstalling the Front Covers

7. Continue to "Operation" on page 61 to start up the UPS.

Note: After UPS startup, ensure maximum battery runtime by configuring the UPS for the correct number of EBMs (see page 67).

Communication Options

The Eaton 9355 UPS has serial communication capabilities through the DB-9 communication port or through an X-Slot card in one of the available bays. In addition, the LanSafe Power Management Software can be installed and used to communicate with the UPS via one of the serial communication connections.

The UPS supports two serial communication devices according to the following table:

Independent	Multiplexed	
X-Slot 1	**X-Slot 2**	**DB-9 Communication Port**
Any X-Slot card	Any X-Slot card except the Eaton Modem Card	Not in use
Any X-Slot card	Eaton Relay Interface Card Powerware Hot Sync CAN Bridge Card	Available
Any X-Slot card	Not in use	Available

Note: You can configure relays, signal inputs, and the serial port baud rate through the front panel menus (see Table 9 on page 62).

DB-9 Communication Port

To establish communication between the UPS and a computer, connect your computer to the UPS communication port using the supplied communication cable.

When the communication cable is installed, power management software can exchange data with the UPS. The software polls the UPS for detailed information on the status of the power environment. If a power emergency occurs, the software initiates the saving of all data and an orderly shutdown of the equipment.

The cable pins are identified in Figure 51 and the pin functions are described in Table 4. See Figure 46 on page 49 for the communication port location.

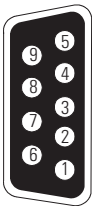


Figure 51. Communication Port

Table 4. Communication Port Pin Assignment

Pin Number	Signal Name	Function	Direction from the UPS
2	TxD	Transmit to external device	Out
3	RxD	Receive from external device	In
5	GND	Signal common (tied to chassis)	—

X-Slot Cards

X-Slot cards allow the UPS to communicate in a variety of networking environments and with different types of devices. The Eaton 9355 UPS has two available communication bays for any X-Slot card, including:

- Power Xpert® Gateway Card - provides a data gateway from the UPS to the Power Xpert Software; provides remote monitoring through a Web browser interface, e-mail, and a network management system using SNMP; connects to a twisted-pair Ethernet (10/100BaseT) network. Modbus TCP support provides direct integration of the UPS's parameters to a Building Management System (BMS). It has a built-in switching hub that allows a second network device to be connected to the network without the requirement of an additional network drop.
- ConnectUPS™-X Web/SNMP Card - has SNMP and HTTP capabilities as well as monitoring through a Web browser interface; connects to a twisted-pair Ethernet (10/100BaseT) network. It has a built-in switching hub that allows three additional network devices to be connected to the network without the requirement of additional network drops. In addition, a Environmental Monitoring Probe can be attached to obtain humidity, temperature, smoke alarm, and security information.
- Relay Interface Card - has isolated dry contact (Form-C) relay outputs for UPS status: Utility failure, Low battery, UPS alarm/OK, or On bypass.
- Modbus® Card - allows you to continuously and reliably monitor the UPSs in your Building Management System (BMS).
- Industrial Relay Card - is used to indicate the operating status of the UPS using the customer's monitoring equipment and to connect an optional RMP. The IRC uses four isolated normally-open or normally-closed dry relay contacts to indicate the UPS status. Normal, Bypass, Battery, and Alarm mode can be monitored (see page 56 for more information).
- Multi-Server Card - has six serial communication ports that can communicate simultaneously with other computers using LanSafe Power Management Software (provided on the Software Suite CD).
- Modem Card - provides out-of-band remote notification and monitoring using modem communication directly to cell phones and pagers.
- Single-Port Card - connects to the Expansion Chassis to enable multiple communication options or to a PC for power management control.
- ConnectUPS-MX SNMP Card - has Ethernet, modem, and SNMP capabilities.
- USB Card - connects to a USB port on your computer.

Note: The Eaton 9355 UPS does not detect plug-and-play hardware. Before installing the USB Card, set the UPS baud rate to 1200 through the front panel (see Table 9 on page 62).

See Figure 46 on page 49 for the location of the two X-Slot communication bays.

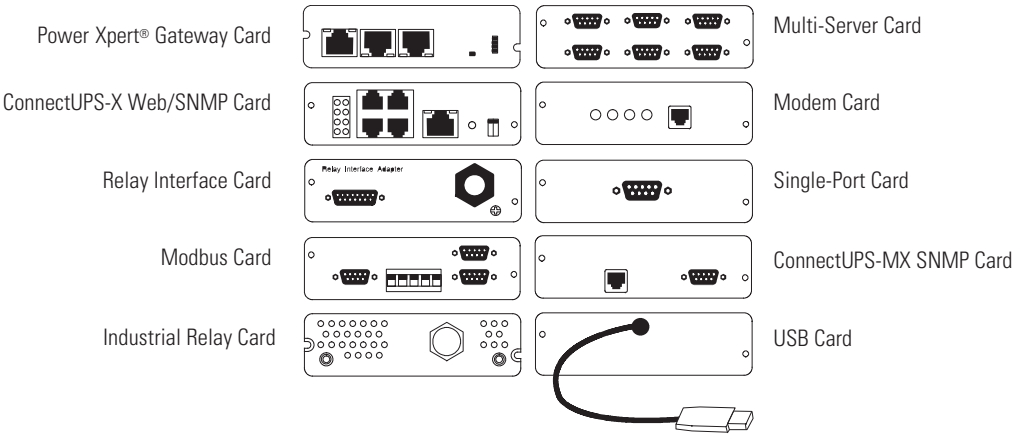


Figure 52. Optional X-Slot Cards

Remote Monitor Panel

The optional RMP can be installed to monitor the operation of the UPS from virtually any location within your facility, up to 152.4m (500 ft) from the UPS. You can surface–mount an RMP on a desktop or on a wall, wherever you have a serial interface line. Figure 53 shows an RMP. Figure 54 shows the enclosure dimensions and cable exit openings.

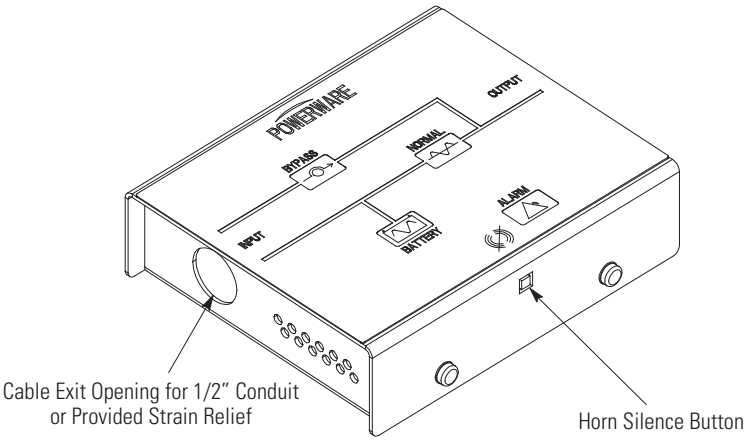


Figure 53. Remote Monitor Panel

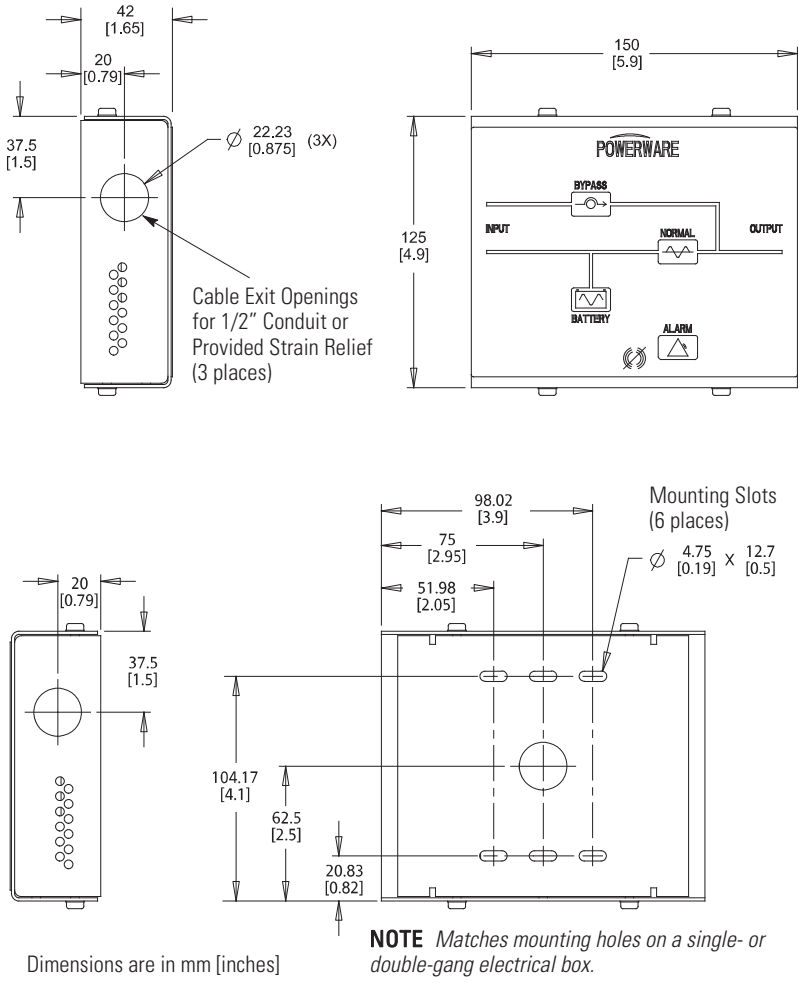


Figure 54. RMP Dimensions

To install an RMP:

Note: If mounting to a hollow wall, secure the enclosure bottom to a wood or metal stud within the wall. Do not use hollow wall anchors. The RMP can also be mounted to a single- or double-gang electrical box.

---

1. If wall mounting, securely mount the RMP. Continue to Step 2.

   If desk mounting, install the provided bumpers to the bottom of the RMP enclosure. Proceed to Step 3.

2. Install 1/2" conduit from the RMP to the IRC through the cable exit openings (see Figure 54). Proceed to Step 4.

3. Install wiring from the RMP to the IRC using the cable listed in Table 5 and the provided strain relief bushings in the cable exit openings in the IRC (see Figure 56) and the RMP.

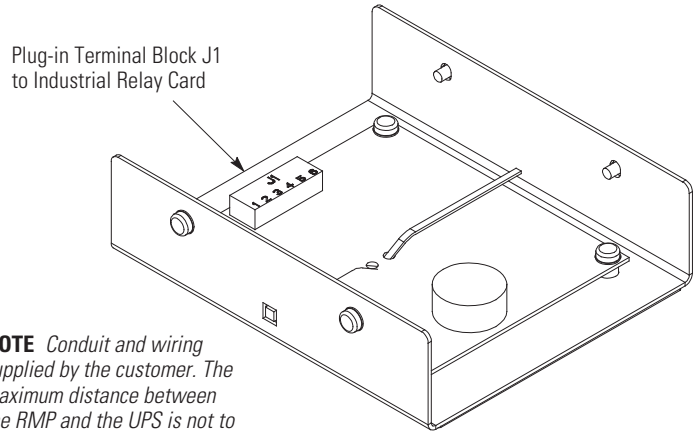
4. Connect the wiring between the RMP and the IRC plug–in terminal blocks using terminations shown in Table 5. See Figure 55 and Figure 56 for plug–in terminal block locations.

Table 5. RMP Wire Terminations

From RMP Terminal	To IRC Terminal	Remarks
J1-1	J1-1	Use Beldon 8690 060 or equivalent cable
J1-3	J1-3	
J1-4	J1-4	
J1-5	J1-5	
J1-6	J1-6	

5. Install the IRC into an open X-Slot communication bay (see Figure 48 on page 50).
6. To check the operation of the RMP, ensure that the UPS is supplying the load via the inverter or bypass. If the indicators on the RMP show the appropriate status, then it is operating correctly.

   If the RMP is not operating correctly, check the wiring, the fuse on the IRC, and the plug–in terminal blocks for proper seating. If all connections are secure but the RMP still does not operate correctly, replace the fuse. If this does not correct the problem, contact your service representative for verification that the RMP is working correctly.



NOTE *Conduit and wiring supplied by the customer. The maximum distance between the RMP and the UPS is not to exceed 152.4m (500 ft).*

Figure 55. RMP Top Internal View

Industrial Relay Card

The IRC uses normally-open or normally-closed dry relay contacts to indicate the UPS status as listed in Table 6. Figure 56 shows an IRC.

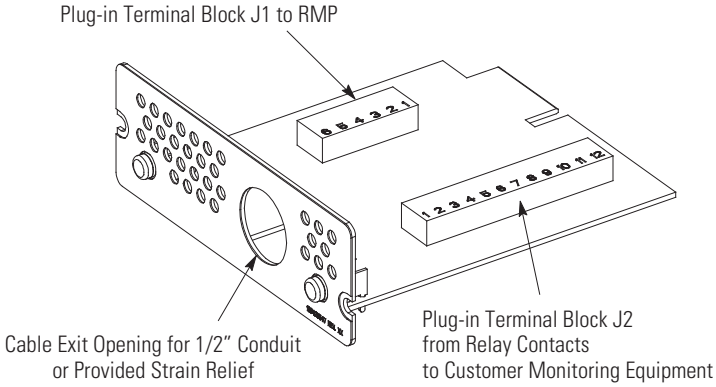


Figure 56. Industrial Relay Card

1. Verify that the UPS is turned off and all power sources are removed.
2. Install wiring from the IRC to the monitoring equipment using 1/2" conduit through the cable exit opening in the IRC (see Figure 57).
3. Connect wiring between the IRC and the monitoring equipment using terminations shown in Table 6. See Figure 56 for plug–in terminal block locations.
4. Install the IRC into an open X-Slot communication bay (see Figure 48 page 50).
5. To check the operation of the IRC, ensure that the UPS is supplying the load via the inverter or bypass. If the indicators on the customer's monitoring equipment show the appropriate status, then it is operating correctly.

   If the IRC is not operating correctly, check the wiring, the fuse on the IRC, and the plug–in terminal blocks for proper seating. If all connections are secure but the IRC still does not operate correctly, replace the fuse. If this does not correct the problem, contact your service representative for verification that the IRC is working correctly.

Table 6. IRC Wire Terminations

IRC Terminal	Function	Remarks
J2-1	NC	Normal mode
J2-2	COM	
J2-3	NO	
J2-4	NC	Bypass mode
J2-5	COM	
J2-6	NO	
J2-7	NC	Battery mode
J2-8	COM	
J2-9	NO	
J2-10	NC	Alarm mode
J2-11	COM	
J2-12	NO	
Maximum contact rating: 250 Vac, 30 Vdc @ 5A; Wire range: 16 24 AWG		

LanSafe Power Management Software

Each Eaton 9355 UPS ships with LanSafe Power Management Software and an interface cable. To begin installing LanSafe software, see the instructions accompanying the Software Suite CD.

Note: Use only the supplied communication cable to connect the UPS to your computer.

LanSafe software provides up-to-date graphics of UPS power and system data and power flow. It also gives you a complete record of critical power events, and it notifies you of important UPS or power information. If there is a power outage and the Eaton 9355 UPS battery power becomes low, LanSafe software can automatically shut down your computer system to protect your data before the UPS shutdown occurs.

Control Terminals

The cables should be connected to the control terminals with a mating connector. Input and output terminals have a functional isolation from terminal to terminal. They are connected to the UPS chassis through individual 1 MΩ resistors.

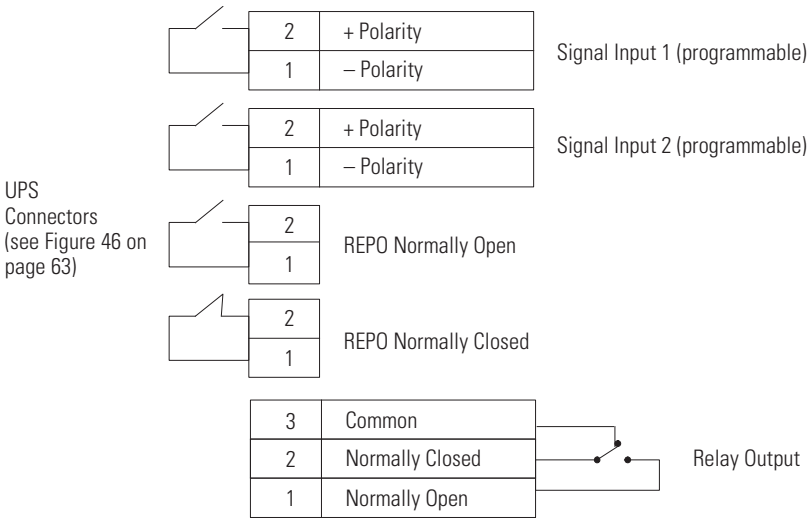


Figure 57. External Control Terminal Connections

Note: If using a semiconductor switch type, pay attention to the proper polarity. A relay or other mechanical control is preferred.

Remote Emergency Power-off

REPO is used to shut down the UPS from a distance. This feature can be used for shutting down the load and the UPS by thermal relay, for instance in the event of room overtemperature. When REPO is activated, the UPS shuts down all converters, de-energizes all system relays, trips the battery circuit breaker, and fully powers down within 10-15 seconds.

There are two REPO positions that may be used, normally-open or normally-closed.

The pins on the normally-closed REPO connector are connected together. When this connection is open, the logic circuitry completely shuts down the UPS, thus preventing the power from supplying the load.

If the use of normally-closed REPO operation is desired, replace the connector with a normally-closed external switch (see Figure 46 on page 49).

If the use of normally-open REPO operation is desired, connect a normally-open external switch (see Figure 46 on page 49).

Note: To restart the UPS, reconnect the REPO connector pins and turn on the UPS manually. The pins must be shorted to keep the UPS running. Maximum resistance is 10 ohm.

Note: Leave the REPO connector installed in the REPO port on the UPS rear panel even if the REPO function is not needed.

CAUTION

- The REPO must not be connected to any utility connected circuits. Reinforced insulation to the utility is required. The REPO switch must have a minimum rating of 24 Vdc and 20 mA.
- To ensure the UPS stops supplying power to the load during any mode of operation, the input power must be disconnected from the UPS when the emergency power-off function is activated.

REPO Connections

Wire Function		Terminal Wire Size Rating	Suggested Wire Size
REPO	L1	12 22 AWG (4 0.32 mm^2)	18 AWG (0.82 mm^2)
	L2		

Relay Output Contacts

The UPS incorporates a programmable relay output with potential free contacts for remote alarm indications (see Figure 46 on page 49). An additional four relay outputs can be obtained with the X-Slot compatible Relay Interface Card.

WARNING

The relay output contacts must not be connected to any utility connected circuits. Reinforced insulation to the utility is required. The relay output contacts must have a maximum rating of 30 Vac/1A and 60 Vdc/2A nominal values.

Programmable Signal Inputs

The UPS incorporates two programmable signal inputs (see Figure 46 on Figure 46). Use of non-polar (relay) control input is recommended. The pins must be shorted with maximum resistance of 10 ohm in order to activate the specific input.

Note: See Figure 57 on page 58 for the polarity and verify these connections if polarity control is required.

The default and programmable settings for the signal inputs are shown in Table 7.

Table 7. Programmable Signal Inputs

Signal	Description
Disable Bypass Operation	If active, the automatic transfer to the static bypass is prevented.
Charger Off	If active, the battery charge function is disabled. In a utility power outage, the discharge of batteries is supported.
Remote ON/OFF	If active, the UPS output turns off regardless of the mode of operation. Auxiliary power, fan, communication, and rectifier/battery charger remain functional. Restart is initiated immediately when this signal is inactive.
Request Bypass	If active, the UPS transfers to bypass if the bypass voltage, frequency, and synchronization are all okay.
Request Normal	If active, the UPS transfers to inverter operation if not prohibited by REPO or an alarm condition.
Force Bypass	If active, the UPS is forced to static bypass operation regardless of the bypass status.
External Battery Breaker Status	If active, the UPS knows that the batteries are disconnected.
Building Alarm 1-6	These alarms can be activated separately or at the same time with other building alarms.
Not in Use	Default

Table 7. Programmable Signal Inputs

Signal	Description
Shutdown	If active, the UPS shuts down immediately.
Delayed Shutdown	If active, the UPS shuts down after a user-configured delay time. Default shutdown delay is 120 seconds. The UPS automatically restarts when the signal changes to inactive.
Normal/Bypass	If active, the UPS transfers to bypass if okay. If inactive, the UPS transfers to the inverter when possible.
On Generator	If active, the UPS knows that input is fed from the generator. Bypass is disabled; the automatic battery test is disabled.
External Transformer Overtemperature	This option is not used.

Chapter 10 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).

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 58).

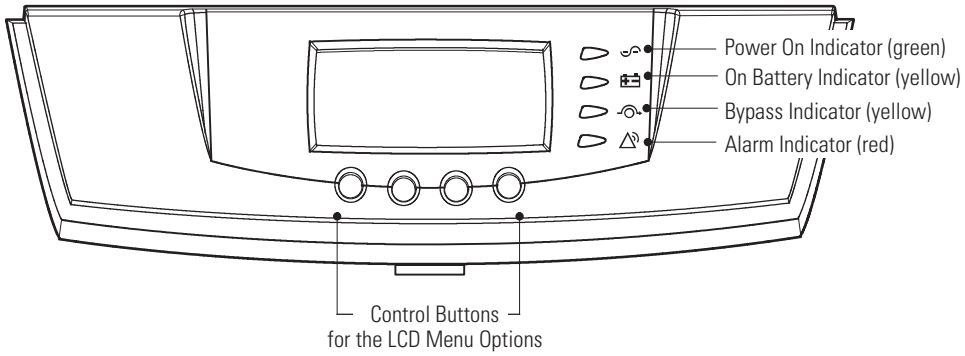


Figure 58. Eaton 9355 UPS Control Panel

The following table shows the indicator status and description.

Indicator	Status	Description
Green	On	The UPS is operating normally.
	Flashing	• The UPS is starting up or is shut down and waiting for power to return. • A new information message is active. • Bypass is not available.
	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 "Troubleshooting" on page 77 for additional information.

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.

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 8. Menu Map for Display Functions

Main Menu	Submenu	Display Information or Menu Function
UPS Status		UPS off / System normal / UPS supporting load / UPS on battery / UPS on bypass / Active alarm list / Battery status
Event Log		Displays up to 127 events and alarms
Measurements	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 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 9 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	

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 9. 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
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] (see "Programmable Signal Inputs" on page 59)	<empty>
Serial Port Config	Port: [X-Slot-1] [X-Slot-2/Serv] Speed: [19200] [9600] [2400] [1200]	19200

Table 9. User Settings (Continued)

Description	Available Settings	Default Setting
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 (see "Configuring the UPS for EBMs" on page 67)	2 strings for UPS-32 models 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
Set Nominal Output Voltage	Output: [120V/208V] [127V/220V]	120V/208V
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 though 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

Initial Startup

Startup and operational checks must be performed by an authorized Eaton Customer Service Engineer, or the warranty terms as specified on page 79 become void. This service is offered as part of the sales contract for the UPS. Contact service in advance (usually a two-week notice is required) to reserve a preferred startup date.

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.

Select one of the following startup options:

Startup Option	Section
Normal mode	"Normal Mode Startup" on page 64
	"Starting the UPS on Battery" on page 65
Bypass mode	" Internal Bypass Startup" on page 65
UPS maintenance bypass	"UPS Maintenance Bypass Startup" on page 66
Wall-mounted maintenance bypass	" Wall-Mounted Maintenance Bypass Startup" on page 66
Parallel UPS configuration	Refer to the *Eaton 9355 Parallel UPS (10/15 kVA) User's Guide*.

Normal Mode Startup

To start up the UPS when the load is de-energized:

1. If an optional wall-mounted bypass cabinet is installed, proceed to Step 2; otherwise, proceed to Step 4.
2. Verify the wall mounted bypass is transfered to UPS mode (see "Using the Wall-Mounted Bypass Cabinet" on page 71.
3. Proceed to Step 4.
4. Verify that the internal maintenance bypass switch is in the UPS position (see Figure 59 on page 70).
5. If an optional isolation transformer is installed, switch the input circuit breaker to the ON position (see Figure 12 on page 17).
6. Switch on utility power where the UPS is connected.
7. Wait for the front panel LCD to illuminate.

   The ⚠ indicator flashes.
8. Remove the breaker tie from all battery circuit breakers.
9. Switch all battery circuit breakers to the ON position.

   The ⚠ indicator stops flashing.
10. Press any button on the front panel display to activate the menu options.
11. Press the ↑ button on the front panel display and then press the → button to select the TURN UPS ON/OFF menu.

12. Select the TURN UPS ON option. Press and hold the button for three seconds, until the UPS stops beeping.

    The indicator illuminates. The UPS is now powering the load.

    If the indicator is flashing, check the UPS status from the front panel to view the active alarms. Correct the alarms and restart if necessary.

Starting the UPS on Battery

Note: Before using this feature, the UPS must have been powered by utility power at least once.

To start the UPS on battery when the load is de-energized:

1. If an optional wall-mounted bypass cabinet is installed, proceed to Step 2; otherwise, proceed to Step 4.
2. Verify the wall mounted bypass is transfered to UPS mode (see "Using the Wall-Mounted Bypass Cabinet" on page 71.
3. Proceed to Step 4.
4. Verify that the internal maintenance bypass switch is in the UPS position (see Figure 59 on page 70).
5. Switch all battery circuit breakers to the ON position.

Note: Leave the battery circuit breaker(s) in the ON position during this operation. If you need to cancel this operation, wait until the front panel LCD illuminates before switching the battery circuit breaker(s) off.

6. Wait for the front panel LCD to illuminate.
7. Press any button on the front panel display to activate the menu options.
8. Within three minutes, press the ↑ button on the front panel display and then press the → button to select the TURN UPS ON/OFF menu.
9. Select the TURN UPS ON option. Press and hold the ↵ button for three seconds, until the UPS stops beeping.

   The UPS starts in Battery mode within two minutes and supplies battery power to your equipment.

Internal Bypass Startup

To start the UPS when load is powered by internal bypass:

1. If an optional wall-mounted bypass cabinet is installed, proceed to Step 2; otherwise, proceed to Step 4.
2. Verify the wall mounted bypass is transfered to Bypass mode (see "Using the Wall-Mounted Bypass Cabinet" on page 71.
3. Proceed to Step 4.
4. Verify that the maintenance bypass switch is in the SERVICE position (see Figure 59 on page Figure 59).
5. If an optional isolation transformer is installed, switch the input circuit breaker to the ON position (see Figure 12 on page 17).
6. Switch on utility power where the UPS is connected.

7. Wait for the front panel LCD to illuminate.

   The indicator flashes.

   The UPS starts and transfers to Bypass mode. This may take up to 1 minute.

   The indicator flashes while transfering to bypass then goes out with the illuminating to indicate the UPS is operating in Bypass mode. The load is now powered by utility power.

   The display indicates On Manual/Maintenance Bypass.

8. To switch to Normal mode from internal Bypass mode, transfer the wall mounted bypass to Bypass mode (see "Using the Wall-Mounted Bypass Cabinet" on page 71 and rotate the internal maintenance bypass switch to the UPS position.

   The indicator illuminates to indicate the UPS is operating in UPS mode. The load is now powered by UPS.

UPS Maintenance Bypass Startup

To start the UPS in maintenance bypass:

1. Verify that the maintenance bypass switch is in the BYPASS position (see Figure 59 on page 70).
2. If an optional isolation transformer is installed, switch the input circuit breaker to the ON position (see Figure 12 on page 17).
3. Switch on utility power where the UPS is connected.

   The load is now powered by utility power.

4. To transfer the load to the UPS, see "Using the Wall-Mounted Bypass Cabinet" on page 71.

Wall-Mounted Maintenance Bypass Startup

To start the UPS in maintenance bypass (wall-mounted operation):

1. Verify that the bypass breaker is in the OFF position (see Figure 20 on page 24 or Figure 31 on page 34).
2. Switch on utility power where the wall-mounted bypass cabinet is connected.
3. Switch the bypass breaker to the ON position.

   The load is now powered by utility power.

4. To transfer the load to the UPS, see "Using the Wall-Mounted Bypass Cabinet" on page 71.

Configuring the UPS for EBMs

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

1. Press any button on the front panel display to activate the menu options.
2. Using the ↑ button, scroll to the Settings menu.
3. Press the → button twice to select the User Settings menu.
4. Using the ↓ button, scroll to the Number of Battery Strings option and press the → button.
5. 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
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 ESC button until the Eaton logo appears.

UPS Shutdown

To shut down the UPS:

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 TURN UPS OFF option.
4. Press and hold the ↵ button for three seconds, until the UPS stops beeping.

   The UPS stops supplying power to the load.
5. Switch the UPS battery circuit breaker to the OFF position.

   The UPS disconnects from the batteries and is on logic power only.
6. Switch off utility power where the UPS is connected.

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Chapter 11 UPS Maintenance

This section explains how to:

- Care for the UPS and batteries
- Recycle used batteries or UPS
- Use the maintenance bypass switch

UPS and Battery Care

For the best preventive maintenance, keep the area around the UPS clean and dust–free. If the atmosphere is very dusty, clean the outside of the system with a vacuum cleaner.

For full battery life, keep the UPS at an ambient temperature of 77°F (25°C).

Note: The batteries in the UPS are rated for a 3–5 year service life. The length of service life varies, depending on the frequency of usage and ambient temperature. Batteries used beyond expected service life will often have severely reduced runtimes. Replace batteries at least every 5 years to keep units running at peak efficiency.

Storing the UPS and Batteries

When storing the UPS and optional cabinets, the following requirements should be met:

- Verify that the battery circuit breaker is in the OFF position.
- Avoid temperature and humidity extremes. To maximize battery life, the recommended storage temperature is 59°F (15°C) to 77°F (25°C).
- If you store the UPS for a long period, recharge the batteries every 10 months by applying utility power. The batteries charge to 80% capacity in approximately 3 hours. However, it is recommended that the batteries charge for 48 hours after long-term storage.
- Check the battery recharge date on the shipping carton label. If the date has expired and the batteries were never recharged, do not use the UPS. Contact your service representative.

When to Replace Batteries

When the ⚠ indicator flashes and the LCD panel displays Battery Failure, the batteries may need replacing. Contact your service representative to order new batteries.

Change the batteries approximately every five years.

Recycling the Used Battery or UPS

Contact your local recycling or hazardous waste center for information on proper disposal of the used battery or UPS.

⚠ WARNING

- Do not dispose of the battery or batteries in a fire. Batteries may explode. Proper disposal of batteries is required. Refer to your local codes for disposal requirements.
- Do not open or mutilate the battery or batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

CAUTION

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

CAUTION

Do not discard waste electrical or electronic equipment (WEEE) in the trash. For proper disposal, contact your local recycling/reuse or hazardous waste center.

Using the UPS Maintenance Bypass Switch

The UPS maintenance bypass switch is located on the back of the UPS (see Figure 59).

The maintenance bypass switch is used to bypass the UPS during maintenance or servicing. The switch provides a wrap-around bypass without shutting down the load. The SERVICE position on the switch allows a service engineer to apply power to the UPS input and verify its operation while the load is powered through bypass.

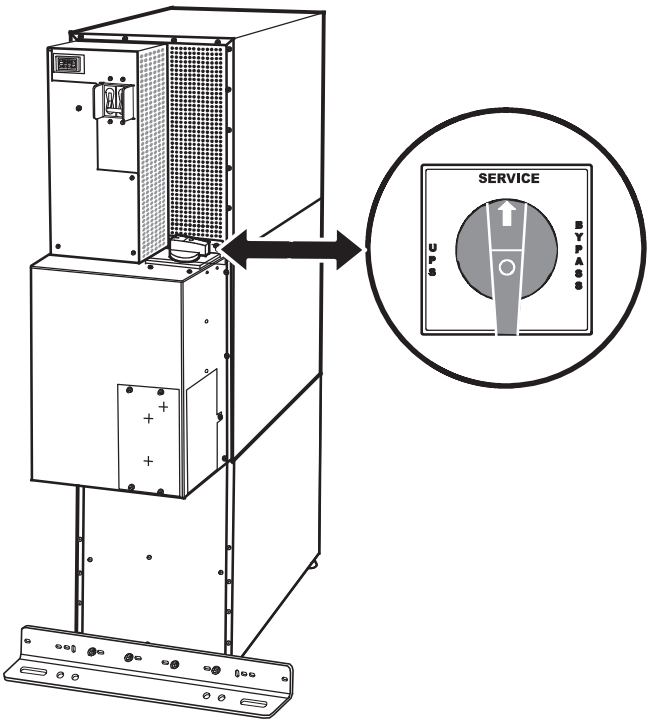

Figure 59. Maintenance Bypass Switch

To transfer the load from the UPS to maintenance bypass:

1. 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. Turn the maintenance bypass switch to the BYPASS position.

   The battery circuit breaker trips, and the UPS is now bypassed, with the load powered by utility power.
3. The UPS automatically shuts down.

To transfer the load from maintenance bypass to the UPS:

1. Turn the maintenance bypass switch to the SERVICE position.

   The UPS starts up in Bypass mode, with the load still powered by utility power.

2. Switch the UPS input and battery circuit breakers to the ON position.

Note: Wait until the indicator illuminates before proceeding to Step 3; otherwise, power to the load may be lost.

---

3. Turn the maintenance bypass switch to the UPS position to return to Normal mode.

   The UPS is now powering the load.

Using the Wall-Mounted Bypass Cabinet

To transfer the load from the UPS to maintenance bypass:

1. Transfer the UPS to Bypass mode:
   - Press any button on the front panel display to activate the menu options.
   - 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 wall-mounted bypass cabinet to the ON position.

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

   The UPS is now bypassed, with the load powered by utility power.

To transfer the load from maintenance bypass to the UPS mode:

1. If the UPS was powered off, continue to Step 2.

   If the UPS is already in Bypass mode, proceed to Step 6.

2. Switch on utility power where the UPS is connected.

3. Wait for the front panel LCD to illuminate.

   The indicator flashes.

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

   The indicator stops flashing.

   The UPS starts and transfers to Bypass mode. This may take up to 1 minute.

   The indicator flashes while transfering to bypass then goes out with the illuminating to indicate the UPS is operating in Bypass mode.

   The display indicates On Manual/Maintenance Bypass.

5. 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.

6. 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.

7. 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.

8. Transfer the UPS to Normal mode:

   - Press the ↵ button to select the Go To Normal Mode option.
   - Press the ESC button until the Eaton logo appears.

   The UPS is now powering the load in Normal mode.

Chapter 12 Specifications

This section provides the following specifications:

- Model list
- Dimensions and weights
- Environmental and safety specifications
- Technical specifications
- Model specifications
- Battery specifications
- Battery runtimes

Table 10. Model List

UPS	Description	Power Rating
9355-10-32	2-high: UPS with one battery section 3-high: UPS with one battery and one isolation transformer section	10 kVA, 9 kW
9355-10-64	3-high: UPS with two battery sections	10 kVA, 9 kW
9355-15-32	2-high: UPS with one battery section 3-high: UPS with one battery and one isolation transformer section	15 kVA, 13.5 kW
9355-15-64	3-high: UPS with two battery sections	15 kVA, 13.5 kW

Extended Battery Module (EBM)	Description
EBM-64	2-high: two battery sections
EBM-96	3-high: three battery sections

Table 11. Dimensions and Weights

	Dimensions (H x W x D)	Weight
2-High UPS	32.2" x 12" x 33.5" (81 x 30 x 85 cm)	381 lb (173 kg)
3-High UPS-32	47.8" x 12" x 33.5" (121.5 x 30 x 85 cm)	587 lb (266 kg)
3-High UPS-64	47.8" x 12" x 33.5" (121.5 x 30 x 85 cm)	619 lb (281 kg)
2-High EBM	32.2" x 12" x 30.3" (81 x 30 x 77 cm)	480 lb (218 kg)
3-High EBM	47.8" x 12" x 30.3" (121.5 x 30 x 77 cm)	710 lb (322 kg)

Table 12. Environmental and Safety Specifications

Operating Temperature	50°F to 104°F (10°C to 40°C) Optimal battery performance: 77°F (25°C)
Transit Temperature	-13°F to 131°F (-25°C to 55°C)
Storage Temperature	32°F to 77°F (0°C to 25°C) Recommended battery storage: 59°F to 77°F (15°C to 25°C)
Ventilation	Front air intake, forced air, two fans, positive pressurization, temperature UPS-monitored
Altitude	9,843 ft (3,000m) operating without derating 32,810 ft (10,000m) during transportation
Relative Humidity	5 95% noncondensing
Audible Noise	<56 dBA at 1 meter distance, typical loads <62 dBA for heavy load, high ambient or high altitude, on battery
Surge Suppression	ANSI C62.41 Category B3
Safety Conformance	NOM-019-SCFI, UL 1778, CSA C22.2, No. 107.3
Agency Markings	cULus
EMC (Class A)	IEC 62040-2, FCC Part 15, ICES-003

Table 13. Technical Specifications

Technology	Online, double conversion topology with static bypass switch and 3 position maintenance bypass switch. Frequency independent operation.
Input Voltage Range	75/130 144/249 Vac per phase
Input Power Factor	>0.99 at full load nominal line conditions
Input Rated Voltage	120/208 or 127/220 Vac three-phase
Isolation Transformer Input Voltage Range	480V or 600V ±20% 60 Hz only
Input Frequency Range	45 65 Hz
Input Rated Frequency	50/60-Hz selectable, auto configuring
Output Voltage Regulation	±1% static, Phase to Neutral ±2% static, Phase to Phase ±5% dynamic at 100% resistive load change Response time <1 ms
Output Voltage Distortion	<2% THD linear load <5% THD non linear load
Output Frequency	50/60-Hz selectable or auto configuring
Output Frequency Regulation	Synchronization to line
Output Overload	101 110% for 10 minutes 111 125% for 60 seconds 126 149% for 5 seconds >150% for 300 milliseconds

Table 14. Model Specifications

		10 kVA Model		
Output Voltage (Line Line)	208	208	208	220
Output Voltage (Line Neutral)	120	120	120	127
Input Voltage	208	480 (with input isolation transformer)	600V (with input isolation transformer)	220
Input Current	32.2A	16A	13.3A	30.5A
Output Current	27.8A	27.8A	27.8A	26.2A
Output kVA	10	10	10	10
Output kW	9	9	9	9
Efficiency (Minimum)	89%	83%	83%	89%
Heat Rejection [BTU/hr (kg-cal/hr)]	3798 (956)	6294 (1585)	6294 (1585)	3798 (956)
		15 kVA Model		
Output Voltage (Line Line)	208	208	208	220
Output Voltage (Line Neutral)	120	120	120	127
Input Voltage	208	480 (with input isolation transformer)	600 (with input isolation transformer)	220
Input Current	48A	24A	20A	45.7A
Output Current	41.6A	41.6A	41.6A	39.4A
Output kVA	15	15	15	15
Output kW	13.5	13.5	13.5	13.5
Efficiency (Minimum)	90%	85%	85%	90%
Heat Rejection [BTU/hr (kg-cal/hr)]	5122 (1290)	8134 (2048)	8134 (2048)	5122 (1290)

Table 15. Battery Specifications

Battery Type	9 Ah sealed, valve-regulated lead acid (VRLA), maintenance-free, minimum 3-year float service life at 25°C (77°F), voltage 192 Vdc (96 cells per string)
Number of Strings	Maximum of 22 strings per full configuration, including UPS batteries (4 EBM-64 cabinets or 3 EBM-96 cabinets, plus UPS batteries) UPS-32: 2 strings; UPS-64: 4 strings EBM-64: 4 strings; EBM-96: 6 strings
Battery Replacement	Must be replaced by a qualified service technician
Charger	Service configurable 0.5 34A per string, with overall maximum of 34A (limited by input current). Default: 3.4A per string
Charging	Internal battery: approximately 3 hours to 80% usable capacity at nominal line voltage after full load discharge External battery: no more than 10x discharge time to 90% usable capacity at nominal line voltage after full load discharge
Start-on-Battery	Allows start of UPS without utility input
Performance	ABM technology increases battery service life, optimizes recharge time, and provides a warning before the end of useful battery life
Protection	Extended Battery Module output protected by 100A circuit breaker

Table 16. Battery Runtimes (in Minutes) at Full Load

2-High Cabinets					
Load	**32 Internal UPS Batteries**	**(1) EBM-64**	**(2) EBM-64**	**(3) EBM-64**	**(4) EBM-64**
15 kVA/13.5 kW	4	23	43	65	88
10 kVA/9 kW	8	37	69	106	144
3-High Cabinets					
Load	**64 Internal UPS Batteries**	**(1) EBM-96**	**(2) EBM-96**	**(3) EBM-96**	
15 kVA/13.5 kW	13	43	76	113	
10 kVA/9 kW	22	69	124	184	

NOTE Battery times are approximate and vary depending on the load configuration and battery charge.

Chapter 13 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.

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 page 78).

Alarm or Condition	Possible Cause	Action
On Battery  LED is on. 1beep 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. 1beep 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. 1beep every second.	Power requirements exceed the UPS capacity (greater than 100% of nominal; see page for specific output overload ranges).	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. 1beep 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.
	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.

Alarm or Condition	Possible Cause	Action
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 TURN UPS 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.

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.

Service and Support

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

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

Chapter 14 Warranty

Limited Factory Warranty

Three Phase Eaton UPS Products

WARRANTOR: The warrantor for the limited warranties set forth herein is Eaton ("Eaton").

LIMITED WARRANTY: This limited warranty (this "Warranty") applies only to the original end-user (the "End-User") of the Eaton Three-Phase UPS Products (the "Product") and cannot be transferred. This Warranty applies even in the event that the Product is initially sold by Eaton for resale to an End-User.

LIMITED WARRANTY PERIOD: The period covered by this Warranty for Product installed [and currently located] in the fifty (50) United States and the District of Columbia is twelve (12) months from the date of Product startup or eighteen (18) months from the date of Product shipment, whichever occurs first, for parts coverage and 90 days from the date of Product startup for labor coverage. The period covered by this Warranty for Product installed [and currently located] outside of the fifty (50) United States and the District of Columbia is twelve (12) months from the date of Product startup or eighteen (18) months from the date of Product shipment, whichever occurs first, for parts coverage.

WHAT THIS LIMITED WARRANTY COVERS: The warrantor warrants that the Eaton three-phase UPS electronics, Eaton-built accessories, and Eaton-built battery cabinets (individually and collectively, the "Warranted Items") are free from defects in material and workmanship. If, in the opinion of Eaton, a Warranted Item is defective and the defect is within the terms of this Warranty, Eaton's sole obligation will be to repair or replace such defective item (including by providing service, parts, and labor, as applicable), at the option of Eaton. The Warranted Item will be repaired or replaced onsite at the End-User's location or such other location as determined by Eaton. Any parts that are replaced may be new or reconditioned. All parts replaced by Eaton shall become the property of Eaton.

WHAT THIS LIMITED WARRANTY DOES NOT COVER: This Warranty does not cover any defects or damages caused by: (a) failure to properly store the Product before installation, including the "trickle charge" of batteries no later than the date indicated on the packaging; (b) shipping and delivery of the Product if shipping is FOB Factory; (c) neglect, accident, fire, flood, lightning, vandalism, acts of God, Customer's neglect, abuse, misuse, misapplication, incorrect installation; (d) repair or alteration not authorized in writing by Eaton personnel or performed by an authorized Eaton Customer Service Engineer or Agent; or (e) improper testing, operation, maintenance, adjustment, or any modification of any kind not authorized in writing by Eaton personnel or performed by an authorized Eaton Customer Service Engineer or Agent.

This Warranty is not valid: (a) unless an authorized Eaton Customer Service Engineer (in the USA) or Agent (outside of the USA) performs startup and commissioning of the Product; (b) if the Product is moved to a new location by someone other than an authorized Eaton Customer Service Engineer (in the USA) or Agent (outside of the USA); or (c) if the Product's serial numbers have been removed or are illegible. Any Warranted Items repaired or replaced pursuant to this Warranty will be warranted for the remaining portion of the original Warranty subject to all the terms thereof. Labor warranty is not provided for Product located outside of the fifty (50) United States or the District of Columbia. **Any equipment, parts, or materials included in the Product and not manufactured by Eaton are warranted solely by the manufacturer of such equipment, parts, or materials and are not included as part of this Warranty. Batteries are not warranted by Eaton.**

THIS WARRANTY IS THE END-USER'S SOLE REMEDY AND IS EXPRESSLY IN LIEU OF, AND THERE ARE NO OTHER EXPRESSED OR IMPLIED GUARANTEES OR WARRANTIES (INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE, WHICH ARE EXPRESSLY DISCLAIMED).

LIMITATION OF LIABILITY: In no event shall Eaton be liable for any indirect, incidental, special, or consequential damages of any kind or type whatsoever, or based on any claim or cause of action, however denominated. Eaton shall not be responsible for failure to provide service or parts due to causes beyond Eaton's reasonable control. In no case will Eaton's liability under this Warranty exceed the replacement value of the Warranted Items.

END-USER'S OBLIGATIONS: In order to receive the benefits of this Warranty, the End-User must use the Product in a normal way, follow the Product's user's guide, and protect against further damage to the Product if there is a covered defect.

OTHER LIMITATIONS: Eaton's obligations under this Warranty are expressly conditioned upon receipt by Eaton of all payments due to it (including interest charges, if any). During such time as Eaton has not received payment of any amount due to it for the Product, in accordance with the contract terms under which the Product is sold, Eaton shall have no obligation under this Warranty. Also during such time, the period of this Warranty shall continue to run and the expiration of this Warranty shall not be extended upon payment of any overdue or unpaid amounts.

COSTS NOT RELATED TO WARRANTY: The End-User shall be invoiced for, and shall pay for, all services not expressly provided for by the terms of this Warranty, including without limitation site calls involving an inspection that determines no corrective maintenance is required. Any costs for replacement equipment, installation, materials, freight charges, travel expenses, or labor of Eaton representatives outside the terms of this Warranty will be borne by the End-User.

OBTAINING WARRANTY SERVICE: In the USA, call the Eaton Customer Reliability Center 7x24 at 800-843-9433. Outside of the USA, call your local Eaton sales or service representative, or call the Eaton Customer Reliability Center in the USA at 919-870-3028. For comments or questions about this Limited Factory Warranty, write to the Customer Quality Representative, 3301 Spring Forest Road, Raleigh, North Carolina 27616 USA.

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Eaton® 9355 UPS

20/30 kVA
Installation and Operation Manual

Powering Business Worldwide

Eaton® 9355 UPS

20/30 kVA
Installation and Operation Manual

Powering Business Worldwide

Class A EMC Statements

FCC Part 15

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 Reglement sur le matériel brouilleur du Canada.

IEC 62040-2

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

Special Symbols

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

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

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

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

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

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

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

PHASE - The word “phase.”

Table of Contents

Chapter 1 Introduction

The Eaton® 9355 uninterruptible power supply (UPS) is a true online, double-conversion, three-phase system that can be used to prevent loss of valuable electronic information and minimize equipment downtime. It is ideal for protecting essential information technology and electrical engineering infrastructure in corporate, telecom, health care, banking, and industrial applications.

The Eaton 9355 UPS continually monitors incoming electrical power and removes the surges, spikes, sags, and other irregularities that are inherent in commercial utility power. Working with a building's electrical system, the UPS supplies clean, consistent power that sensitive electronic equipment requires for reliable operation. During brownouts, blackouts, and other power interruptions, batteries provide emergency power to safeguard operation.

With the Eaton 9355 UPS, you can safely eliminate the effects of electrical line disturbances and guard the integrity of your systems and equipment. Figure 1 shows the Eaton 9355 UPS (20/30 kVA) with an optional Extended Battery Cabinet (EBC) and Options Cabinet.

IMPORTANT

Startup and operational checks must be performed by an authorized Eaton Customer Service Engineer, or the warranty terms specified on page W-1 become void. 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.

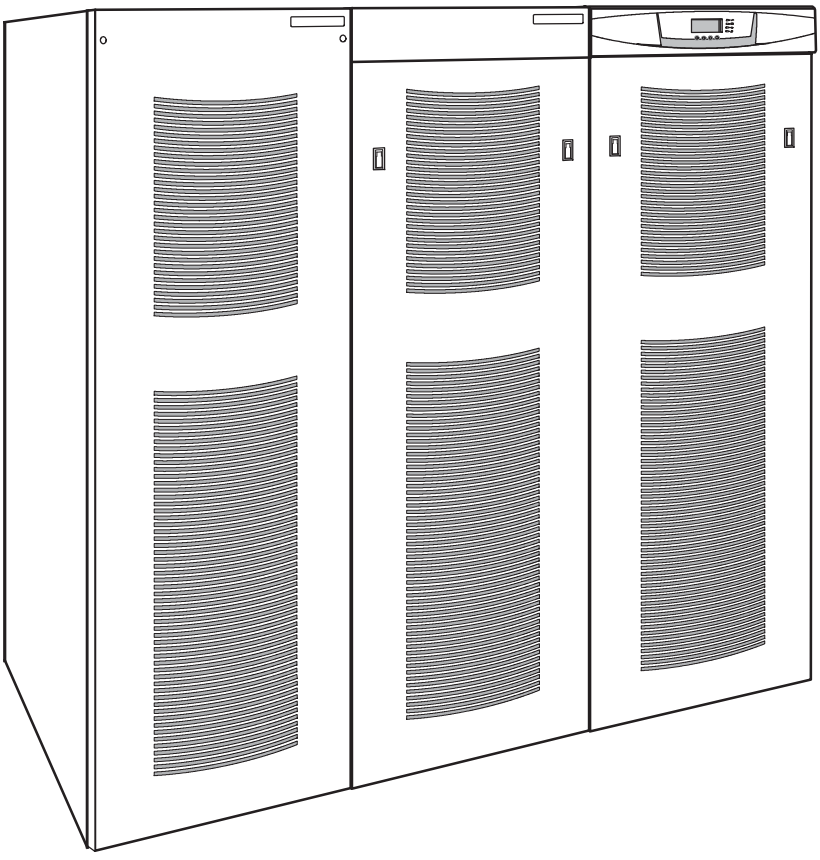

Figure 1. The Eaton 9355 UPS (20/30 kVA) with Optional EBC and Options Cabinet

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.
- A UPS maintenance bypass switch (MBS) that provides a Make-Before-Break (MBB) wrap-around bypass for UPS maintenance or service without shutting down the load.
- 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.
- Over two hours of extended runtime with added EBCs.
- 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.

The following options for the Eaton 9355 are available:

- Extended Battery Cabinet

  Optional EBCs are available with 2 strings or 4 strings, providing up to 2.7 hours of extended runtime.

- **Options Cabinet**

  The Options Cabinet is available in five models:

  - Options Cabinet with a maintenance bypass switch that provides wrap-around bypass for UPS maintenance or service without shutting down the load
  - Options Cabinet with both MBS and input isolation transformer that allows operation from a 208V, 480V, or 600V 60-Hz source (input transformer in single-feed systems or bypass transformer in dual-feed systems)
  - Options Cabinet for dual-feed systems that provides the second input from a 208V, 480V, or 600V 60-Hz source
  - Options Cabinet with an output isolation transformer for 480V loads
  - Options Cabinet for single-feed system with MBS, 480V input isolation transformer, and 480V output transformer.

- **Wall-Mounted Bypass Switch**

  The optional wall-mounted bypass switch is used to bypass the UPS during maintenance or servicing, providing wrap-around bypass for UPS service without shutting down the load.

- **Parallel Tie Cabinet**

  An optional parallel system with up to four 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 Controller Area Network (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 Tie Cabinet.

- **Remote Monitor Panel**

  The optional Remote Monitor Panel (RMP) provides monitoring of the operational status and alarm condition of the UPS from virtually any location within the facility. You can install multiple RMPs at remote locations to increase your monitoring capabilities.

- **Seismic Kit**

  The optional seismic kit secures the UPS and optional cabinets for Zone 4 seismic installations.

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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 125 amperes maximum branch circuit overcurrent protection in accordance with the National Electrical Code, 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.

Consignes de Sécurité

CONSIGNES DE SÉCURITÉ IMPORTANTES CONSERVER CES INSTRUCTIONS

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

DANGER!

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

AVERTISSEMENT!

- Cette onduleur possède sa propre source d'alimentation (batteries). Il est possible que la sortie de l'onduleur soit sous tension même lorsque l'onduleur n'est pas connectée à une alimentation CA.
- 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).
- Afin de réduire les risques d'incendie, n'effectuez le raccordement qu'avec un circuit muni d'une protection de surintensité du circuit de dérivation maximum de 125 ampères conformément au Code Électrique National (National Electrical Code) des États-Unis ANSI/NFPA 70.
- La protection de surintensité de sortie ainsi que le sectionneur doivent être fournis par des tiers.

ATTENTION!

- Les batteries peuvent présenter un risque de choc électrique ou de brûlure provenant d'un courant de court-circuit haute intensité. Observez les précautions appropriées. L'entretien doit être réalisé par du personnel qualifié connaissant bien les batteries et les précautions nécessaires. N'autorisez aucun personnel non qualifié à manipuler les batteries.
- 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.

Advertencias de Seguridad

INSTRUCCIONES DE SEGURIDAD IMPORTANTES GUARDE ESTAS INSTRUCCIONES

Este manual contiene instrucciones importantes que debe seguir durante la instalación y el mantenimiento del SIE y de las baterías. Por favor, lea todas las instrucciones antes de poner en funcionamiento el equipo y guarde este manual para referencia en el futuro.

PELIGRO

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.

ADVERTENCIA

- Este SIE contiene su propia fuente de energía (baterías). La salida del SIE puede transportar voltaje activo aun cuando el SIE no esté conectado con una fuente de CA.
- 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).
- Para reducir el riesgo de incendio, realice la conexión únicamente hacia un circuito que cuente con un máximo de 125 amperios de protección contra sobrecorriente de circuito derivado, de acuerdo con el Código Eléctrico Nacional, ANSI/NFPA 70.
- La protección contra sobrecorriente de salida y el conmutador de desconexión debe suministrarse por parte de terceros.

PRECAUCIÓN

- Las baterías pueden constituir un riesgo de descarga eléctrica o quemaduras por corriente alta de corto circuito. Adopte las precauciones debidas. Personal calificado de servicio que conozca de baterías y esté al tanto de las precauciones requeridas debe darle servicio al equipo. Mantenga al personal no autorizado alejado de las baterías.
- 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.

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Chapter 3 UPS Setup

This chapter describes:

- Equipment inspection
- Floor loading and clearances
- Removing and replacing the cabinet doors
- Unloading the cabinet(s)

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.

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.

Floor Loading

When planning the installation, consider the UPS weight for floor loading. The strength of the installation surface must be adequate for point and distributed loadings. The approximate weights are shown in the following table.

Standard Model Floor Loadings

Eaton 9355	Maximum Weight	Point Loading
20 kVA UPS	1160 lb (526 kg)	290 lb/in^2 (20 kg/cm^2)
30 kVA UPS	1160 lb (526 kg)	290 lb/in^2 (20 kg/cm^2)
EBC 36	1160 lb (526 kg)	290 lb/in^2 (20 kg/cm^2)
EBC 72	2060 lb (934 kg)	515 lb/in^2 (36 kg/cm^2)
Options Cabinet with Single Transformer	535 lb (243 kg)	134 lb/in^2 (9.4 kg/cm^2)
Options Cabinet with Dual Transformer	792 lb (360 kg)	198 lb/in^2 (13.9 kg/cm^2)
Options Cabinet with MBS only	205 lb (93 kg)	51 lb/in^2 (3.6 kg/cm^2)

Clearances

The following clearances are recommended for the Eaton 9355 UPS:

From Front of Cabinet	36" (91.4 cm) working space
From Back of Cabinet	6" (15.2 cm)
From Right of Cabinet	Refer to local codes for right side service access [minimum 36" (91.4 cm)]

Removing and Replacing the Front Doors

To remove and replace the UPS or Options Cabinet front door, see the following section. To remove and replace the Extended Battery Cabinet (EBC) front door, see "EBC Front Door" on page 11.

UPS or Options Cabinet Front Door

To remove the UPS or Options Cabinet front door:

1. Press and rotate the latches 90° to open the front door (rotate the left latch clockwise and the right latch counter-clockwise). See Figure 2.
2. Lift the door up and off the cabinet.

To replace the door:

1. Insert the door notches into the slots on the bottom of the cabinet.
2. Secure the door latches.

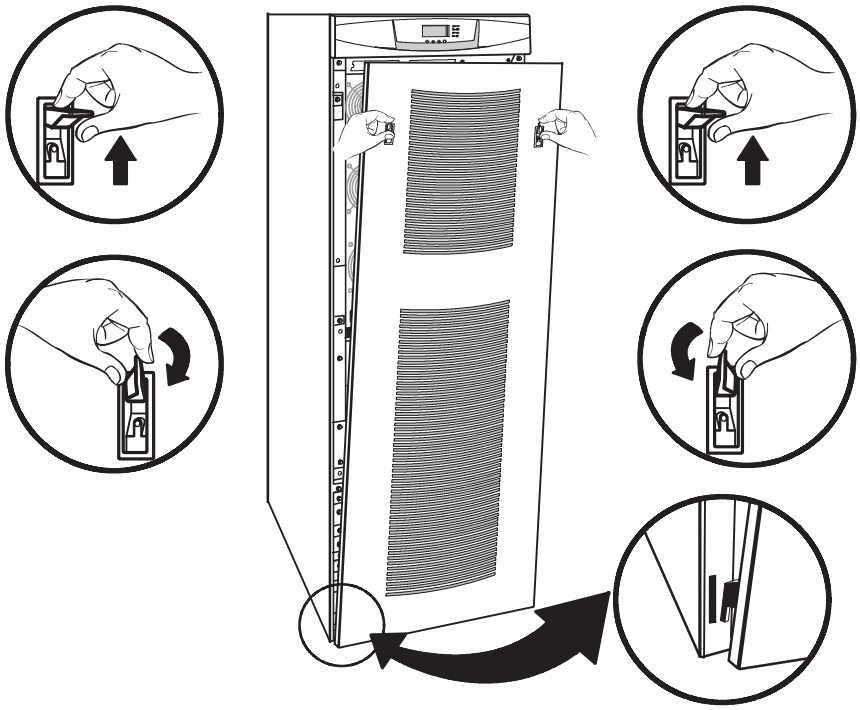

Figure 2. Removing the UPS Front Door

EBC Front Door

To remove the EBC front door:

1. Remove the two M8 hex-head screws from the top corners of the door (see Figure 3).
2. Lift the door up and off the cabinet.

To replace the door:

1. Place the door on the bottom hooks of the EBC.
2. Replace the two door screws.

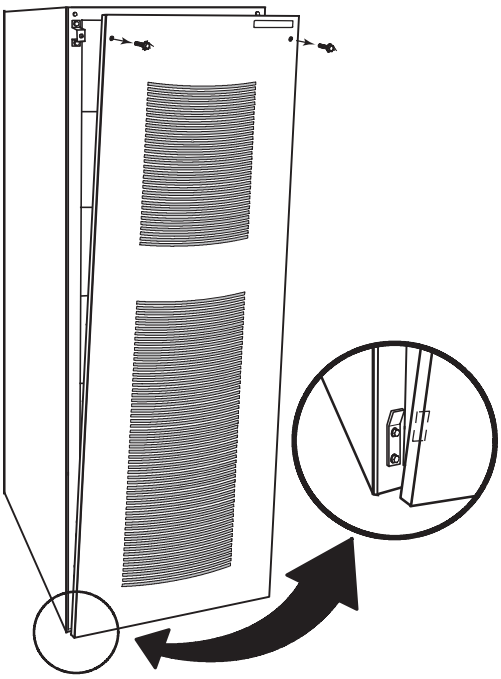

Figure 3. Removing the EBC Front Door

Unloading the Cabinet(s)

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

- 15 mm wrench or socket
- 7 mm nut driver or socket
- Adjustable wrench or channel-locks

⚠ CAUTION

The UPS and optional cabinets are heavy (see page 9). Unloading the cabinets requires at least two people to safely remove the cabinets from the pallet.

To remove the UPS or optional cabinets from the shipping pallet:

1. Remove the two M10 bolts securing the rear shipping bracket to the pallet (see Figure 4).
2. Remove the four M8 screws securing the rear shipping bracket to the cabinet rear panel and remove the bracket. Retain the hardware for later use.

Note: Be sure to retain the rear shipping bracket and hardware for later re-assembly if you plan to permanently mount the cabinet.

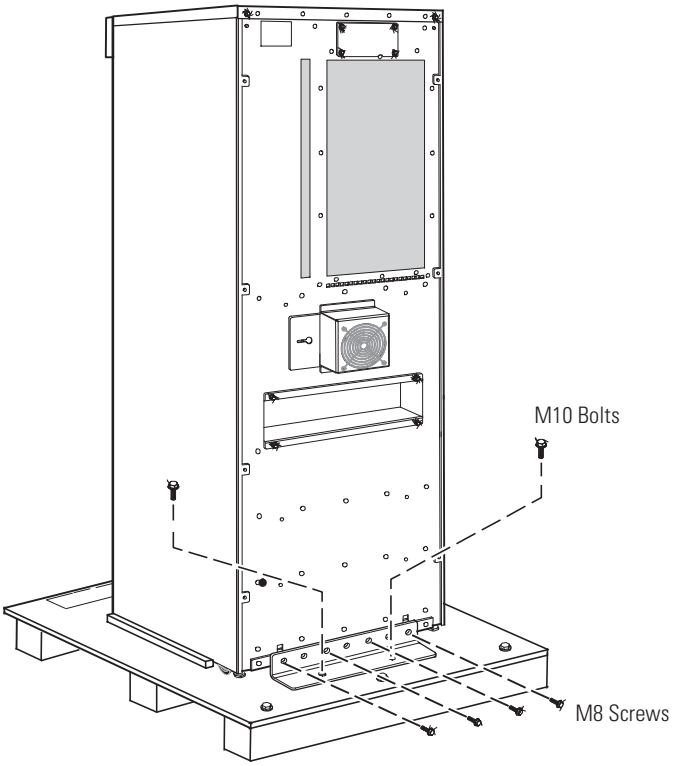

Figure 4. Removing the Rear Shipping Bracket (UPS Shown)

3. Remove the three M10 bolts securing the rear shipping pad to the pallet and remove the shipping pad (see Figure 5).

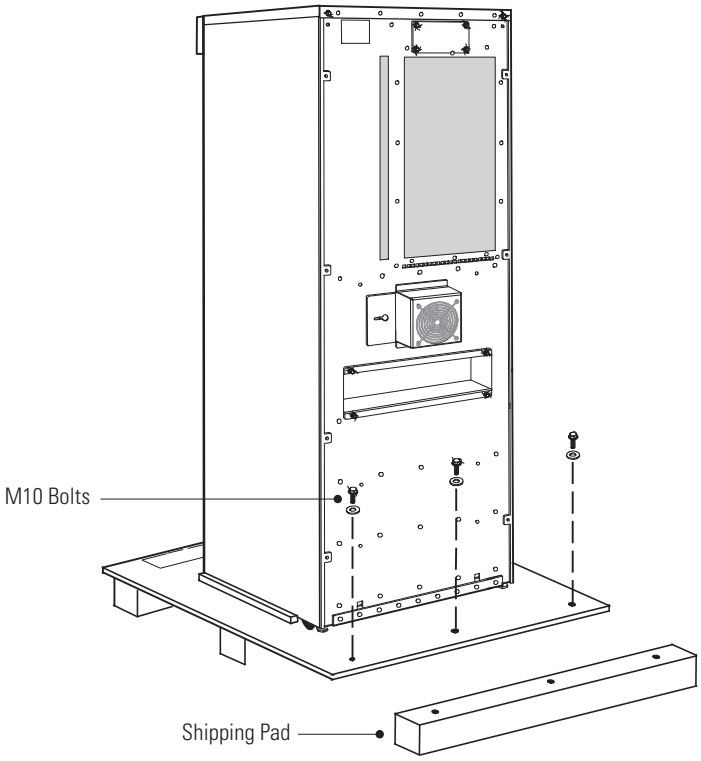

Figure 5. Removing the Shipping Pad (UPS Shown)

4. Remove the front door to access the front shipping bracket (see page 10).
5. Remove the four M8 screws securing the front shipping bracket to the cabinet (see Figure 6).
6. Remove the two M10 bolts securing the front shipping bracket to the pallet and remove the bracket.

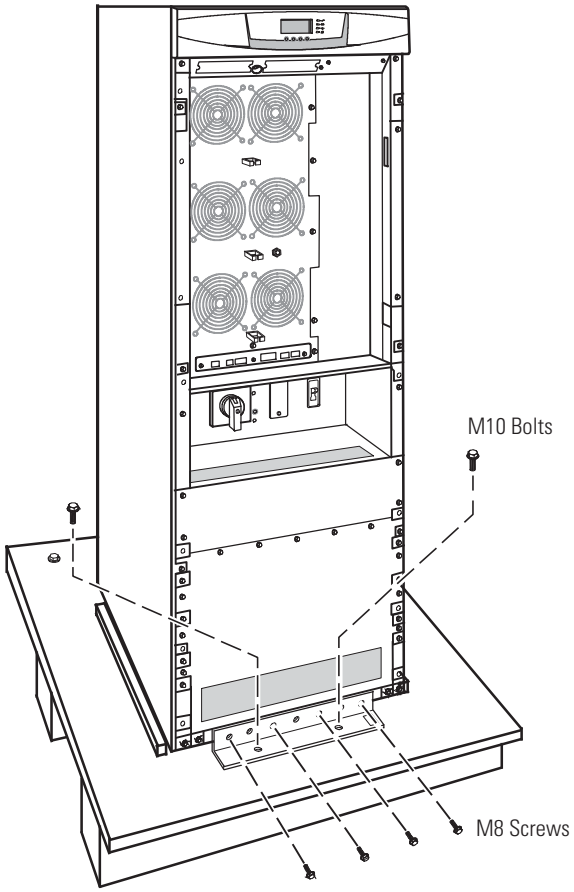

Figure 6. Removing the Front Shipping Bracket (UPS Shown)

7. Replace the front door.

Note: Be sure to support the front and back of the cabinet when rolling it off the pallet to prevent tipping or rolling away.

8. Raise the leveling feet so that they do not touch the pallet.

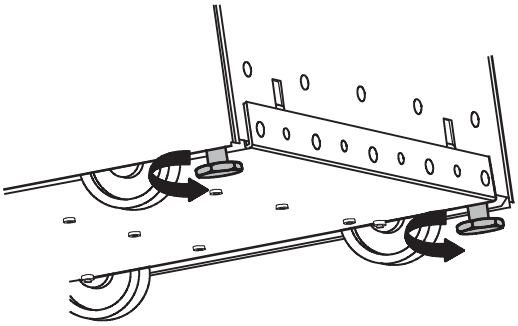

Figure 7. Raising the Leveling Feet

9. 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 8).

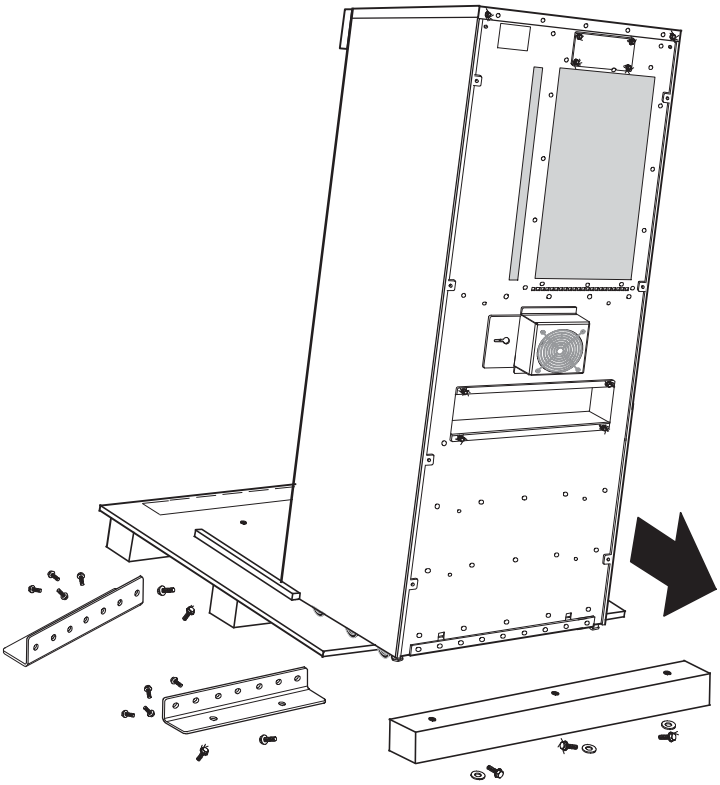

Figure 8. Unloading the Cabinet (UPS Shown)

10. With the cabinet supported, slowly pull the pallet away from the cabinet (see Figure 9).

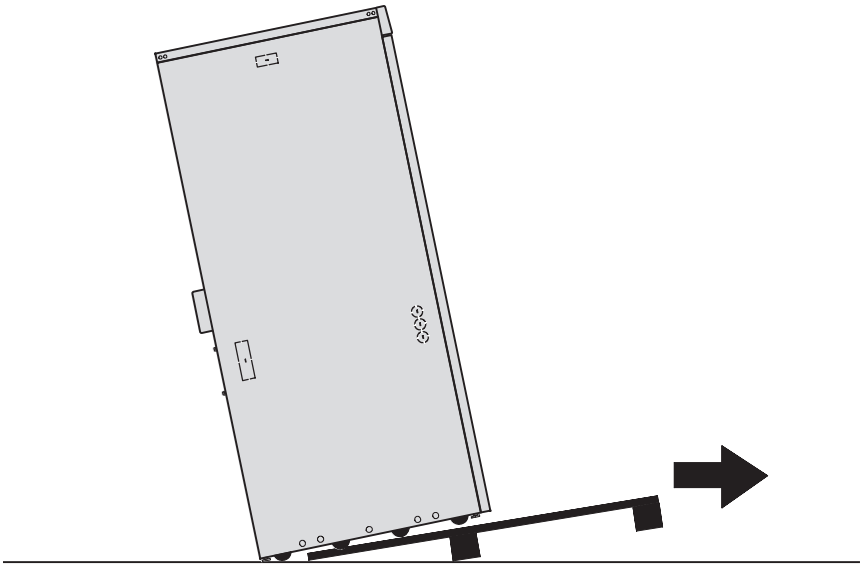

Figure 9. Removing the Pallet (UPS Shown)

11. Roll the cabinet to the desired location.
12. If you are installing more than one cabinet, continue to "Joining the Cabinets" on page 17; otherwise, continue to "Electrical Installation" on page 21.

Chapter 4 Joining the Cabinets

If you are installing additional cabinets to the UPS, join the cabinets before installing the electrical connections between the cabinets.

To join the cabinets:

1. Position the cabinets to the left of the UPS, leaving enough space between cabinets to remove the knockouts.

Note: Position the Extended Battery Cabinet (EBC) to the far left of the UPS and Options Cabinet (if installed).

Note: A maximum of four EBCs can be installed.

Note: If you have two Options Cabinets, position the cabinet with the maintenance bypass switch (MBS) closest to the UPS.

---

2. Remove the front door of all cabinets (see page 10).
3. For EBCs only or EBCs and Options Cabinets, continue to Step 4. For Options Cabinets only, proceed to Step 8.
4. Remove the knockout on the top left side of the UPS and the top right side of the EBC (see Figure 10).

   If you are installing more than one EBC, remove both knockouts on the middle cabinet(s).
5. If you are installing an EBC with an Options Cabinet, continue to Step 6; otherwise, proceed to Step 11 to install the ground straps.
6. Remove both knockouts from the top sides of the Options Cabinet (see Figure 10).
7. Remove one edge grommet from the inside rail of the EBC(s). Install the grommet on the bottom edge of the left knockout of the Options Cabinet (the knockout closest to the UPS does not need an edge grommet).

   If you are installing two Options Cabinets, install edge grommets on both knockouts of the second cabinet.
8. Remove the rectangular knockout on the right side of the Options Cabinet.

   If you have two Options Cabinets, remove the rectangular knockout on the right side of the second Options Cabinet.
9. Remove the three circular knockouts on the left side of the UPS (see Figure 10).

   If you have two Options Cabinets, remove the three circular knockouts on the left side of the first Options Cabinet.
10. Install three bushings (supplied) in the circular knockouts of the adjacent cabinet.

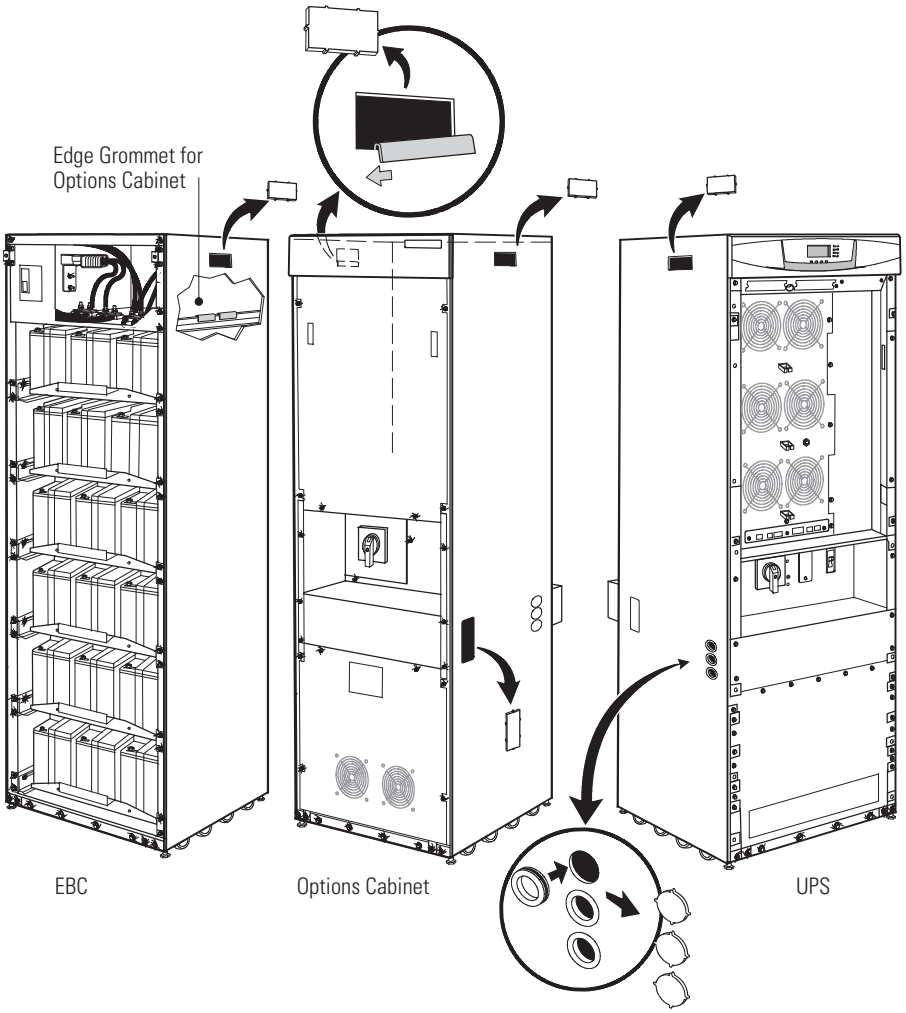

Figure 10. Joining Additional Cabinets (Typical Configuration)

11. Remove the two ground straps from the rear panel of the EBC or Options Cabinet (installed at the top corners).
12. Install one ground strap between the rear panels of the adjacent cabinets as shown in Figure 11.
13. Install the other ground strap between the front panels of the adjacent cabinets as shown in Figure 11.
14. Repeat Steps 11 through 13 for each cabinet.
15. Replace the front door of all cabinets.
16. Continue to "Electrical Installation" on page 21.

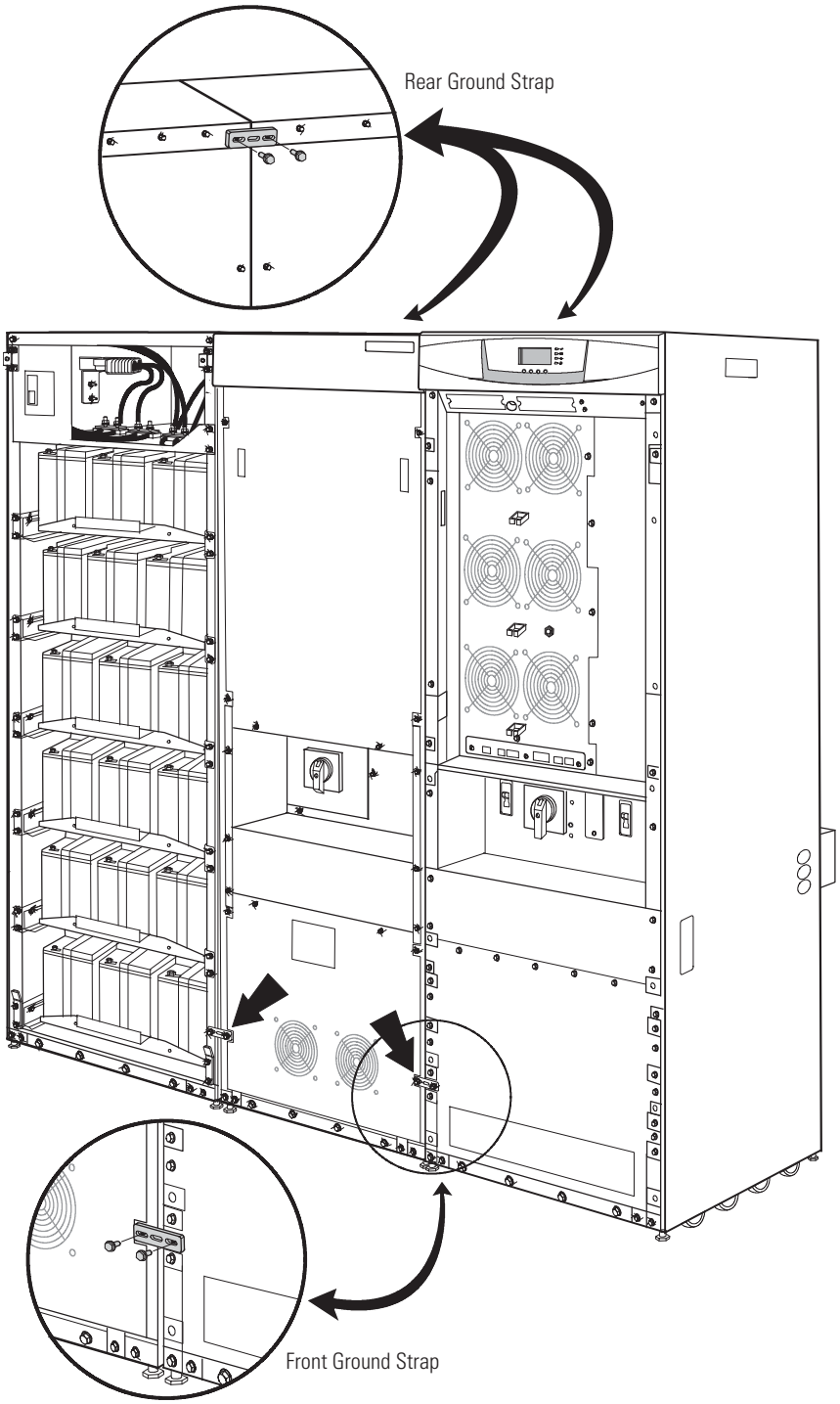

Figure 11. Ground Strap Installation

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Chapter 5 Electrical Installation

The Eaton 9355 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 (UPS only or parallel system)
- 208V, 480V, or 600V 60-Hz input is available when using the Options Cabinet with an input isolation transformer
- 480/480 Vac is available when using the Options Cabinet with an output transformer

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

Figure 24 through Figure 31 beginning on page 37 show the oneline diagrams.

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.

Wiring Preparation

To begin wiring the UPS or Options Cabinet:

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 1 on page 35.

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 UPS or Options Cabinet 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 UPS front door (see page 10).
6. Verify that the UPS input circuit breaker is in the OFF position (see Figure 12).
7. Verify that the UPS battery circuit breaker is in the OFF position.
8. If you ordered the UPS with the optional output circuit breaker, verify that the output circuit breaker is in the OFF position.
9. Remove the UPS wiring access cover and retain.
10. Remove the UPS connections insulator and retain

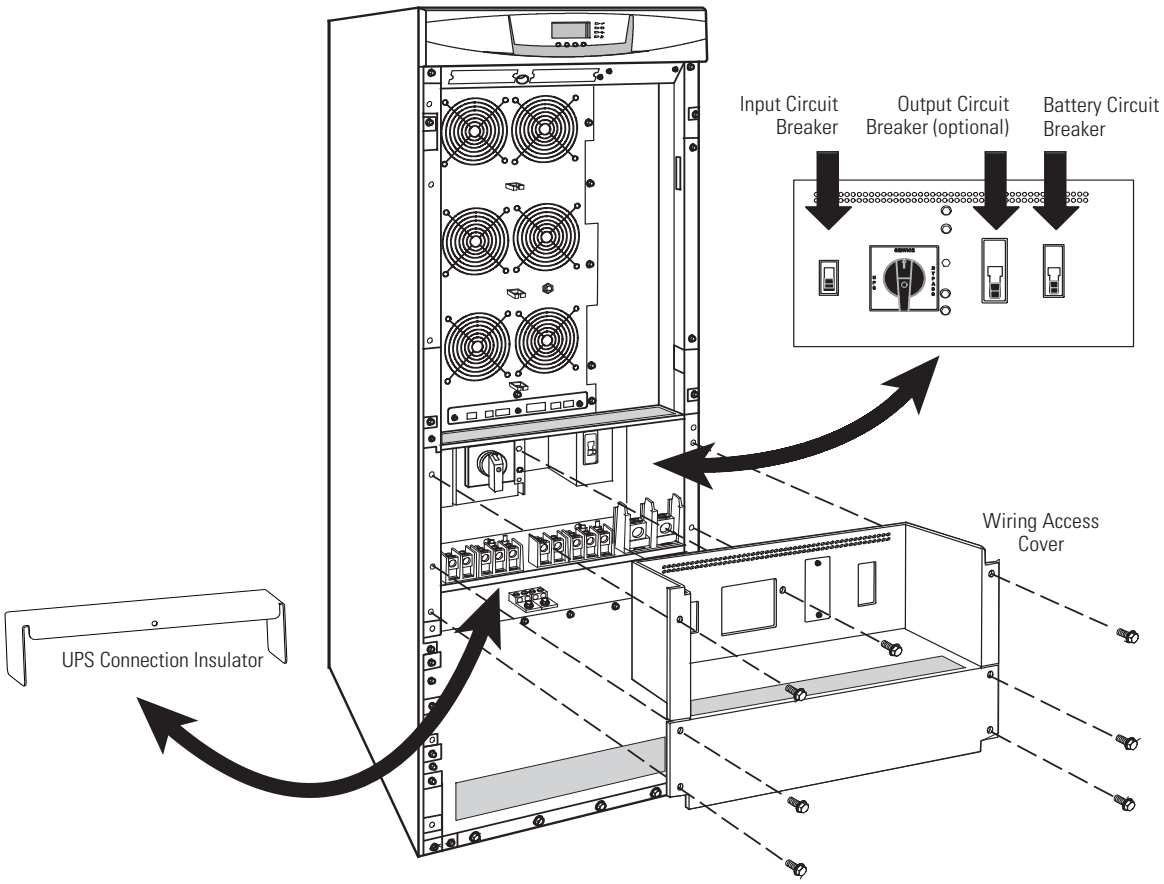

Figure 12. UPS Front View

11. If you have an Options Cabinet, remove the front door (see page 10).
12. Remove the Options Cabinet wiring access cover and retain (see Figure 13).
13. If you have two Options Cabinets, repeat Steps 11 and 12 for the second cabinet.

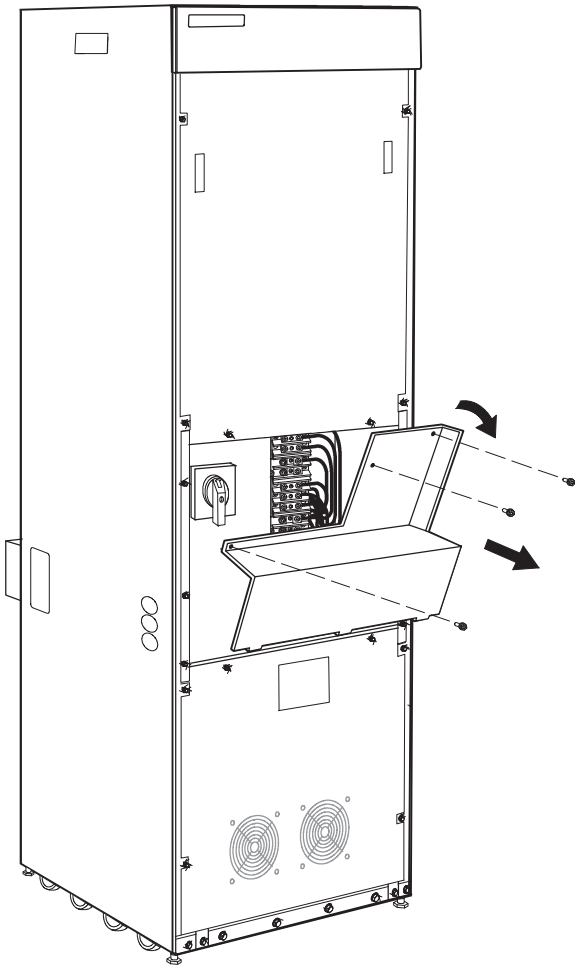

Figure 13. Removing the Options Cabinet Wiring Access Cover

Wiring Installation

Wire the UPS or Options Cabinet(s) according to one of the following configurations:

- UPS only – see the following section, "UPS Only Wiring"
- Up to four UPSs in a parallel capacity and/or redundant system – see "Parallel UPS Wiring" on page 25
- UPS with Options Cabinet that has a maintenance bypass switch (MBS) – see "Options Cabinet with MBS Wiring" on page 29
- UPS with Options Cabinet that has a dual transformer (input and output) and an MBS – see "Options Cabinet with MBS Wiring" on page 29
- UPS with Options Cabinet that has an input transformer only – see "Options Cabinet with Dual-Feed Wiring" on page 31
- UPS with Options Cabinet that has an output transformer only– see "Options Cabinet with Output Transformer Wiring" on 33

UPS Only Wiring

To hardwire the UPS:

1. Remove the UPS conduit landing box from the rear panel and retain (see Figure 14).
2. Punch two holes in the conduit landing box for the input and output conduit using a Greenlee® punch or similar device.
3. Route the wiring from the back of the UPS, through the wiring tray, to the front of the UPS.
4. Hardwire the input, output, and ground terminations for the UPS. See Table 1 on page 35 for wiring specifications.

   For a detailed view of the UPS terminal block, see Figure 23 on page 36.
5. If wiring for dual-feed, remove the jumpers between the input terminal block and the input circuit breaker (see Figure 23 on page 36).

   Wire the second input directly to the input circuit breaker.
6. Reinstall the UPS connections insulator.
7. Reinstall the UPS wiring access cover.
8. Reinstall the UPS conduit landing box in the reversed position (see Figure 14).
9. Replace the UPS front door (see page 10).

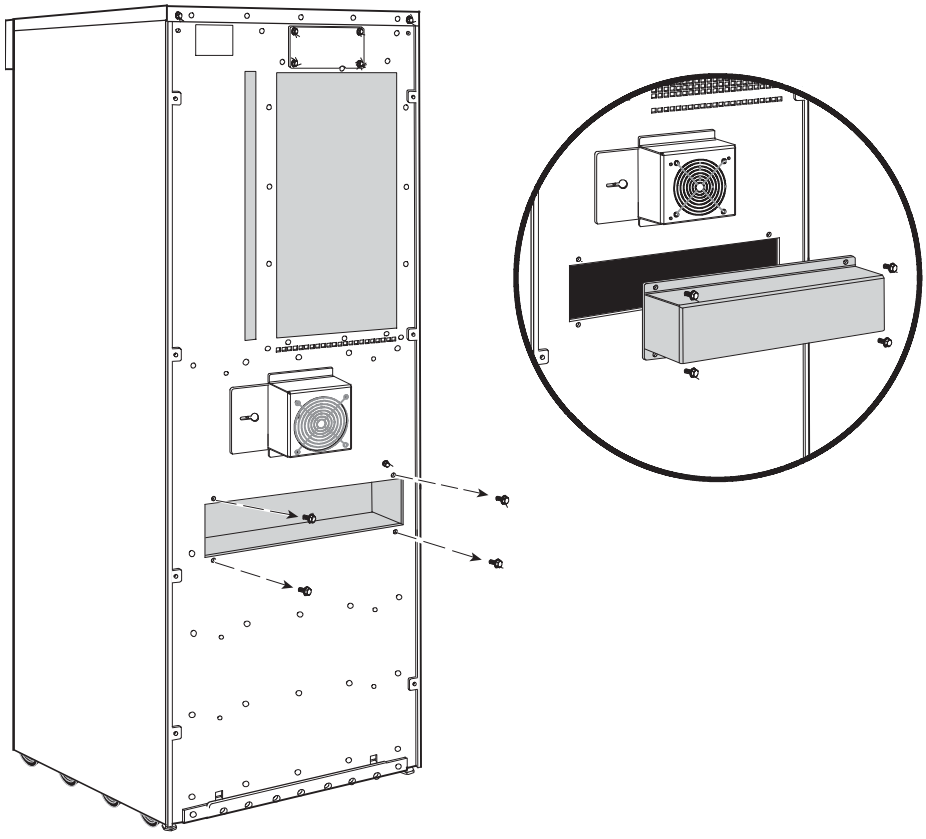

Figure 14. Reversing the UPS Conduit Landing Box

Parallel UPS Wiring

To hardwire the UPS in a parallel capacity and/or redundant system:

1. Remove the UPS conduit landing box from the rear panel and retain (see Figure 14).
2. Punch two holes in the conduit landing box for the input and output conduit using a Greenlee punch or similar device.
3. Route the wiring from the back of the UPS, through the wiring tray, to the front of the UPS.
4. Hardwire the input terminations for the UPS. See Table 1 on page 35 for wiring specifications.

   For a detailed view of the UPS terminal block, see Figure 23 on page 36. See Figure 15 or Figure 16 for a parallel wiring diagram.
5. Remove any Tie Cabinet covers and install conduit for the Tie Cabinet.
6. Hardwire the output terminations from the UPS to the Tie Cabinet.
7. Hardwire the load to the Tie Cabinet.
8. Wire the maintenance bypass auxiliary contacts below the maintenance bypass switch and terminate to the maintenance bypass wires in the Tie Cabinet.

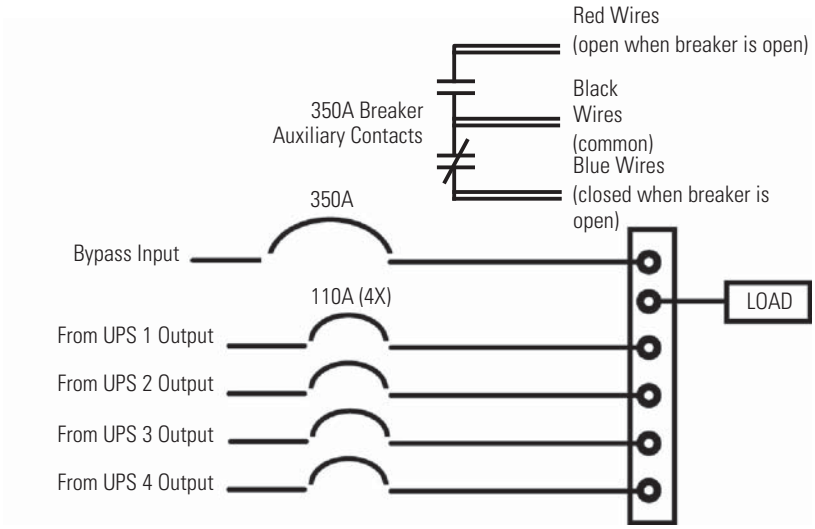

Figure 15. Parallel Wiring Diagram – Version 1 and Version 2 without Maitenance Isolation Switch (MIS)

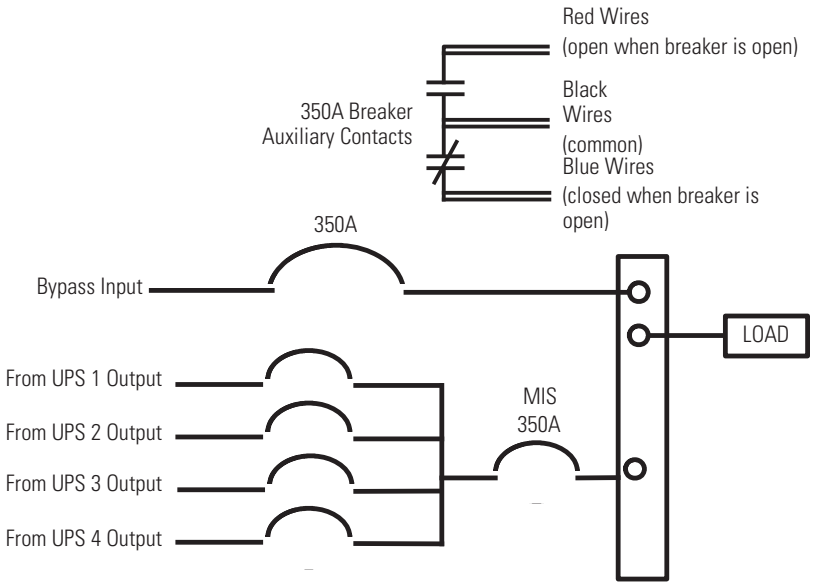

Figure 16. Parallel Wiring Diagram – Version 2 with MIS

9. Wire the AC input to the bypass breaker on the Tie Cabinet (see Figure 17 for Version 1 or Figure 18 for Version 2).
10. Verify the phase rotation for each UPS and the bypass input.
11. Reinstall any covers removed from the Tie Cabinet.
12. Reinstall the UPS connections insulator.
13. Reinstall the UPS wiring access cover.
14. Reinstall the UPS conduit landing box in the reversed position (see Figure 14 on page 24).
15. Replace the UPS front door (see page 10).

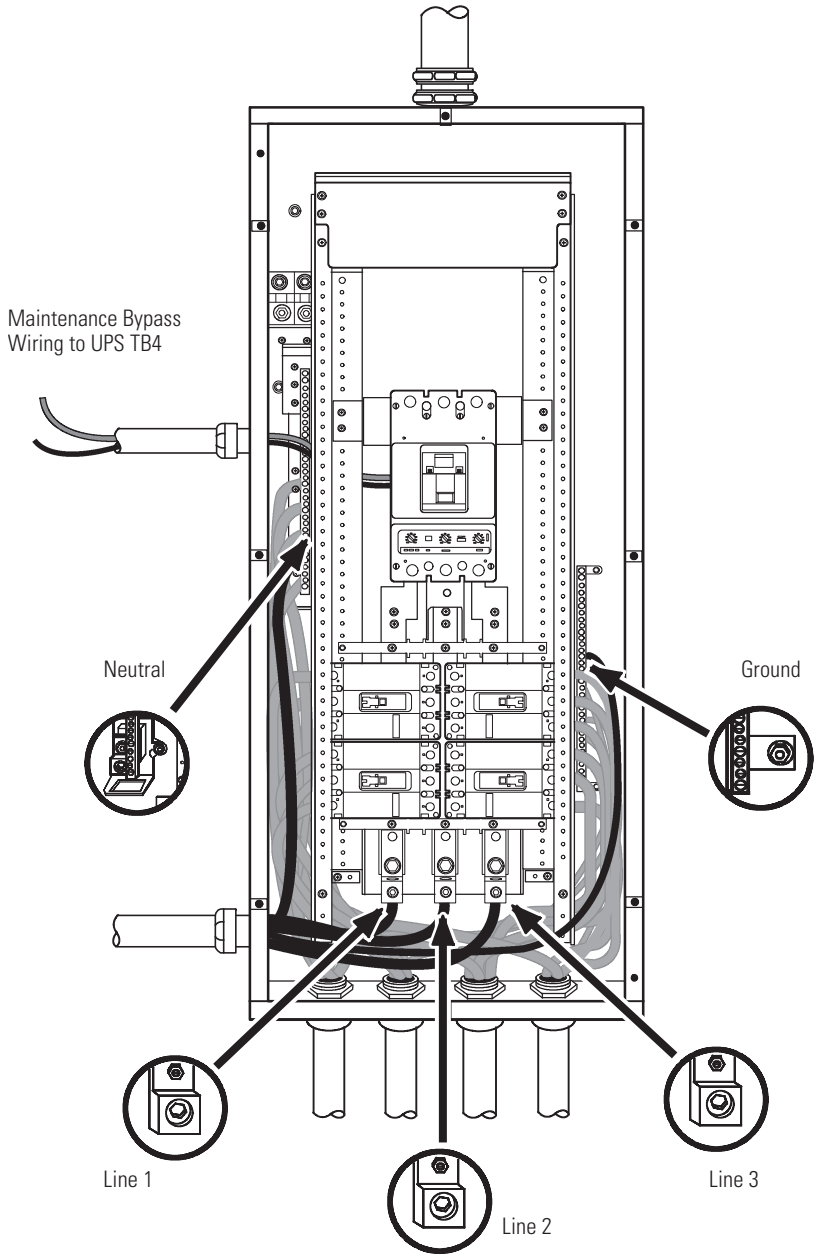

Figure 17. Bypass AC Input Wiring (Eaton Tie Cabinet Version 1 Shown)

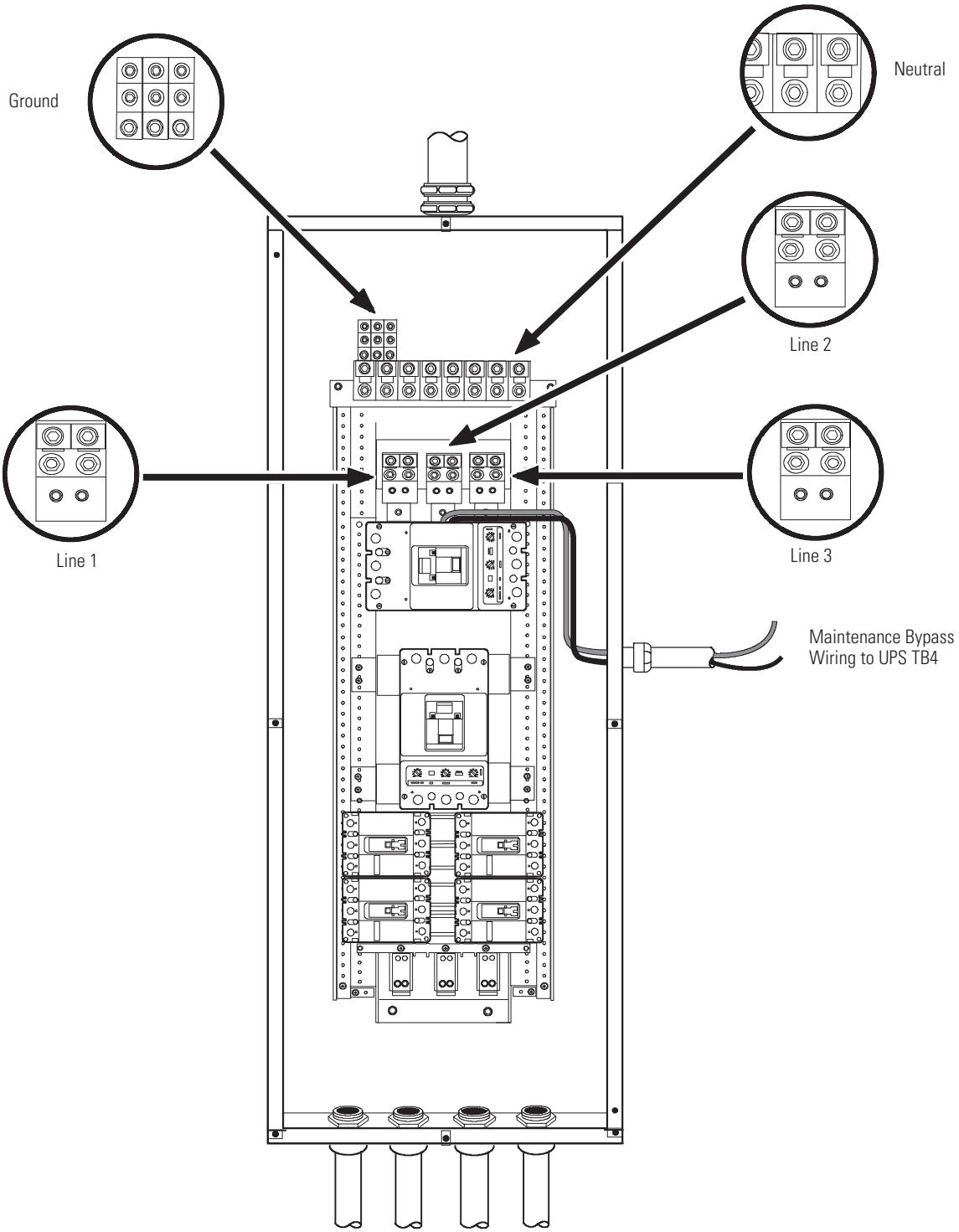

Figure 18. Bypass AC Input Wiring (Eaton Tie Cabinet Version 2 with MIS Shown)

Options Cabinet with MBS Wiring

To hardwire an Options Cabinet with an MBS (with or without an input isolation transformer or input and output transformers):

1. Remove the Options Cabinet conduit landing box from the rear panel and retain (see Figure 19).
2. Punch two holes in the conduit landing box for the input and output conduit using a Greenlee punch or similar device.
3. Route the wiring from the back of the Options Cabinet, through the wiring tray, to the front of the Options Cabinet.
4. Hardwire the input, output, and ground terminations for the Options Cabinet. See Table 1 on page 35 for wiring specifications.

   For a detailed view of the Options Cabinet terminal block, see Figure 20.
5. Route the factory-installed wiring and ground bonding wire through the knockouts and hardwire to the UPS terminal and ground blocks.

   For a detailed view of the UPS terminal block, see Figure 23 on page 36.
6. Route the maintenance bypass auxiliary wiring through the knockouts to the UPS and wire to the contacts below the MBS (see Figure 20).
7. Reinstall the Options Cabinet wiring access cover.
8. Reinstall the Options Cabinet conduit landing box in the reversed position (see Figure 19).
9. Replace the Options Cabinet front door (see page 10).
10. Reinstall the UPS connections insulator.
11. Reinstall the UPS wiring access cover.
12. Replace the UPS front door (see page 10).

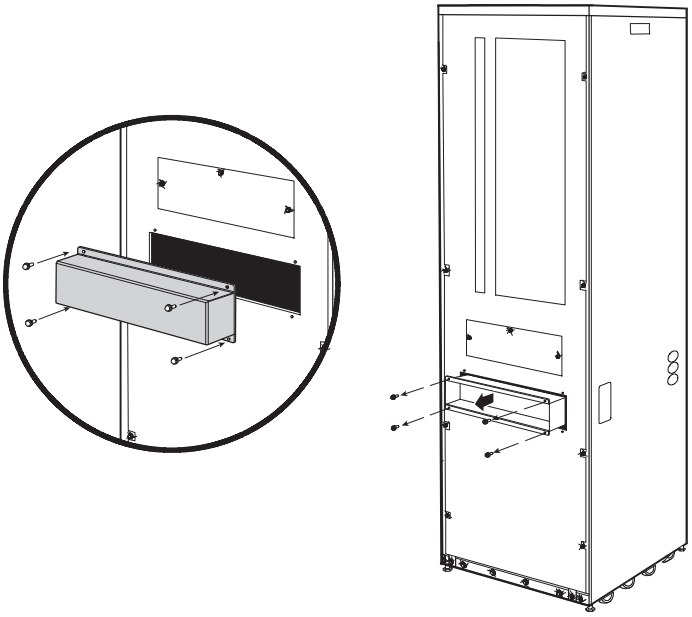

Figure 19. Reversing the Options Cabinet Conduit Landing Box

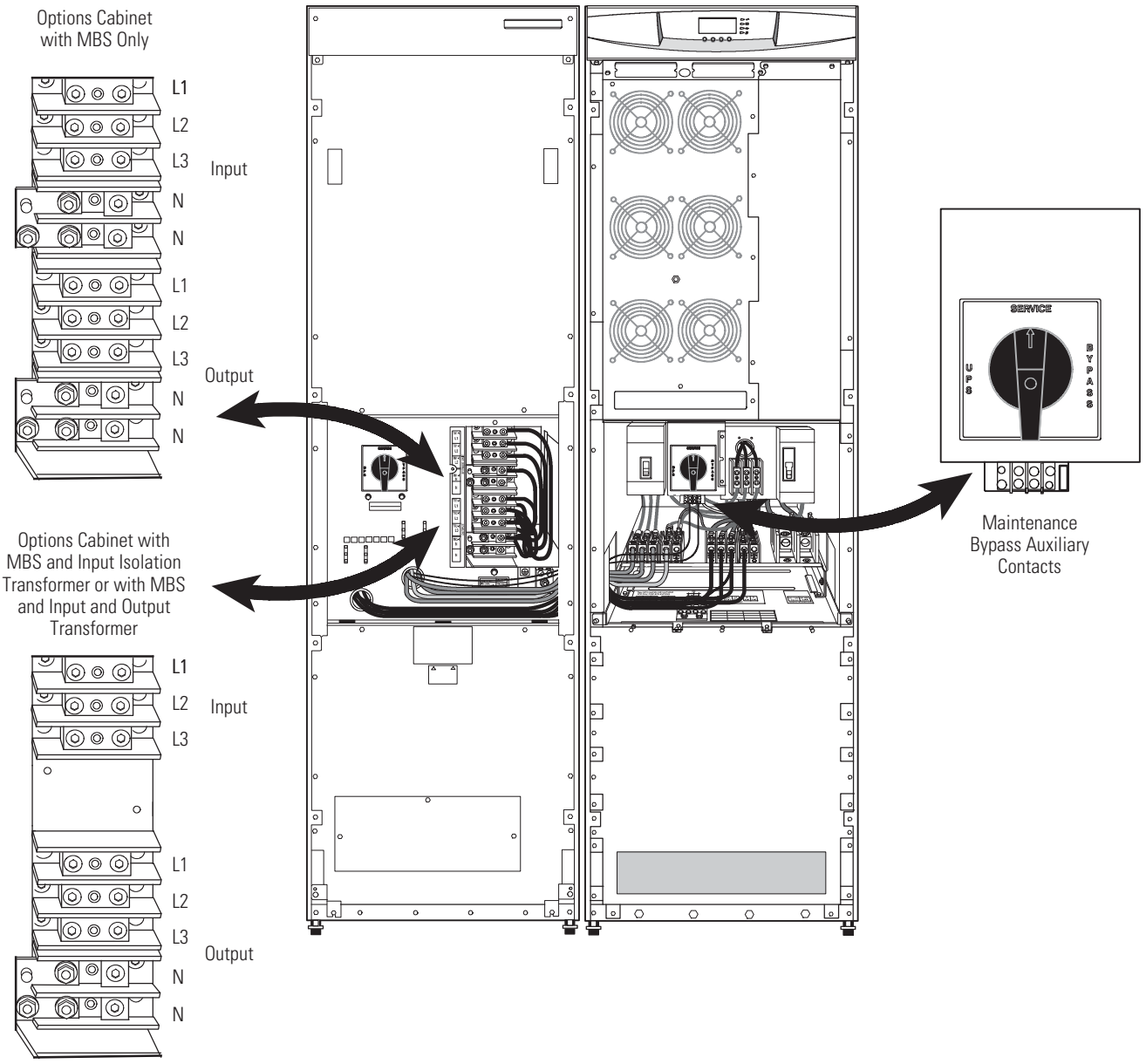

Figure 20. Options Cabinet with MBS Wiring

Options Cabinet with Dual-Feed Wiring

To hardwire the Options Cabinets in a dual-feed system:

1. Remove the Options Cabinet conduit landing box from both Options Cabinet rear panels and retain (see Figure 19 on page 29).
2. Punch two holes in the first conduit landing box for the input and output conduit using a Greenlee punch or similar device.

   Punch one hole in the second conduit landing box for the second input conduit.
3. Route the wiring from the back of the first Options Cabinet, through the wiring tray, to the front of the Options Cabinet.

   Route the wiring from the back of the second Options Cabinet, through the wiring tray, to the front of the Options Cabinet.
4. On the first Options Cabinet, hardwire the input, output, and ground terminations. See Table 1 on page 35 for wiring specifications.

   On the second Options Cabinet, hardwire the second input and ground terminations.

   For a detailed view of both Options Cabinet terminal blocks, see Figure 21.
5. Remove the jumpers between the UPS input terminal block and the input circuit breaker (see Figure 23 on page 36).
6. On the first Options Cabinet, route the factory-installed wiring through the knockouts and hardwire to the UPS terminal block.

   On the second Options Cabinet, route the factory-installed wiring through the knockouts and hardwire to the UPS input circuit breaker.

   For a detailed view of the UPS terminal block, see Figure 23 on page 36.
7. On the first Options Cabinet, route the maintenance bypass auxiliary wiring through the knockouts to the UPS and wire to the contacts below the MBS (see Figure 21).
8. Reinstall both Options Cabinet wiring access covers.
9. Reinstall both Options Cabinet conduit landing boxes in the reversed position (see Figure 19 on page 29).
10. Replace both Options Cabinet front doors (see page 10).
11. Reinstall the UPS connections insulator.
12. Reinstall the UPS wiring access cover.
13. Replace the UPS front door (see page 10).

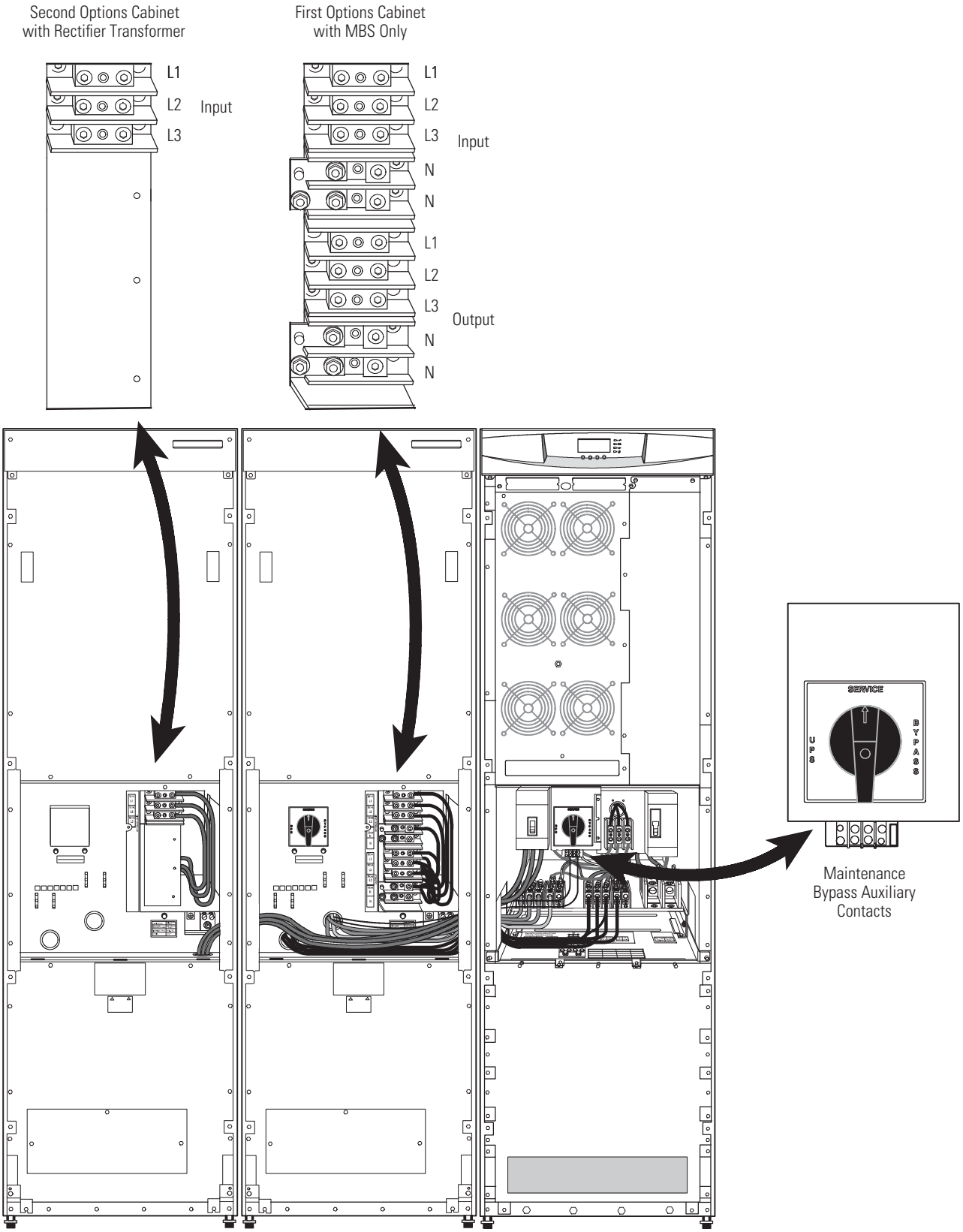

Figure 21. Options Cabinets with Dual-Feed Wiring

Options Cabinet with Output Transformer Wiring

To hardwire the Options Cabinets for 480V loads:

1. Remove the Options Cabinet conduit landing box from both Options Cabinet rear panels and retain (see Figure 19 on page 29).
2. Punch one hole in the first conduit landing box for the input conduit using a Greenlee punch or similar device.

   Punch one hole in the second conduit landing box for the output conduit.
3. Route the wiring from the back of the first Options Cabinet, through the wiring tray, to the front of the Options Cabinet.

   Route the wiring from the back of the second Options Cabinet, through the wiring tray, to the front of the Options Cabinet.
4. On the first Options Cabinet, hardwire the input and ground terminations. See Table 1 on page 35 for wiring specifications.

   On the second Options Cabinet, hardwire the output and ground terminations.

   For a detailed view of both Options Cabinet terminal blocks, see Figure 22.
5. On the second Options Cabinet, route the factory-installed wiring through the knockouts and hardwire to the output terminal block of the first Options Cabinet.

   On the first Options Cabinet, route the factory-installed wiring through the knockouts and hardwire to the UPS terminal block.

   For a detailed view of the UPS terminal block, see Figure 23 on page 36.
6. On the first Options Cabinet, route the maintenance bypass auxiliary wiring through the knockouts to the UPS and wire to the contacts below the MBS (see Figure 22).
7. Reinstall both Options Cabinet wiring access covers.
8. Reinstall both Options Cabinet conduit landing boxes in the reversed position (see Figure 19 on page 29).
9. Replace both Options Cabinet front doors (see page 10).
10. Reinstall the UPS connections insulator.
11. Reinstall the UPS wiring access cover.
12. Replace the UPS front door (see page 10).

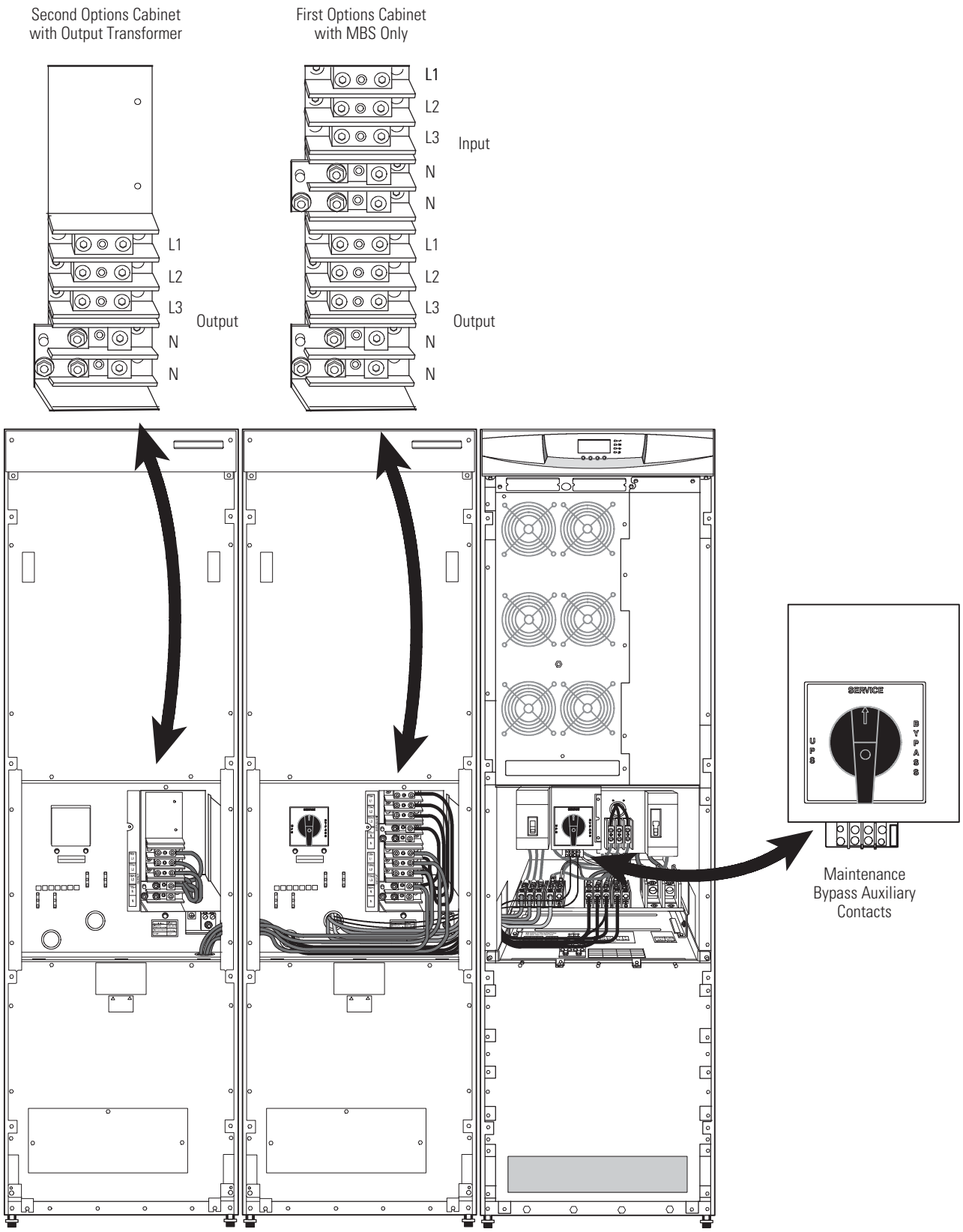

Figure 22. Options Cabinets with Output Transformer Wiring

Wiring Specifications and Diagrams

Note: Input neutral must be wired for proper operation or the UPS will not start. If you have an Options Cabinet with an input isolation transformer, the input neutral is supplied by the input isolation transformer.

Note: The Eaton 9355 UPS is shipped as a single-feed UPS and can be converted to a dual-feed UPS in the field.

Note: DO NOT overtighten the screws; be sure to use the specified tightening torque values shown in Table 1.

Table 1. Terminal Block Wiring

20 kVA System 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)
208	Input UPS X1 WYE / 4-wire	100A	1 AWG	6 AWG	120 lb in (13.5 Nm)	2.00" conduit (1)
220		100A	1 AWG	6 AWG		
480	Input Options Cabinet Delta / 3-Wire	45A	6 AWG	10 AWG		1.00" conduit (1)
600		35A	8 AWG	10 AWG		
208	Output UPS X2 WYE / 4-wire		1 AWG	6 AWG	120 lb in (13.5 Nm)	2.00" conduit (1)
220			1 AWG	6 AWG		
480	Output Options Cabinet WYE / 4-Wire		6 AWG	10 AWG		1.00" conduit (1)
30 kVA System 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)**
208	Input UPS X1 WYE / 4-wire	125A	1/0 AWG	6 AWG	120 lb in (13.5 Nm)	2.00" conduit (1)
220		125A	1/0 AWG	6 AWG		
480	Input Options Cabinet Delta / 3-Wire	60A	6 AWG	10 AWG		1.00" conduit (1)
600		50A	6 AWG	10 AWG		
208	Output UPS X2 WYE / 4-wire		1/0 AWG	6 AWG	120 lb in (13.5 Nm)	2.00" conduit (1)
220			1/0 AWG	6 AWG		
480	Output Options Cabinet WYE / 4-Wire		6 AWG	10 AWG		1.00" conduit (1)

[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 310-104A. 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 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.

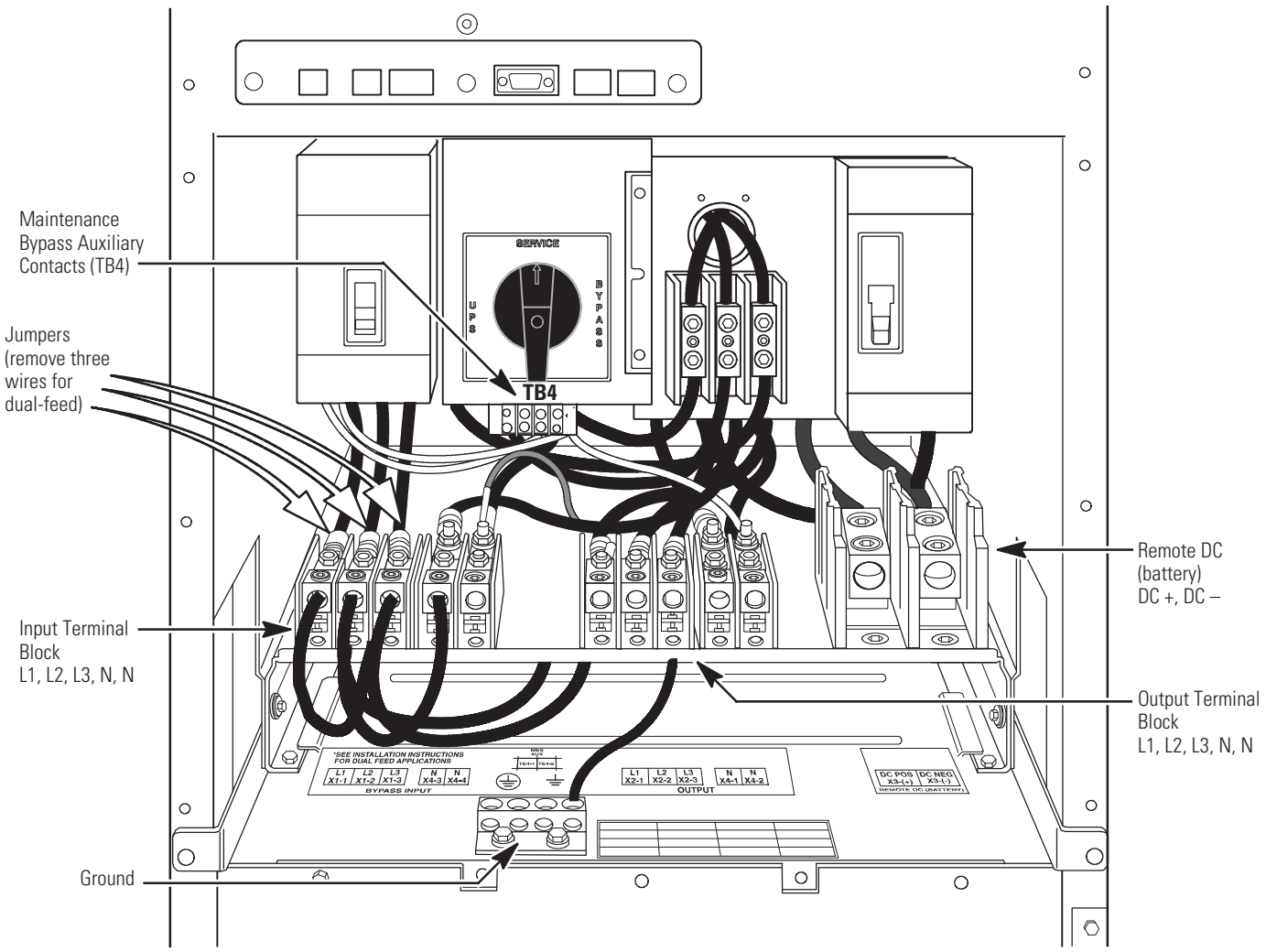

Figure 23. UPS Terminal Block

Note: The two input neutral terminals are jumpered together; use either one of these terminals to make the input neutral connection.

Note: The two output neutral terminals are jumpered together; use either one of these terminals to make the output neutral connection.

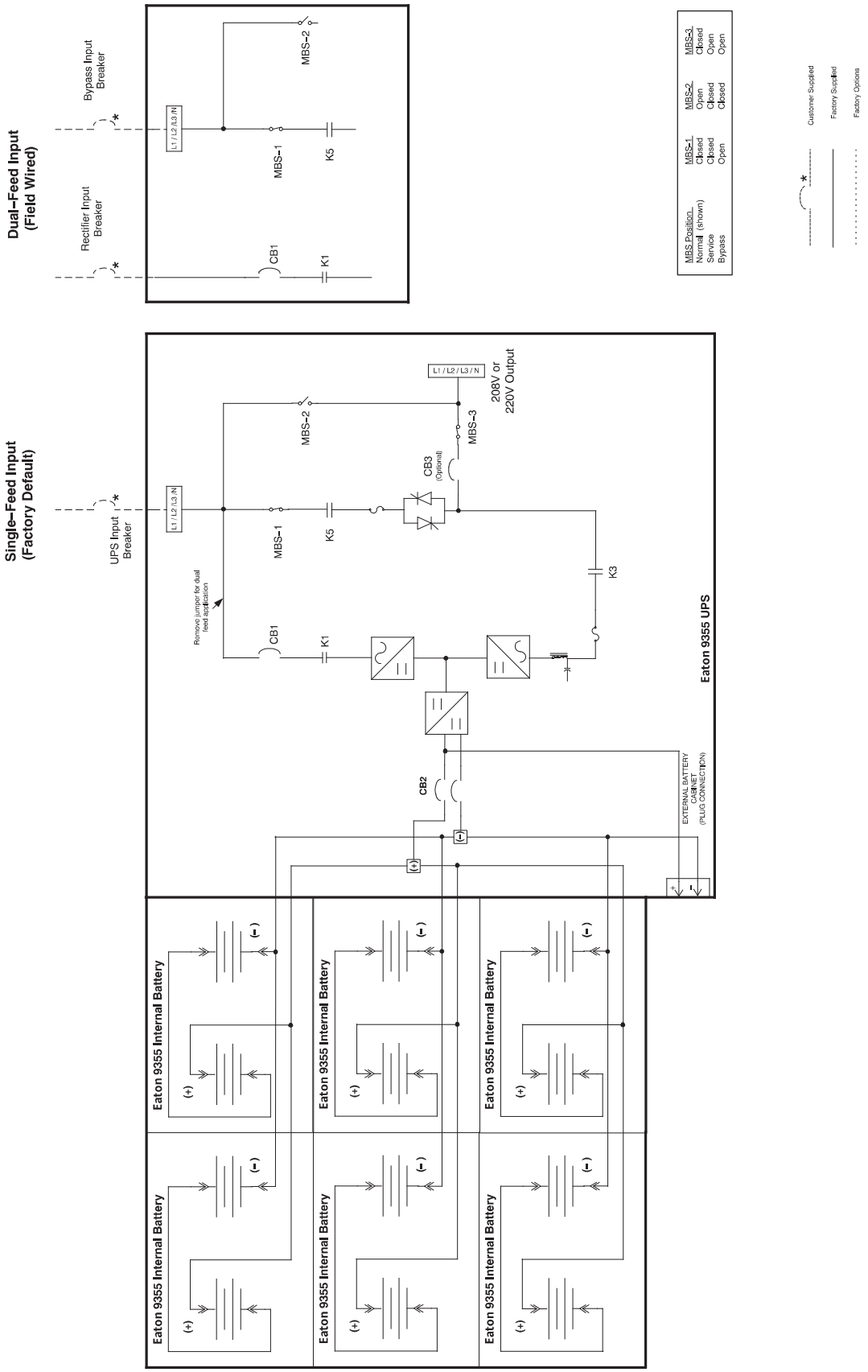

Figure 24. UPS Wiring Diagram (Single-Feed, 208V or 220V Input : 208V or 220V Output)

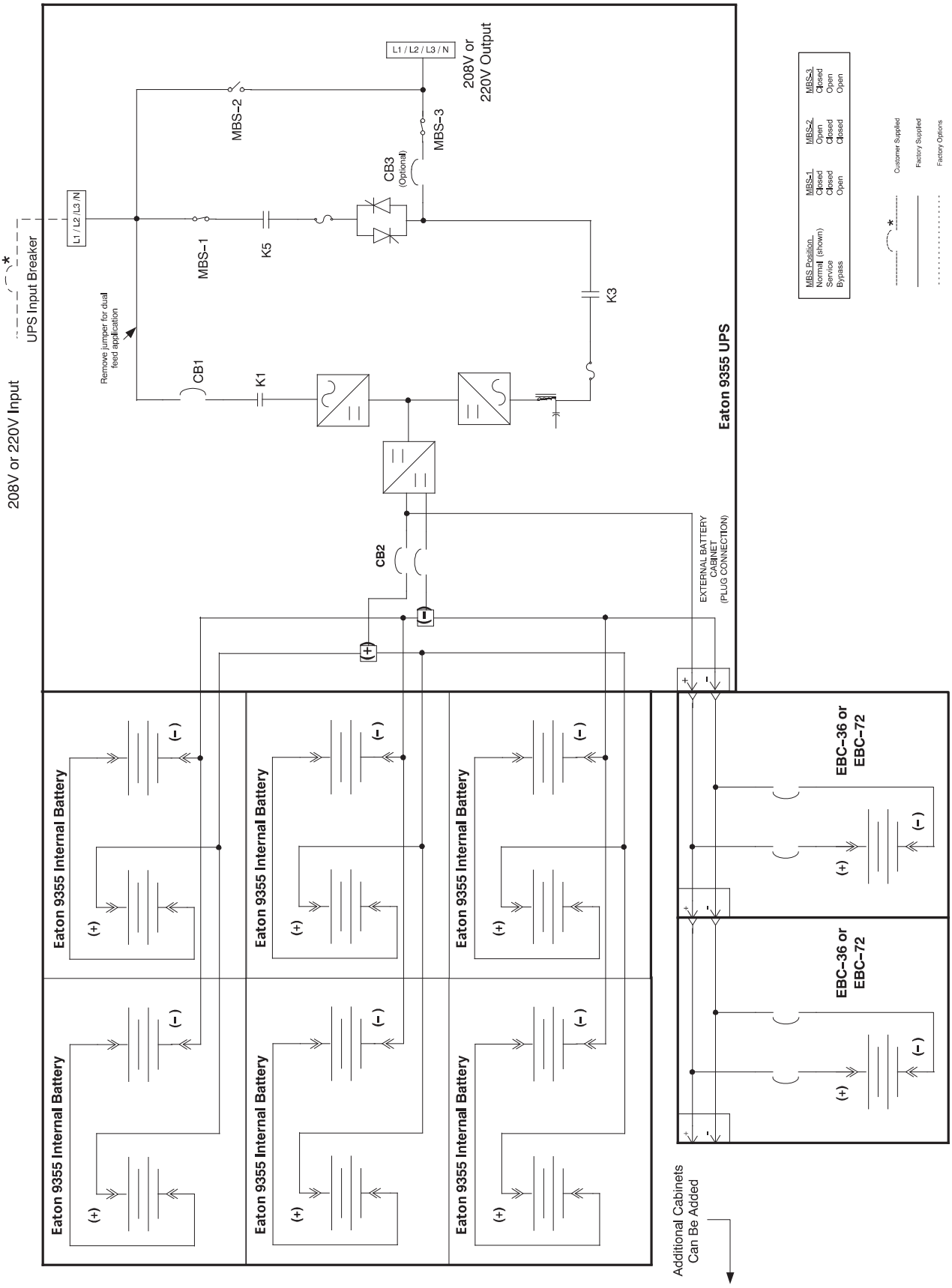

Figure 25. UPS with EBCs Wiring Diagram (Single-Feed, 208V or 220V Input : 208V or 220V Output)

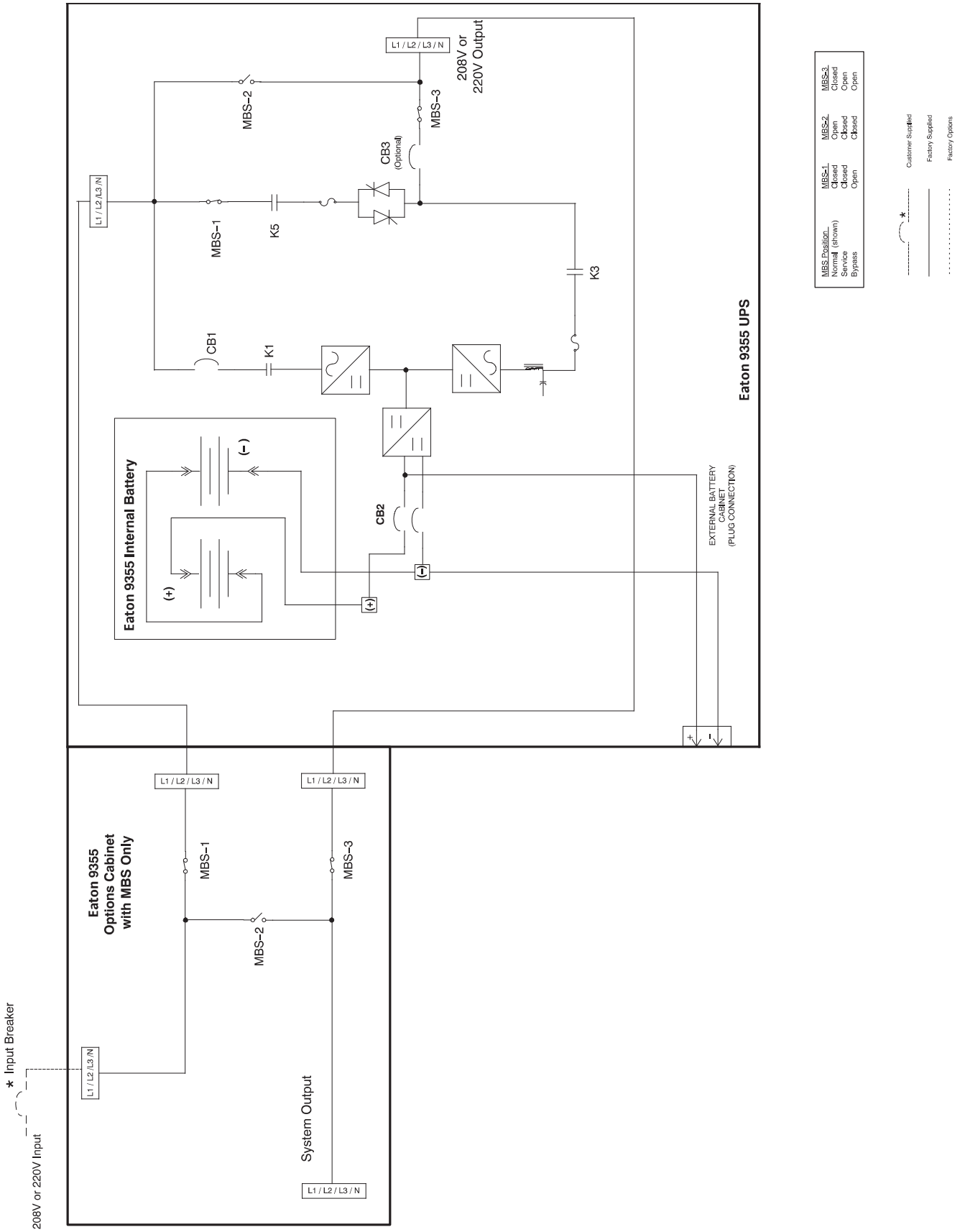

Figure 26. UPS and Options Cabinet with MBS Only (Single-Feed, 208V or 220V Input : 208V Output)

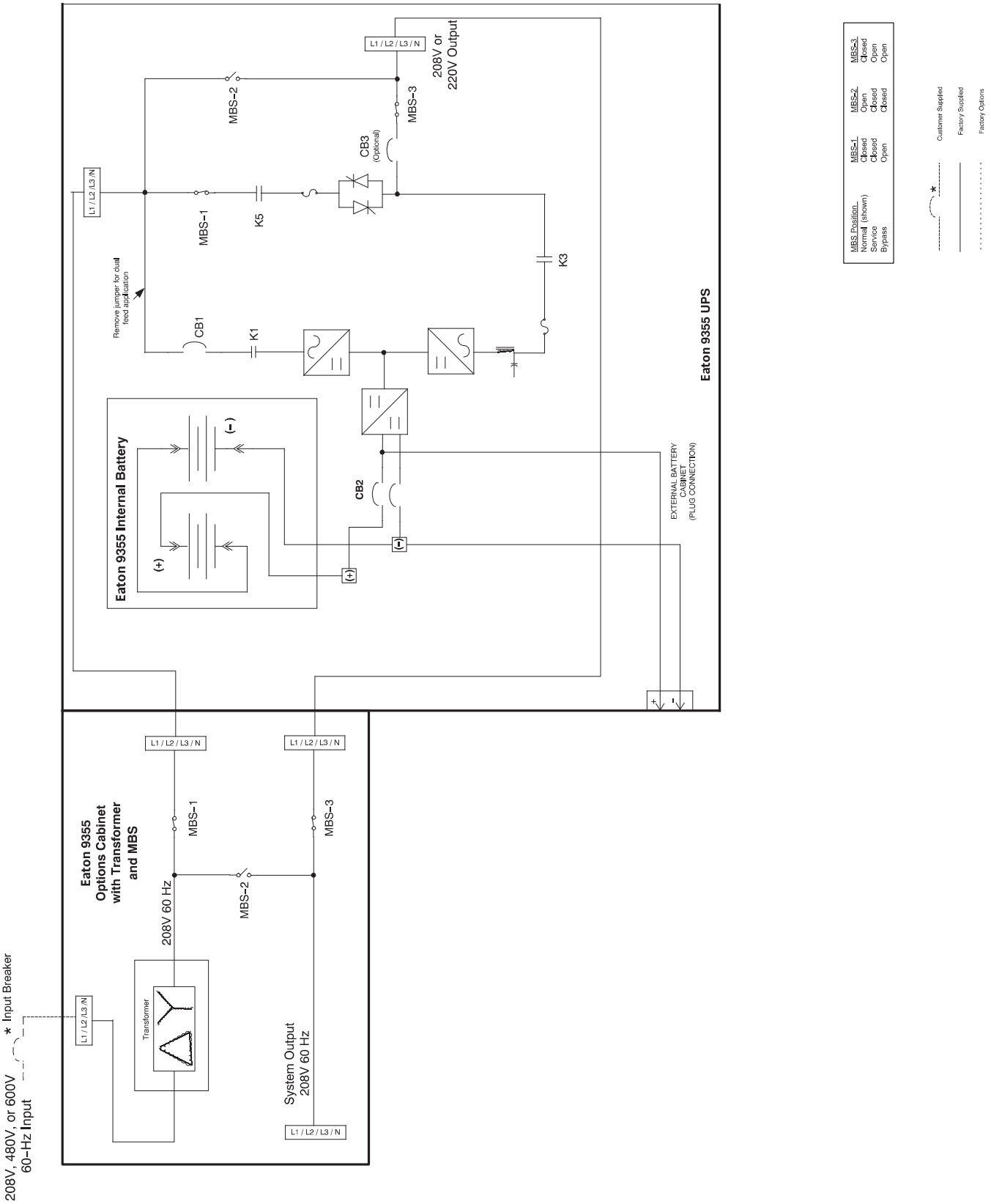

Figure 27. UPS and Options Cabinet with MBS/Input Isolation Transformer Wiring Diagram (Single-Feed, 208V, 480V, or 600V Input : 208V Output)

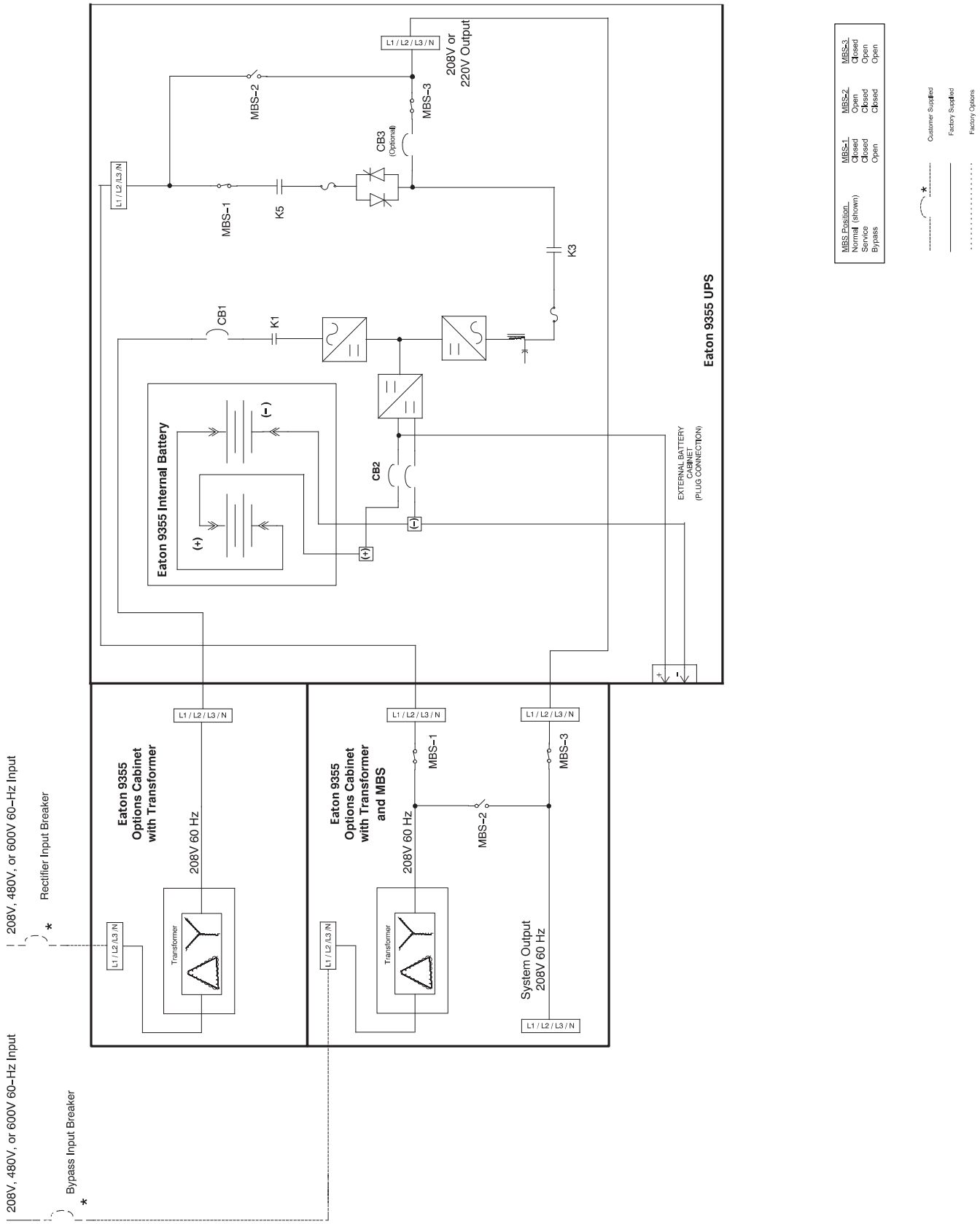

Figure 28. UPS and Dual-Feed Options Cabinets Wiring Diagram (Dual-Feed, 208V, 480V, or 600V Input : 208V Output)

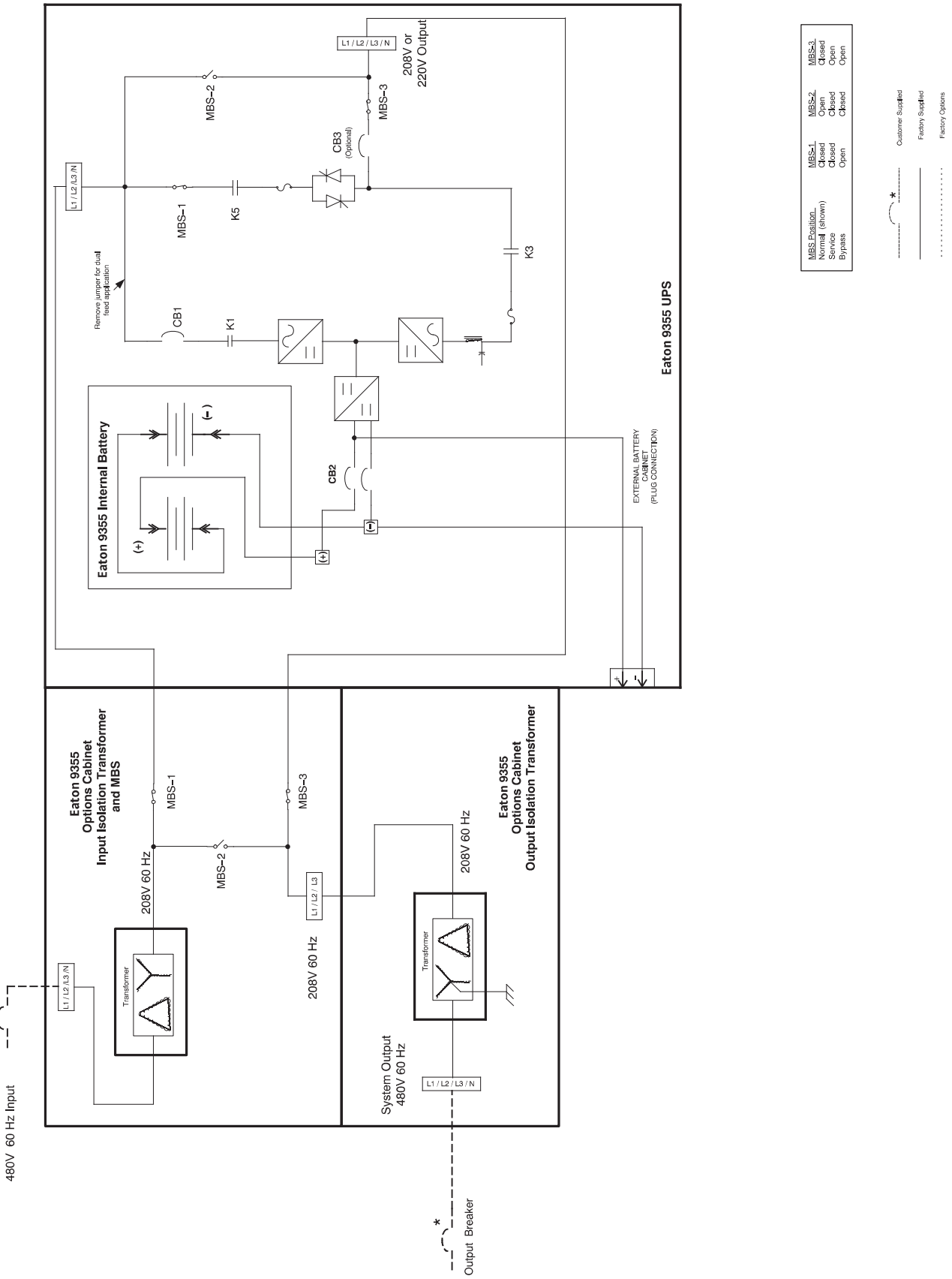

Figure 29. UPS and Dual Options Cabinets with Input and Output Transformers Wiring Diagram (Single-Feed, 480V Input : 480V Output)

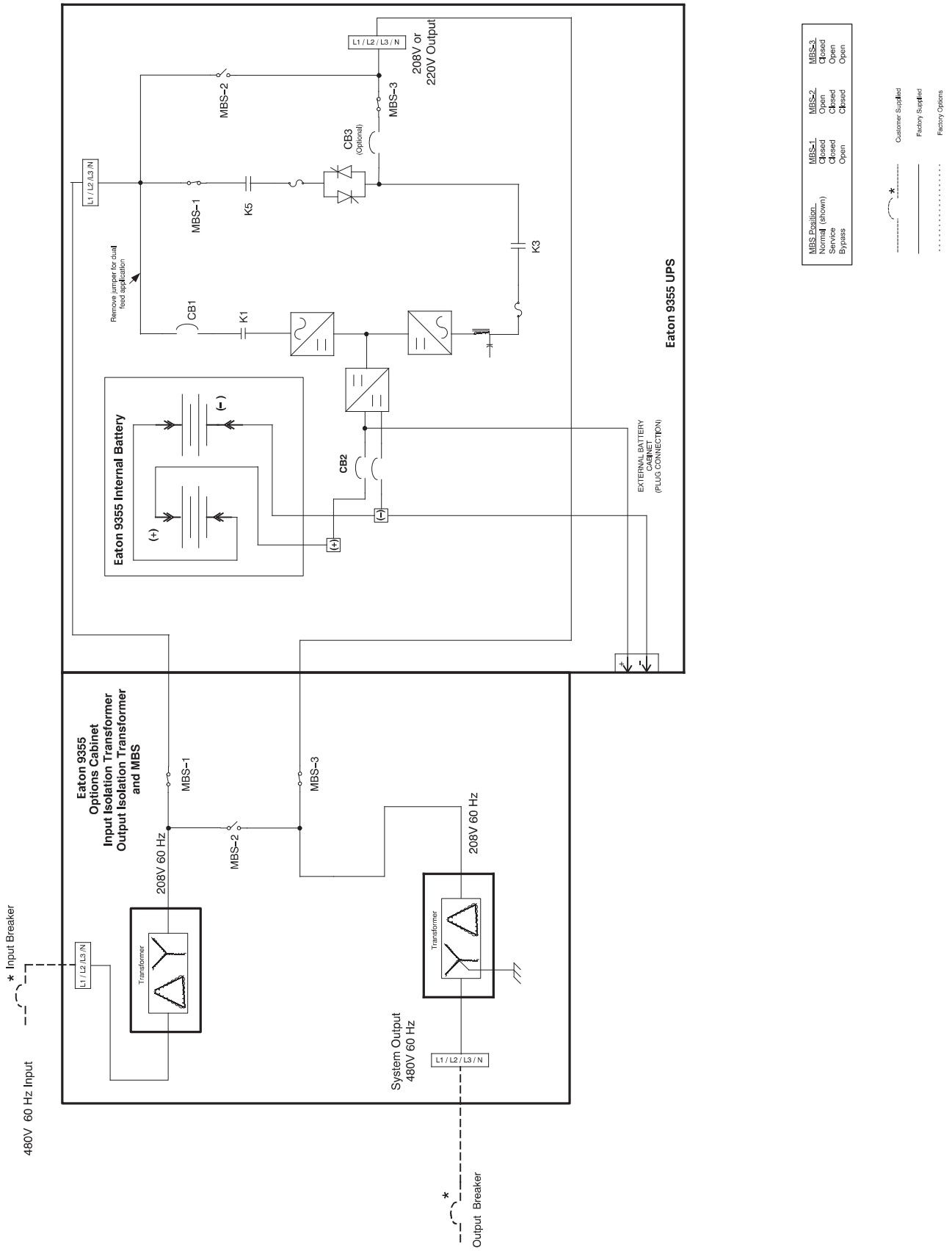

Figure 30. UPS and Single Options Cabinet with Input and Output Transformers Wiring Diagram (Single-Feed, 480V Input : 480V Output)

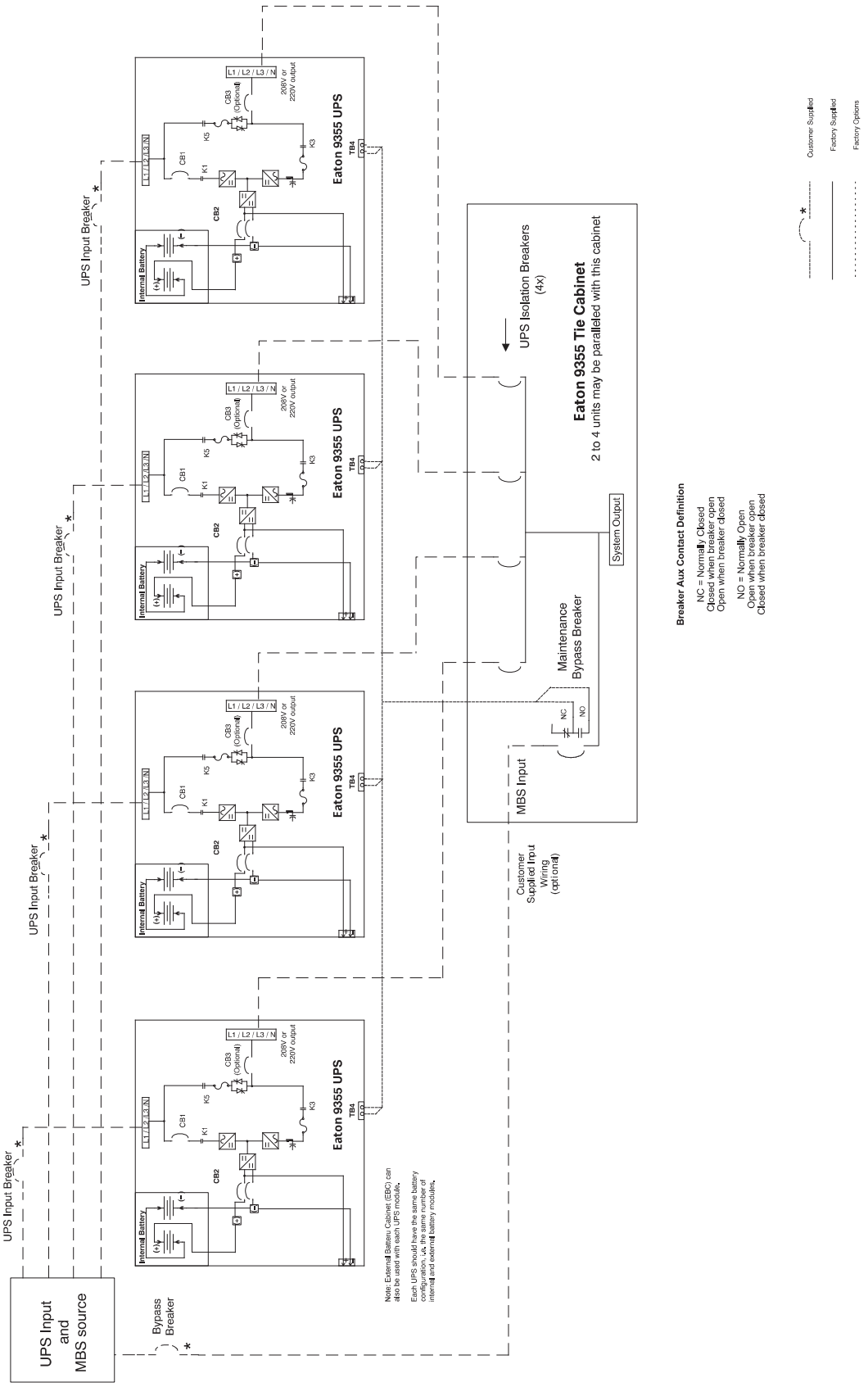

Figure 31. Parallel UPS System with Tie Cabinet Diagram (Single-Feed, 208V or 220V Input : 208V or 220V Output)

Chapter 6 Extended Battery Cabinet Installation

Note: A maximum of four Extended Battery Cabinets (EBCs) can be installed.

To install the optional EBC:

1. Remove the UPS front door (see page 10).

   If you installed an Options Cabinet, remove the Options Cabinet front door (see page 10).

2. Verify that the UPS battery circuit breaker is in the OFF position (see Figure 32).
3. Remove the EBC front door(s). See page 11.
4. Plug the EBC cable into the UPS battery connector (see Figure 32).

   If an Options Cabinet is installed, route the EBC cable through the knockouts and connect to the UPS battery connector.

⚠ CAUTION

The EBC cable must not touch the top of the transformer. Leave any EBC cable slack inside the EBC cabinet.

   If a dual transformer Options Cabinet is installed, route the EBC cable through the knockout in the left side of the Options Cabinet, placing the cable in the cable hooks at the top of the cabinet (see Figure 33) and connect to the UPS battery connector.

   If additional EBCs are installed, plug the EBC cable into the battery connector on the next EBC. Repeat for each additional EBC.

5. Replace the EBC front door(s).
6. Replace the UPS front door.

   If you installed an Options Cabinet, replace the Options Cabinet front door.

7. Continue to one of the following sections:
   - "Permanent Mounting Installation" on page 49.
   - "Communication" on page 51 to install UPS communication options, such as X-Slot cards or remote emergency power-off (REPO).
   - "Operation" on page 69 to start up the UPS.

Note: After UPS startup, ensure maximum battery runtime by configuring the UPS for the correct number of EBCs (see page 75).

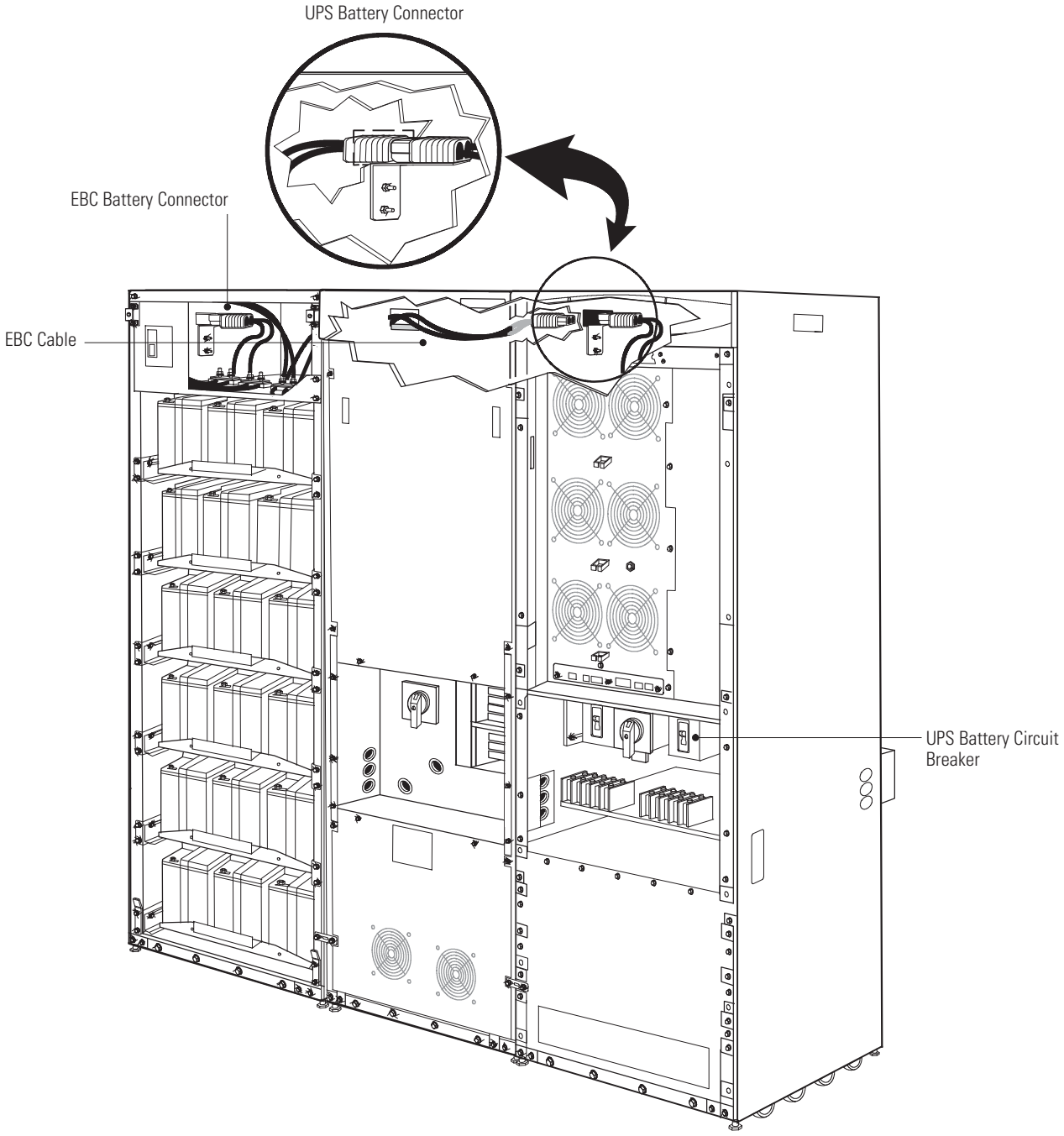

Figure 32. Typical EBC Installation

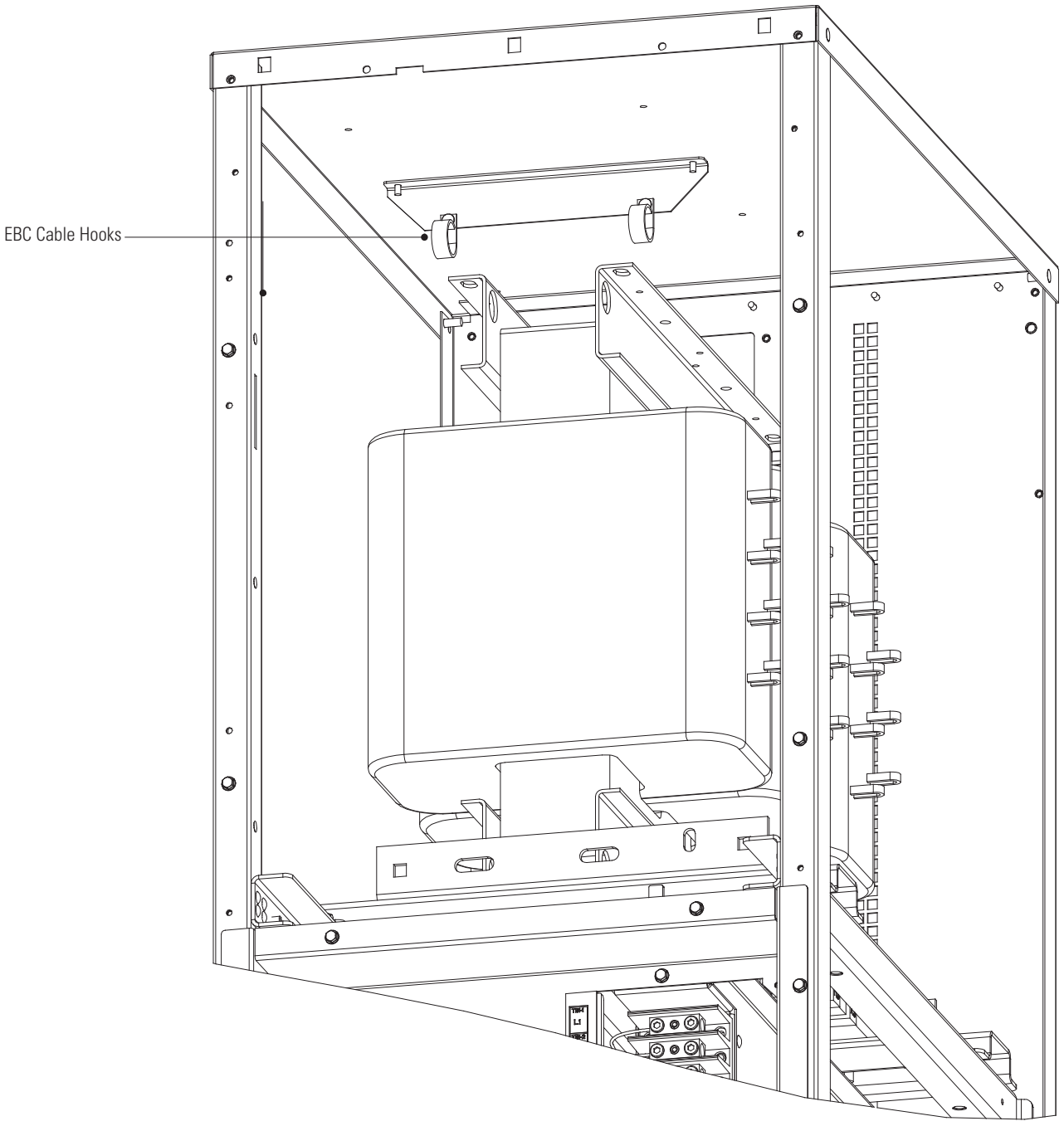

Figure 33. Dual Transformer Options Cabinet EBC Cable Hooks

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Chapter 7 Permanent Mounting Installation

Note: Permanent mounting is optional and uses the rear shipping bracket.

To permanently mount the cabinet(s):

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

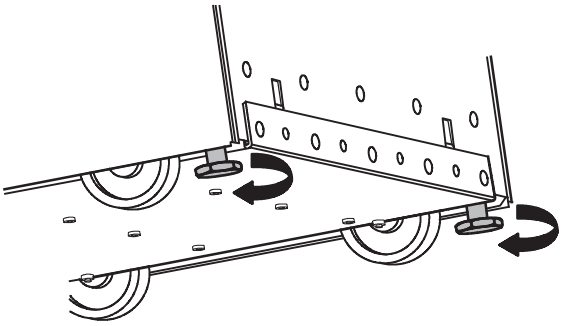


Figure 34. Lowering the Leveling Feet

2. Attach the rear shipping bracket to the bottom of the cabinet rear panel using the retained hardware from the shipping pallet (see Figure 35).
3. Install customer-provided floor bolts in the holes in the bottom of the bracket to attach the cabinet to the flooring.
4. Continue to one of the following sections:
   - "Communication" on page 51 to install UPS communication options, such as X-Slot cards or remote emergency power-off (REPO).
   - "Operation" on page 69 to start up the UPS.

Note: After UPS startup, ensure maximum battery runtime by configuring the UPS for the correct number of EBCs (see page 75).

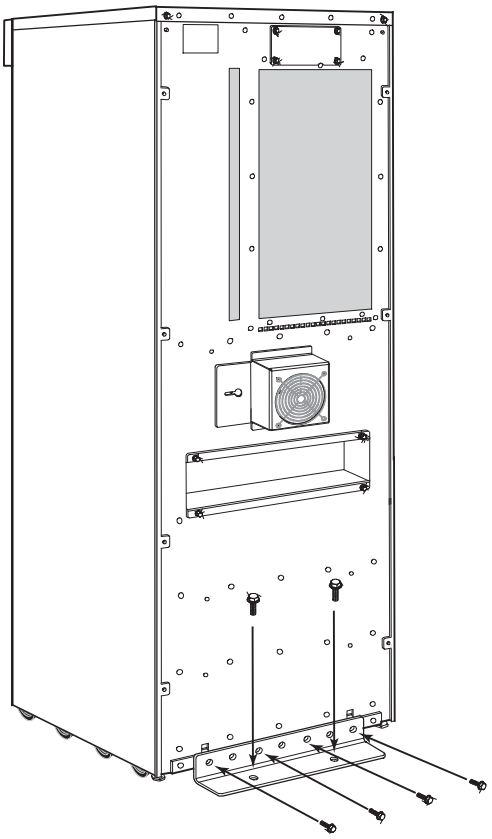


Figure 35. Permanent Mounting

Chapter 8 Communication

This section describes the:

- DB-9 communication port
- X-Slot cards
- Remote Monitor Panel (RMP) and Industrial Relay Card (IRC)
- LanSafe® Power Management Software
- Remote emergency power-off (REPO)
- Relay output contacts
- Programmable signal inputs

Figure 36 shows the location of the communication options and control terminals on the UPS.

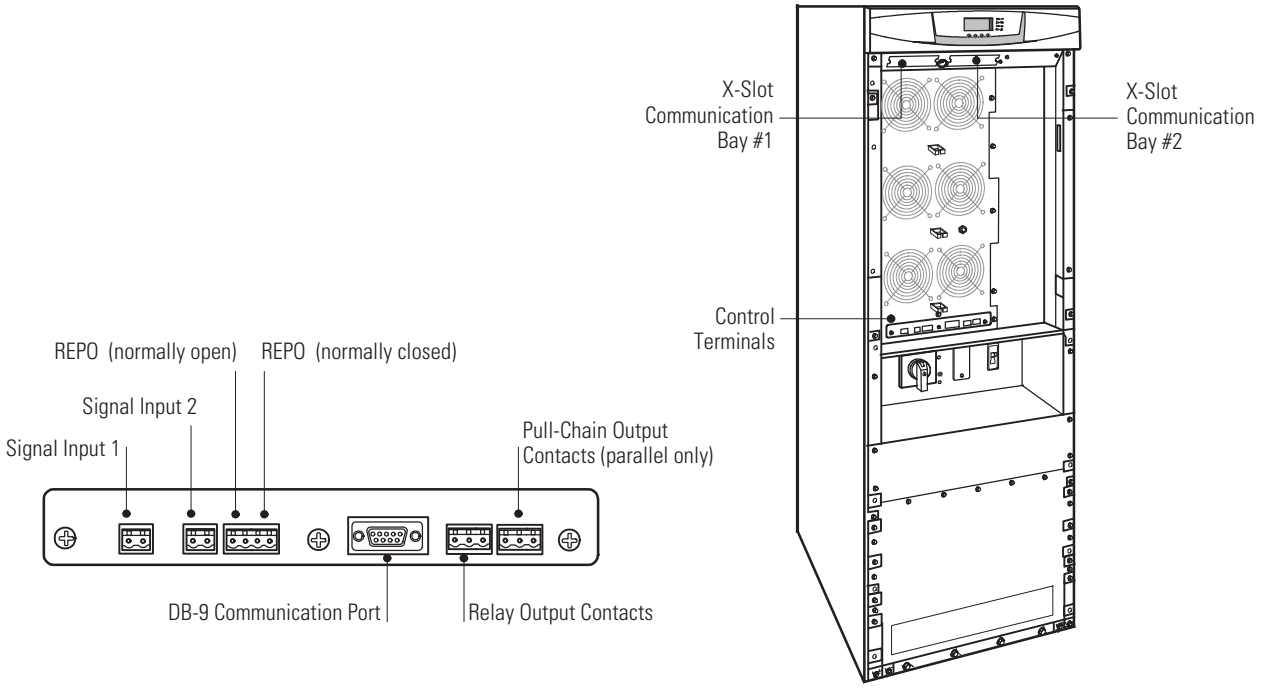


Figure 36. Communication Options and Control Terminals

Installing Communication Options and Control Terminals

Note: To install a CAN Bridge Card, see "Parallel Communication" on page 63.

To access and install the communication options and control terminals:

1. Remove the UPS front door (see page 10).
2. Install the appropriate X-Slot card and/or necessary cables into the ports (see Figure 36 and Figure 37).
3. Route the control terminal cable(s) through the middle of the fan section and secure in the cable clips.

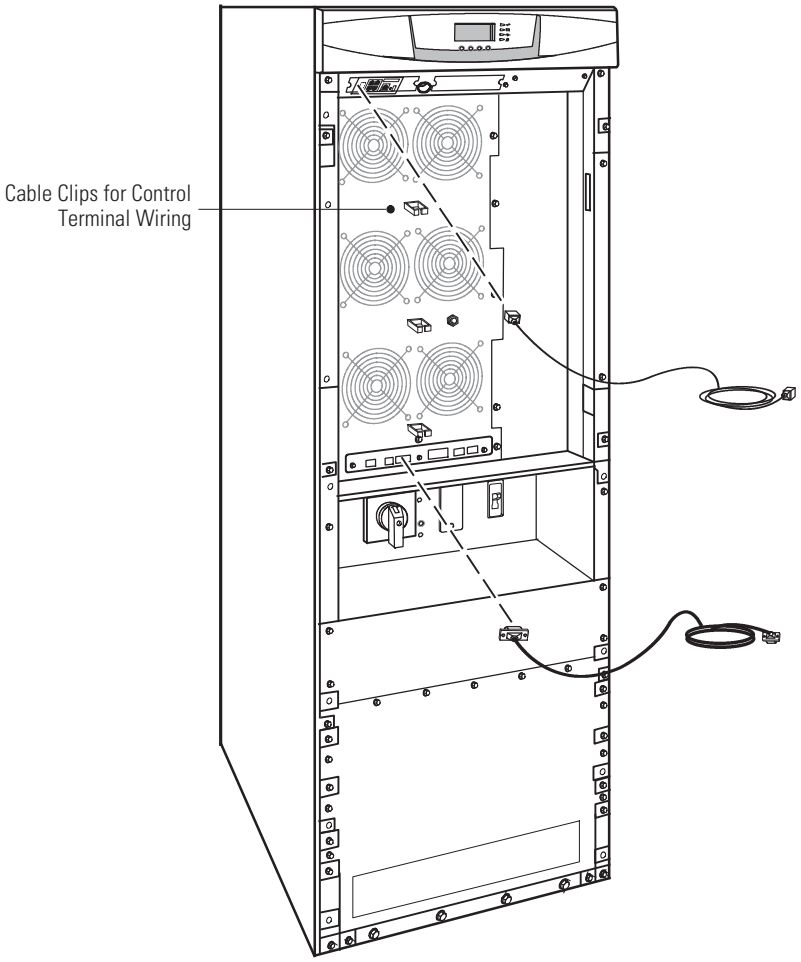


Figure 37. Installing Communication Cables

4. Route the cable(s) through the opening between the two X-Slot communication bays.

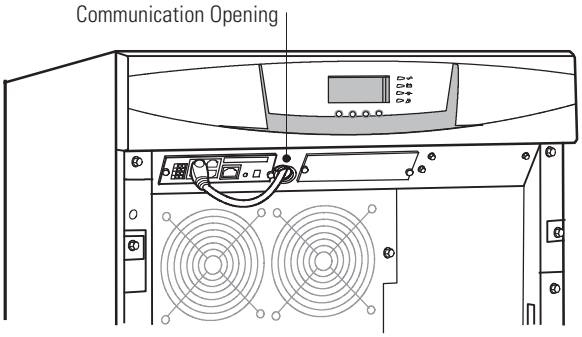


Figure 38. Routing the Cables

5. Remove the communication wiring access plate from the UPS rear panel and punch a hole in it using a Greenlee punch or similar device (see Figure 39).

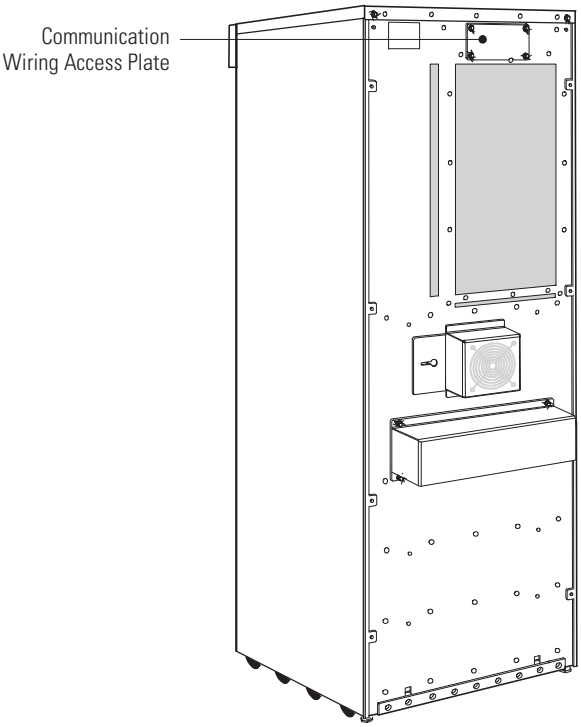


Figure 39. Communication Wiring Access

6. Connect the cables to the appropriate location.

   See "Communication Options" on page 54 or "Control Terminals" on page 60 for detailed information.

7. Reinstall the communication wiring access plate.
8. Replace the UPS front door.
9. Continue to "Operation" on page 69 to start up the UPS.

Communication Options

The Eaton 9355 UPS has serial communication capabilities through the DB-9 communication port or through an X-Slot card in one of the available bays. In addition, the LanSafe Power Management Software can be installed and used to communicate with the UPS via one of the serial communication connections.

The UPS supports two serial communication devices according to the following table:

Independent		Multiplexed
X-Slot 1	**X-Slot 2**	**DB-9 Communication Port**
Any X-Slot card	Any X-Slot card except the Eaton Modem Card	Not in use
Any X-Slot card	Eaton Relay Interface Card Powerware Hot Sync CAN Bridge Card	Available
Any X-Slot card	Not in use	Available

Note: You can configure relays, signal inputs, and the serial port baud rate through the front panel menus (see Table 7 on page 70).

DB-9 Communication Port

To establish communication between the UPS and a computer, connect your computer to the UPS communication port using the supplied communication cable.

When the communication cable is installed, power management software can exchange data with the UPS. The software polls the UPS for detailed information on the status of the power environment. If a power emergency occurs, the software initiates the saving of all data and an orderly shutdown of the equipment.

The cable pins are identified in Figure 40 and the pin functions are described in Table 2. See Figure 36 on page 51 for the communication port location.

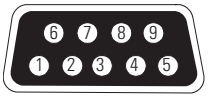


Figure 40. Communication Port

Table 2. Communication Port Pin Assignment

Pin Number	Signal Name	Function	Direction from the UPS
2	TxD	Transmit to external device	Out
3	RxD	Receive from external device	In
5	GND	Signal common (tied to chassis)	—

X-Slot Cards

For information about the Powerware Hot Sync CAN Bridge Card, see "Parallel Communication" on page 63.

X-Slot cards allow the UPS to communicate in a variety of networking environments and with different types of devices. The Eaton 9355 UPS has two available communication bays for any X-Slot card, including:

- Power Xpert® Gateway Card - provides a data gateway from the UPS to the Power Xpert Software; provides remote monitoring through a Web browser interface, e-mail, and a network management system using SNMP; connects to a twisted-pair Ethernet (10/100BaseT) network. Modbus TCP support provides direct integration of the UPS's parameters to a Building Management System (BMS). It has a built-in switching hub that allows a second network device to be connected to the network without the requirement of an additional network drop.

- ConnectUPS™ -X Web/SNMP Card - has SNMP and HTTP capabilities as well as monitoring through a Web browser interface; connects to a twisted-pair Ethernet (10/100BaseT) network. It has a built-in switching hub that allows three additional network devices to be connected to the network without the requirement of additional network drops. In addition, a Environmental Monitoring Probe can be attached to obtain humidity, temperature, smoke alarm, and security information.
- Relay Interface Card - has isolated dry contact (Form-C) relay outputs for UPS status: Utility failure, Low battery, UPS alarm/OK, or On bypass.
- Modbus® Card - allows you to continuously and reliably monitor the UPSs in your Building Management System (BMS).
- Industrial Relay Card - is used to indicate the operating status of the UPS using the customer's monitoring equipment and to connect an optional RMP. The IRC uses four isolated normally-open or normally-closed dry relay contacts to indicate the UPS status. Normal, Bypass, Battery, and Alarm mode can be monitored (see page 59 for more information).
- Multi-Server Card - has six serial communication ports that can communicate simultaneously with other computers using LanSafe Power Management Software (provided on the Software Suite CD).
- Modem Card - provides out-of-band remote notification and monitoring using modem communication directly to cell phones and pagers.
- Single-Port Card - provides serial communication.
- ConnectUPS-MX SNMP Card - has Ethernet, modem, and SNMP capabilities.
- USB Card - connects to a USB port on your computer.

Note: The Eaton 9355 UPS does not detect plug-and-play hardware. Before installing the USB Card, set the UPS baud rate to 1200 through the front panel (see Table 7 on page 70).

See Figure 36 on page 51 for the location of the two X-Slot communication bays.

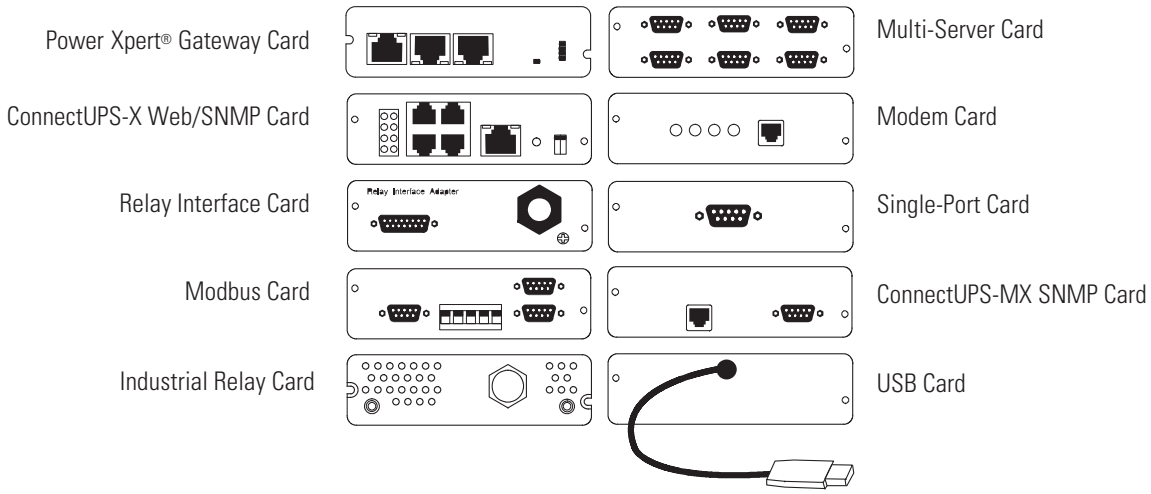


Figure 41. Optional X-Slot Cards

Remote Monitor Panel

The optional RMP can be installed to monitor the operation of the UPS from virtually any location within your facility, up to 500 ft (152.4m) from the UPS. You can surface-mount an RMP on a desktop or on a wall, wherever you have a serial interface line. Figure 42 shows an RMP. Figure 43 shows the enclosure dimensions and cable exit openings.

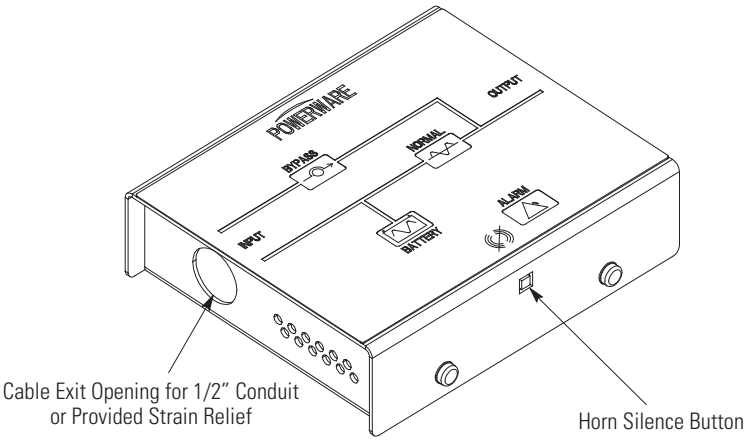


Figure 42. Remote Monitor Panel

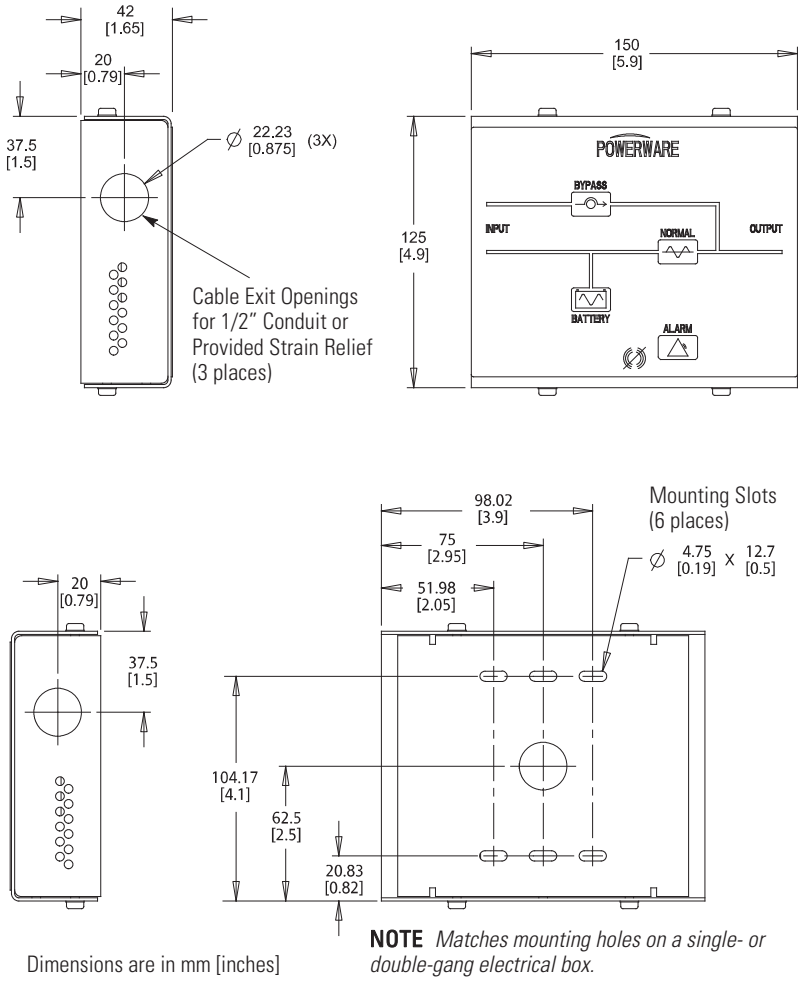


Figure 43. RMP Dimensions

To install an RMP:

Note: If mounting to a hollow wall, secure the enclosure bottom to a wood or metal stud within the wall. Do not use hollow wall anchors. The RMP can also be mounted to a single- or double-gang electrical box.

---

1. If wall mounting, securely mount the RMP. Continue to Step 2.

   If desk mounting, install the provided bumpers to the bottom of the RMP enclosure. Proceed to Step 3.

2. Install 1/2" conduit from the RMP to the IRC through the cable exit openings (see Figure 43). Proceed to Step 4.

3. Install wiring from the RMP to the IRC using the cable listed in Table 3 and the provided strain relief bushings in the cable exit openings in the IRC (see Figure 45) and the RMP.

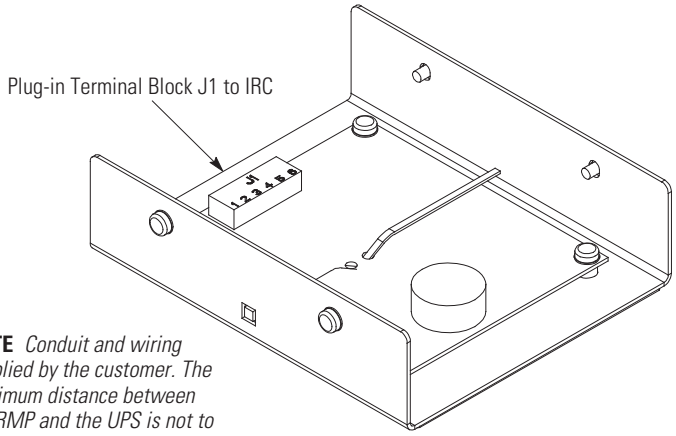
4. Connect the wiring between the RMP and the IRC plug-in terminal blocks using terminations shown in Table 3. See Figure 44 and Figure 45 for plug-in terminal block locations.

Table 3. RMP Wire Terminations

From RMP Terminal	To IRC Terminal	Remarks
J1-1	J1-1	Use Beldon 8690 060 or equivalent cable
J1-3	J1-3	
J1-4	J1-4	
J1-5	J1-5	
J1-6	J1-6	

5. Install the IRC into an open X-Slot communication bay (see Figure 36 on page 51).
6. To check the operation of the RMP, ensure that the UPS is supplying the load via the inverter or bypass. If the indicators on the RMP show the appropriate status, then it is operating correctly.

   If the RMP is not operating correctly, check the wiring, the fuse on the IRC, and the plug-in terminal blocks for proper seating. If all connections are secure but the RMP still does not operate correctly, replace the fuse. If this does not correct the problem, contact your service representative for verification that the RMP is working correctly.



NOTE *Conduit and wiring supplied by the customer. The maximum distance between the RMP and the UPS is not to exceed 500 ft (152.4m).*

Figure 44. RMP Top Internal View

Industrial Relay Card

The IRC uses normally-open or normally-closed dry relay contacts to indicate the UPS status as listed in Table 4. Figure 45 shows an IRC.

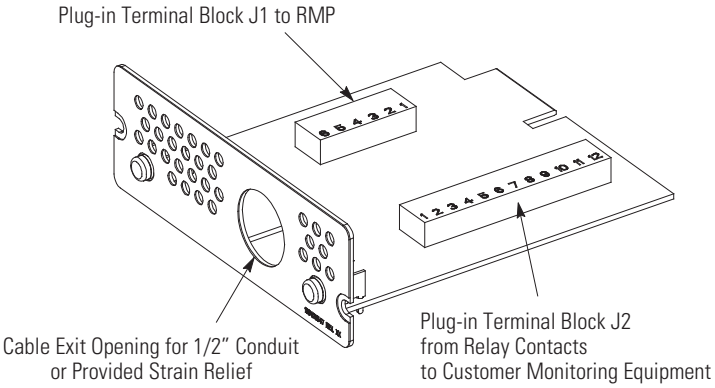


Figure 45. Industrial Relay Card

1. Verify that the UPS is turned off and all power sources are removed.
2. Install wiring from the IRC to the monitoring equipment using 1/2" conduit through the cable exit opening in the IRC (see Figure 45).
3. Connect wiring between the IRC and the monitoring equipment using terminations shown in Table 4. See Figure 45 for plug-in terminal block locations.
4. Install the IRC into an open X-Slot communication bay (see Figure 36 on page 51).
5. To check the operation of the IRC, ensure that the UPS is supplying the load via the inverter or bypass. If the indicators on the customer's monitoring equipment show the appropriate status, then it is operating correctly.

   If the IRC is not operating correctly, check the wiring, the fuse on the IRC, and the plug-in terminal blocks for proper seating. If all connections are secure but the IRC still does not operate correctly, replace the fuse. If this does not correct the problem, contact your service representative for verification that the IRC is working correctly.

Table 4. IRC Wire Terminations

IRC Terminal	Function	Remarks
J2-1	NC	Normal mode
J2-2	COM	
J2-3	NO	
J2-4	NC	Bypass mode
J2-5	COM	
J2-6	NO	
J2-7	NC	Battery mode
J2-8	COM	
J2-9	NO	
J2-10	NC	Alarm mode
J2-11	COM	
J2-12	NO	
NOTE Maximum contact rating: 250 Vac, 30 Vdc @ 5A; Wire range: 16–24 AWG		

LanSafe Power Management Software

Each Eaton 9355 UPS ships with LanSafe Power Management Software and a communication cable. To begin installing LanSafe software, see the instructions accompanying the Software Suite CD.

Note: Use only the supplied communication cable to connect the UPS to your computer.

LanSafe software provides up-to-date graphics of UPS power and system data and power flow. It also gives you a complete record of critical power events, and it notifies you of important UPS or power information. If there is a power outage and the Eaton 9355 UPS battery power becomes low, LanSafe software can automatically shut down your computer system to protect your data before the UPS shutdown occurs.

Control Terminals

The cables should be connected to the control terminals with a mating connector. Input and output terminals have a functional isolation from terminal to terminal. They are connected to the UPS chassis through individual 1 MΩ resistors.

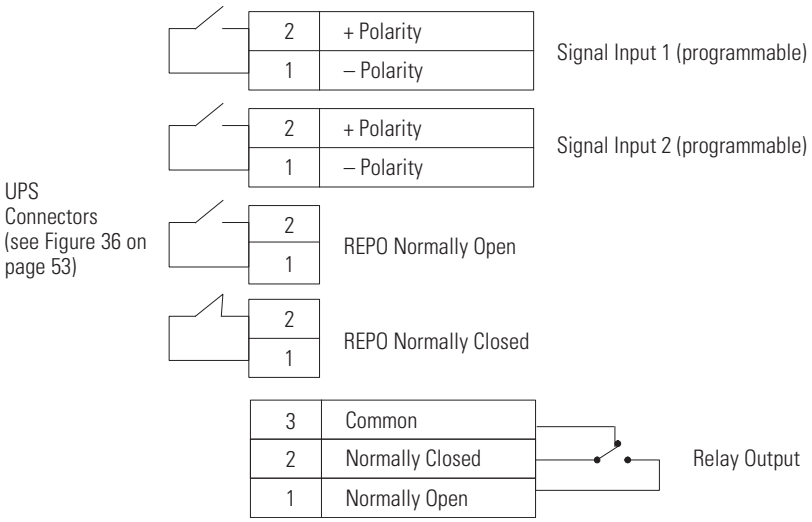


Figure 46. External Control Terminal Connections

Note: If using a semiconductor switch type, pay attention to the proper polarity. A relay or other mechanical control is preferred.

Remote Emergency Power-off

REPO is used to shut down the UPS from a distance. This feature can be used for shutting down the load and the UPS by thermal relay, for instance in the event of room overtemperature. When REPO is activated, the UPS shuts down all converters, de-energizes all system relays, trips the battery circuit breaker, and fully powers down within 1–2 minutes.

There are two REPO positions that may be used, normally-open or normally-closed.

The pins on the normally-closed REPO connector are connected together. When this connection is open, the logic circuitry completely shuts down the UPS, thus preventing the power from supplying the load.

If the use of normally-closed REPO operation is desired, replace the connector with a normally-closed external switch (see Figure 36 on page 51).

If the use of normally-open REPO operation is desired, connect a normally-open external switch (see Figure 36 on page 51).

Note: To restart the UPS, reconnect the REPO connector pins and turn on the UPS manually. The pins must be shorted to keep the UPS running. Maximum resistance is 10 ohm.

Note: Leave the REPO connector installed in the REPO port on the UPS even if the REPO function is not needed.

CAUTION

- The REPO must not be connected to any utility connected circuits. Reinforced insulation to the utility is required. The REPO switch must have a minimum rating of 24 Vdc and 20 mA.
- To ensure the UPS stops supplying power to the load during any mode of operation, the input power must be disconnected from the UPS when the emergency power-off function is activated.

REPO Connections

Wire Function		Terminal Wire Size Rating	Suggested Wire Size
REPO	L1	12–22 AWG (4–0.32 mm^2)	18 AWG (0.82 mm^2)
	L2		

Relay Output Contacts

The UPS incorporates a programmable relay output with potential free contacts for remote alarm indications (see Figure 36 on page 51). An additional four relay outputs can be obtained with the X-Slot compatible Relay Interface Card.

WARNING

The relay output contacts must not be connected to any utility connected circuits. Reinforced insulation to the utility is required. The relay output contacts have a maximum rating of 10A, 250 Vac or 30 Vdc nominal values.

Programmable Signal Inputs

The UPS incorporates two programmable signal inputs (see Figure 36 on page 51). Use of non-polar (relay) control input is recommended. The pins must be shorted with maximum resistance of 10 ohm to activate the specific input.

Note: See Figure 46 on page 60 for the polarity and verify these connections if polarity control is required.

The default and programmable settings for the signal inputs are shown in Table 5.

Table 5. Programmable Signal Inputs

Signal	Description
Disable Bypass Operation	If active, the automatic transfer to the static bypass is prevented.
Charger Off	If active, the battery charge function is disabled. In a utility power outage, the discharge of batteries is supported.
Remote ON/OFF	If active, the UPS output turns off regardless of the mode of operation. Auxiliary power, fan, communication, and rectifier/battery charger remain functional. Restart is initiated immediately when this signal is inactive.
Request Bypass	If active, the UPS transfers to bypass if the bypass voltage, frequency, and synchronization are all okay.
Request Normal	If active, the UPS transfers to inverter operation if not prohibited by REPO or an alarm condition.
Force Bypass	If active, the UPS is forced to static bypass operation regardless of the bypass status.
External Battery Breaker Status	If active, the UPS knows that the batteries are disconnected.
Building Alarm 1–6	These alarms can be activated separately or at the same time with other building alarms.
Not in Use	Default
Shutdown	If active, the UPS shuts down immediately.
Delayed Shutdown	If active, the UPS shuts down after a user-configured delay time. Default shutdown delay is 120 seconds. The UPS automatically restarts when the signal changes to inactive.
Normal/Bypass	If active, the UPS transfers to bypass if okay. If inactive, the UPS transfers to the inverter when possible.
On Generator	If active, the UPS knows that input is fed from the generator. Bypass is disabled; the automatic battery test is disabled.
External Transformer Overtemperature	This option is not used.

Chapter 9 Parallel Communication

The Powerware Hot Sync CAN Bridge Card, shown in Figure 47, can be installed to provide connectivity for operational mode control and metering of a parallel system at any UPS in the system.

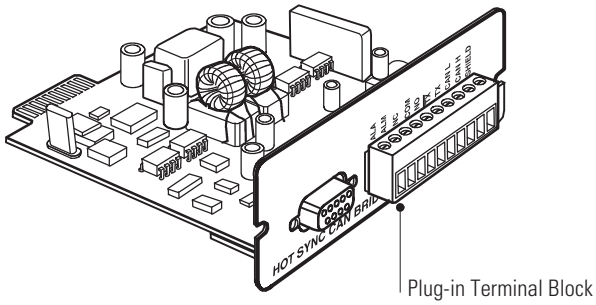


Figure 47. Powerware Hot Sync CAN Bridge Card

To install the Powerware Hot Sync CAN Bridge Card:

1. Remove the UPS front door (see page 10).
2. Remove the communication wiring access plate from the UPS rear panel and punch a hole in it using a Greenlee punch or similar device (see Figure 48).
3. Install conduit for the communication wiring.

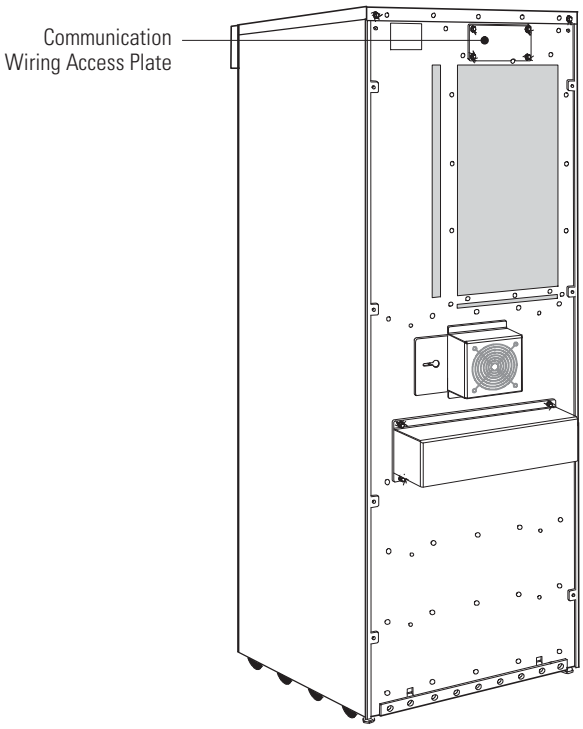


Figure 48. Communication Wiring Access

4. Set the jumper pins on the Powerware Hot Sync CAN Bridge Card according to the parallel configuration (see Figure 49):
   - If only two UPSs are paralleled, then set both cards to Pins 1 and 2.
   - For three or four paralleled UPSs, set the cards of the first and last UPSs to Pins 1 and 2; set the cards for the middle UPSs to Pins 2 and 3.

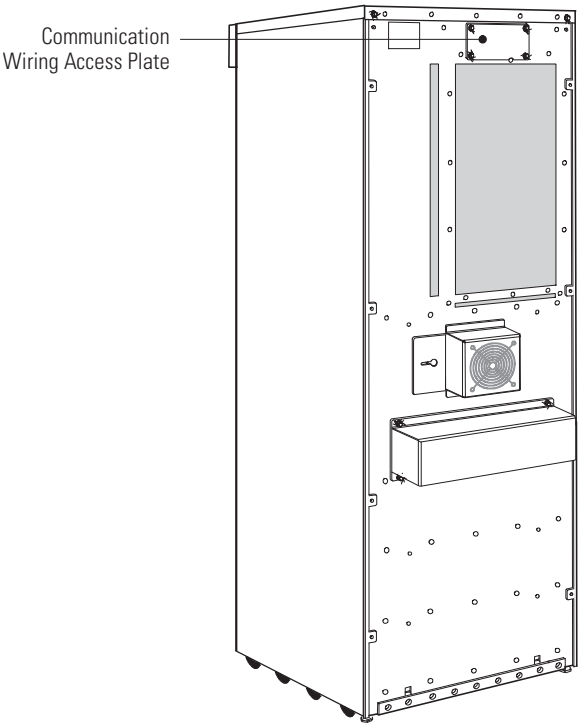


Figure 49. Setting the CAN Bridge Card Jumper J7 (Side View)

5. Install the CAN Bridge Card into X-Slot 2 (see Figure 36 and Figure 51).
6. Strip shielded, four-wire, twisted-pair wire (maximum 18 AWG recommended) for CAN Bridge Card wiring and pull-chain wiring.
7. Repeat Steps 1 through 6 for each UPS.
8. Route the wiring through the conduit from the communication wiring access plate to the opening between the two X-Slot communication bays on each UPS (see Figure 50).

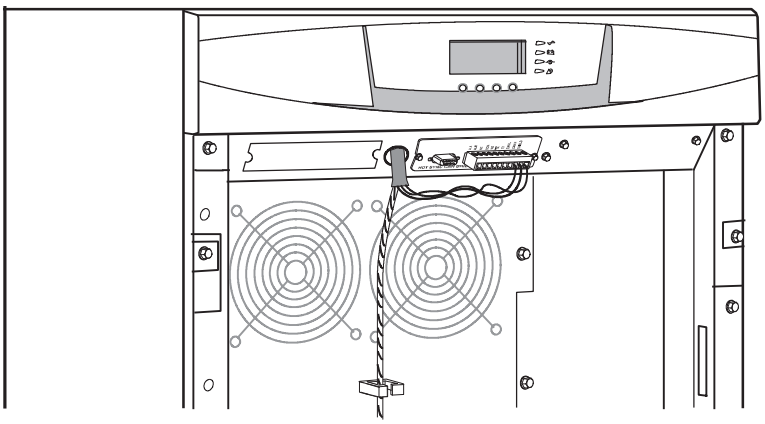


Figure 50. Routing the Cables

9. Install the CAN Bridge Card wiring between each UPS (see Figure 52 on page 67).

   Use three wires of the four-wire twisted-pair wire. (Reserve two wires for pull-chain wiring in Step 11.) Be sure to check 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.

10. Route the pull-chain wiring through the middle of the fan section and secure in the cable clips for each UPS (see Figure 51).

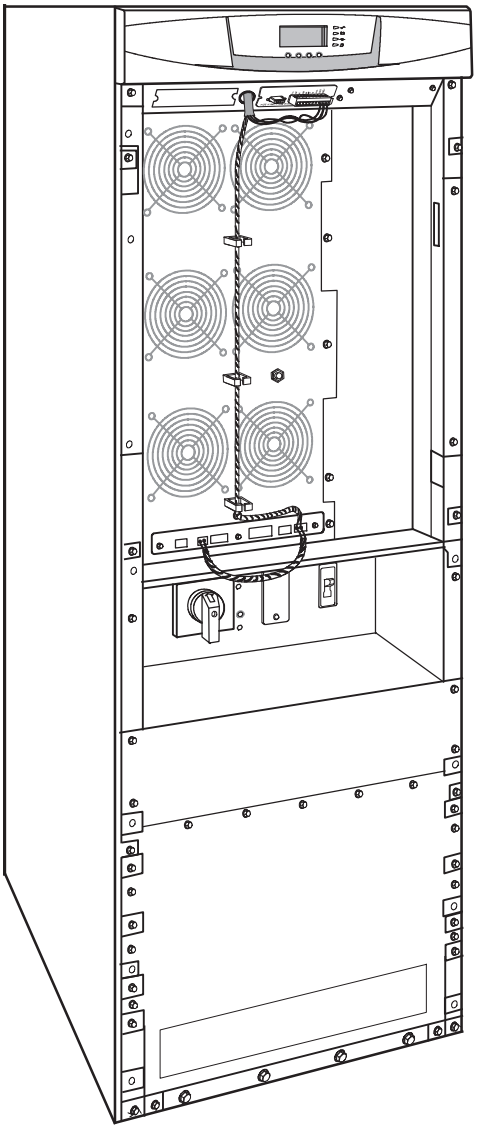


Figure 51. Installing Communication Cables

11. Wire the pull-chain wiring to Signal Input 2 on each UPS and daisy chain the wiring to each UPS as shown in Figure 52. Be sure to check correct polarity:
    - Connect Pull-Chain Output Contact Pin 1 to Signal Input 2 Pin 1 on each UPS.
    - Connect Pull-Chain Output Contact Pin 2 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.

12. Reinstall the communication wiring access plate on each UPS.
13. Replace the UPS front door on each UPS.

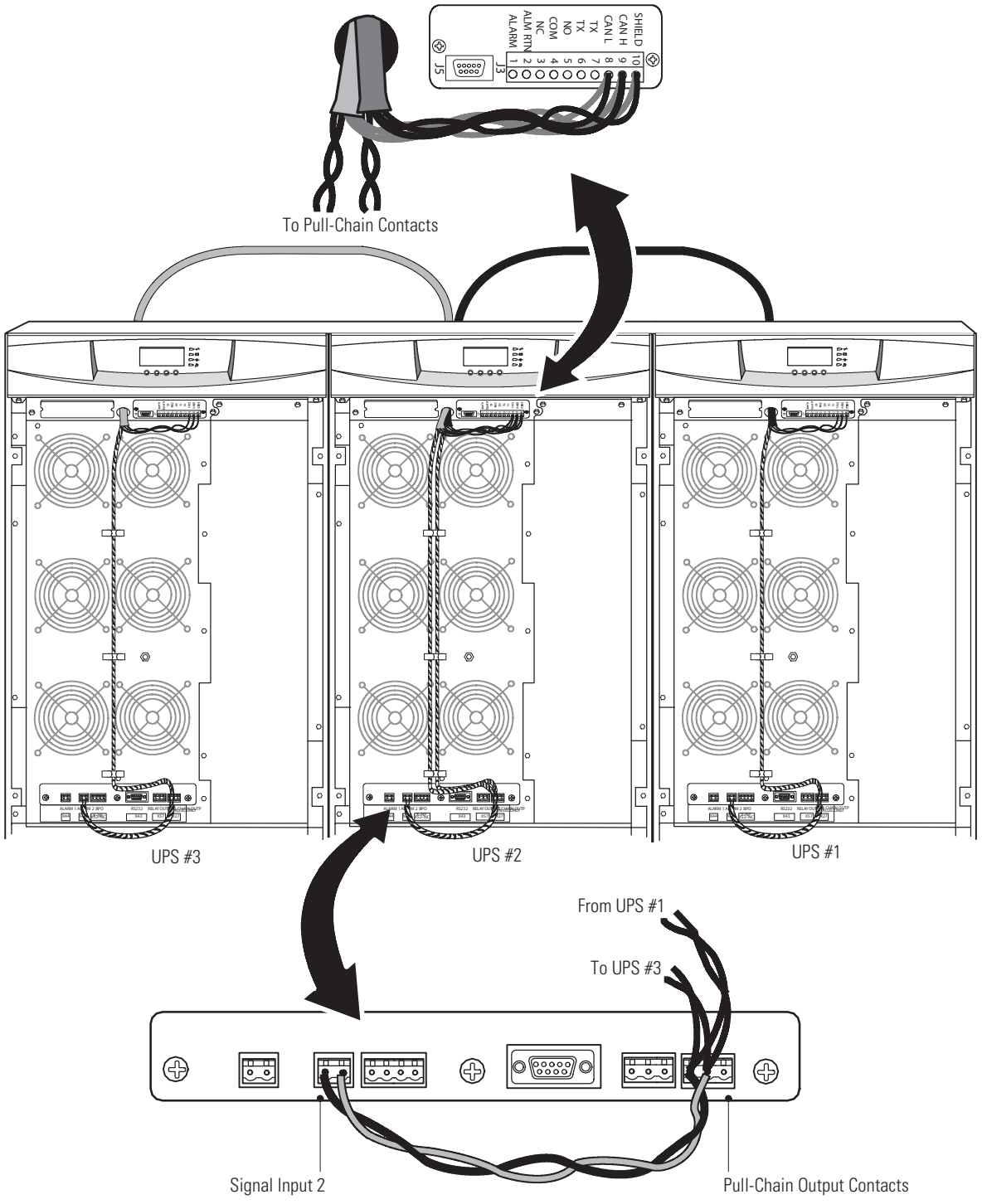


Figure 52. CAN Bridge Card and Pull-Chain Wiring

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Chapter 10 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 Cabinets (EBCs).

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 53).

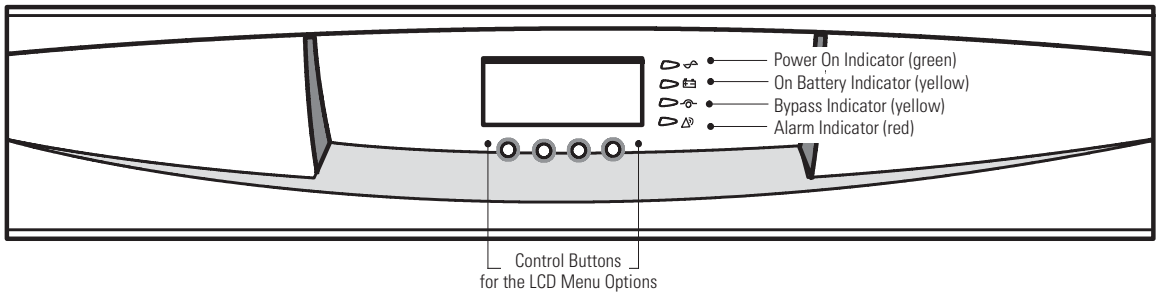

Figure 53. Eaton 9355 UPS Control Panel

The following table shows the indicator status and description:

Indicator	Status	Description
Green	On	The UPS is operating normally.
	Flashing	• The UPS is starting up or is shut down and waiting for power to return. • A new information message is active. • Bypass is not available.
	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 "Troubleshooting" on page 87 for additional information.

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.

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 6. Menu Map for Display Functions

Main Menu	Submenu	Display Information or Menu Function
UPS Status		UPS off / System normal / UPS supporting load / UPS on battery / UPS on bypass / Active alarm list / Battery status
		For parallel systems: 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 (parallel UPSs only)	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 (kW/kVA/pf)
	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 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 7 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	

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 7. 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> Choisir la langue <Francais>	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

Table 7. User Settings (Continued)

Description	Available Settings	Default Setting
Signal Inputs	[empty] [Logic] (see "Programmable Signal Inputs" on page 61)	<empty>
Serial Port Config	Port: [X-Slot-1] [X-Slot-2/Serv] Speed: [19200] [9600] [2400] [1200]	19200
Modem Config	Modem Setup	<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
Battery Setup	Number of Internal Battery Strings	6
	Internal Battery Capacity [1 through 65535 watts per cell]	34W/cell
	Number of External Battery Strings (see "Configuring the UPS for EBCs" on page 75)	0
	External Battery Capacity	120W/cell
	Battery Low Alarm Level [1.750 through 1.950 volts per cell]	1.880 V/cell
	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
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
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 though 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
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

Table 7. User Settings (Continued)

Description	Available Settings	Default Setting
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

Initial Startup

Startup and operational checks must be performed by an authorized Eaton Customer Service Engineer, or the warranty terms as specified on page 89 become void. This service is offered as part of the sales contract for the UPS. Contact service in advance (usually a two-week notice is required) to reserve a preferred startup date.

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.

Select one of the following startup options:

Startup Option	Section
Normal mode	"Normal Mode Startup" on page 72
Battery Mode	"Starting the UPS on Battery" on page 73
Bypass mode	"Internal Bypass Startup" on page 74
UPS maintenance bypass	"UPS Maintenance Bypass Startup" on page 74

Normal Mode Startup

To start up the UPS when the load is de-energized:

1. Remove the UPS front door (see page 10).
2. Verify that the rotary maintenance bypass switch is in the UPS position (see Figure 55 on page 80).
3. Switch on utility power where the UPS is connected.
4. Switch the UPS input circuit breaker to the ON position.
5. If the optional UPS output circuit breaker is installed, switch the breaker to the ON position.
6. Wait for the front panel LCD to illuminate.

   The ⚠ indicator flashes.
7. Switch the battery circuit breaker to the ON position.

   The ⚠ indicator stops flashing.
8. Press any button on the front panel display to activate the menu options.
9. Press the ↑ button on the front panel display and then press the → button to select the TURN UPS ON/OFF menu.

10. Select the TURN UPS ON option. Press and hold the ↵ button for three seconds, until the UPS stops beeping.

    The UPS precharges for a few minutes and then the ⏻ indicator illuminates. The UPS is now powering the load.

    If the ⚠ indicator is flashing, check the UPS status from the front panel to view the active alarms. Correct the alarms and restart if necessary.

11. Replace the UPS front door.

Starting the UPS on Battery

Note: Before using this feature, the UPS must have been powered by utility power at least once.

To start the UPS on battery:

1. Remove the UPS front door (see page 10).
2. Verify that the maintenance bypass switch is in the UPS position (see Figure 55 on page 80).
3. Push the red start-on-battery button on the UPS (see Figure 54).

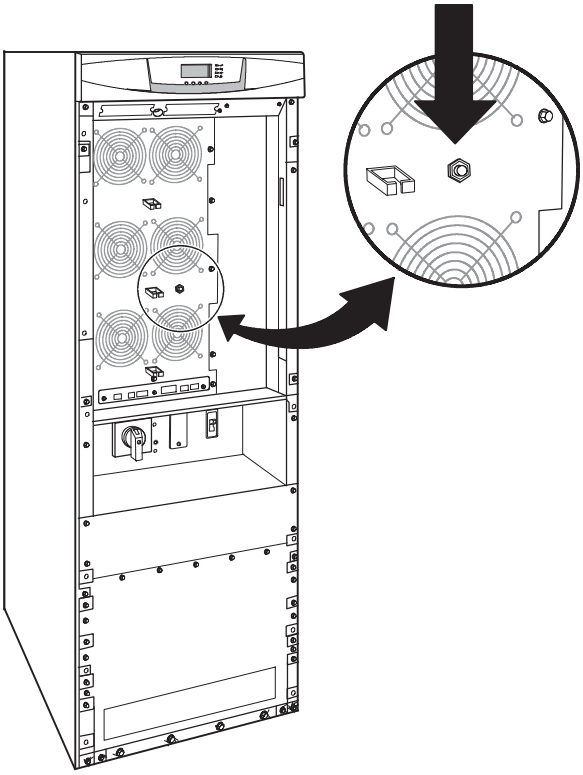

Figure 54. Start-on-Battery Button

4. Wait for the front panel LCD to illuminate.
5. Press any button on the front panel display to activate the menu options.
6. Within three minutes, press the ↑ button on the front panel display and then press the → button to select the TURN UPS ON/OFF menu.

7. Select the TURN UPS ON option. Press and hold the ↵ button for three seconds, until the UPS stops beeping.

   The UPS starts in Battery mode within two minutes and supplies battery power to your equipment.

8. Replace the UPS front door.

Internal Bypass Startup

To start the UPS when the load is powered by the internal bypass:

1. Remove the UPS front door (see page 10).
2. Verify that the maintenance bypass switch is in the SERVICE position (see Figure 55 on page 80).
3. Switch on utility power where the UPS is connected.
4. Switch the UPS input circuit breaker to the ON position.
5. If the optional UPS output circuit breaker is installed, switch the breaker to the ON position.
6. Wait for the front panel LCD to illuminate.

   The ⚠ indicator flashes.

7. Switch the UPS battery circuit breaker to the ON position.

   The ⚠ indicator stops flashing.

   The UPS starts and transfers to Bypass mode. This may take up to 1 minute.

   The indicator flashes while transfering to bypass then goes out with the illuminating to indicate the UPS is operating in Bypass mode. The load is now powered by utility power.

   The display indicates On Manual/Maintenance Bypass.

8. To switch to Normal mode from internal Bypass mode, rotate the maintenance bypass switch to the UPS position.

   The indicator illuminates to indicate the UPS is operating in UPS mode. The load is now powered by UPS.

9. Replace the UPS front door.

UPS Maintenance Bypass Startup

To start the UPS in maintenance bypass:

1. Remove the UPS front door (see page 10).
2. Verify that the maintenance bypass switch is in the BYPASS position (see Figure 55 on page 80).
3. Replace the UPS front door.
4. Switch on utility power where the UPS is connected.

   The load is now powered by utility power.

5. To transfer the load to the UPS, see "Using the UPS Maintenance Bypass Switch" on page 80.

Configuring the UPS for EBCs

Note: Each UPS in a parallel system must have its own EBC and the same number of EBCs to ensure consistent runtimes.

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

1. Press any button on the front panel display to activate the menu options.
2. Using the ↑ button, scroll to the Settings menu.
3. Press the → button twice to select the User Settings menu.
4. Using the ↓ button, scroll to the Battery Setup menu and press the button.
5. Using the ↓ button, scroll to the Number of External Battery Strings option and press the → button.
6. Use the ↑ or ↓ buttons to select the number of strings according to your UPS configuration:

Battery Combinations	Number of Strings
EBC 36	2
1 EBC 72	4
2 EBC 72s	8
3 EBC 72s	12

7. Press the ↵ button to save the setting.
8. Press the ESC button until the Eaton logo or Mimic screen appears.

UPS Shutdown

To shut down the UPS:

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 TURN UPS OFF option.
4. Press and hold the ↵ button for three seconds, until the UPS stops beeping.

   The UPS stops supplying power to the load.
5. Remove the UPS front door (see page 10).
6. Switch the UPS input and battery circuit breakers to the OFF position.
7. If the optional UPS output circuit breaker is installed, switch the breaker to the OFF position.
8. Replace the UPS front door.
9. Switch off utility power where the UPS is connected.

Parallel Operation

Initial startup must be performed by an authorized Eaton Customer Service Engineer. This section describes shutting down and restarting UPSs in a parallel system.

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.
4. Press and hold the ↵ button for three seconds, until the UPS stops beeping.

   The UPS removes power to the parallel UPS system output.
5. Press the ESC button until the Eaton logo or Mimic screen appears.
6. If you want to completely remove power from the UPS, continue to the following section, "Individual UPS Shutdown (Parallel System)," to shut down each UPS.

Individual UPS Shutdown (Parallel System)

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 UPS Off option.
4. Press and hold the ↵ button for three seconds, until the UPS stops beeping.
5. Remove the UPS front door (see page 10).
6. Switch the UPS input and battery circuit breakers to the OFF position.
7. If the optional UPS output circuit breaker is installed, switch the breaker to the OFF position.

   The UPS beeps and the front panel display LEDs flash for approximately 45 seconds as the logic power shuts down.
8. Replace the UPS front door.
9. Switch the UPS breaker on the 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.

---

10. Switch off utility power where the UPS is connected.

    If you are shutting down all the UPSs in a parallel system, repeat Steps 1 through 9 for each UPS then remove utility power.

Restarting the Parallel System

To restart the parallel system:

1. Verify that the maintenance isolation breaker (MIS) if present or all of the UPS breakers on the Tie Cabinet are in the OFF position.
2. Switch on utility power where the UPSs are connected.
3. Remove the UPS front door (see page 10).
4. Switch the UPS input circuit breaker to the ON position.
5. If the optional UPS output circuit breaker is installed, switch the breaker to the ON position.
6. Wait for the front panel LCD to illuminate.

   The ⚠ indicator flashes.
7. Switch the battery circuit breaker to the ON position.

   The ⚠ indicator stops flashing.
8. If present, switch the maintenance isolation breaker on the Tie Cabinet to the ON position; otherwise, switch all UPS breakers to the ON position.
9. Replace the UPS front door.
10. 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.
11. Press the ESC button once and then press the ↑ button to select the TURN UPS ON/OFF menu.
12. Press the ↓ button to select the System On option; press the ↵ button.
13. 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.
14. Press the ESC button until the Eaton logo or Mimic screen appears.

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Chapter 11 UPS Maintenance

This section explains how to:

- Care for the UPS and batteries
- Recycle used batteries or UPS
- Use the maintenance bypass switch (MBS)
- Use parallel bypass

UPS and Battery Care

For the best preventive maintenance, keep the area around the UPS clean and dust–free. If the atmosphere is very dusty, clean the outside of the system with a vacuum cleaner.

For full battery life, keep the UPS at an ambient temperature of 77°F (25°C).

Note: The batteries in the UPS are rated for a 3–5 year service life. The length of service life varies, depending on the frequency of usage and ambient temperature. Batteries used beyond expected service life will often have severely reduced runtimes. Replace batteries at least every 5 years to keep units running at peak efficiency.

Storing the UPS and Batteries

When storing the UPS and optional cabinets, the following requirements should be met:

- Verify that the battery circuit breaker is in the OFF position.
- Avoid temperature and humidity extremes. To maximize battery life, the recommended storage temperature is 59°F (15°C) to 77°F (25°C).
- If you store the UPS for a long period, recharge the batteries every 10 months by applying utility power. The batteries charge to 80% capacity in approximately 3 hours. However, it is recommended that the batteries charge for 48 hours after long-term storage.
- Check the battery recharge date on the shipping carton label. If the date has expired and the batteries were never recharged, do not use the UPS. Contact your service representative.

When to Replace Batteries

When the ⚠ indicator flashes and the LCD panel displays Battery Failure, the batteries may need replacing. Contact your service representative to order new batteries.

Change the batteries approximately every five years.

Recycling the Used Battery or UPS

Contact your local recycling or hazardous waste center for information on proper disposal of the used battery or UPS.

WARNING

- Do not dispose of the battery or batteries in a fire. Batteries may explode. Proper disposal of batteries is required. Refer to your local codes for disposal requirements.
- Do not open or mutilate the battery or batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

CAUTION

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

CAUTION

Do not discard waste electrical or electronic equipment (WEEE) in the trash. For proper disposal, contact your local recycling/reuse or hazardous waste center.

Using the UPS Maintenance Bypass Switch

The UPS maintenance bypass switch is located behind the UPS front door (see Figure 55).

The maintenance bypass switch is used to bypass the UPS during maintenance or servicing. The switch provides a wrap-around bypass without shutting down the load. The SERVICE position on the switch allows a service engineer to apply power to the UPS input and verify its operation while the load is powered through bypass.

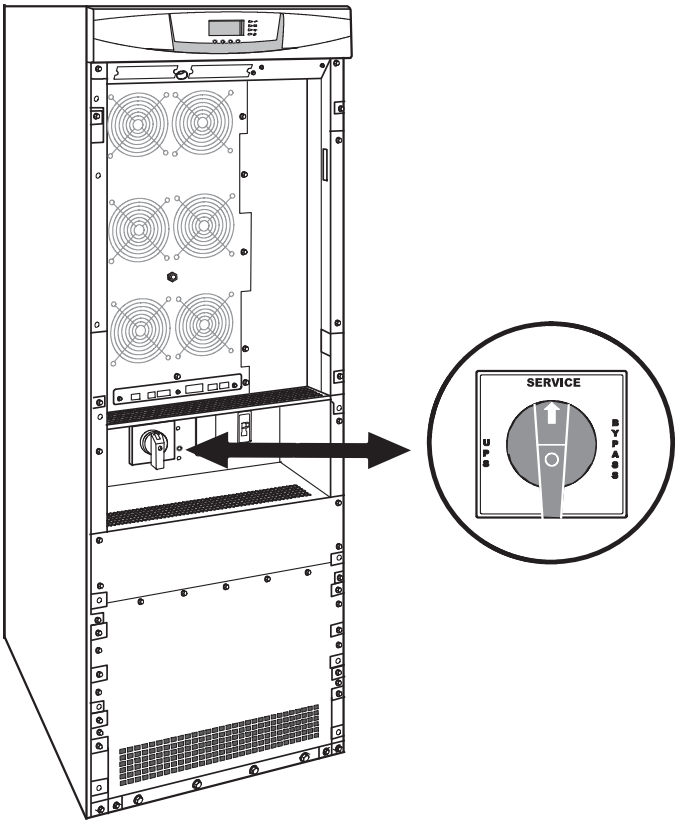

Figure 55. Maintenance Bypass Switch

Single UPS Bypass

To transfer the load from the UPS to maintenance bypass:

1. Remove the UPS front door (see page 10).
2. 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.
3. Turn the maintenance bypass switch to the BYPASS position.

   The input and battery circuit breakers trip, and the UPS is now bypassed, with the load powered by utility power.
4. The UPS automatically shuts down.

   Rear fan is running signifying load is being supplied utility power on bypass.
5. If present, switch the UPS output circuit breaker to the OFF position
6. Replace the UPS front door.

To transfer the load from maintenance bypass to the UPS:

1. Remove the UPS front door (see page 10).
2. Turn the maintenance bypass switch to the SERVICE position.

   The UPS starts up in Bypass mode, with the load still powered by utility power.
3. Verify all six fans on front start up.

Note: Wait until the indicator illuminates (approximately two minutes) before proceeding to Step 6; otherwise, power to the load may be lost.

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4. Switch the UPS input and battery circuit breakers to the ON position.
5. If present, switch the UPS output circuit breaker to the ON position
6. Turn the maintenance bypass switch to the UPS position to return to Normal mode.
7. Verify the rear fan is running.

   The UPS is now powering the load.
8. Replace the UPS front door.

Parallel UPS Bypass

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

Note: All UPSs go to bypass using the following procedure.

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 on the Tie Cabinet to the ON position.
3. If present, switch the maintenance isolation breaker on the Tie Cabinet to the OFF position; otherwise, switch the UPS breakers on the Tie Cabinet to the OFF position.

   The UPS is now bypassed, with the load powered by utility power.

To return the parallel UPS 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.

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

3. If present, switch the maintenance isolation breaker on the Tie Cabinet to the ON position; otherwise, switch all UPS breakers to the ON position.
4. Switch the bypass breaker on the Tie Cabinet to the OFF position.
5. 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 should go to Normal mode.

   The UPS is now powering the load in Normal mode.

Chapter 12 Specifications

This section provides the following specifications:

- Model list
- Dimensions and weights
- Environmental and safety specifications
- Technical specifications
- Model specifications
- Battery specifications
- Battery runtimes

Table 8. Model List

UPS	Description	Power Rating
PW9355-20	UPS with internal batteries	20 kVA, 18 kW
PW9355-30	UPS with internal batteries	30 kVA, 27 kW
Extended Battery Cabinet (EBC)	**Description**	
EBC 36	EBC with 2 strings	
EBC 72	EBC with 4 strings	

Table 9. Dimensions and Weights

Eaton 9355 Cabinet	Dimensions (H W D) Including Conduit Landing Box	Weight
UPS	66.3" x 19.4" x 34.1" (168 x 49 x 87 cm)	1160 lb (526 kg)
EBC 36	66.3" x 19.4" x 34.1" (168 x 49 x 76 cm)	1160 lb (526 kg)
EBC 72	66.3" x 19.4" x 34.1" (168 x 49 x 76 cm)	2060 lb (934 kg)
Options Cabinet with Single (Input or Output) Transformer	66.3" x 19.4" x 34.1" (168 x 49 x 87 cm)	535 lb (243 kg)
Options Cabinet with Dual (Input and Output) Transformer	66.3" x 19.4" x 34.1" (168 x 49 x 87 cm)	792 lb (360 kg)
Options Cabinet with Maintenance Bypass Switch (MBS) Only	66.3" x 19.4" x 34.1" (168 x 49 x 87 cm)	205 lb (93 kg)

Table 10. Environmental and Safety Specifications

Operating Temperature	50°F to 104°F (10°C to 40°C) Optimal battery performance: 77°F (25°C)
Transit Temperature	-13°F to 131°F (-25°C to 55°C)
Storage Temperature	32°F to 77°F (0°C to 25°C) Recommended battery storage: 59°F to 77°F (15°C to 25°C)
Ventilation	Front air intake, forced air, six fans, positive pressurization, temperature UPS-monitored
Altitude	9,843 ft (3,000m) operating without derating 32,810 ft (10,000m) during transportation
Relative Humidity	5–95% noncondensing
Audible Noise	<62 dBA
Surge Suppression	ANSI C62.41 Category B3
Safety Conformance	NOM-019-SCFI, UL 1778, CSA C22.2, No. 107.3
Agency Markings	cULus
EMC (Class A)	IEC 62040-2, FCC Part 15, ICES-003

Table 11. Technical Specifications

Technology	Online, double-conversion topology with static bypass switch and 3-position maintenance bypass switch. Frequency independent operation.
Input Voltage Range	75/130–144/249 Vac per phase
Input Power Factor	>0.99
Input Rated Voltage	120/208 or 127/220 Vac three-phase
Isolation Transformer Input Voltage Range	208V, 480V, or 600V ±20% 60 Hz only
Input Frequency Range	45–65 Hz
Input Rated Frequency	50/60-Hz selectable, auto configuring
Output Voltage Regulation	±1% static, Phase to Neutral ±2% static, Phase to Phase ±5% dynamic at 100% resistive load change Response time <1 ms
Output Voltage Distortion	<2% THD linear load <5% THD non linear load
Output Frequency	50/60-Hz selectable or auto configuring
Output Frequency Regulation	Synchronization to line
Output Overload	101–110% for 10 minutes 111–125% for 60 seconds 126–149% for 5 seconds >150% for 300 milliseconds

Table 12. Model Specifications

	20 kVA Model						
Output Voltage (Line–Line)	208	208	208	220	480 (with output isolation transformer)	480 (with output isolation transformer)	480 (with output isolation transformer)
Output Voltage (Line–Neutral)	120	120	120	127	277	277	277
Input Voltage	208	480 (with input isolation transformer)	600 (with input isolation transformer)	220	208	480 (with input isolation transformer)	600 (with input isolation transformer)
Input Current	70A	30A	24A	70A	70A	48A	32A
Output Current	55A	55A	55A	52A	55A	37A	37A
Output kVA	20	20	20	20	20	20	20
Output kW	18	18	18	18	18	18	18
Efficiency (Minimum)	89%	83%	83%	89%	85%	81%	81%
Heat Rejection [BTU/hr (kg-cal/hr)]	6762 (1704)	10450 (2633)	10450 (2633)	6762 (1704)	11035 (2783)	14723 (3713)	14723 (3713)
	30 kVA Model						
Output Voltage (Line–Line)	208	208	208	220	480 (with output isolation transformer)	480 (with output isolation transformer)	480 (with output isolation transformer)
Output Voltage (Line–Neutral)	120	120	120	127	277	277	277
Input Voltage	208	480 (with input isolation transformer)	600 (with input isolation transformer)	220	208	480 (with input isolation transformer)	600 (with input isolation transformer)
Input Current	100A	45A	35A	100A	100A	48A	32A
Output Current	83A	83A	83A	79A	83A	37A	37A
Output kVA	30	30	30	30	30	30	30
Output kW	27	27	27	27	27	27	27
Efficiency (Minimum)	90%	85%	85%	90%	87%	84%	84%
Heat Rejection [BTU/hr (kg-cal/hr)]	9220 (2323)	13831 (3485)	13831 (3485)	9220 (2323)	13493 (3402)	18104 (4565)	18104 (4565)

Table 13. Battery Specifications

UPS Internal Battery Type	9 Ah sealed, valve-regulated lead acid (VRLA), maintenance-free, minimum 3-year float service life at 77°F (25°C), voltage 216 Vdc (108 cells per string)
EBC Battery Type	Sealed, valve-regulated lead acid (VRLA), maintenance-free, minimum 3-year float service life at 77°F (25°C), 120W/cell
Number of Strings	UPS: 6 strings EBC 36: 2 strings; EBC 72: 4 strings
Battery Replacement	Must be replaced by a qualified service technician
Charger	Service configurable 0.5 –34A per string, with overall maximum of 34A (limited by input current). Default: 3.4A per string
Charging	Internal battery: approximately 3 hours to 80% usable capacity at nominal line voltage after full load discharge External battery: no more than 10x discharge time to 90% usable capacity at nominal line voltage after full load discharge
Start-on-Battery	Allows start of UPS without utility input
Performance	ABM technology increases battery service life, optimizes recharge time, and provides a warning before the end of useful battery life
Protection	EBC output protected by 200A circuit breaker

Table 14. Battery Runtimes (in Minutes) at Full Load, 0.9 pF

Load	UPS Internal Batteries	+(1) EBC 36	+(2) EBC 36	+(3) EBC 36
30 kVA/27 kW	10	31	56	75
20 kVA/18 kW	18	56	82	97
Load	**UPS Internal Batteries**	**+(1) EBC 72**	**+(2) EBC 72**	**+(3) EBC 72**
30 kVA/27 kW	10	56	89	110
20 kVA/18 kW	18	83	114	162

NOTE Battery times are approximate and vary depending on the load configuration and battery charge.

Chapter 13 Troubleshooting

The Eaton 9355 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.

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 page 88).

Alarm or Condition	Possible Cause	Action
On Battery  LED is on. 1beep 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.	The power requirements exceed the UPS capacity (greater than 100% of nominal; see page 84 for specific output overload ranges).	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.	The 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.
	The input circuit breaker is off.	Verify that the UPS input circuit breaker is on.
	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.

Alarm or Condition	Possible Cause	Action
Power is not available at the UPS output terminals.	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 TURN UPS 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.
	The 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 page 64). Set the system to internal Bypass mode (see page 74). If the condition persists, contact your service representative.
Abnormal output voltage at startup	The UPS breaker on the 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 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 page 64). Verify the pull-chain wiring (see page 64). If the condition persists, contact your service representative.

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.

Service and Support

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

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

Chapter 14 Warranty

Limited Factory Warranty

Three Phase Eaton® UPS Products

WARRANTOR: The warrantor for the limited warranties set forth herein is Eaton ("Eaton").

LIMITED WARRANTY: This limited warranty (this "Warranty") applies only to the original end-user (the "End-User") of the Eaton Three-Phase UPS Products (the "Product") and cannot be transferred. This Warranty applies even in the event that the Product is initially sold by Eaton for resale to an End-User.

LIMITED WARRANTY PERIOD: The period covered by this Warranty for Product installed [and currently located] in the fifty (50) United States and the District of Columbia is twelve (12) months from the date of Product startup or eighteen (18) months from the date of Product shipment, whichever occurs first, for parts coverage and 90 days from the date of Product startup for labor coverage. The period covered by this Warranty for Product installed [and currently located] outside of the fifty (50) United States and the District of Columbia is twelve (12) months from the date of Product startup or eighteen (18) months from the date of Product shipment, whichever occurs first, for parts coverage.

WHAT THIS LIMITED WARRANTY COVERS: The warrantor warrants that the Eaton three-phase UPS electronics, Eaton-built accessories, and Eaton-built battery cabinets (individually and collectively, the "Warranted Items") are free from defects in material and workmanship. If, in the opinion of Eaton, a Warranted Item is defective and the defect is within the terms of this Warranty, Eaton's sole obligation will be to repair or replace such defective item (including by providing service, parts, and labor, as applicable), at the option of Eaton. The Warranted Item will be repaired or replaced onsite at the End-User's location or such other location as determined by Eaton. Any parts that are replaced may be new or reconditioned. All parts replaced by Eaton shall become the property of Eaton.

WHAT THIS LIMITED WARRANTY DOES NOT COVER: This Warranty does not cover any defects or damages caused by: (a) failure to properly store the Product before installation, including the "trickle charge" of batteries no later than the date indicated on the packaging; (b) shipping and delivery of the Product if shipping is FOB Factory; (c) neglect, accident, fire, flood, lightning, vandalism, acts of God, Customer's neglect, abuse, misuse, misapplication, incorrect installation; (d) repair or alteration not authorized in writing by Eaton personnel or performed by an authorized Eaton Customer Service Engineer or Agent; or (e) improper testing, operation, maintenance, adjustment, or any modification of any kind not authorized in writing by Eaton personnel or performed by an authorized Eaton Customer Service Engineer or Agent.

This Warranty is not valid: (a) unless an authorized Eaton Customer Service Engineer (in the USA) or Agent (outside of the USA) performs startup and commissioning of the Product; (b) if the Product is moved to a new location by someone other than an authorized Eaton Customer Service Engineer (in the USA) or Agent (outside of the USA); or (c) if the Product's serial numbers have been removed or are illegible. Any Warranted Items repaired or replaced pursuant to this Warranty will be warranted for the remaining portion of the original Warranty subject to all the terms thereof. Labor warranty is not provided for Product located outside of the fifty (50) United States or the District of Columbia. **Any equipment, parts, or materials included in the Product and not manufactured by Eaton are warranted solely by the manufacturer of such equipment, parts, or materials and are not included as part of this Warranty. Batteries are not warranted by Eaton.**

THIS WARRANTY IS THE END-USER'S SOLE REMEDY AND IS EXPRESSLY IN LIEU OF, AND THERE ARE NO OTHER EXPRESSED OR IMPLIED GUARANTEES OR WARRANTIES (INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE, WHICH ARE EXPRESSLY DISCLAIMED).

LIMITATION OF LIABILITY: In no event shall Eaton be liable for any indirect, incidental, special, or consequential damages of any kind or type whatsoever, or based on any claim or cause of action, however denominated. Eaton shall not be responsible for failure to provide service or parts due to causes beyond Eaton's reasonable control. In no case will Eaton's liability under this Warranty exceed the replacement value of the Warranted Items.

END-USER'S OBLIGATIONS: In order to receive the benefits of this Warranty, the End-User must use the Product in a normal way, follow the Product's user's guide, and protect against further damage to the Product if there is a covered defect.

OTHER LIMITATIONS: Eaton's obligations under this Warranty are expressly conditioned upon receipt by Eaton of all payments due to it (including interest charges, if any). During such time as Eaton has not received payment of any amount due to it for the Product, in accordance with the contract terms under which the Product is sold, Eaton shall have no obligation under this Warranty. Also during such time, the period of this Warranty shall continue to run and the expiration of this Warranty shall not be extended upon payment of any overdue or unpaid amounts.

COSTS NOT RELATED TO WARRANTY: The End-User shall be invoiced for, and shall pay for, all services not expressly provided for by the terms of this Warranty, including without limitation site calls involving an inspection that determines no corrective maintenance is required. Any costs for replacement equipment, installation, materials, freight charges, travel expenses, or labor of Eaton representatives outside the terms of this Warranty will be borne by the End-User.

OBTAINING WARRANTY SERVICE: In the USA, call the Eaton Customer Reliability Center 7x24 at 800-843-9433. Outside of the USA, call your local Eaton sales or service representative, or call the Eaton Customer Reliability Center in the USA at 919-870-3028. For comments or questions about this Limited Factory Warranty, write to the Customer Quality Representative, 3301 Spring Forest Road, Raleigh, North Carolina 27616 USA.

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