

Eaton® 9355 UPS


10/15 kVA
User's Guide



p/n: 164201594
Revision H0

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

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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.”



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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.

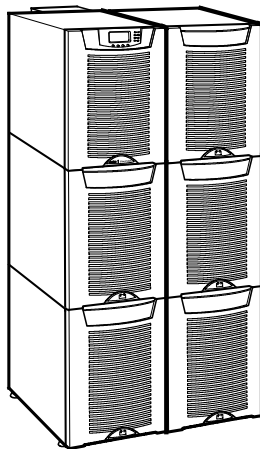
With the Eaton 9355 UPS, you can safely eliminate the effects of electrical line disturbances and guard the integrity of your systems and equipment. [Figure 1](#) shows the Eaton 9355 UPS and an optional Extended Battery Module (EBM).



IMPORTANT

Startup and operational checks must be performed by an authorized Eaton Customer Service Engineer, or the warranty terms specified on the product's resources page become void. See [Chapter 11 Warranty](#) for details. This service is offered as part of the sales contract for the UPS. Contact an Eaton service representative in advance (a minimum two-week notice is required) to reserve a preferred startup date.

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



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

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

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

1.1 UPS Standard Features

The UPS has many standard features that provide cost-effective and consistently reliable power protection. The descriptions in this section provide a brief overview of the UPS standard features.

1.1.1 Control Panel

The control panel, located on the front of 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 [Chapter 7 UPS Operating Instructions](#) for additional information.

1.1.2 Customer Interface

- **Building Alarm Monitoring** – Up to four inputs in the UPS are available to connect the facility's alarm system contacts. Some system configurations may limit the number of inputs available. The UPS uses these inputs to monitor the building alarms in addition to the UPS status.
- **X-Slot Communication Bays** – Two communication bays are standard equipment. Up to two communication cards can be installed in the UPS at any time.

For additional information on these topics, see [Chapter 6 Communication](#).

1.1.3 Advanced Battery Management

Advanced Battery Management (ABM) technology uses sophisticated sensing circuitry and a three-stage charger. The charger is a high-frequency, IGBT-based power conversion stage that extends the useful service life of UPS batteries by isolating the battery from the electrical environment, except for periodic charging or reserve mode operation. ABM also protects batteries from damage due to high current charging and inverter ripple currents. Charging at high currents can overheat and damage batteries.

ABM extends battery life by keeping the batteries charged and performing periodic battery testing. The battery test checks the batteries by transferring to battery mode. During the test the battery voltage is constantly monitored to determine Battery Health. ABM is intended for VRLA style batteries.

An ABM charging cycle starts with the charger driving the battery voltage at maximum current limit, to a battery charge level of 2.30volts/cell. The time it takes for the voltage to reach the battery charge level is saved as the battery charge time. If the battery charge time exceeds 24 hours, an alarm sounds.

When the battery reaches the float level, the battery is charged at the float level for 48 hours. Due to charger capability, some battery cabinet configurations extend float level to 72 hours. Twenty-four hours into the float period, a series of battery tests are performed to check the battery health. The float level charge continues after a successful test.

After initial startup, the battery run time on the front panel display indicates two minutes. After the 24-hour float charging period and automated battery testing, the actual battery run time is determined and the actual battery run time is displayed.

After the float period is completed, the charger is disconnected and the batteries are allowed to rest for up to 672 hours (28 days) maximum rest time. If the battery voltage falls below the opportunity charge level of 2.1V/cell during the first 240 hours (10 days) of the rest period, an alarm sounds.

An ABM charge cycle is initiated whenever one of these four conditions occurs since the last charge cycle:

- The batteries have rested over the maximum rest time of 672 hours.
- Accumulated discharge time is over a maximum battery discharge time of 20 seconds.
- Battery voltage is under the opportunity charge level of 2.1 volts/cell and the cabinet has been in rest mode for longer than 240 hours.
- A Battery Test command has been initiated.

1.2 Options and Accessories

Contact an Eaton sales representative for information about the following options.

1.2.1 Extended Battery Module (EBM)

Battery backup protection with additional runtime can be provide by equipping the UPS system with up to four Extended Battery Modules (EBMs) containing sealed lead-acid, maintenance-free batteries. The EBMs are housed in single, free-standing cabinets designed for line-up-and-match installation, but may be installed separate from the UPS cabinet. An external battery disconnect switch or tie point must be used when three or four EBMs are located separate from the UPS cabinet. The EBMs may be installed on either the right or left side of the UPS cabinet. The recommended installation location for adjacent battery cabinets is on the right side of the UPS cabinet.

1.2.2 Parallel System

Up to four 9355 UPSs can be paralleled for either redundancy or extra capacity using Eaton's patented Powerware Hot Sync paralleling technology. Powerware Hot Sync also enables wireless paralleling in the event of a communications failure, providing the industry's only truly redundant paralleling solution.

1.2.3 Monitoring and Communication

X-Slot Cards – Optional X-Slot cards support several protocols, such as SNMP, SMTP, HTTP, Modbus®, and TCP/IP. See [Chapter 6 Communication](#), for additional information on monitoring and communication features.

Remote Monitoring Device (RMD) – An optional RMD contains a touch screen status display and a local audible alarm, allowing monitoring of the operational status and alarm condition of the UPS from virtually any location within the facility, up to 300 feet from the UPS.

Refer to the ***Eaton Remote Monitoring Device (RMD) Installation and Operation Manual***, listed in paragraph [1.7 For More Information](#), for additional information.

PredictPulse™ Remote Monitoring and Management Service – PredictPulse is a subscription monitoring and management service from Eaton that collects and analyzes data from connected power infrastructure devices, providing us with the insight needed to make recommendations and take action on your behalf. It's also powered by CA Technologies, bringing together the best in hardware and software. Like a second set of eyes on your power infrastructure, PredictPulse provides 24/7 remote monitoring of alarms and system performance (load, temperature/humidity, battery health, energy savings and service level) to reduce downtime risk and expedite repairs. PredictPulse also shares real-time status and trend information via an online dashboard and smartphone mobile app (Apple and Android), giving subscribers insights about past and current performance, a list of all active alarms, and asset management data (i.e., battery date codes, last and next scheduled service dates, firmware versions). The service notifies customers of critical alarms, supports remote diagnostics, and facilitates smart dispatch of technicians. PredictPulse requires a Power Xpert® Gateway X-Slot

(PXGMS) connectivity card in an X-Slot communication bay and an Environmental Monitoring Probe (EMP) for battery temperature/humidity monitoring. See [Chapter 6 Communication](#), for additional information.

1.3 Battery System

The battery system provides emergency short-term backup power to safeguard operation during brownouts, blackouts, and other power interruptions.

1.3.1 Battery Configurations

The 9355 UPS battery system can be internal to the UPS cabinet, an Extended Battery Module/s (EBM)s, or a combination of both. The EBMs are connected in parallel with the internal batteries to provide extended run time. The battery system is equipped with sealed lead-acid, maintenance-free batteries.

An external battery disconnect switch or tie point must be used when battery systems are located separate from the UPS cabinet and wiring exceeds the number of battery terminals available.

A supplemental 48 Vdc shunt trip signal for the battery disconnect device is provided by the UPS, but is not required for normal operation.

1.4 Using This Manual

This manual describes how to install and operate the Eaton 9355 UPS. Read and understand the procedures described in this manual to ensure trouble-free installation and operation. In particular, be thoroughly familiar with the REPO procedure or the LOAD OFF procedure, see **Chapter 7 UPS Operating Instructions**.

The information in this manual is divided into sections and chapters. The system, options, and accessories being installed dictate which parts of this manual should be read. At a minimum, **Chapter 1 Introduction** through **Chapter 4 UPS System Installation** and **Chapter 7 UPS Operating Instructions** should be examined.

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

1.5 Conventions Used in This Manual

This manual uses these type conventions:

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

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

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

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

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

1.6 Symbols, Controls, and Indicators

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



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



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



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



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



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



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



PHASE - The word "phase."

1.7 For More Information

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

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

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

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

1.8 Getting Help

If help is needed with any of the following:

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

Please call the Customer Reliability Center at:

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

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

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

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

E-ESSDocumentation@eaton.com

1.9 Equipment Registration

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

Model Number:

Serial Number:

Chapter 2 Safety Warnings

IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

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

 **DANGER**

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

 **WARNING**

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

 **CAUTION**

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

2.1 Consignes de Sécurité

2.1.1 CONSIGNES DE SÉCURITÉ IMPORTANTES CONSERVER CES INSTRUCTIONS



IMPORTANT

Cet 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 CONFIEE A UN PERSONNEL QUALIFIE AGRÉÉ. AUCUNE PIÈCE RÉPARABLE PAR L'UTILISATEUR ne se trouve dans l'onduleur.



AVERTISSEMENT!

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



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.
-

2.2 Advertencias de Seguridad

2.2.1 INSTRUCCIONES DE SEGURIDAD IMPORTANTES GUARDE ESTAS INSTRUCCIONES



IMPORTANT

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.
-
-

Safety Warnings

Chapter 3 UPS Installation Plan and Unpacking

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

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

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

3.1 Creating an Installation Plan

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

3.2 Preparing the Site

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

3.2.1 Environmental and Installation Considerations

The UPS system installation must meet the following guidelines:

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



CAUTION

Do not expose the UPS to overly aggressive environments, like salt mist or corrosive gases. High relative humidity accelerates the effects of contaminants. The UPS should be installed in a G1 environment (based on ANSI/ISA S-71.04 classifications). If the UPS is used in a more aggressive environment, it can cause reduced product life and possibly early failure. If the installation location does not meet the recommended environment, contact Eaton service representative for further information (see paragraph [1.8 Getting Help](#)).

- The environmental requirements specified below are for the air at the intake ports of the 9355 UPS, and are the maximum, not to exceed, ratings.
 - There shall be at least a 1.8°F (1.0°C) difference between the dry bulb temperature and the wet bulb temperature, at all times, to maintain a non-condensing environment.
 - The maximum rate of temperature change shall be limited to 3°F over 5 minutes (36°F/hour), based on the ASHRAE Standard 90.1-2013.

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

Failure to follow guidelines may void your warranty.

The basic environmental requirements for operation of the UPS are:

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

 **CAUTION**

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

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

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

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

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

Table 2. UPS Cabinet Weights

Standard Model Floor Loadings (2-High/3-High Cabinets)		
Eaton 9355 UPS	Maximum Weight	Point Loading lb/in ² (kg/cm ²)
2-High UPS	381 lb (173 kg)	95 (6.7)
3-High UPS-32	587 lb (266 kg)	147 (10.3)

Table 2. UPS Cabinet Weights (Continued)

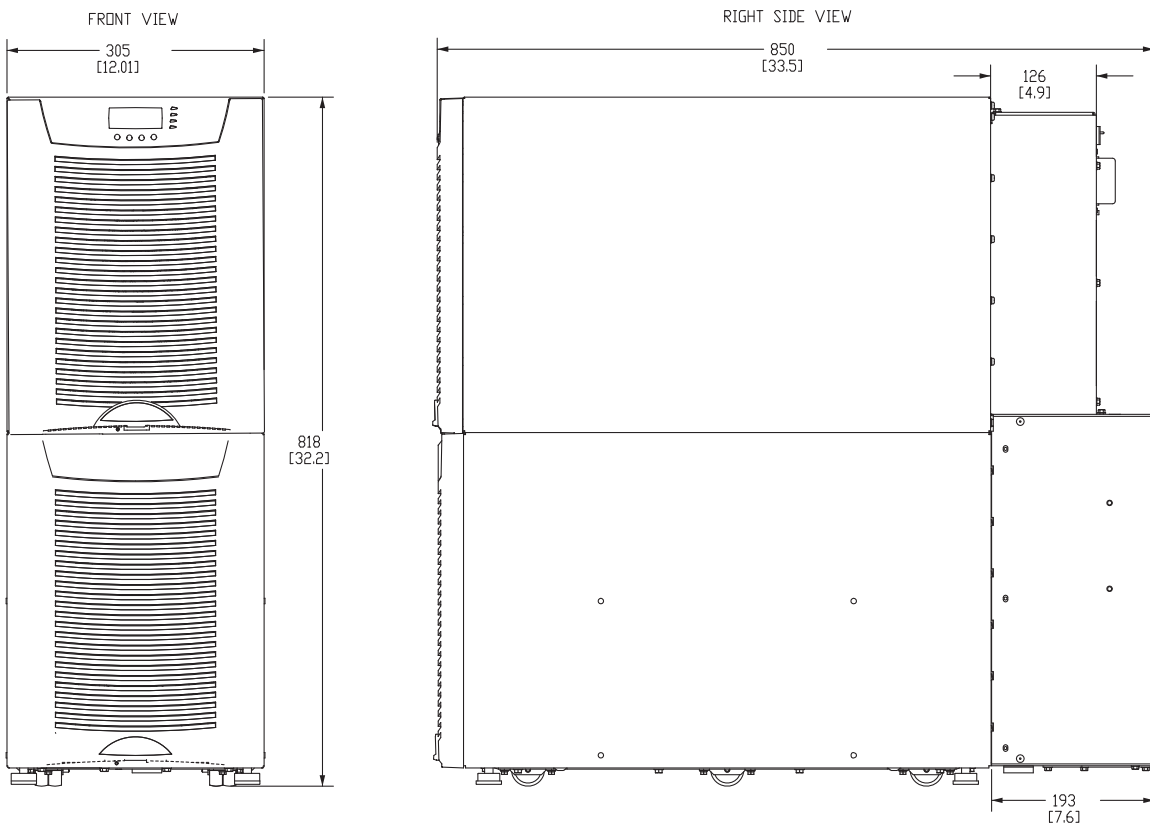
Standard Model Floor Loadings (2-High/3-High Cabinets)		
Eaton 9355 UPS	Maximum Weight	Point Loading lb/in² (kg/cm²)
3-High UPS-64	619 lb (281 kg)	155 (10.9)
2-High EBM	480 lb (218 kg)	120 (8.4)
3-High EBM	710 lb (322 kg)	178 (12.5)

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

Table 3. UPS Cabinet Clearances

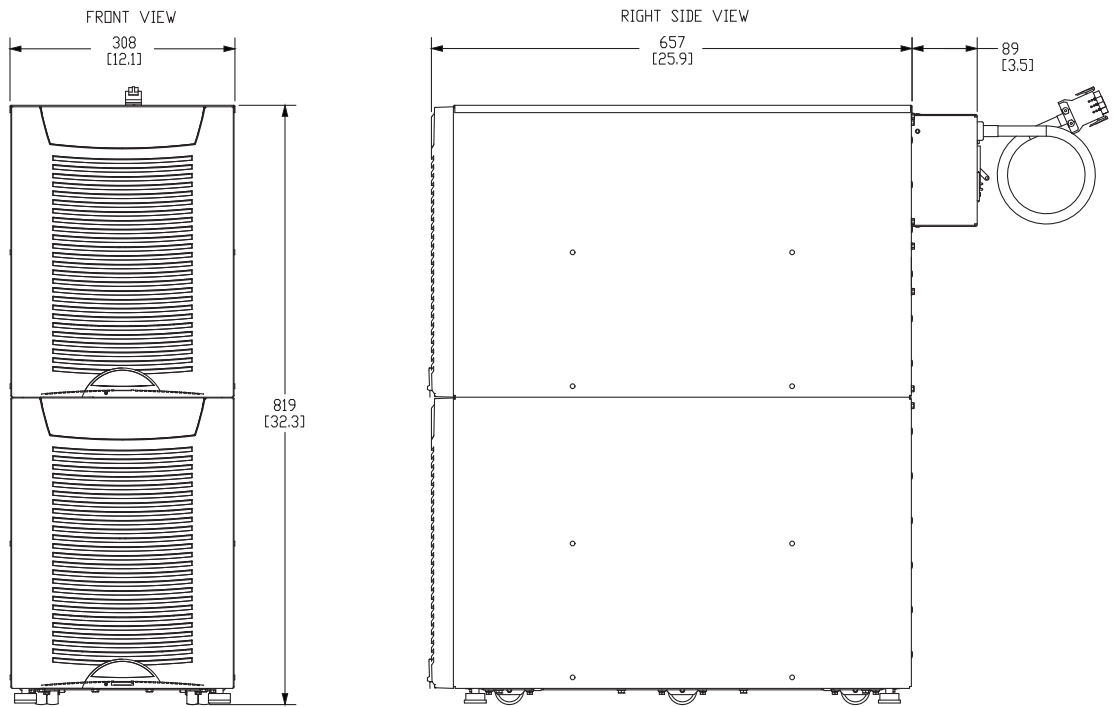
From Front of Cabinet	36" (91.4 cm) working space
From Back of Cabinet	6" (15.2 cm) without PDM installed; with PDM installed, clearance determined by customer-supplied mating plug
From Right of Cabinet	Refer to local codes for right side service access [minimum 36" (91.4 cm)]

Figure 2. UPS Cabinet Dimensions (2-High Front and Right Side Views)



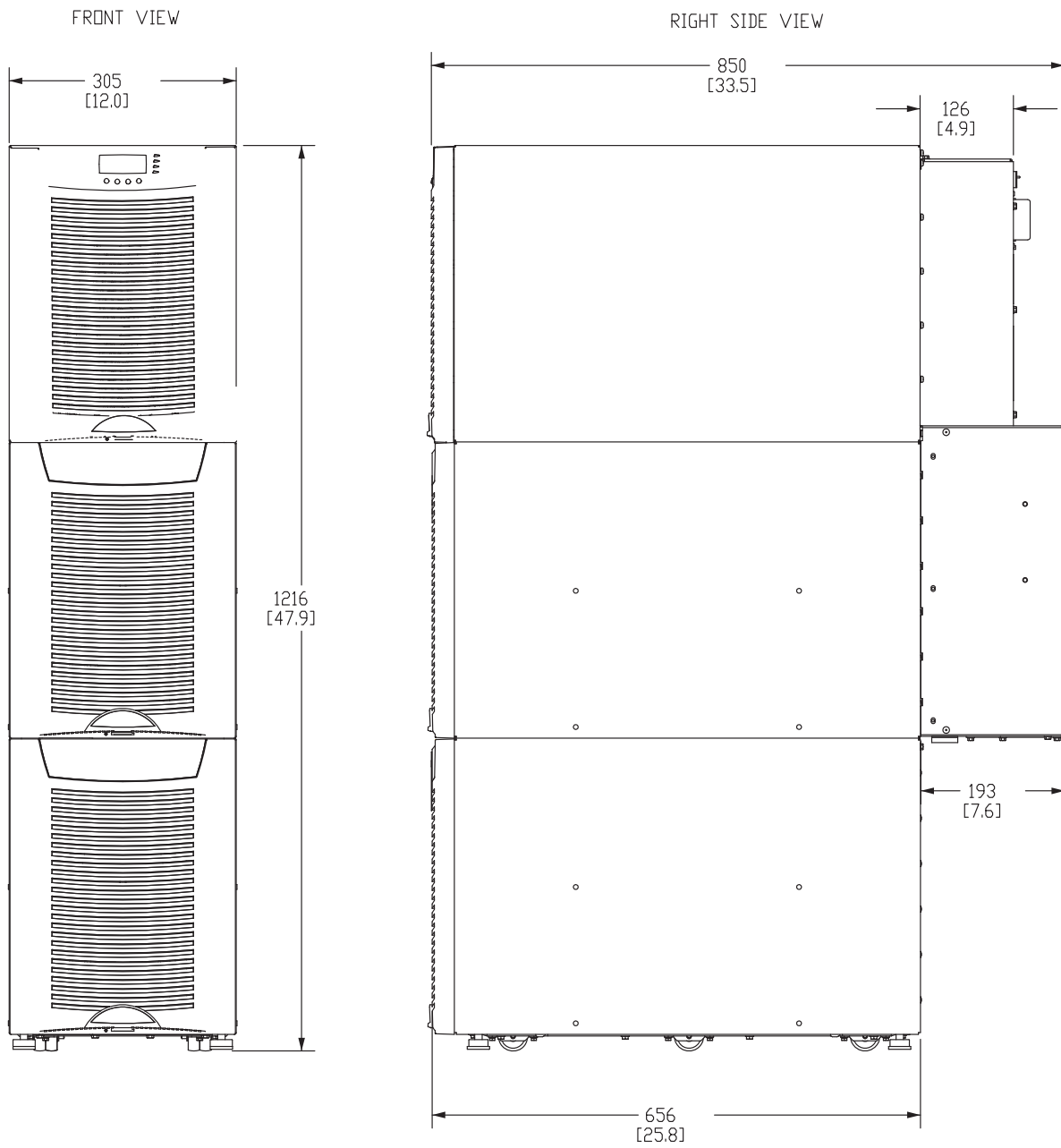
Dimensions are in millimeters [inches]

Figure 3. Extended Battery Module Dimensions (2-High Front and Right Side Views)



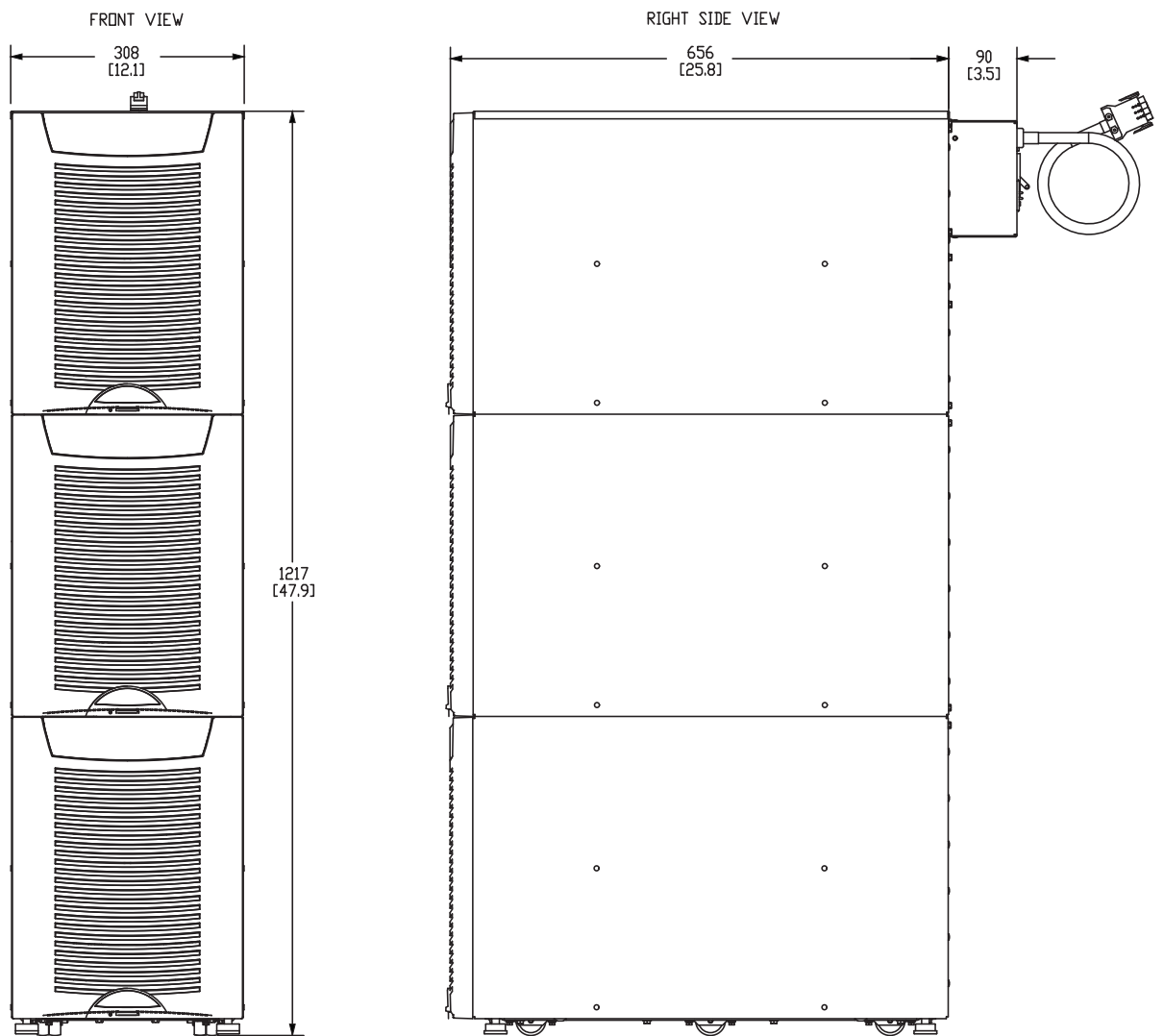
Dimensions are in millimeters [inches]

Figure 4. UPS Cabinet Dimensions (3-High Front and Right Side Views)



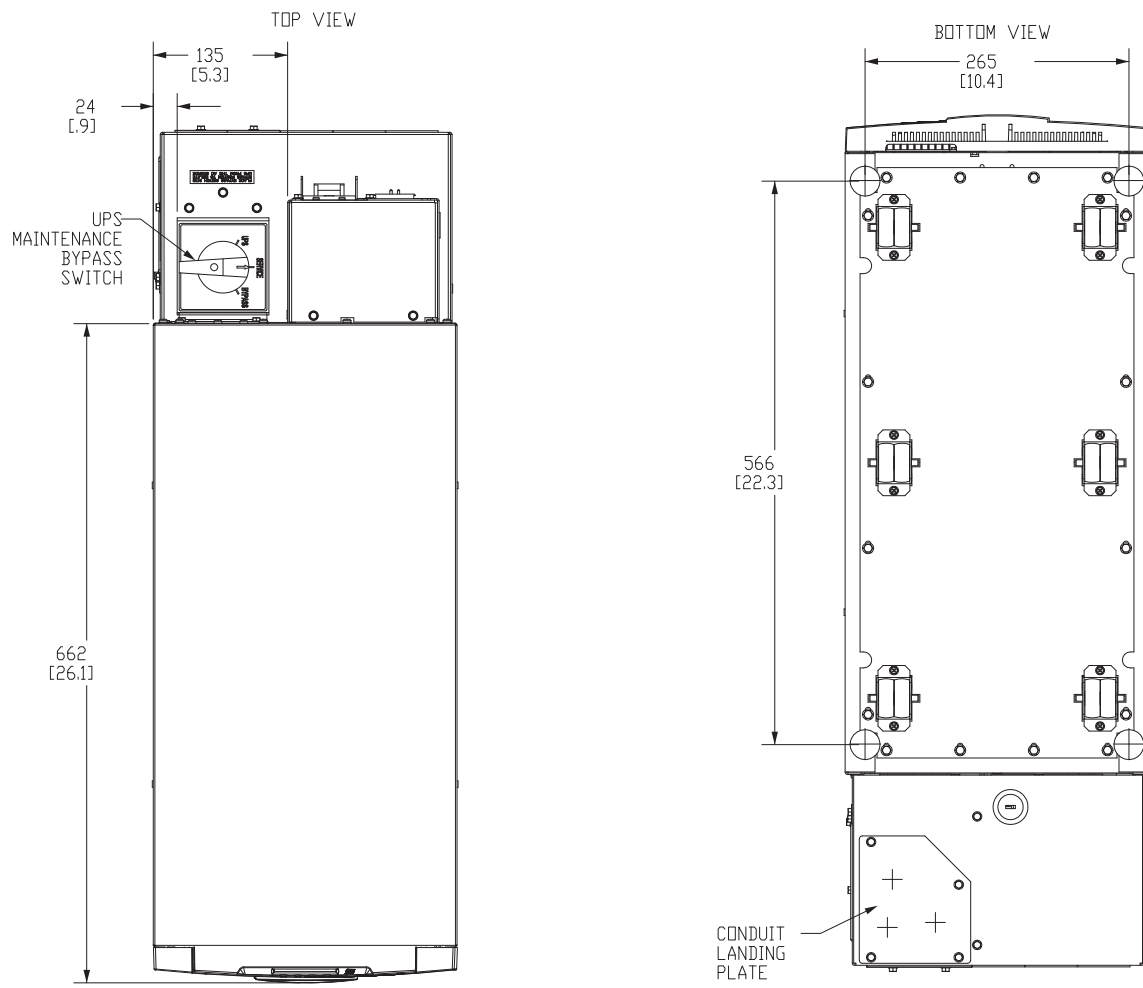
Dimensions are in millimeters (inches)

Figure 5. Extended Battery Module Dimensions (3-High Front and Right Side Views)



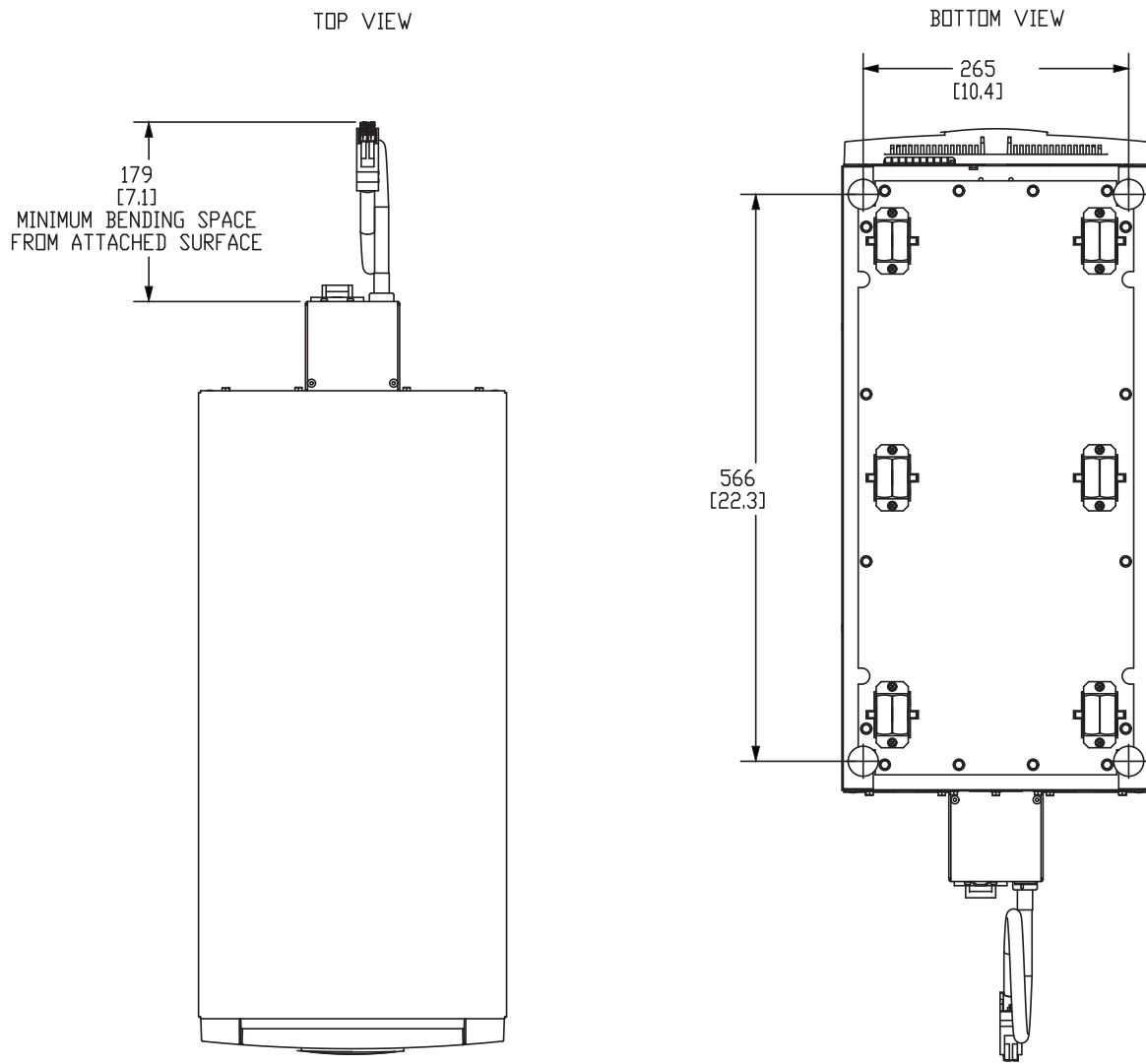
Dimensions are in millimeters [inches]

Figure 6. UPS Cabinet Dimensions (2 or 3-High Top and Bottom Views)



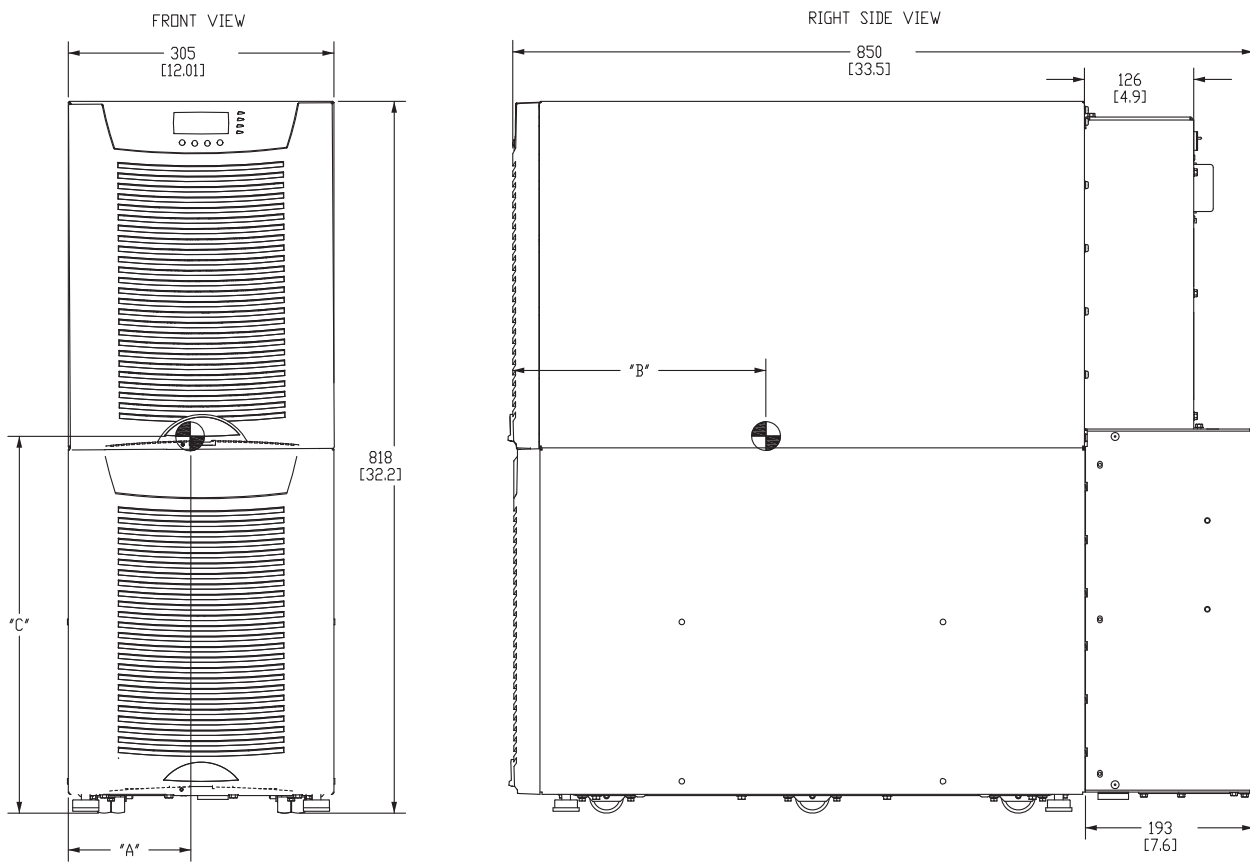
Dimensions are in millimeters [inches]

Figure 7. Extended Battery Module Dimensions (2 or 3-High Top and Bottom Views)



Dimensions are in millimeters [inches]

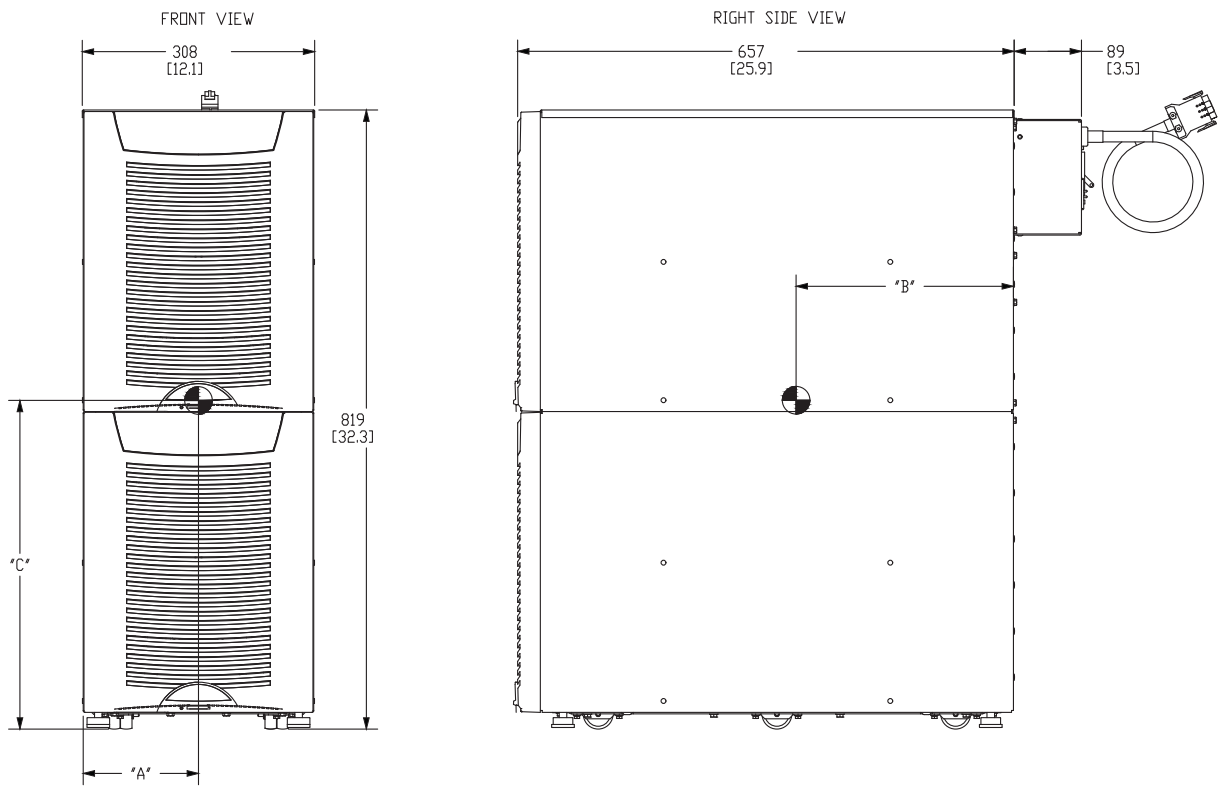
Figure 8. 2-High UPS Cabinet Center of Gravity



Dimensions are in millimeters [inches]

Weight and Center of Gravity	Dimensions mm [in] See Figure 8 .			Weight kg [lb]
	A	B	C	
Eaton 9355 8–15 kVA UPS 2-High	81 [3.2]	452 [17.8]	406 [16.0]	169 [373]

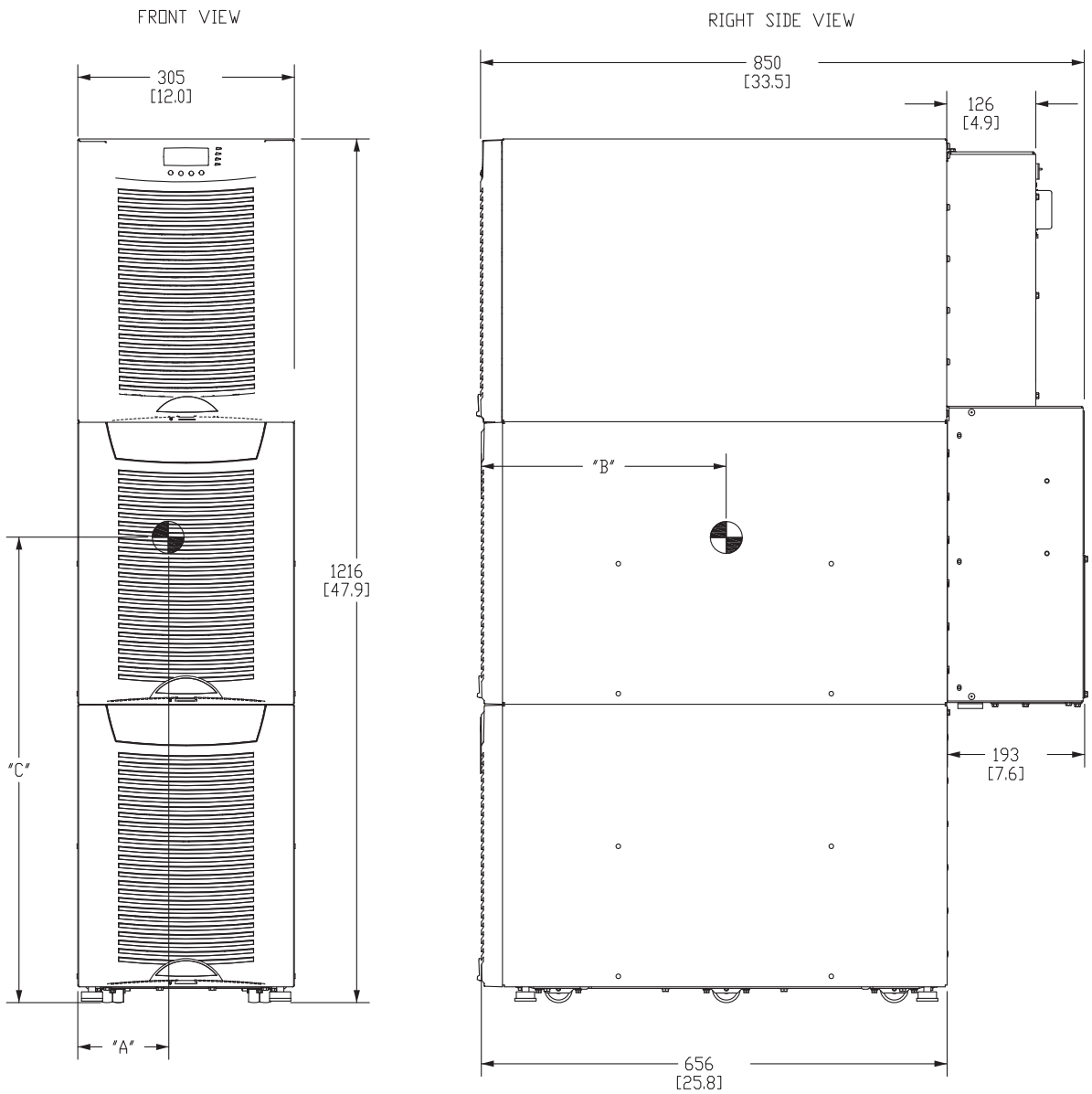
Figure 9. 2-High EBM Cabinet Center of Gravity



Dimensions are in millimeters [inches]

Weight and Center of Gravity	Dimensions mm [in] See Figure 9 .			Weight kg [lb]
	A	B	C	
Eaton 9355 Extended Battery Module 2-High	81 [3.2]	452 [17.8]	406 [16.0]	218 [480]

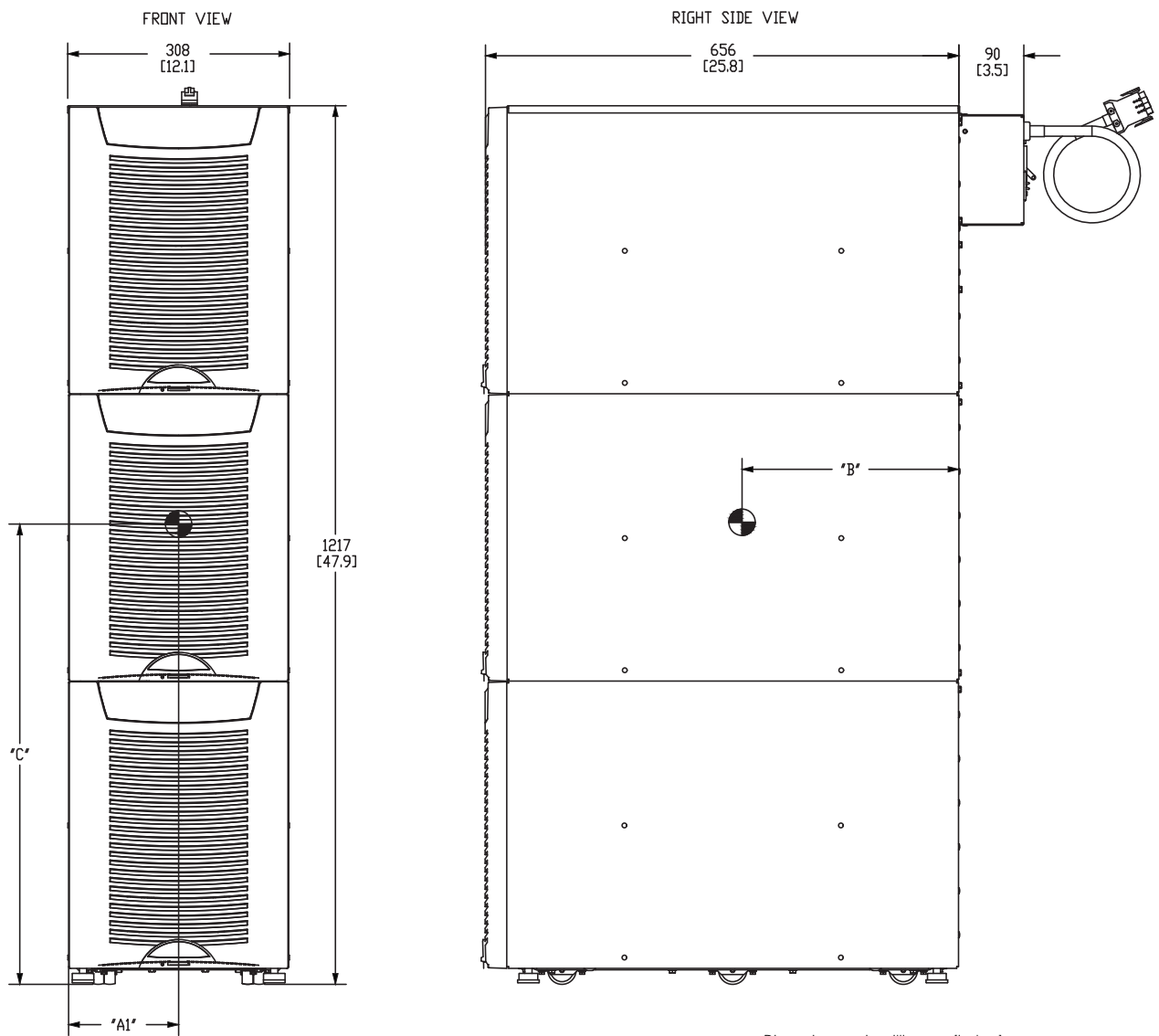
Figure 10. 3-High UPS Cabinet Center of Gravity



Dimensions are in millimeters [inches]

Weight and Center of Gravity	Dimensions mm [in] See Figure 10 .			Weight kg [lb]
	A	B	C	
Eaton 9355 8–15 kVA UPS 3-High	81 [3.2]	452 [17.8]	610 [24.0]	276 [609]

Figure 11. 3-High EBM Cabinet Center of Gravity



Dimensions are in millimeters [inches]

Weight and Center of Gravity	Dimensions mm [in] See Figure 11 .			Weight kg [lb]
	A	B	C	
Eaton 9355 Extended Battery Module 3-High	81 [3.2]	452 [17.8]	610 [24.0]	276 [609]

3.3 UPS System Power Wiring Preparation

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

 **WARNING**

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

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

 **IMPORTANT**

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

Wire sizes listed in [Table 4](#) through [Table 6](#) are for copper wiring only. If wire is run in an ambient temperature greater than 40°C, larger size wire may be necessary. Wire sizes are based on using the specified breakers.

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

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

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

Table 4. Eaton 9355 10–15 kVA UPS: Recommended Terminal Block Wiring (Continued)

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

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

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

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

Table 5. Eaton 9355 10–15 kVA UPS with Version 1 Wall-Mounted Bypass Switch: Recommended Terminal Block Wiring

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

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

Table 6. Eaton 9355 10–15 kVA UPS with Version 2 Wall-Mounted Bypass Switch: Recommended Terminal Block Wiring

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

3.4 Inspecting and Unpacking the Equipment

The cabinet is shipped bolted to a metal and wood pallet with outer protective packaging material covering the cabinets.

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



CAUTION

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

- Use a forklift or pallet jack to move the packaged cabinet to the installation site, or as close as possible, before unpacking. If possible, move the cabinet using the pallet. Insert the forklift or pallet jack forks between the supports on the bottom of the pallet.
- Set the pallet on a firm, level surface, allowing a minimum clearance of 3m (10 ft) on each side for removing the cabinet from the pallet.
- Remove the protective packaging material from the cabinet and recycle in a responsible manner. Retain any parts kits packaged with the cabinet.
- Inspect the contents for any evidence of physical damage, and compare each item with the Bill of Lading. If damage has occurred or shortages are evident, contact an Eaton service representative immediately to determine the extent of the damage and its impact on further installation.

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**

While waiting for installation, protect the unpacked cabinet from moisture, dust, and other harmful contaminants. Failure to store and protect the UPS properly may void the warranty.

**NOTE**

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

Chapter 4 UPS System Installation

4.1 Preliminary Installation Information

 **WARNING**

Installation should be performed only by qualified personnel.

Refer to the following while installing the UPS system:

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

4.2 Unloading the UPS Cabinet from the Pallet

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

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

 **CAUTION**

The UPS and EBM are heavy (see [Table 2](#)). Unloading the cabinets requires at least two people to safely remove the cabinets from the pallet.

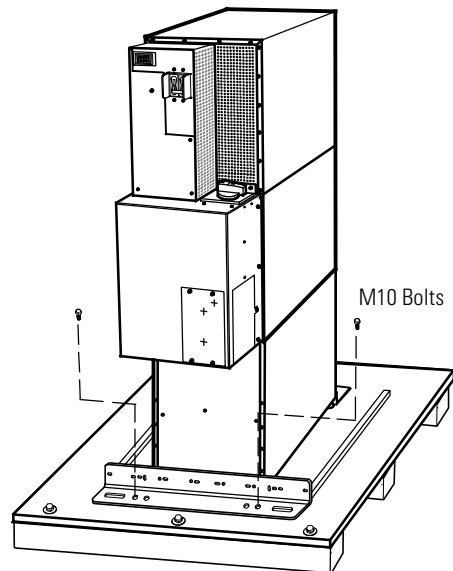
To unload three-high cabinets or two-high EBMs, proceed to [4.2.1 Three-High Cabinets or Two-High EBMs](#). To unload two-high UPS cabinets, proceed to [4.2.2 Two-High UPS Cabinets](#).

4.2.1 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 12](#)).

Figure 12. Removing the Stabilizing Bracket Bolts



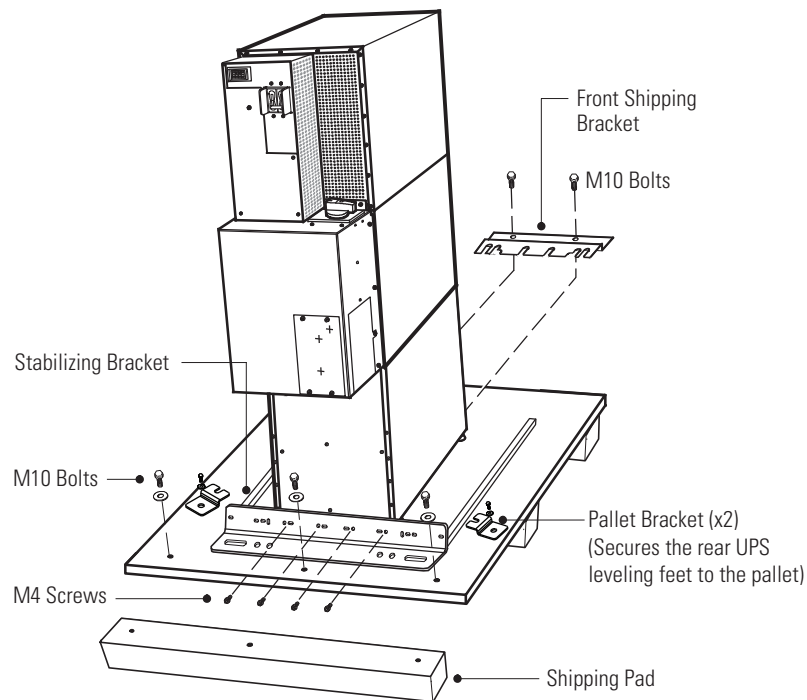
2. Remove the M10 bolts from the two Pallet Brackets securing the leveling feet to the pallet (see [Figure 13](#)).
3. Remove the four M4 screws securing the stabilizing bracket to the cabinet rear panel and remove the bracket (see [Figure 13](#)). Retain the hardware for later use.

i 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.

i 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 13. Removing the Brackets and Shipping Pad

7. Reinstall the front cover removed in [Step 4](#).

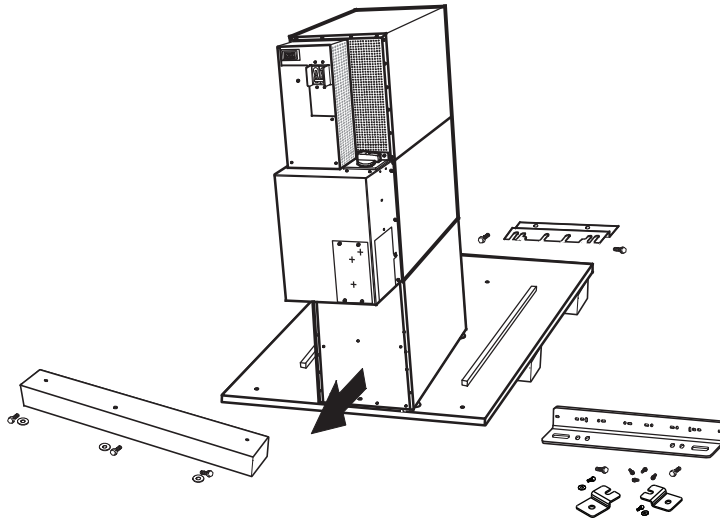
Hang the top edge of the cover on the cabinet first, then lower the bottom edge and snap into place.

1 **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 14](#)).

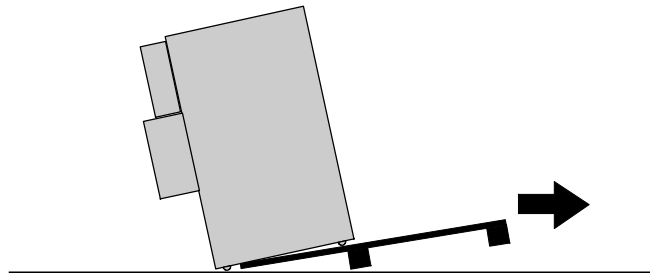
If needed, adjust the leveling feet so that the cabinet rolls freely.

Figure 14. Unloading the Cabinet



9. With the cabinet supported, slowly pull the pallet away from the cabinet (see [Figure 15](#)).

Figure 15. Removing the Pallet

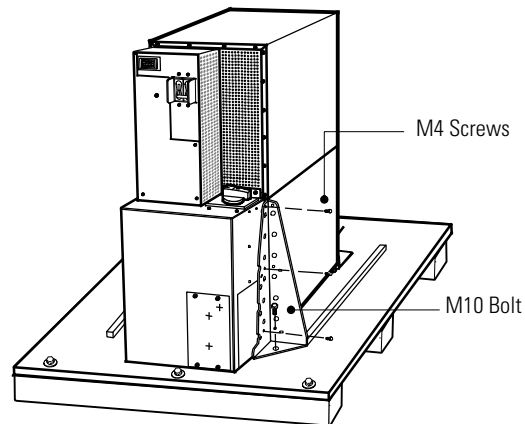


10. Roll the cabinet to the desired location.
11. Proceed to paragraph [4.3.1 Selecting an Installation Option](#).

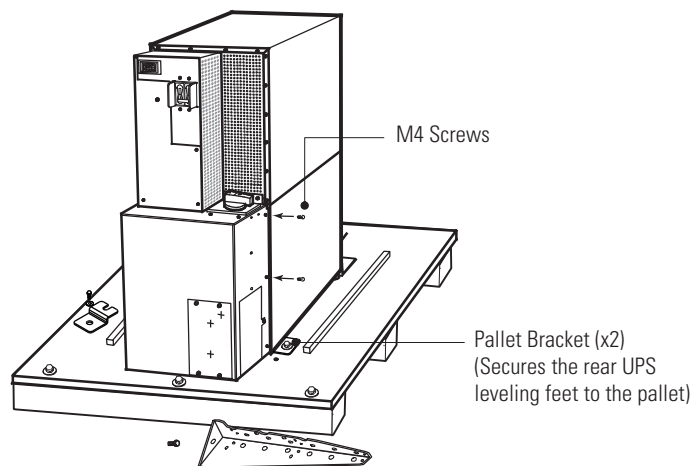
4.2.2 Two-High UPS Cabinets

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

1. Remove the M10 bolt securing the vertical bracket to the pallet (see [Figure 16](#)).
2. Remove and retain the three M4 screws securing the vertical bracket to the UPS. Remove the vertical bracket.

Figure 16. Removing the Vertical Bracket

3. Reinstall the M4 screws to the UPS (see [Figure 16](#)).

Figure 17. Reinstalling the M4 Screws and Remove Pallet Brackets

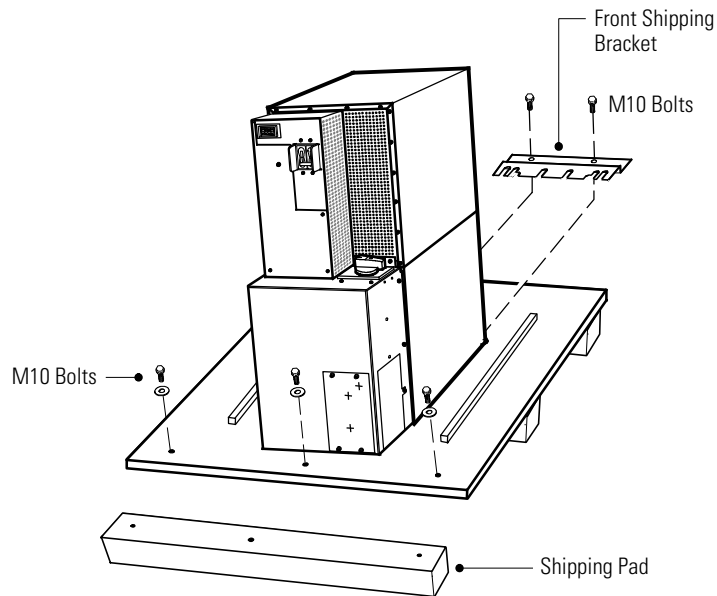
4. Remove the M10 bolts from the two Pallet Brackets securing the leveling feet to the pallet (see).
5. Repeat Steps [Step 1](#) through [Step 4](#) to remove the vertical bracket on the other side.
6. Remove the front cover from the bottom cabinet to access the front shipping bracket.
Press and release the handle latch at the bottom of the cover and then lift the cover up and off the cabinet.
7. Remove the three M10 bolts securing the rear shipping pad to the pallet and remove the shipping pad (see [Figure 18](#)).

**NOTE**

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

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

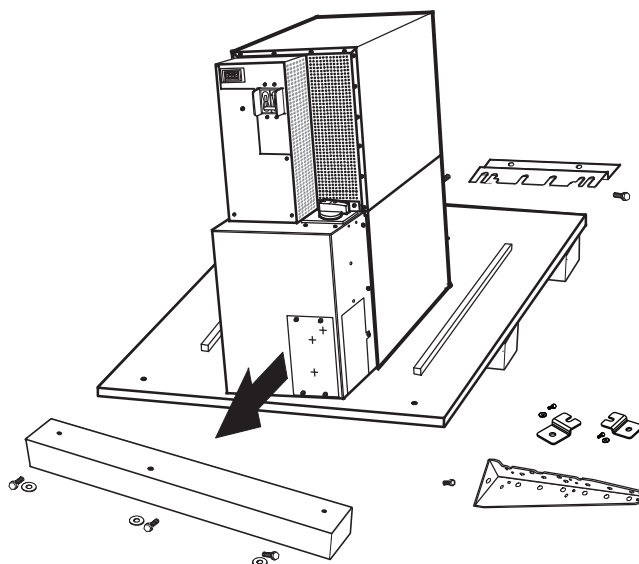
Figure 18. Removing the Front Shipping Bracket and Shipping Pad



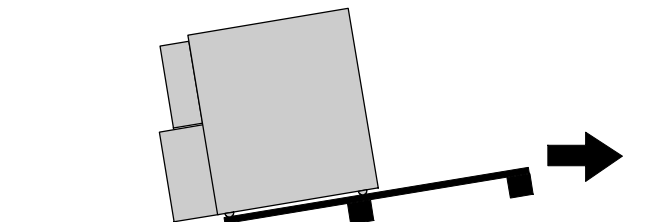
- Reinstall the front cover removed in [Step 6](#).
Hang the top edge of the cover on the cabinet first, then lower the bottom edge and snap into place.

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

- 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 19](#)).
If needed, adjust the leveling feet so that the cabinet rolls freely.

Figure 19. Unloading the Cabinet

11. With the cabinet supported, slowly pull the pallet away from the cabinet (see [Figure 20](#)).

Figure 20. Removing the Pallet

12. Roll the cabinet to the desired location.
13. Proceed to paragraph [4.3.1 Selecting an Installation Option](#).

4.3 External AC Power Wiring Installation

4.3.1 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	Paragraph Section
UPS only	4.3.2 UPS and UPS with Input Isolation Transformer Power Wiring Installation
UPS with an input isolation transformer	4.3.2 UPS and UPS with Input Isolation Transformer Power Wiring Installation
UPS with a version 1 wall-mounted bypass switch	4.3.3 UPS with a Version 1 Wall-Mounted Bypass Switch
UPS with a version 2 wall-mounted bypass switch	4.3.4 UPS with a Version 2 Wall-Mounted Bypass Switch
Parallel UPS configuration	Refer to the <i>Eaton 9355 Parallel UPS (10/15 kVA) User's Guide</i> .

4.3.2 UPS and UPS with Input Isolation Transformer Power Wiring 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 52](#) through [Figure 54](#) show the oneline diagrams.



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 4](#).

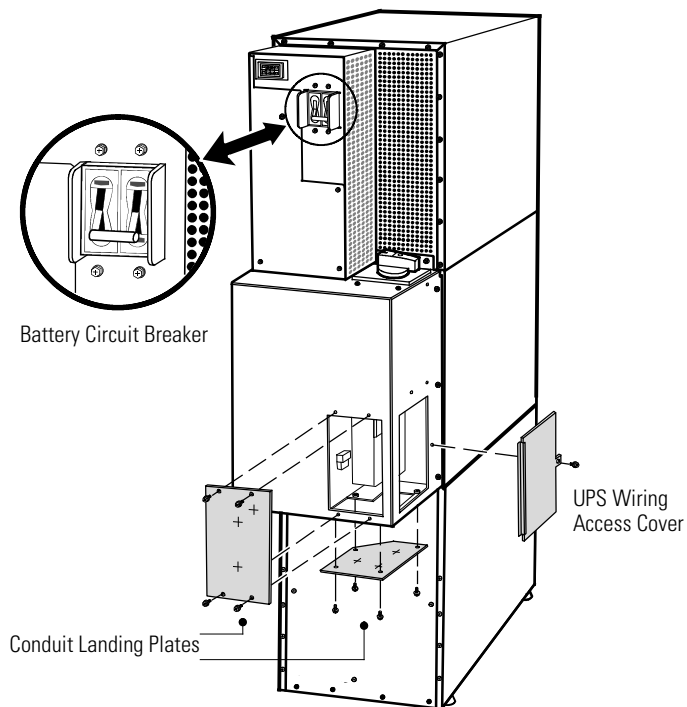


NOTE

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

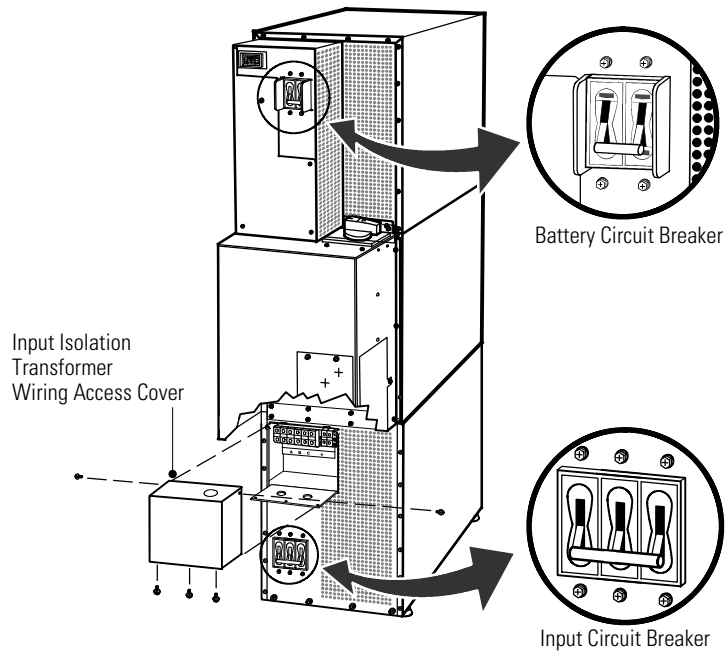
3. Switch off utility power to the distribution point where the UPS will be connected. Be absolutely sure there is no power.
4. Determine your equipment's grounding requirements according to your local electrical code.
5. Verify that the UPS battery circuit breaker is in the OFF position (see [Figure 21](#)).

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



6. For UPS only installations, proceed 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 21](#)).
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 22](#)).
11. Remove the input isolation transformer wiring access cover and retain.

Figure 22. UPS with Input Isolation Transformer Rear View



12. Hardwire the input, output, and ground terminations for the UPS or input isolation transformer. See [Table 4](#) for wiring specifications.

For a detailed view of the terminal block, see [Figure 23](#) or [Figure 24](#).


-
- NOTE 1**  Input neutral must be wired for proper operation. Failure to connect an input neutral will void the warranty. If the optional input transformer is installed, an input neutral is not required.
 - NOTE 2** The Eaton 9355 UPS is a single-feed UPS only.
-

Figure 23. UPS Terminal Block (3-High Shown)

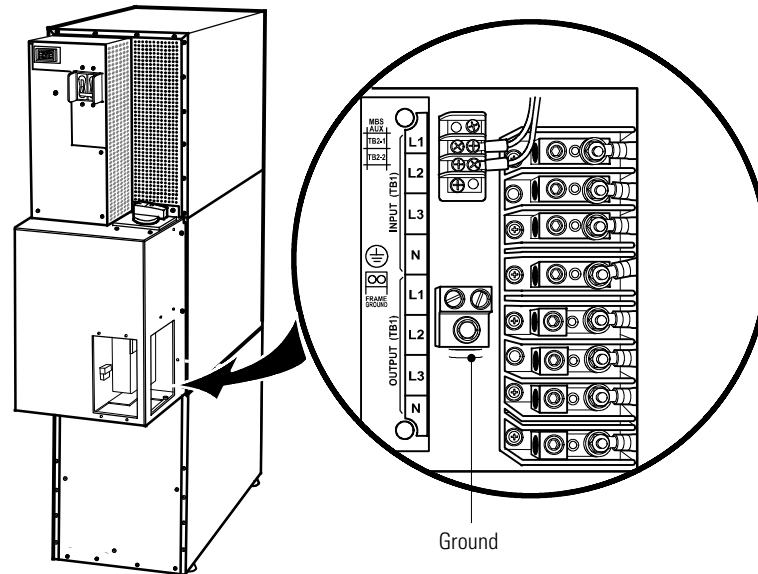
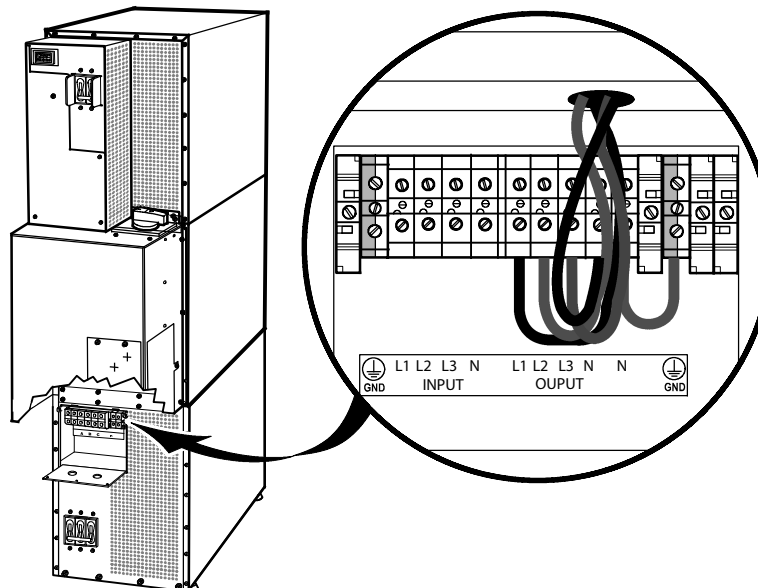


Figure 24. Input Isolation Transformer Terminal Block



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. Proceed to to complete the UPS installation.

4.3.3 UPS with a Version 1 Wall-Mounted Bypass Switch

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

i 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 55](#) and [Figure 56](#) 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.

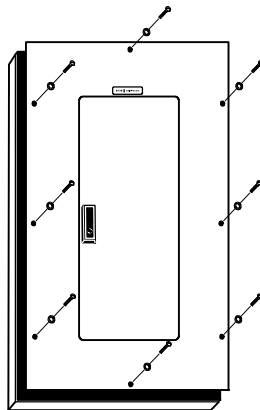
To hardwire the bypass cabinet:

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.

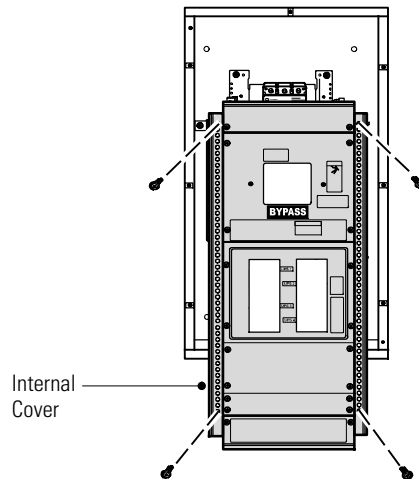
Compare the circuit breaker ratings to the ones in [Table 5](#).

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 25](#)).

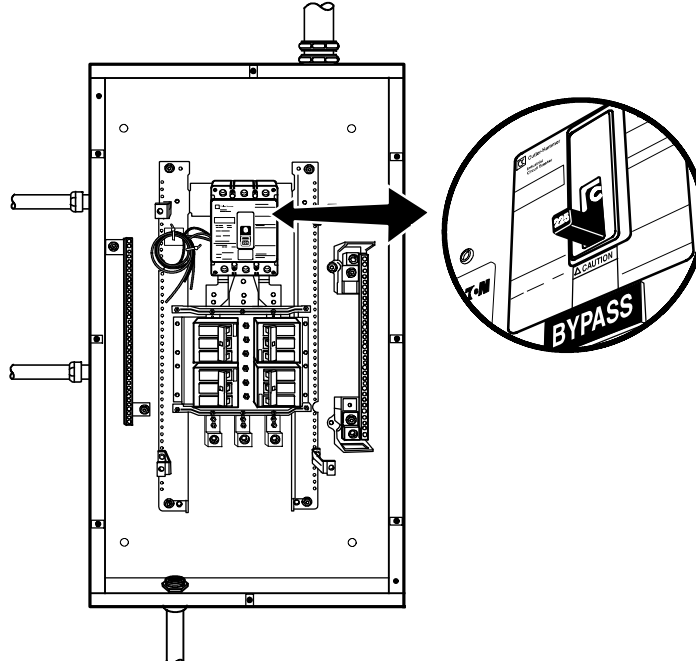
Figure 25. Version 1 Bypass Cabinet Front Cover



6. Remove the internal cover to gain access to the breakers (see [Figure 26](#)).

Figure 26. Version 1 Internal Cover

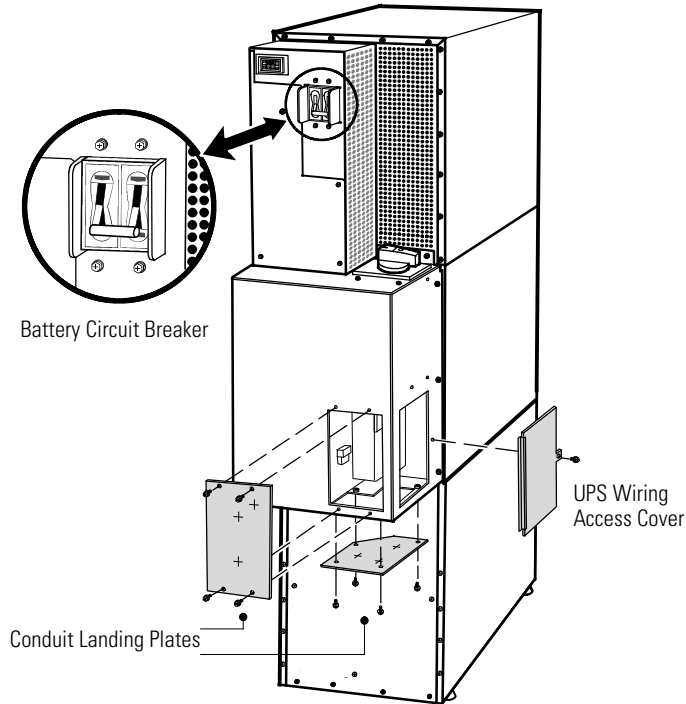
7. Punch holes for the conduit (AC input, UPS output, load connection, and maintenance bypass contact wires) using a Greenlee punch or similar device.
8. Verify that the bypass breaker is in the OFF position (see [Figure 27](#)).
9. Mount the bypass cabinet to the wall and install the conduit.

Figure 27. Version 1 Bypass Breaker

10. Verify that the UPS battery circuit breaker is in the OFF position (see [Figure 28](#)).
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 28. UPS Rear View (3-High Shown)



13. Hardwire the UPS input terminations.

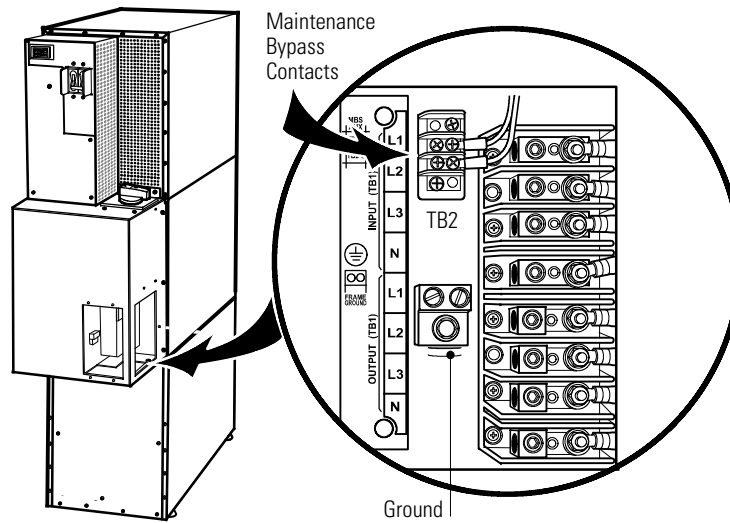
See [Table 5](#) for specifications and [Figure 29](#) for a detailed view of the UPS terminal block.



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

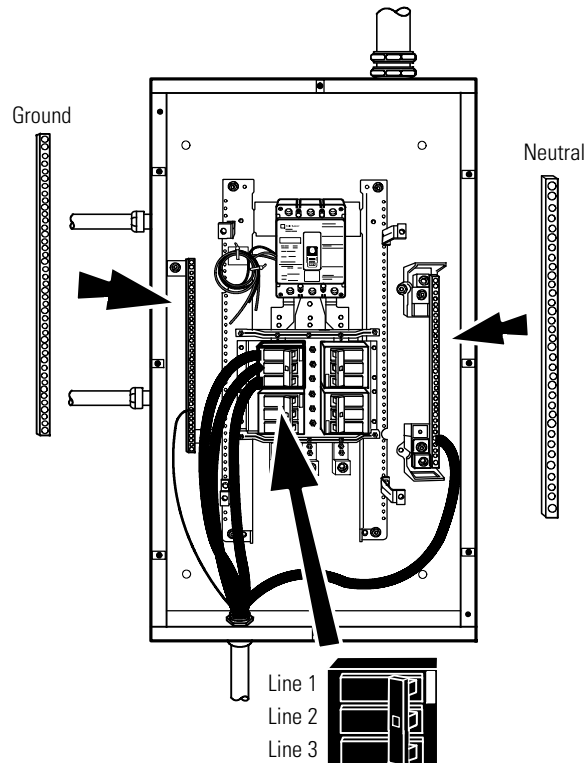
NOTE 2 The Eaton 9355 UPS is a single-feed UPS only.

Figure 29. UPS Terminal Block (3-High Shown)



14. Hardwire the output terminations from the UPS to the bypass cabinet (see [Figure 30](#)).

Figure 30. Version 1 UPS Output to Bypass Cabinet Wiring



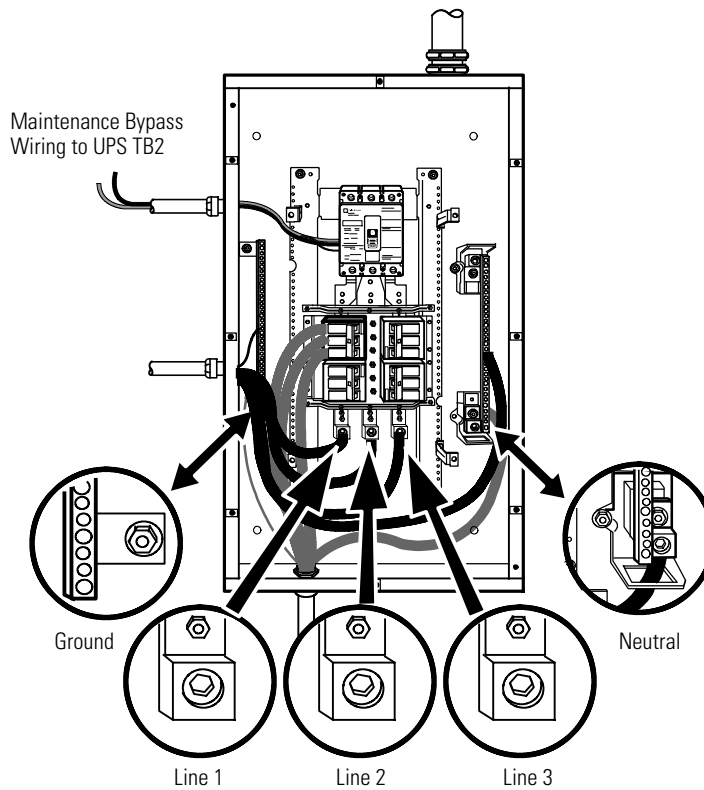
15. Hardwire the load to the bypass cabinet (see [Figure 31](#)).
16. Route the maintenance bypass wires through the conduit to the UPS terminal block (see [Figure 29](#)).

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

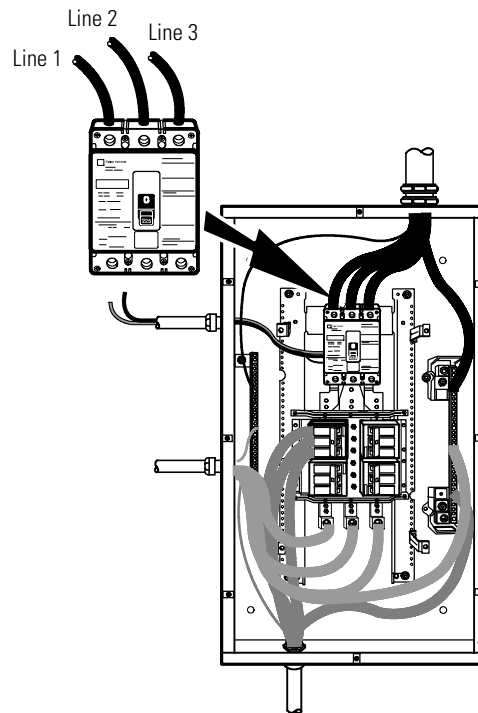
i NOTE The maintenance bypass contacts are normally-open. To ensure proper bypass operation, DO NOT use the blue wire (it is normally-closed).

17. Replace the UPS wiring access cover and conduit landing plate.

Figure 31. Version 1 Load Connections



18. Wire the AC input to the bypass breaker (see [Figure 32](#)).

Figure 32. Version 1 Bypass AC Input Wiring

19. Verify the bypass input.
20. Reinstall the internal cover.
21. Reinstall the bypass cabinet front cover.
22. Proceed to [4.4 Stabilizing the Cabinet](#) to complete the UPS installation.

4.3.4 UPS with a Version 2 Wall-Mounted Bypass Switch

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 57](#) through [Figure 59](#) 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 6](#).

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 33](#)).
6. Follow the instructions on the inside of the door to open or remove the front cover (see [Figure 33](#) and [Figure 34](#)).

Figure 33. Version 2 Bypass Cabinet Front Door and Cover

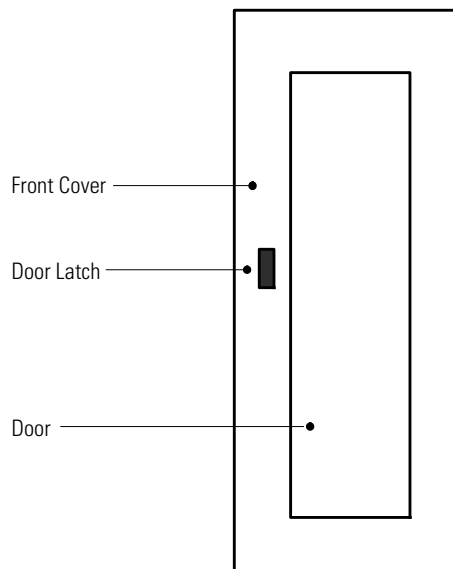
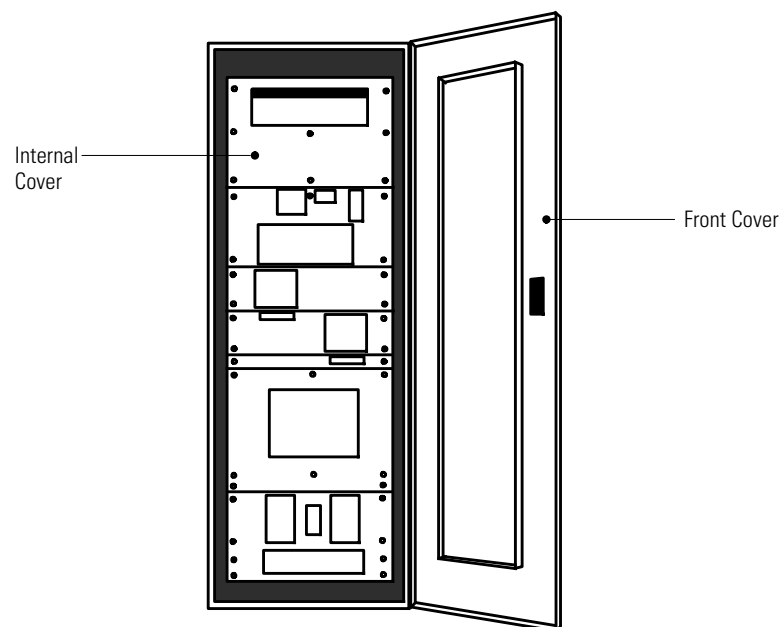
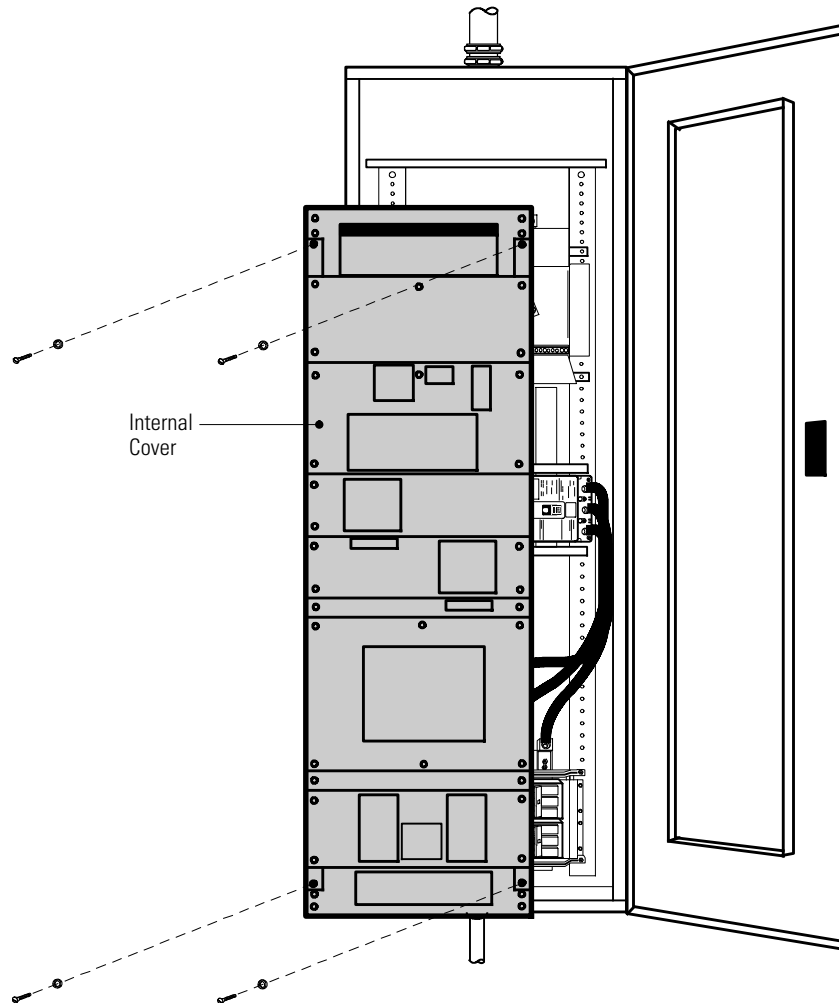


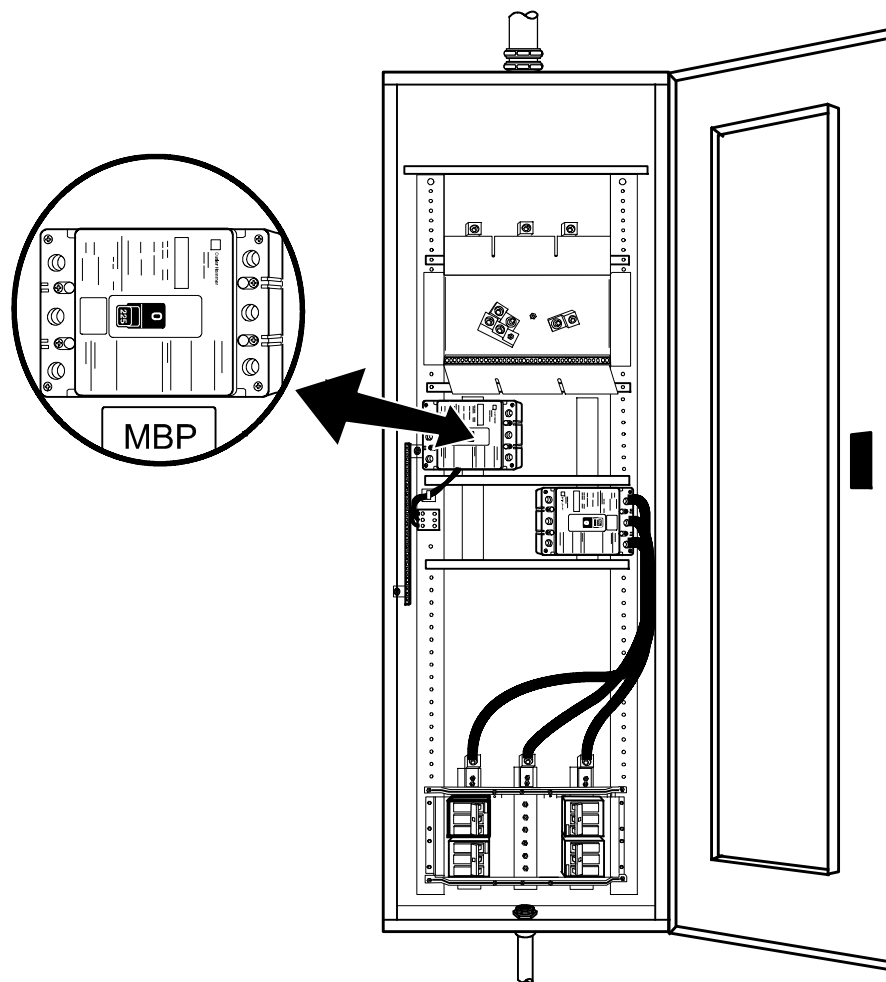
Figure 34. Version 2 Bypass Cabinet Front Cover Open

7. Remove the internal cover to gain access to the breakers (see [Figure 35](#)).

Figure 35. Version 2 Bypass Cabinet Internal Cover

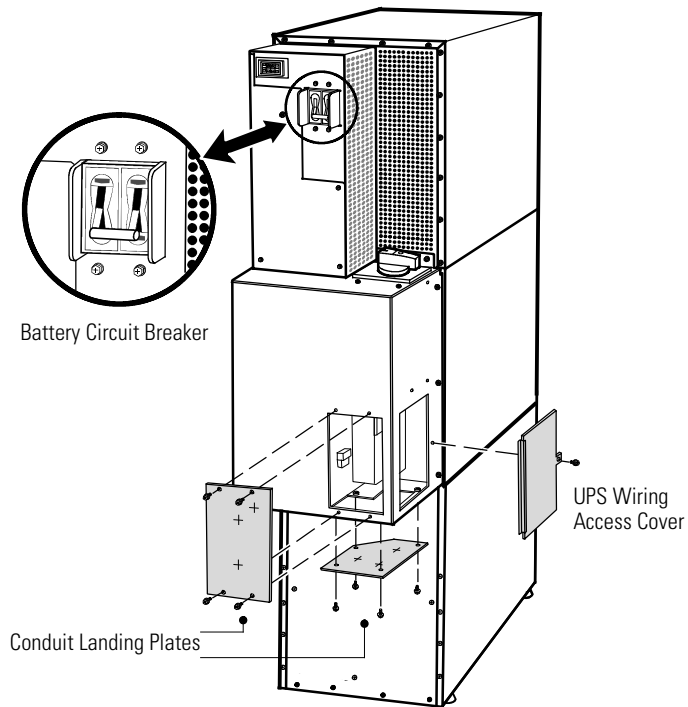


8. Punch holes for the conduit (AC input, UPS output, load connection, and maintenance bypass contact wires) using a Greenlee punch or similar device.
9. Verify that the bypass breaker is in the OFF position (see [Figure 36](#)).
10. Mount the bypass cabinet to the wall and install the conduit.

Figure 36. Version 2 Bypass Cabinet Bypass Breaker

11. Verify that the UPS battery circuit breaker is in the OFF position (see [Figure 37](#)).
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 37. UPS Rear View (3-High Shown)



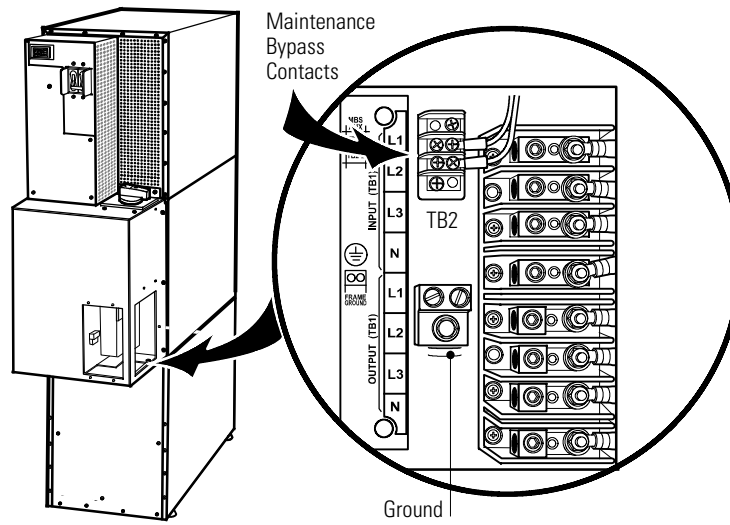
14. Hardwire the UPS input terminations.

See [Table 6](#) for specifications and [Figure 38](#) for a detailed view of the UPS terminal block.



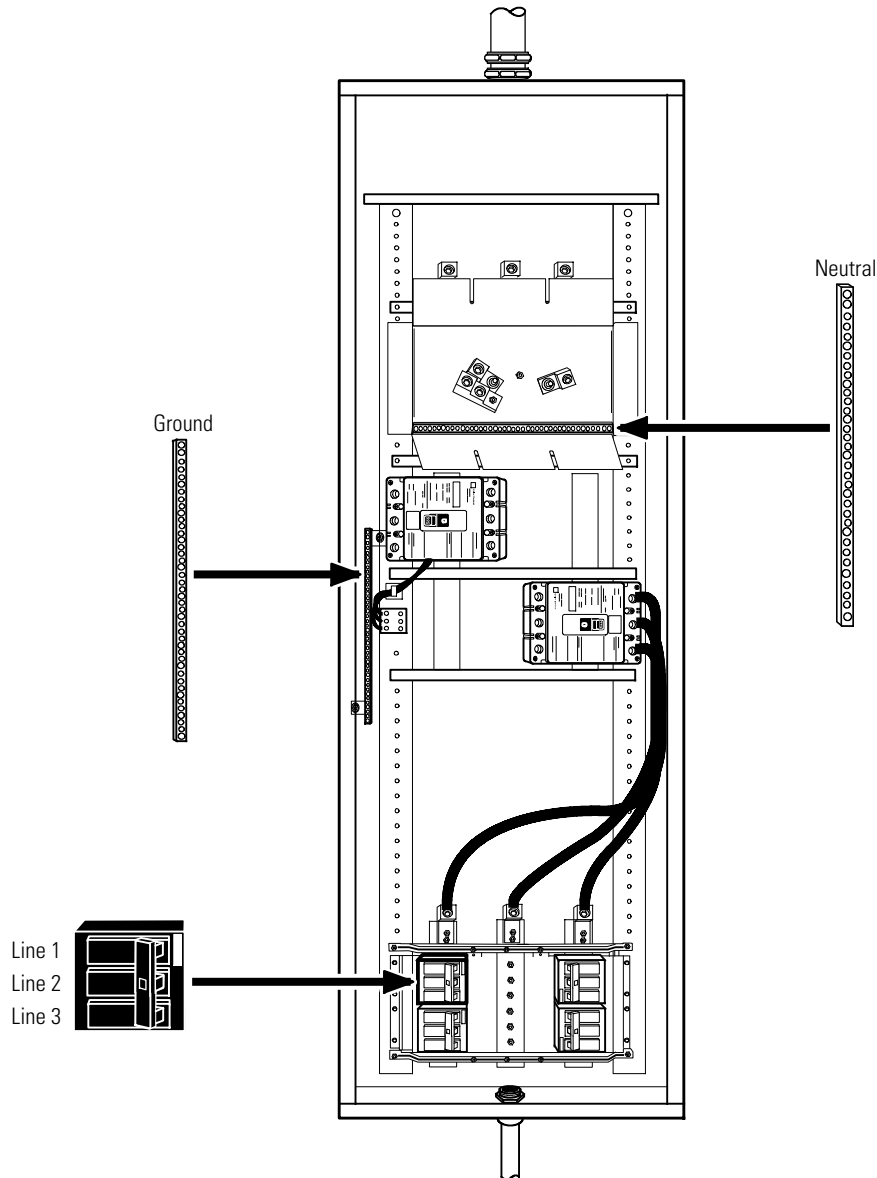
NOTE 1 Input neutral must be wired for proper operation. Failure to connect an input neutral will void the warranty. If the optional input transformer is installed, an input neutral is not required.

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

Figure 38. UPS Terminal Block (3-High Shown)

15. Hardwire the output terminations from the UPS to the bypass cabinet (see [Figure 39](#)).

Figure 39. Version 2 Bypass Cabinet UPS Output to Bypass Wiring



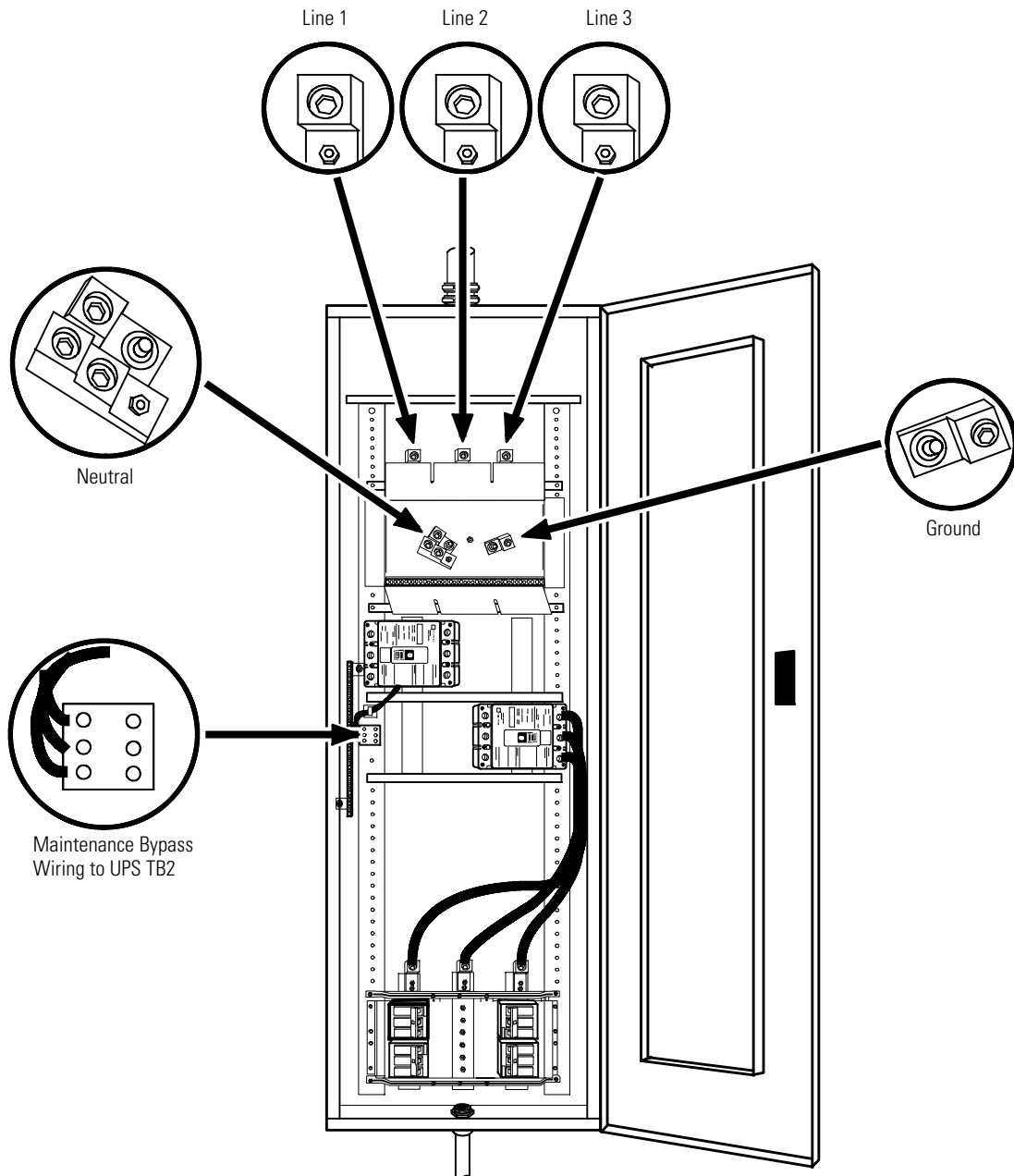
16. Hardwire the load to the bypass cabinet (see [Figure 40](#)).
17. Route the maintenance bypass wires through the conduit to the UPS terminal block (see [Figure 38](#)).
Connect the black and the red wires from the terminal block on the Tie Cabinet to TB2 on the UPS.



NOTE

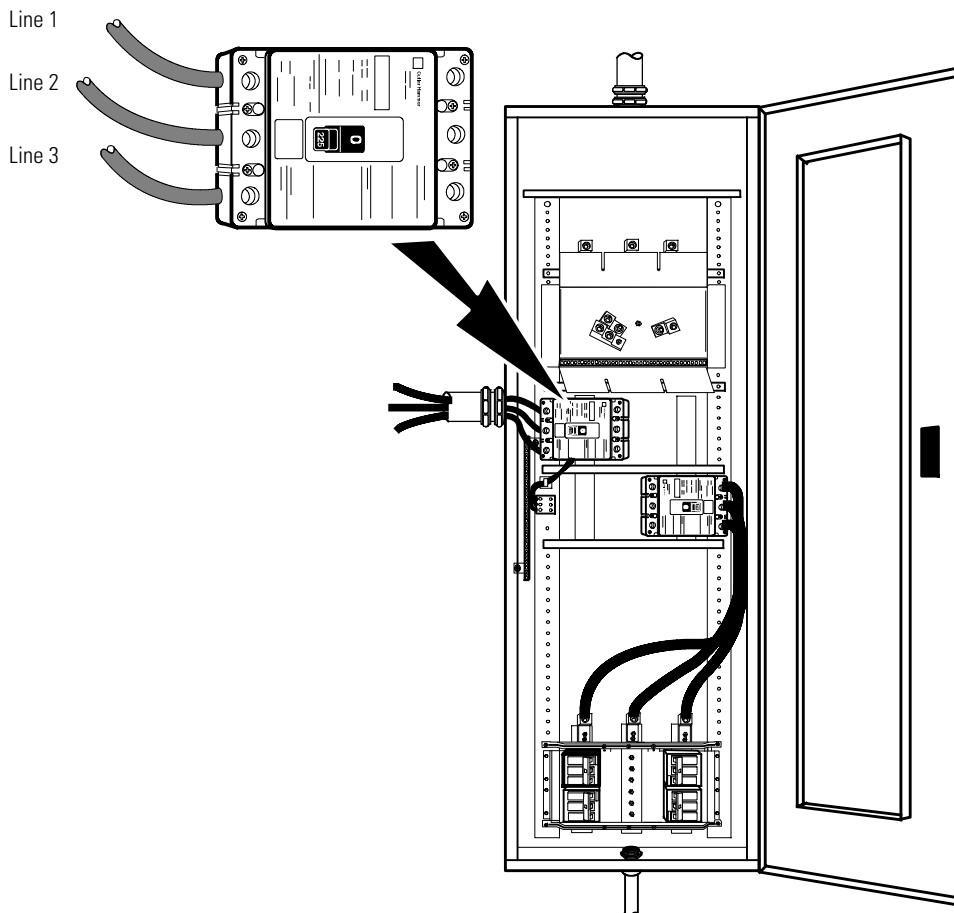
The maintenance bypass contacts are normally-open. To ensure proper bypass operation, DO NOT use the blue wire (it is normally-closed).

18. Replace the UPS wiring access cover and conduit landing plate.

Figure 40. Version 2 Bypass Cabinet Load Connections

19. Wire the AC input to the bypass breaker (see [Figure 41](#)).

Figure 41. 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. Proceed to [4.4 Stabilizing the Cabinet](#) to complete the UPS installation.

4.4 Stabilizing the Cabinet

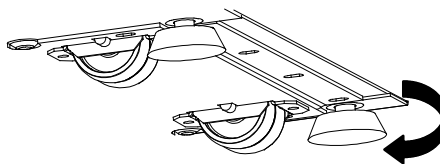
NOTE 1 For seismic installations, you **MUST** order and install an Eaton 9355 UPS seismic kit; do not use the following instructions.



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

To stabilize the cabinet(s):

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

Figure 42. 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 43](#).
 - For two cabinets, see [Figure 44](#).
 - For three cabinets, see [Figure 45](#).



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

3. Use the holes and slots in the bottom of the bracket to attach the cabinet to the flooring if desired.
4. Continue to one of the following sections:
 - See paragraph [4.5 Internal Battery Tray Wiring Connections](#) to connect the internal battery tray wiring.
 - See paragraph [4.6 Extended Battery Module Installation](#) to install optional EBMs.
 - See [Chapter 6 Communication](#) to install UPS communication options, such as X-Slot cards or remote emergency power-off (REPO).
 - See [Chapter 7 UPS Operating Instructions](#) to start up the UPS.



NOTE After UPS startup, ensure maximum battery runtime by configuring the UPS for the correct number of EBMs (see [7.6 Configuring the UPS for EBMs](#)).

Figure 43. Stabilizing Bracket with One Cabinet

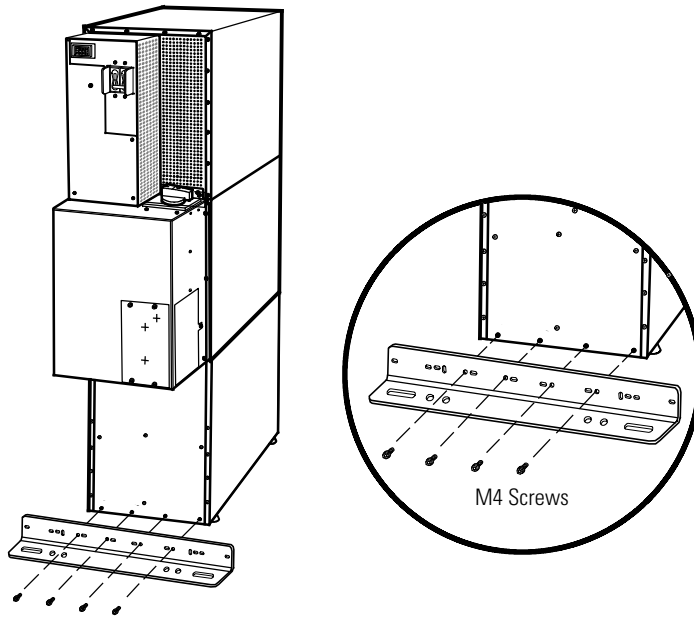


Figure 44. Stabilizing Bracket with Two Cabinets

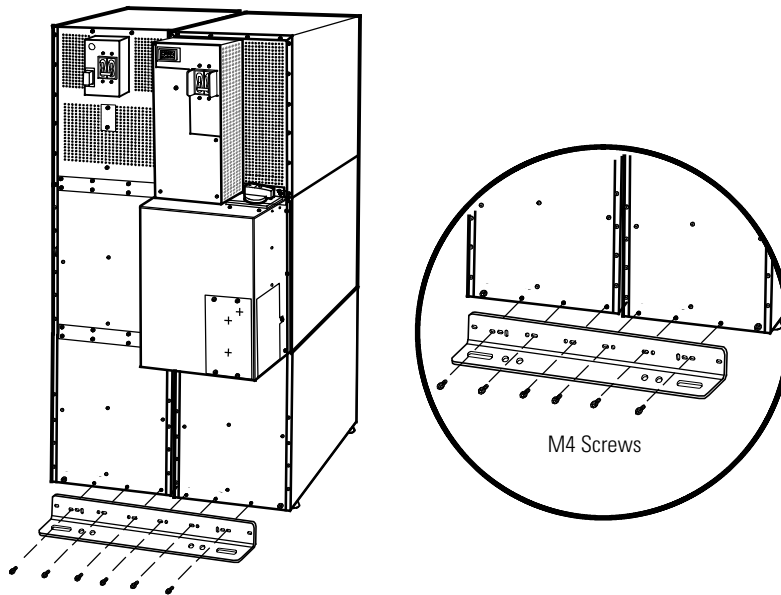
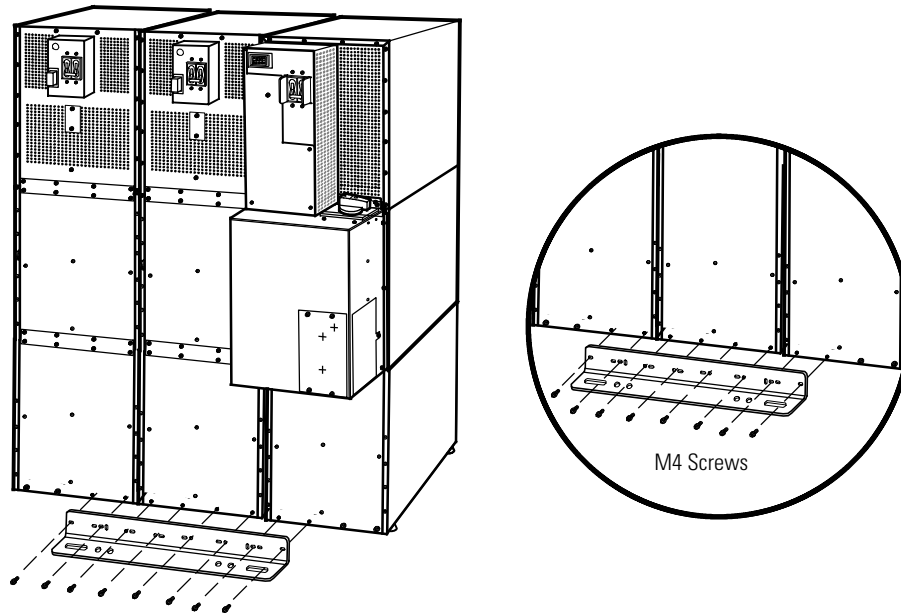


Figure 45. Stabilizing Bracket with Three Cabinets



4.5 Internal Battery Tray Wiring Connections


NOTE

To reduce electrical safety risks during transportation, the UPS is shipped with the internal battery tray assemblies disconnected.


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

The UPS is intended to be operated only with batteries installed. When batteries are not installed a stabilizing bracket is required to prevent a tip hazard.


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.

CAUTION

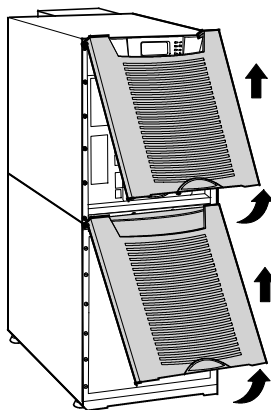
- Servicing should be performed by qualified service personnel knowledgeable of batteries and required precautions. Keep unauthorized personnel away from batteries.
- Batteries can present a risk of electrical shock or burn from high short circuit current. The following precautions should be observed: 1) Remove watches, rings, or other metal objects; 2) Use tools with insulated handles; 3) Do not lay tools or metal parts on top of batteries; 4) Disconnect charging source prior to connecting or disconnecting battery terminals; 5) Wear voltage rated gloves and electrical hazard footwear.
- When replacing batteries, replace with the same type and number of batteries or battery packs. Contact your service representative to order new 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.
- Do not open or mutilate the battery or batteries. Released electrolyte is harmful to the skin and eyes and may be extremely toxic.
- Determine if the battery is inadvertently grounded. If inadvertently grounded, remove source of ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock will be reduced if such grounds are removed during installation and maintenance.
- **ELECTRIC ENERGY HAZARD.** Do not attempt to alter any battery wiring or connectors. Attempting to alter wiring can cause injury.

To access and install the internal battery trays and wiring connections:

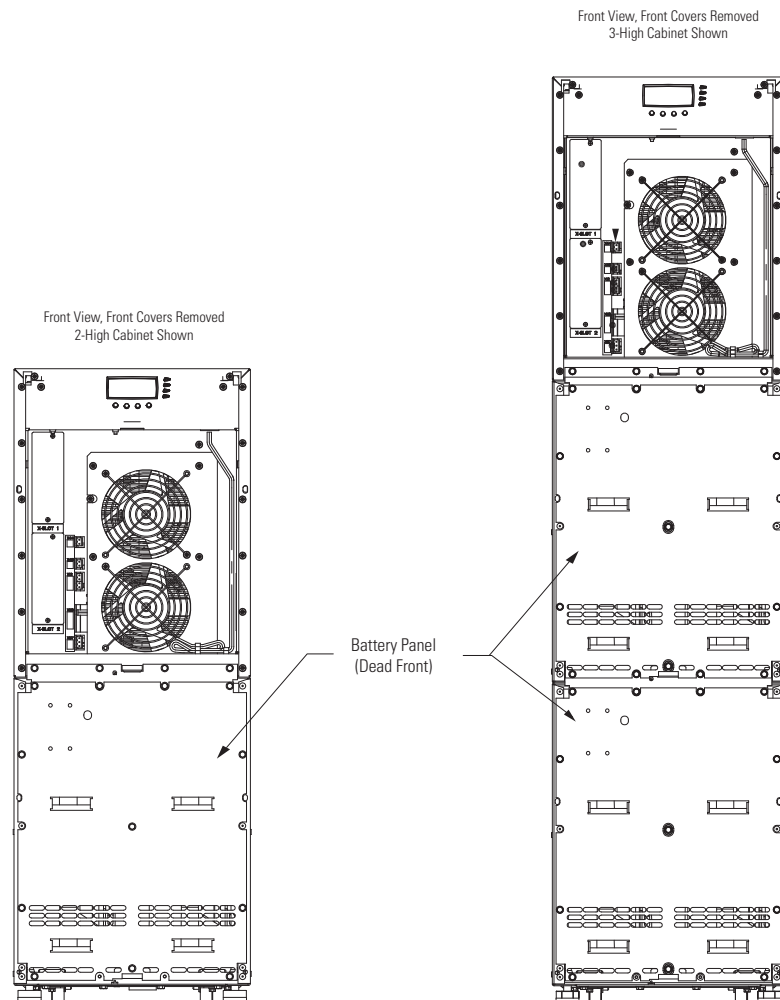
1. Verify that the input, output, and battery circuit breakers are in the OFF position
2. Remove the front covers of all cabinets, starting with the top cabinet.

Press and release the handle latch at the bottom of each cover and then lift the cover up and off the cabinet (see [Figure 46](#)).

Figure 46. Removing the Front Covers



3. The battery cover panel is made up of two parts joined together with four screws. Remove both parts of the panel at the same time by removing the 10 M4 screws on the edges of the panel and M4 screw in the middle of the panel (see [Figure 47](#)).

Figure 47. Battery Panel (Dead Front)

4. Connect the UPS battery wiring to the Battery tray wiring, red connector to red connector, black connector to black connector (see [Figure 48](#) and [Figure 49](#)).

Figure 48. Internal Battery Tray Wiring Connections

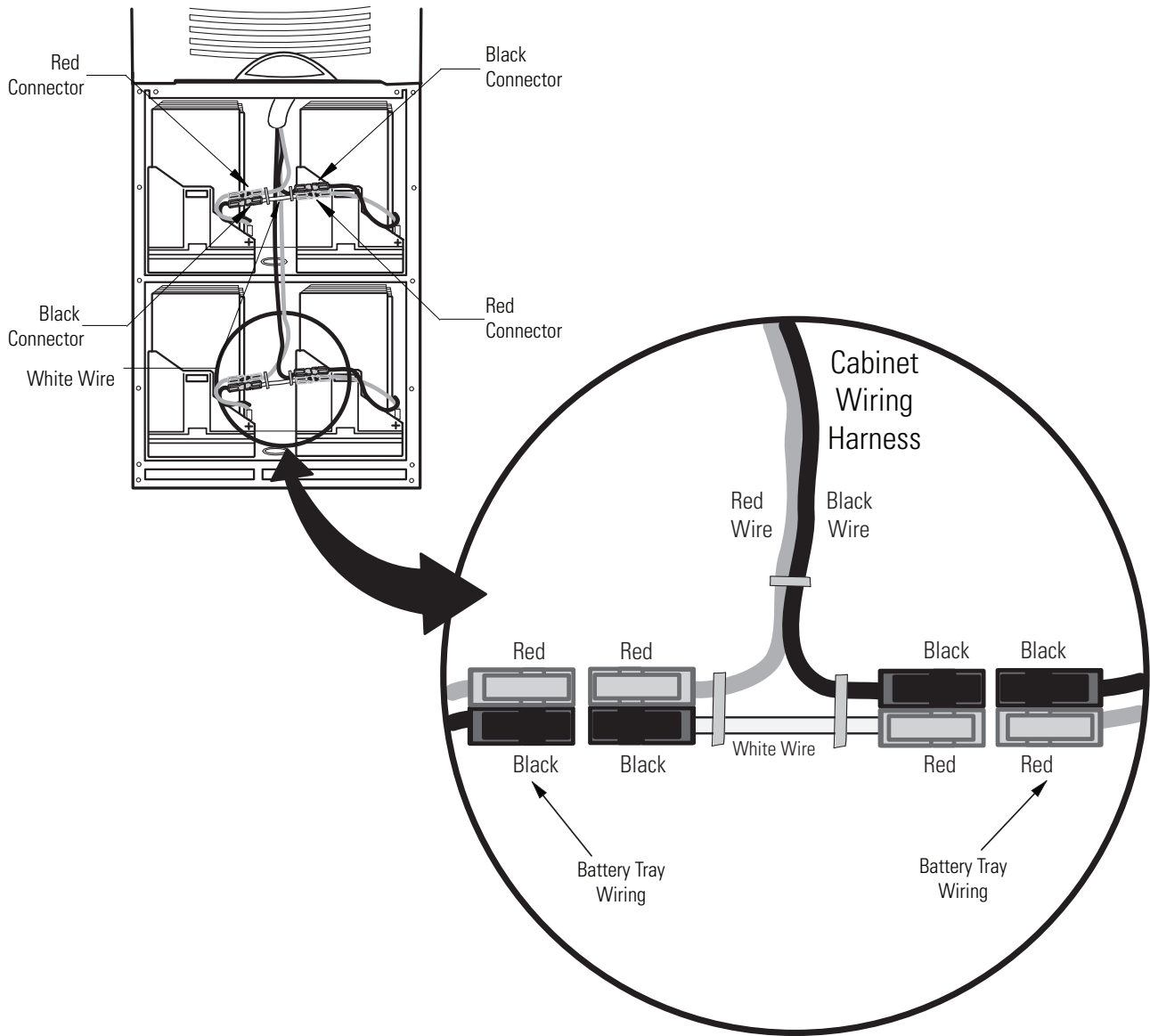
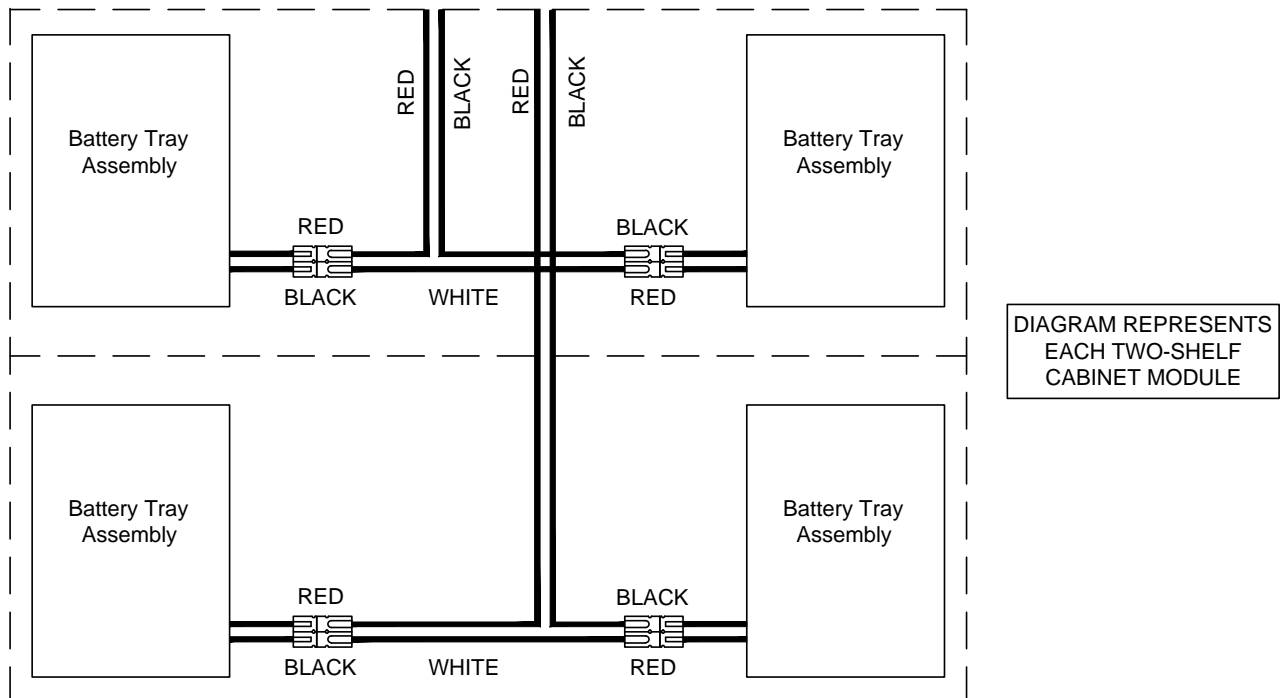


Figure 49. Internal Battery Tray Wiring Diagram

5. Repeat these steps to connect each battery tray to the UPS-Battery wiring harness.
6. Continue to one of the following sections:
 - See paragraph [4.6 Extended Battery Module Installation](#) to install optional EBMs.
 - See [Chapter 6 Communication](#) to install UPS communication options, such as X-Slot cards or remote emergency power-off (REPO).
 - See [Chapter 7 UPS Operating Instructions](#) to start up the UPS.

4.6 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.

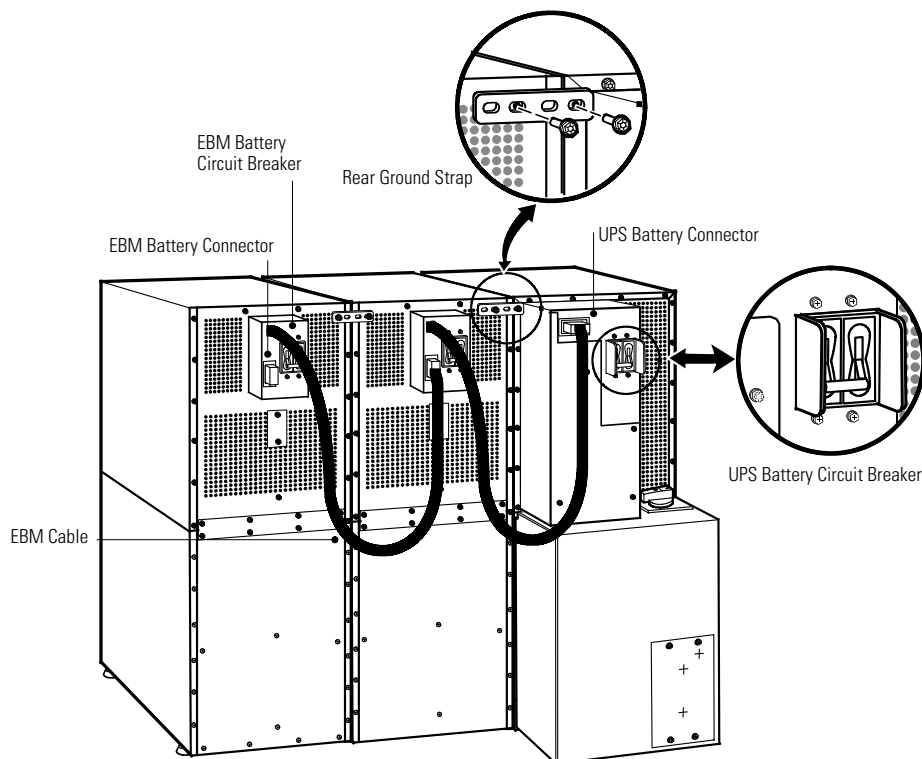
NOTE For non-seismic installations, you **MUST** install the stabilizing bracket on all 3-high cabinets. The stabilizing bracket is optional for 2-high cabinets.

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 50](#)).
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 50](#).
5. If additional EBMs are installed, attach another ground strap between the first and second EBM as shown in [Figure 50](#). 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 50. Typical EBM Installation (2-High Cabinets Shown)



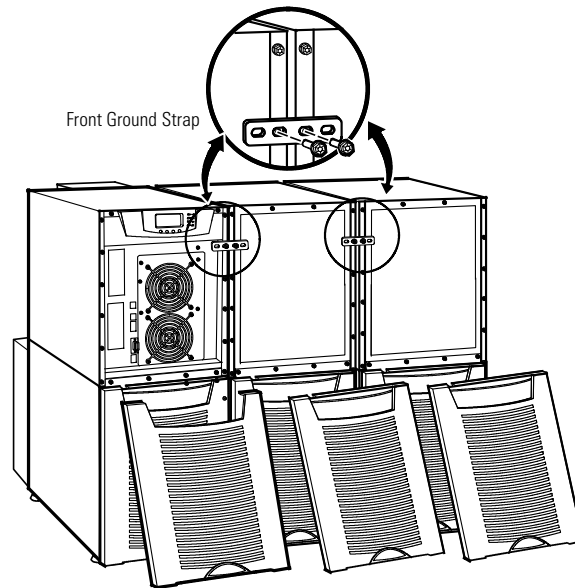
8. Remove the top front covers of all cabinets.
9. Install the remaining ground straps between each cabinet (see [Figure 51](#)).
10. Reinstall the top front covers removed in [Step 8](#).
Hang the top edge of the cover on the cabinet first, then lower the bottom edge and snap into place.
11. Continue to one of the following sections:
 - See [Chapter 6 Communication](#) to install UPS communication options, such as X-Slot cards or remote emergency power-off.
 - See [Chapter 7 UPS Operating Instructions](#) to start up the UPS.



NOTE

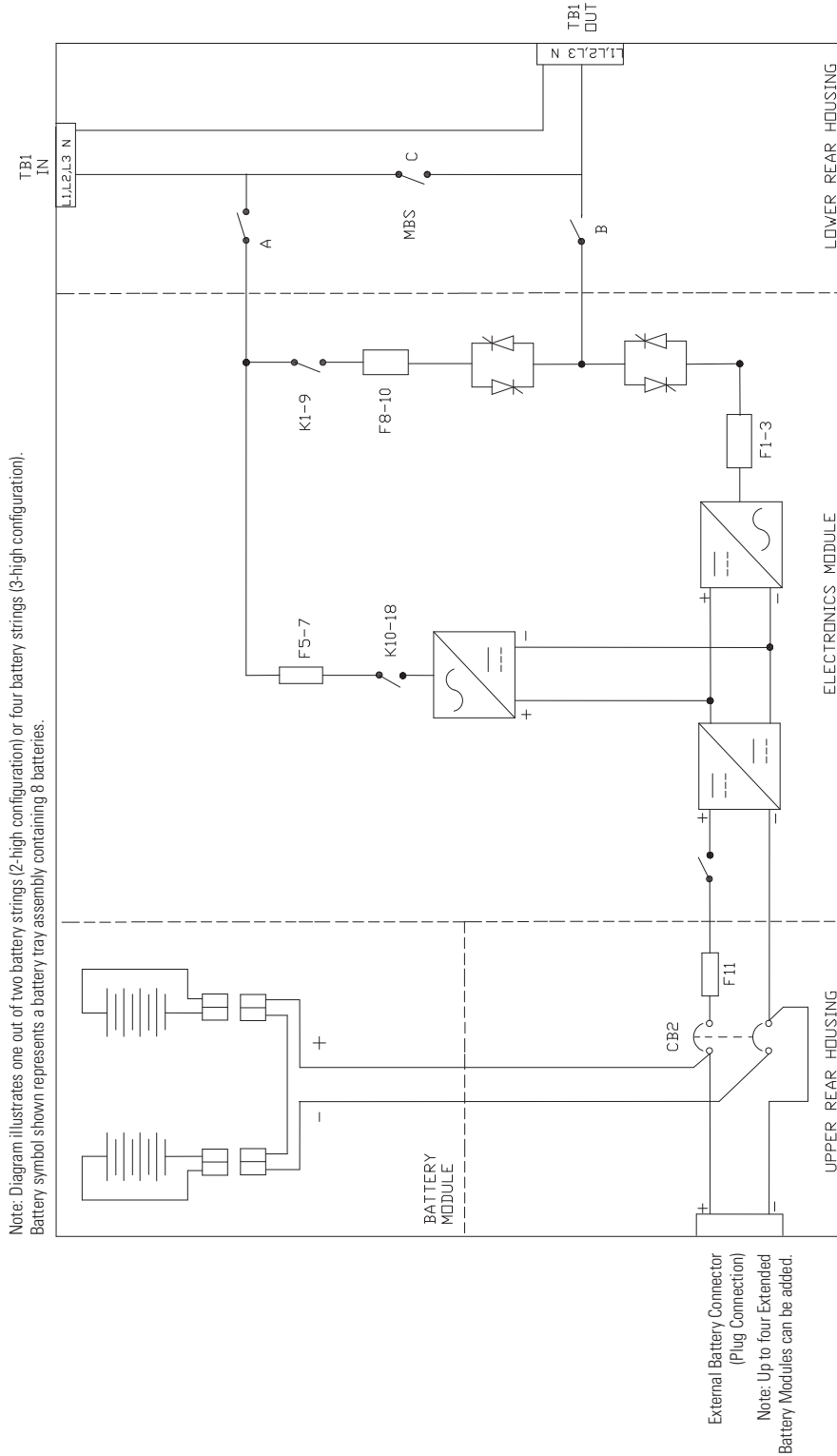
After UPS startup, ensure maximum battery runtime by configuring the UPS for the correct number of EBMs (see [Chapter 7 UPS Operating Instructions](#)).

Figure 51. Front Ground Strap Installation (2-High Cabinets Shown)



Chapter 5 UPS Wiring Diagram Schematics

Figure 52. UPS Wiring Diagram

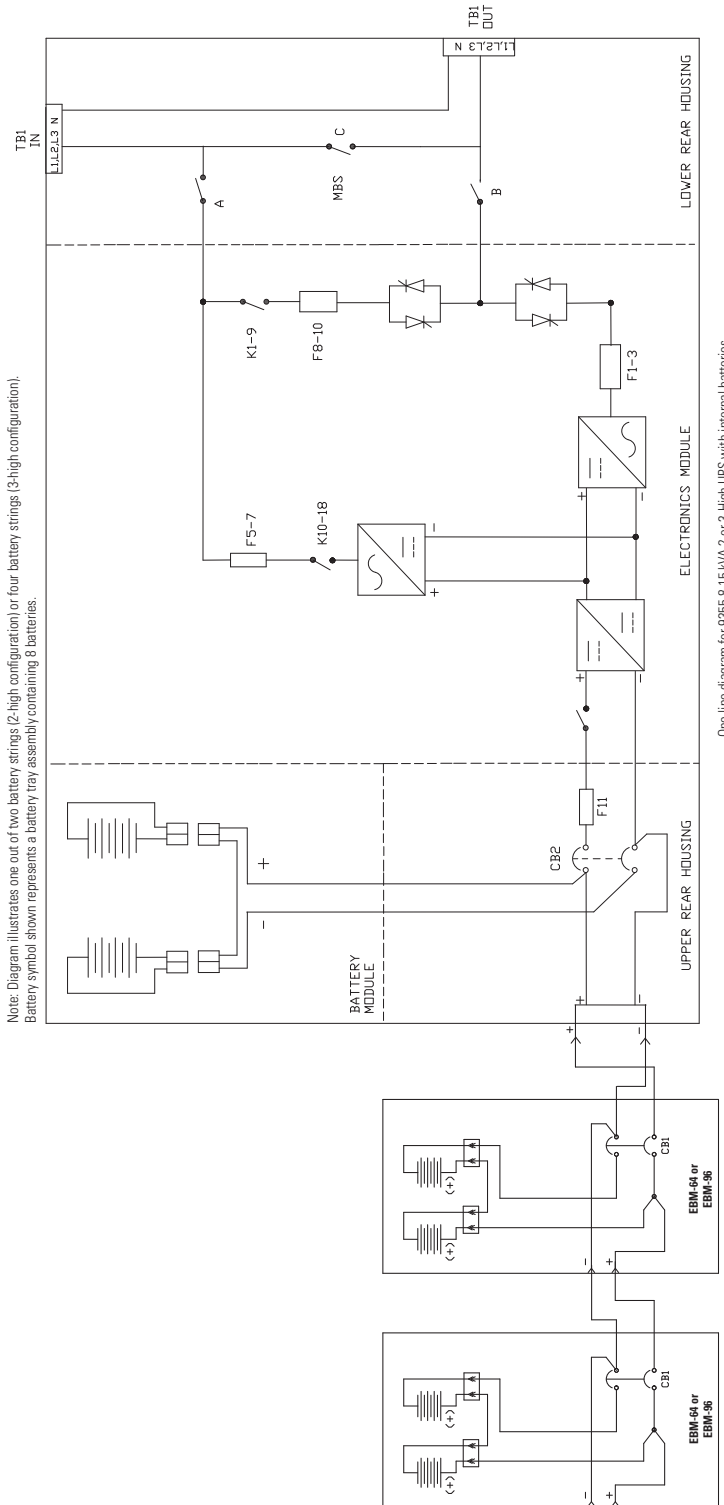


One line diagram for 9355 8-15 kVA 2 or 3-High UPS with internal batteries

Notes:

1. Use only 90°C-Rated copper wire, minimum wire size is based on 120/208 full load ratings applied to Nation Electrical Code®(NEC®) Table 310.15(B)(16). 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 53. UPS with Extended Battery Modules Wiring Diagram



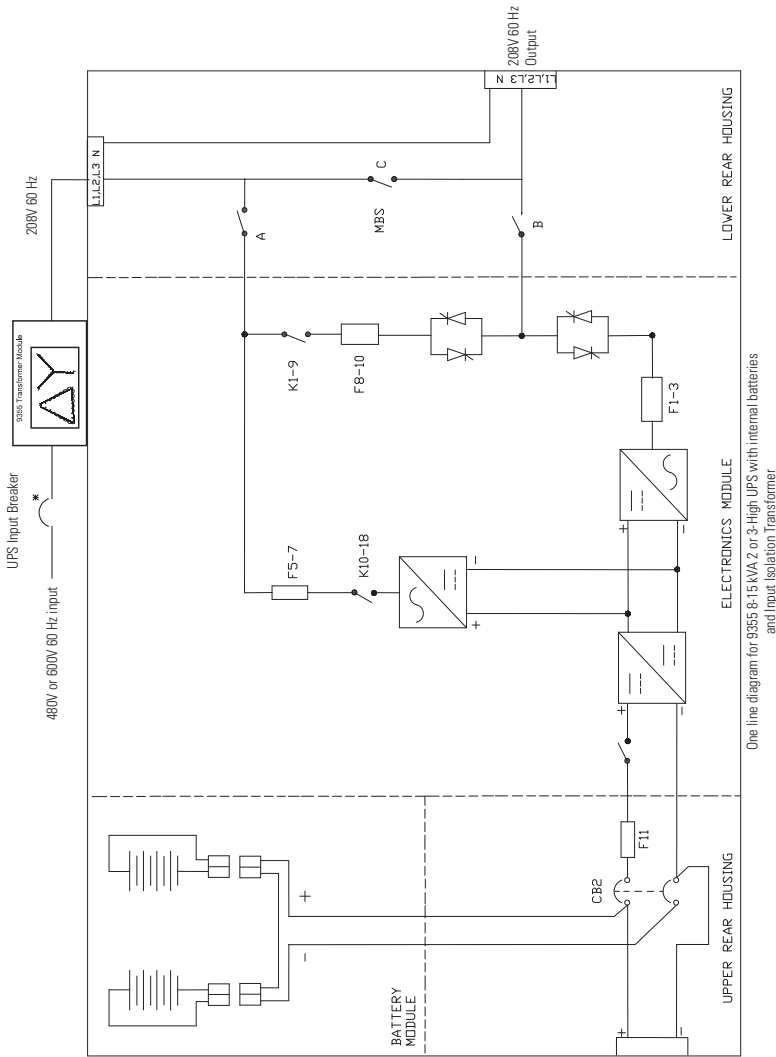
Note: Diagram illustrates one out of two battery strings (2-high configuration) or four battery strings (3-high configuration). Battery symbol shown represents a battery tray assembly containing 8 batteries.

One line diagram for 9355 8-15 kVA 2 or 3-High UPS with internal batteries

- Notes:
1. Use only 50°C-rated copper wire, minimum wire size is based on 120/208 full load ratings applied to Nation Electrical Code®(NEC®) Table 310.15(B)(16). 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 C, Type letters RHH, RHW, RHW-2, TW, THW, THHW, THW-2.

Note: Up to four Extended Battery Modules can be added.

Figure 54. UPS with Input Isolation Transformer Wiring Diagram



Note: Diagram illustrates one out of two battery strings (2-high configuration) or four battery strings (3-high configuration).
 Battery symbol shown represents a battery tray assembly containing 6 batteries.

External Battery Connector (Plug Connection)
 Note: Up to four Extended Battery Modules can be added.

Notes:

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 310.15(B)(16). 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, THW-2.

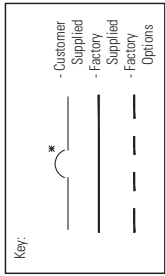


Figure 55. Wall-Mounted Bypass Switch (Version 1) Bypass Wiring Diagram

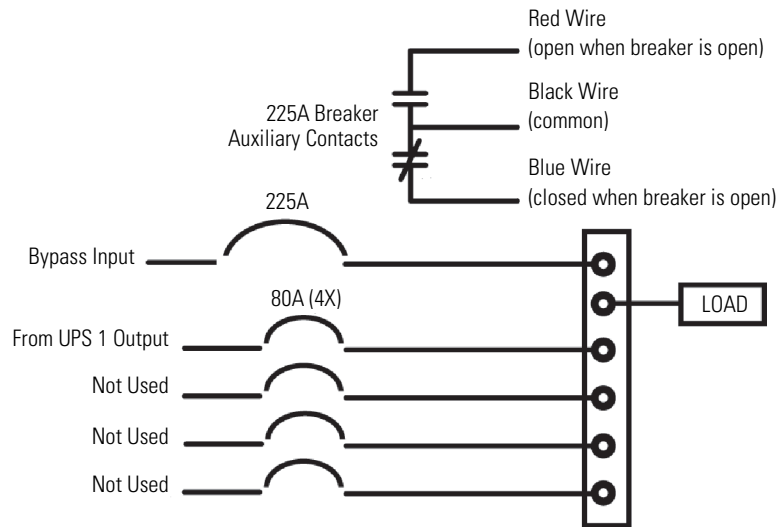


Figure 56. UPS with Input Isolation Transformer and Version 1 Wall-Mounted Bypass Wiring Diagram

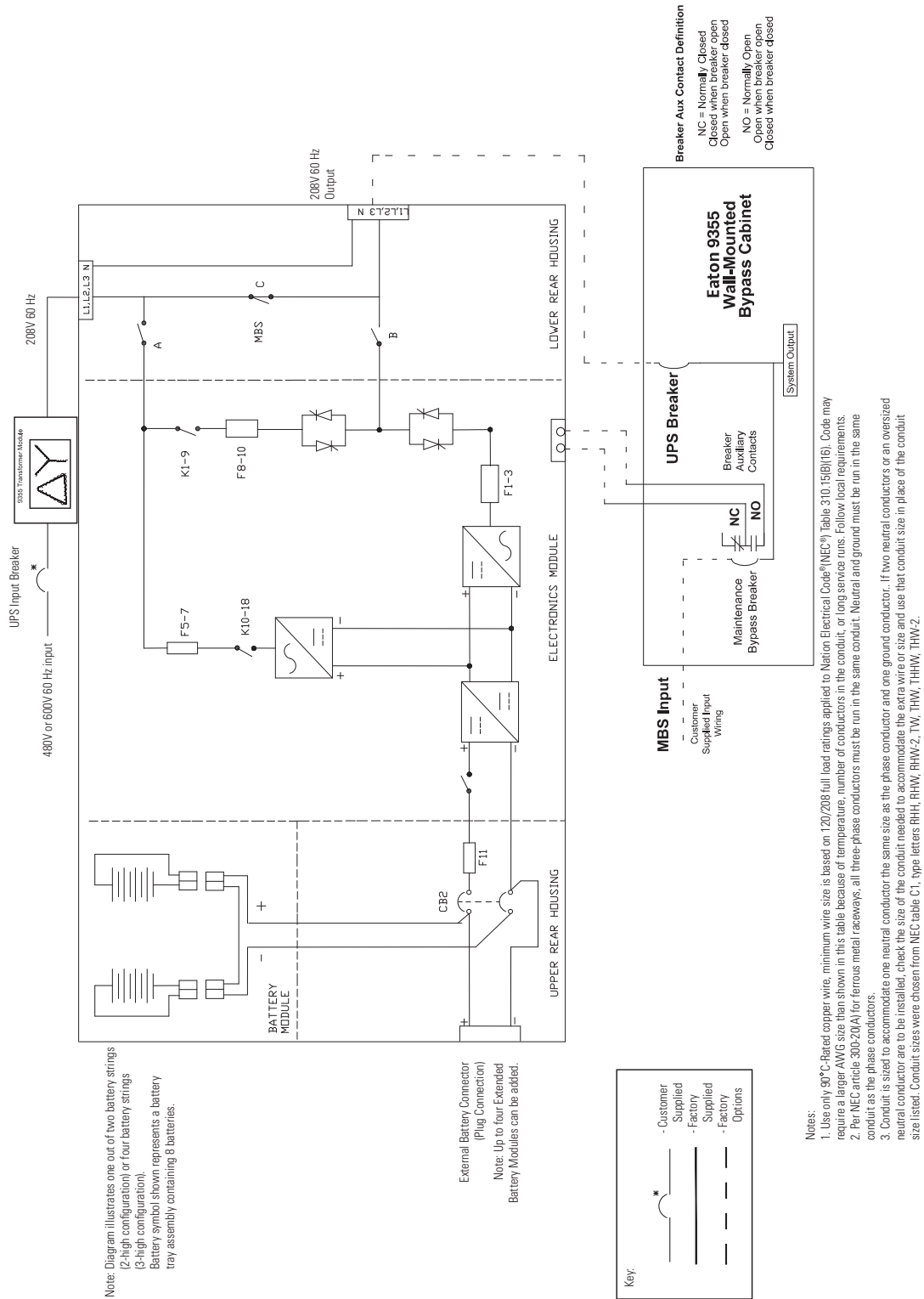


Figure 57. Version 2 Bypass Cabinet Bypass Wiring Diagram – without Maintenance Isolation Switch (MIS)

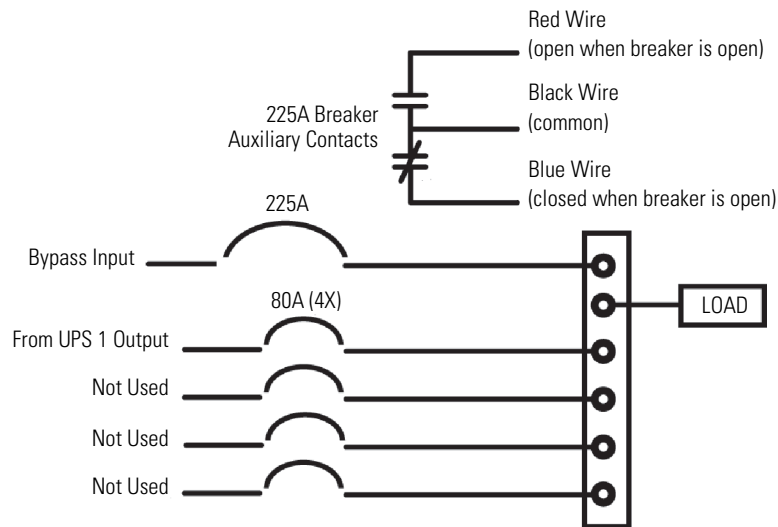


Figure 58. Version 2 Bypass Cabinet Bypass Wiring Diagram – with MIS

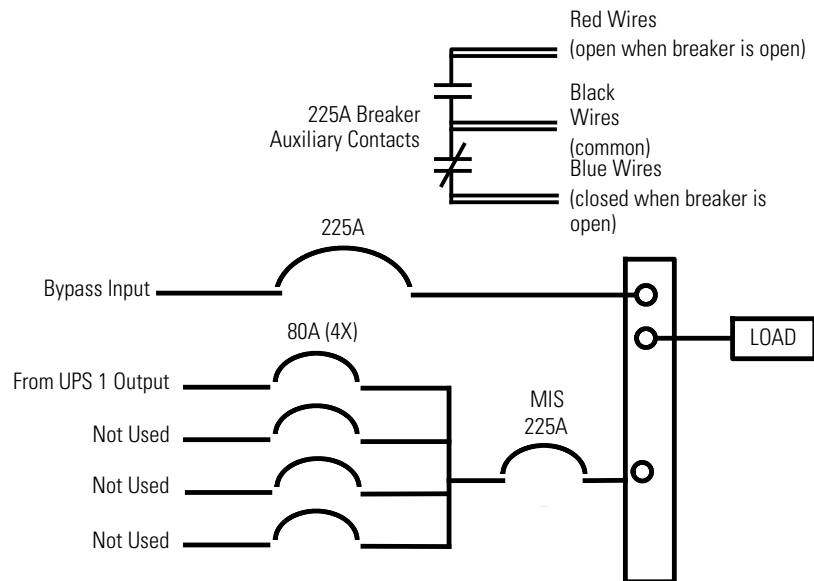
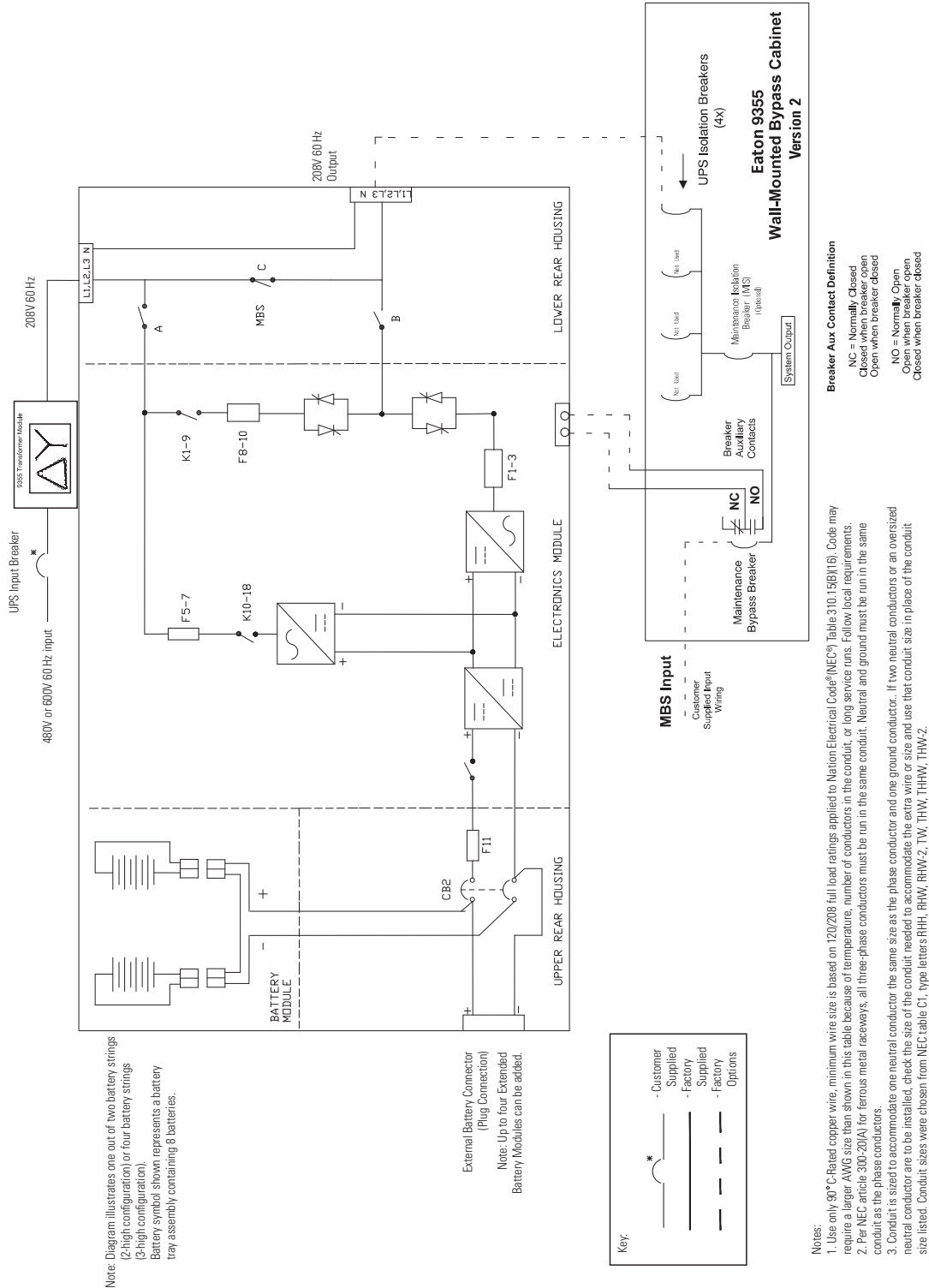


Figure 59. UPS with Input Isolation Transformer and Version 2 Wall Mounted Bypass Cabinet Wiring Diagram



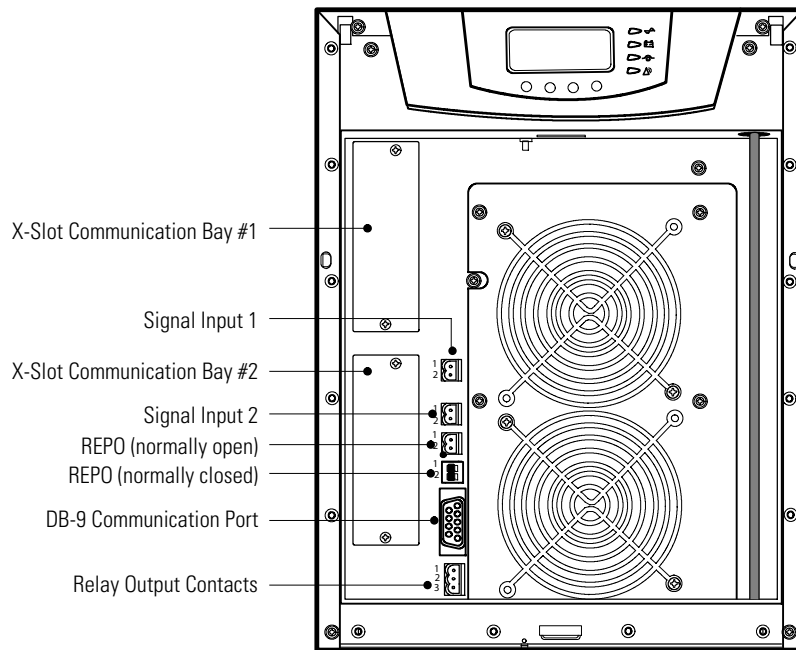
Chapter 6 Communication

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

Figure 60. Communication Options and Control Terminals



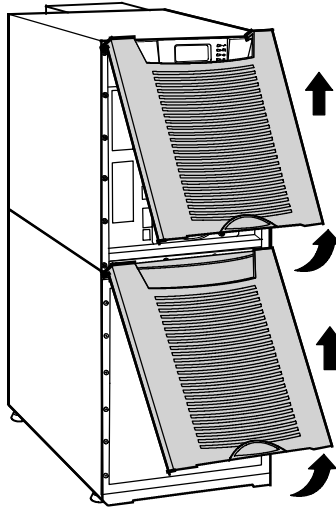
6.1 Installing Communication Options and Control Terminals

To access and install the communication options and control terminals:

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

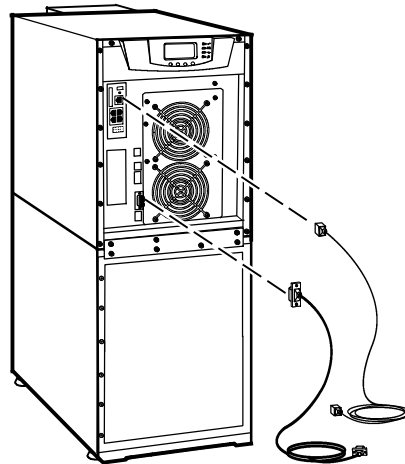
Press and release the handle latch at the bottom of each cover and then lift the cover up and off the cabinet (see [Figure 61](#)).

Figure 61. Removing the Front Covers



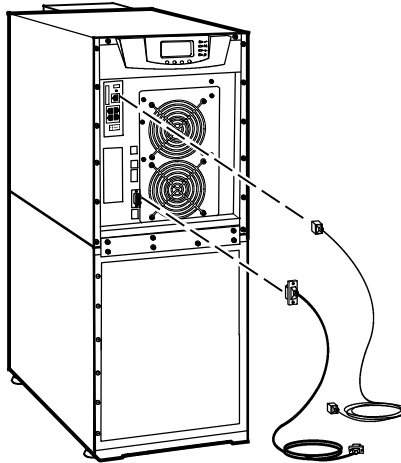
2. Install the appropriate X-Slot card and/or necessary cable(s) into the top cabinet (see [Figure 60](#) and [Figure 62](#)).

Figure 62. Installing Communication Cables

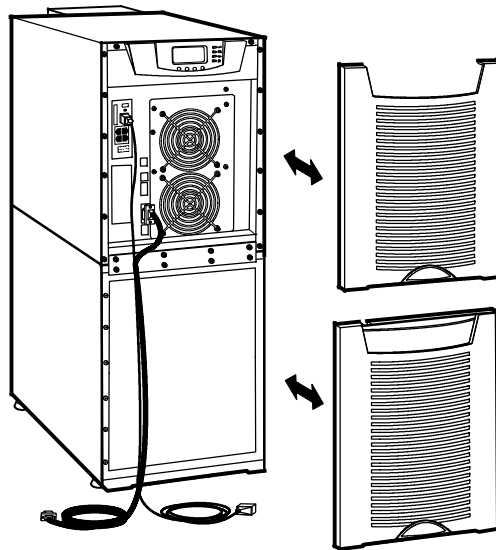


3. On the bottom cover (and also the middle cover if 3-high), remove a knockout tab in the top edge of the cover for each cable:

With wire cutters, cut either side of the tab and twist down to remove the tab (see [Figure 63](#)).

Figure 63. 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 [Chapter 6 Communication](#) or paragraph [6.3 Control Terminals](#) for detailed information.
6. Reinstall the front covers, starting with the bottom cabinet (see [Figure 64](#)).
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 64. Reinstalling the Front Covers

7. Proceed to [Chapter 7 UPS Operating Instructions](#) to start up the UPS.

**NOTE**

After UPS startup, ensure maximum battery runtime by configuring the UPS for the correct number of EBMs (see paragraph [7.6 Configuring the UPS for EBMs](#)).

6.2 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 [7.1.3 User Settings](#)).

6.2.1 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 65](#) and the pin functions are described in [Table 7](#). See [Figure 60](#) for the communication port location.

Figure 65. Communication Port

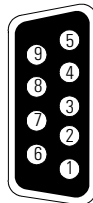


Table 7. Communication Port Pin Assignment

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)	—

6.2.2 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:

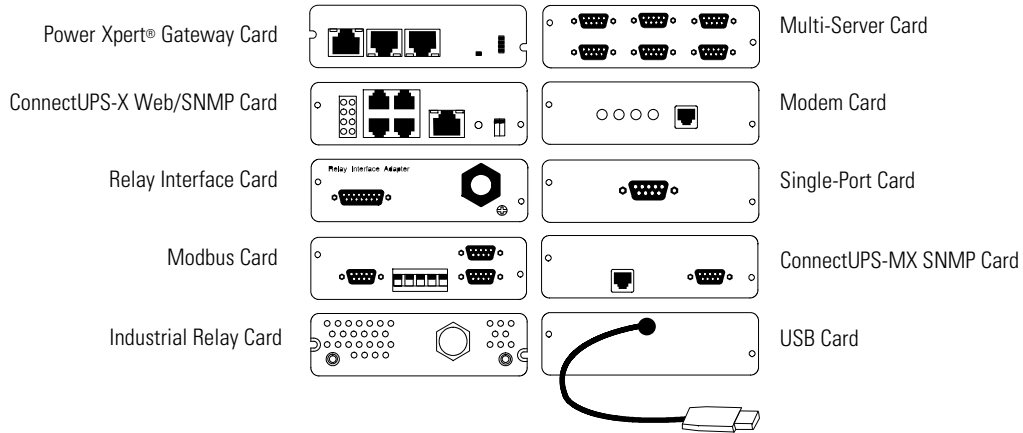
- Power Xpert® Gateway Card - provides a data gateway from the UPS to the Power Xpert Software; provides remote monitoring through a Web browser interface, e-mail, and a network management system using SNMP; connects to a twisted-pair Ethernet (10/100BaseT) network. Modbus TCP support provides direct 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.
- 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 10](#)).

See [Figure 60](#) for the location of the two X-Slot communication bays.

Figure 66. Optional X-Slot Cards



6.2.3 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 67](#) shows an RMP. [Figure 68](#) shows the enclosure dimensions and cable exit openings.

Figure 67. Remote Monitor Panel

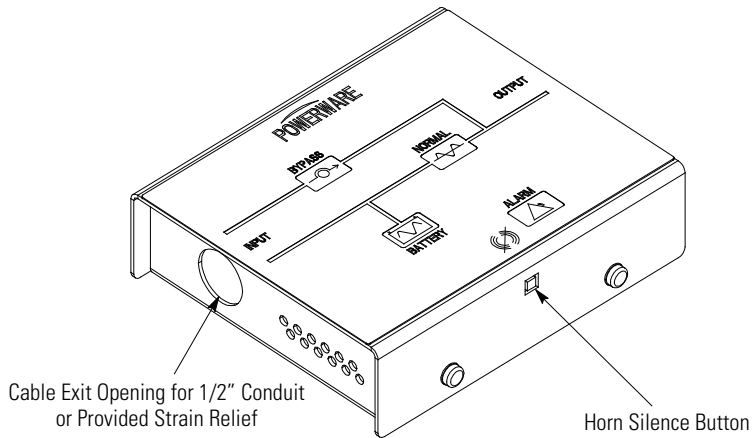
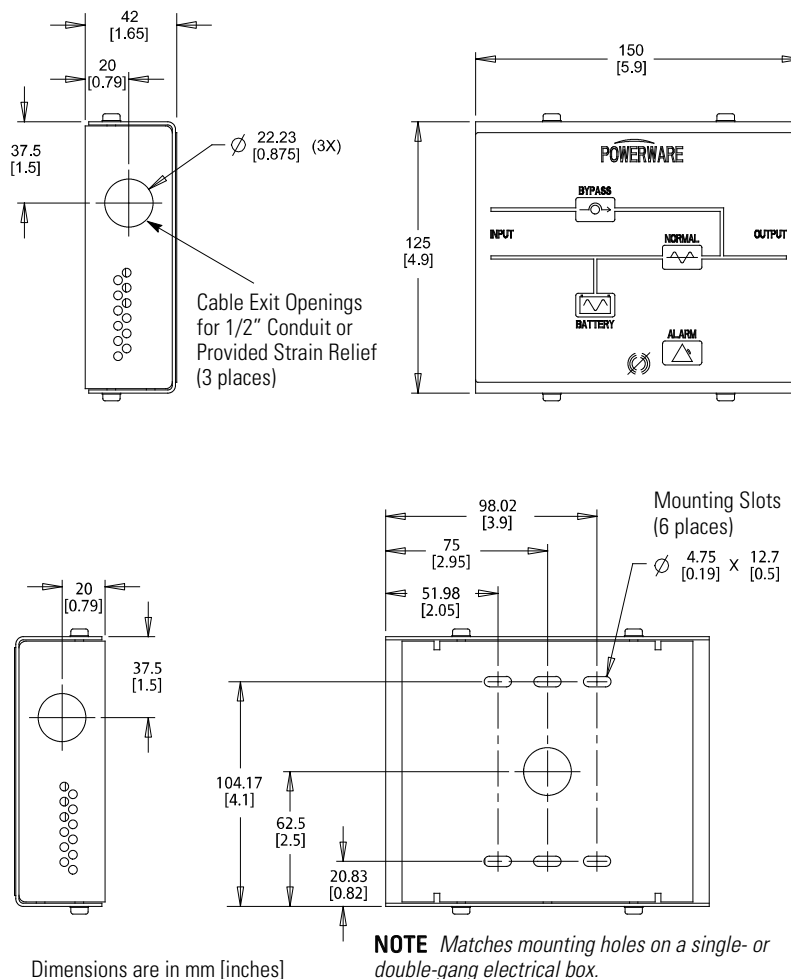


Figure 68. RMP Dimensions



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. Proceed 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 68](#)). Proceed to [Step 4](#).
3. Install wiring from the RMP to the IRC using the cable listed in [Table 8](#) and the provided strain relief bushings in the cable exit openings in the IRC (see [Figure 70](#)) and the RMP.
4. Connect the wiring between the RMP and the IRC plug-in terminal blocks using terminations shown in [Table 8](#). See [Figure 69](#) and [Figure 70](#) for plug-in terminal block locations.

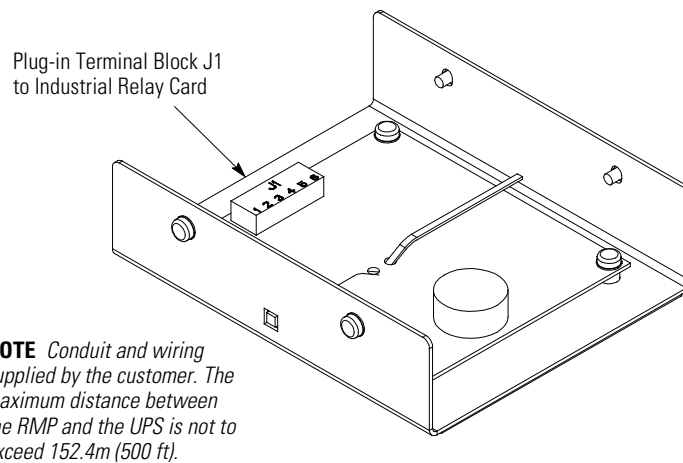
Table 8. RMP Wire Terminations

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

5. Install the IRC into an open X-Slot communication bay (see [Figure 62](#)).
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.

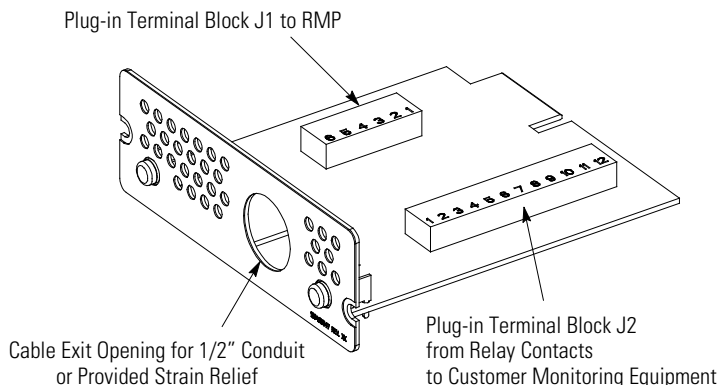
Figure 69. RMP Top Internal View



6.2.4 Industrial Relay Card

The IRC uses normally-open or normally-closed dry relay contacts to indicate the UPS status as listed in [Table 9](#). [Figure 70](#) shows an IRC.

Figure 70. 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 71](#)).
3. Connect wiring between the IRC and the monitoring equipment using terminations shown in [Table 9](#). See [Figure 70](#) for plug-in terminal block locations.
4. Install the IRC into an open X-Slot communication bay (see [Figure 62](#)).
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 9. IRC Wire Terminations

IRC Terminal	Function	Remarks
J2-1	NC	
J2-2	COM	Normal mode
J2-3	NO	
J2-4	NC	
J2-5	COM	Bypass mode
J2-6	NO	
J2-7	NC	
J2-8	COM	Battery mode
J2-9	NO	

Table 9. IRC Wire Terminations (Continued)

IRC Terminal	Function	Remarks
J2-10	NC	
J2-11	COM	Alarm mode
J2-12	NO	

Maximum contact rating: 250 Vac, 30 Vdc @ 5A; Wire range: 16-24 AWG

6.2.5 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.

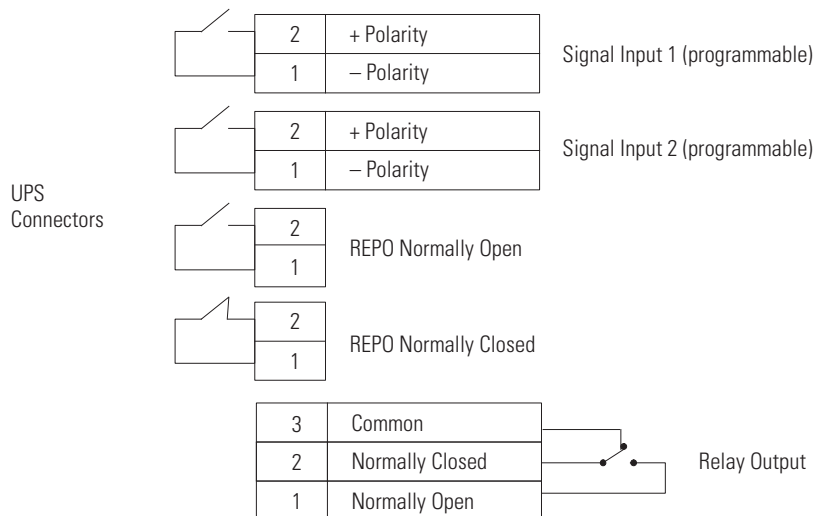
NOTE Use only the supplied communication cable to connect the UPS to your computer.

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.

6.3 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 MW resistors.

Figure 71. 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.

6.3.1 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 60](#)).

If the use of normally-open REPO operation is desired, connect a normally-open external switch (see [Figure 60](#)).

-
- NOTE 1**  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 2** 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)
	L2	
		18 AWG (0.82 mm ²)

6.3.2 Relay Output Contacts

The UPS incorporates a programmable relay output with potential free contacts for remote alarm indications (see [Figure 60](#)). 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.

6.3.3 Programmable Signal Inputs

The UPS incorporates two programmable signal inputs (see [Figure 60](#) on [Figure 60](#)). 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 71](#) 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 10](#).

Table 10. 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.

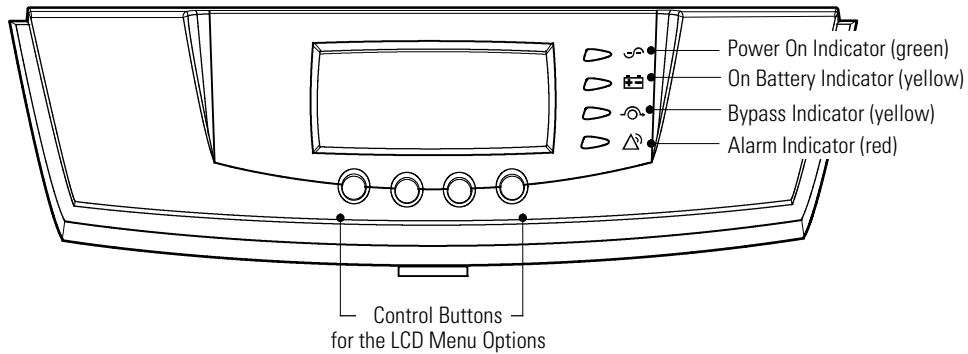
Chapter 7 UPS Operating Instructions

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).





7.1 Control Panel Functions

The UPS has a four-button graphical LCD with backlight. It provides useful information about the UPS itself, load status, events, measurements, and settings (see [Figure 72](#)).

Figure 72. Eaton 9355 UPS Control Panel



The following table shows the indicator status and description.

Indicator	Status	Description
 Green	On	The UPS is operating normally.
	Flashing	A new information message is active.
	Off	The UPS is turned off and will not turn on automatically.
 Yellow	On	The UPS is in Battery mode.
	On	The UPS is in Bypass mode.
 Yellow		
 Red	On	The UPS has an active alarm.
	Flashing	There is a new UPS alarm condition. See Chapter 9 Troubleshooting for additional information.




7.1.1 Changing the Language

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

7.1.2 Display Functions

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

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

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

The following table shows the basic menu structure.

Table 11. 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 12 for more information.
	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	

7.1.3 User Settings

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



NOTE

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

Table 12. 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 paragraph 6.3.3 Programmable Signal Inputs for more information.)	<empty>
Serial Port Config	Port: [X-Slot-1] [X-Slot-2/Serv] Speed: [19200] [9600] [2400] [1200]	19200
Modem Config	Modem Installation Set Modem Call Events Set Modem Init String Set Modem Call Command Set Modem Communication Password	<Not Installed> Event #0 Call modem: no ATZ0 None 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 paragraph 7.6 Configuring the UPS for EBMs for more information.)	2 strings for UPS-32 models 4 strings for UPS-64 models

Table 12. User Settings (Continued)

Description	Available Settings	Default Setting
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 through 5 hertz per second (0.1 Hz increments)	0.5 Hz/s
Usage of Bypass	Enabled/Disabled	Enabled
Transfer to Bypass When Overload	After a delay/Immediately	After a delay
Automatic Start Delay	-1 through 32767 seconds (-1 means disabled)	0s
Control Commands from X-Slot1	Allowed/Disabled	Allowed
Control Commands from X-Slot2/ Serv	Allowed/Disabled	Allowed
X-Slot Signal Input Activation Delay	0 through 65 seconds	5s
Input signal delayed shutdown delay	1 through 65535 seconds	120s
Site Wiring Fault Notice	Enabled/Disabled	Enabled
Reset Custom Event Settings	0 through 32	Total: 0/32
Auto Output Configuration	Enabled/Disabled	Enabled for initial startup Disabled after initial startup

7.2 Initial UPS Startup

Startup and operational checks must be performed by an authorized Eaton Customer Service Engineer, or the warranty terms specified on the product's resources page become void. See [Chapter 11 Warranty](#) for details. This service is offered as part of the sales contract for the UPS. Contact an Eaton service representative in advance (a minimum two-week notice is required) to reserve a preferred startup date.

 **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	See paragraph 7.2.1 Normal Mode Startup .
Battery mode	See paragraph 7.2.2 Starting the UPS on Battery .
Bypass mode	See paragraph 7.2.3 Internal Bypass Startup .
UPS maintenance bypass	See paragraph 7.2.4 UPS Maintenance Bypass Startup .
Wall-mounted maintenance bypass	See paragraph 7.2.5 Wall-Mounted Maintenance Bypass Startup .
Parallel UPS configuration	Refer to the <i>Eaton 9355 Parallel UPS (10/15 kVA) User's Guide</i> .

7.2.1 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 transferred to UPS mode (see paragraph [7.5 Operating the Wall-Mounted Bypass Cabinet](#)).
3. Proceed to [Step 4](#).
4. Verify that the internal maintenance bypass switch is in the UPS position (see [Figure 73](#)).
5. If an optional isolation transformer is installed, switch the input circuit breaker to the ON position (see [Figure 24](#)).
6. Switch ON the 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.

7.2.2 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 transferred to UPS mode (see paragraph [7.5 Operating the Wall-Mounted Bypass Cabinet](#)).
3. Proceed to [Step 4](#).
4. Verify that the internal maintenance bypass switch is in the UPS position (see [Figure 73](#)).
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.



7.2.3 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 transferred to UPS mode (see paragraph [7.5 Operating the Wall-Mounted Bypass Cabinet](#)).
3. Proceed to [Step 4](#).
4. Verify that the internal maintenance bypass switch is in the UPS position (see [Figure 73](#)).
5. If an optional isolation transformer is installed, switch the input circuit breaker to the ON position (see [Figure 24](#)).
6. Switch ON the 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 transferring 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.

- To switch to Normal mode from internal Bypass mode, transfer the wall mounted bypass to Bypass mode (see paragraph [7.5 Operating the Wall-Mounted Bypass Cabinet](#)) 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.

7.2.4 UPS Maintenance Bypass Startup

To start the UPS in maintenance bypass:

- Verify that the maintenance bypass switch is in the BYPASS position (see [Figure 73](#)).
- If an optional isolation transformer is installed, switch the input circuit breaker to the ON position (see [Figure 22](#)).
- Switch ON the utility power where the UPS is connected.
The load is now powered by utility power.
- To transfer the load to the UPS, see paragraph [7.5 Operating the Wall-Mounted Bypass Cabinet](#).





7.2.5 Wall-Mounted Maintenance Bypass Startup

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

- Verify that the bypass breaker is in the OFF position (see [Figure 27](#) or [Figure 36](#)).
- Switch ON the utility power where the wall-mounted bypass cabinet is connected.
- Switch the bypass breaker to the ON position.
The load is now powered by utility power.
- To transfer the load to the UPS, see paragraph [7.5 Operating the Wall-Mounted Bypass Cabinet](#).

7.3 Single UPS Shutdown

To shut down the UPS:

- 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 OFF option.
- Press and hold the  button for three seconds, until the UPS stops beeping.
The UPS stops supplying power to the load.
- Switch the UPS battery circuit breaker to the OFF position.
The UPS disconnects from the batteries and is on logic power only.
- Switch OFF the utility power where the UPS is connected.

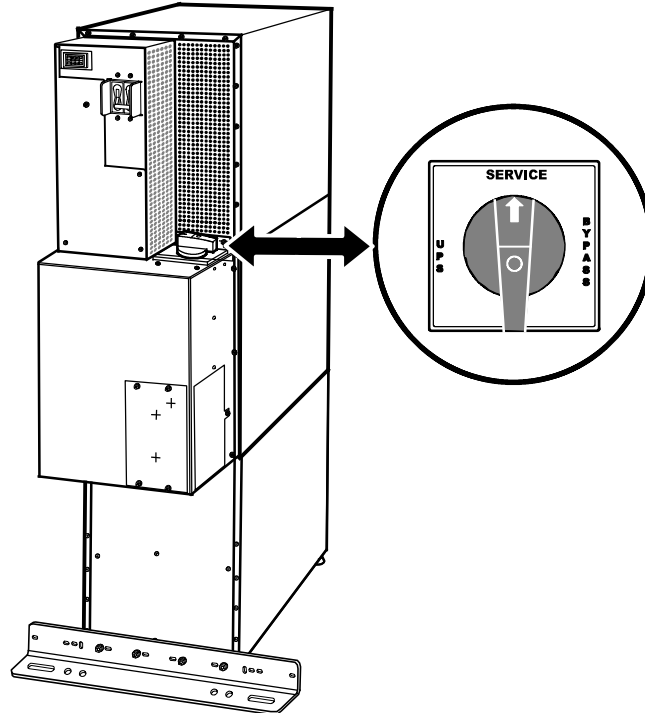
7.4 Operating the UPS Maintenance Bypass Switch

The UPS maintenance bypass switch is located on the back of the UPS (see [Figure 73](#)).

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 73. Maintenance Bypass Switch



The UPS-mounted bypass switch has three positions as described in [Table 13](#).

i NOTE In the UPS or SERVICE position, AC input power is still connected to the input terminals inside the UPS.

Table 13. UPS-Mounted Bypass Switch Positions

Switch Position	Description
UPS	Connects the UPS output to the load.
SERVICE	Connects the load directly to AC input power and disconnects UPS output. AC input power is still connected to the UPS input.
BYPASS	Like the SERVICE position, BYPASS connects the load directly to AC input power and disconnects UPS output. However, because BYPASS also disconnects AC input from the UPS, this is the appropriate position for UPS maintenance or repair.

7.4.1 Single UPS Bypass



7.4.1.1 Transfer the load from the UPS to maintenance bypass:

1. Remove the cables and screws for any ConnectUPS Web/SNMP or PXGX card and then remove the x-slot card.


**NOTE**

Before proceeding ensure that there are no active alarms or notices.

2. 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 rotary switch on the back of the UPS to the SERVICE position.

Verify the load is transferred by viewing the output meters screen.

The Normal LED  will be flashing.

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

Press the ↑ button on the front display, scroll to the UPS On/Off menu. Press the → button to turn the UPS off.

Rear fan is running signifying load is being supplied utility power on bypass.
5. Switch all of the UPS battery circuit breakers to the Off position.
6. Turn the Maintenance Bypass rotary switch on the back of the UPS to the BYPASS position.

7.4.1.2 Transfer the load from maintenance bypass to the UPS

1. Turn the maintenance bypass switch on the back of the UPS to the SERVICE position (see [Figure 73](#)).
2. Switch all of the UPS battery circuit breakers to the ON position.
3. Wait 1.5 to 2 minutes for the internal startup process to complete.

Wait until the bypass indicator illuminates and the two front fans are operating before proceeding to the next step.

Verify the output voltage is present on the meters screen.
4. Turn the maintenance bypass switch on the back of the UPS to the UPS position to return to Normal mode.



When the green UPS normal indicator illuminates, the UPS is powering the load.

Verify the load is transferred to the UPS by viewing the output meters screen.
5. Reinstall any ConnectUPS Web/SNMP or PXGX cards, secure with retained hardware and connect cables.

7.5 Operating 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 the 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 transferring 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  button until the Eaton logo appears.

The UPS is now powering the load in Normal mode.

7.6 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 Battery Setup menu and press the → button.
5. Using the ↓ button, scroll to the Number of Battery Strings option and press the → button.
6. 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.

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

Chapter 8 UPS Maintenance

This section explains how to:

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

8.1 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.

8.1.1 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.

8.2 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.

8.3 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.

Chapter 9 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.

9.1 Typical Alarms and Conditions

The following table describes typical alarms and conditions; check the Event Log through the control panel for a list of active alarms. If an alarm appears with a service code, please contact the Help Desk (see paragraph [1.8 Getting Help](#)).

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

Alarm or Condition	Possible Cause	Action
	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.
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.

9.2 Silencing the Alarm

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

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

Chapter 10 Product 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 14. Model List

UPS	Description	Power Rating
9355-10-32	2-high: UPS with one battery section	10 kVA, 9 kW
	3-high: UPS with one battery and one isolation transformer section	
9355-10-64	3-high: UPS with two battery sections	10 kVA, 9 kW
9355-15-32	2-high: UPS with one battery section	15 kVA, 13.5 kW
	3-high: UPS with one battery and one isolation transformer section	
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 15. 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 16. 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, IEC 61000-4-5
Safety Conformance	UL1778 5th Edition, CSA C22.2 No. 107.3-14, NOM-NYCE
Agency Markings	cULus, NOM-NYCE
EMC (Class A)	47 CFR Part 15/ICES-003 Class A

Table 17. 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 18. 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 19. 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

Table 19. Battery Specifications (Continued)

	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 20. 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 11 Warranty

For warranty information, please refer to the Resources link on our website, www.eaton.com/9355.

EQUIPMENT REGISTRATION

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

Model Number:

Serial Number:



164201594 H0