Eaton® Samsung Gen 3 Battery Cabinet

Installation and Operation Manual

Powering Business Worldwide

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Revision 06

Dear Customer,

On behalf of everyone at Eaton, we thank you for partnering with us, for trusting us to maintain your business continuity and for preventing downtime at your facility.

Our suite of backup power, power distribution and power management products are designed to protect you from a host of threats including power outages, surges, and lighting strikes, and enable you to monitor and control your power infrastructure.

We trust that our products will deliver high quality, reliable power for your business, and we are committed to your success.

Please read this manual, which details the installation and operation processes for your new Eaton product.

Thank you for choosing Eaton!

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Chapter 1 Introduction

The Eaton® Samsung Gen 3 Battery Cabinet provides power for energy storage and emergency backup power for the Eaton Uninterruptible Power Supply (UPS) systems to enhance the usability and reliability of the systems.

The batteries are housed in a single free-standing cabinet.

The battery cabinets are equipped with lithium ion batteries. Removable battery modules reduce battery maintenance time. A DC-rated circuit breaker within each cabinet provides protection and servicing isolation.

Figure 1 shows the Eaton Samsung Gen 3 battery cabinet

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

Figure 1. Eaton Samsung Gen 3 Battery Cabinet

1.1 Installation Features

- Standalone configurations using customer supplied power wiring.
- UPS wiring connections can be routed through the top of the battery cabinets using conduit.
- Easily accessible mechanical terminals located at the top of the cabinet reduce installation time.
- Control wiring can be routed through the sides of the battery cabinets in side by side configurations or through the top of the battery cabinets using conduit in standalone configurations.
- Battery cabinets can be installed in a single lineup.
- Up to nine Eaton Samsung Gen 3 battery cabinets can be paralleled with a UPS to extend the run time.
- Cabinet bolt holes are provided for permanently mounting the battery cabinet using the included Floor Mount (Seismic) Bracket Kit.

1.2 Using This Manual

This manual describes how to install the Eaton Samsung Gen 3 battery cabinet and is divided into chapters. Read and understand the procedures described to ensure trouble-free installation and operation.

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

1.3 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.

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 Eaton Samsung Gen 3 refers only to the battery cabinet and its internal elements. The UPS system refers to the entire power protection system – the UPS cabinet, 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.

1.4 Symbols, Controls, and Indicators

The following are examples of symbols used on the Eaton Samsung Gen 3 battery cabinet 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 batteries in the trash. This product contains sealed lithium batteries and must be disposed of properly. For more information, contact your local recycling/reuse or hazardous waste center.

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

1.5 For More Information

Refer to the applicable UPS Operation and Installation Manual for the information listed:

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

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

1.6 Getting Help

If help is needed with any of the following:

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

Please call the Customer Reliability Center at:

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

Please use the following e-mail address for manual comments, suggestions, or to report an error in this manual: **E-ESSDocumentation@eaton.com**

1.7 Equipment Registration

Please visit www.eaton.com/pq/register to register your new Eaton Samsung Gen 3 battery cabinet.

Model Number:

Serial Number:

Chapter 2 Safety Warnings

IMPORTANT SAFETY INSTRUCTIONS - SAVE THESE INSTRUCTIONS

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

CONSIGNES DE SÉCURITÉ IMPORTANTES – CONSERVER CES INSTRUCTIONS

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

⚠DANGER

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

⚠ DANGER!

Cet système de batterie peut générer des **TENSIONS MORTELLES**. L'installation et l'entretien ne doivent être effectués que par le **PERSONNEL AUTORISÉ**. Ne contient **AUCUNE PIÈCE REMPLAÇABLE**.

⚠WARNING

- The battery system is powered by its own energy source (batteries). The output terminals may carry live voltage even when the system is disconnected from an AC source.
- To reduce the risk of fire or electric shock, install this battery system in a temperature and humidity controlled, indoor environment, free of conductive contaminants. Ambient temperature must not exceed 40°C (104°F). Do not operate near water or excessive humidity (95% maximum). The system is not intended for outdoor use.
- Ensure all power is disconnected before performing installation or service.
- 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) Wear rubber gloves and boots.
- ELECTRIC ENERGY HAZARD. Do not attempt to alter any battery wiring or connectors. Attempting to alter wiring can cause injury.
- 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.
- Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

AVERTISSEMENT!

- Système de batterie est alimenté par sa propre source d'énergie (batteries). Les bornes de sortie peuvent être sous tension, même lorsque système est débranché d'une source de courant alternatif
- Pour réduire les risques d'incendie et de décharge électrique, installer système de batterie à l'intérieur, dans un endroit exempt d'éléments conducteurs et où la température et l'humidité sont régulées. La température ambiante ne doit pas dépasser 40 C (104 F). Ne pas faire fonctionner près d'une source d'eau ou dans un endroit très humide (95 % maximum). Le système n'est pas conçu pour une utilisation extérieure.
- Toutes les sources d'alimentation doivent être débranchées avant de procéder à l'installation et à l'entretien.
- Les batteries peuvent présenter un risque de décharge électrique ou de brûlure en raison du courant de court-circuit élevé. Les précautions de base suivantes doivent être suivies : 1) retirer les montres, bagues et autres objets métalliques; 2) utiliser des outils munis d'une poignée isolée; 3) ne pas déposer les outils ou des pièces de métal sur les batteries; 4) porter des gants et des bottes en caoutchouc.
- DANGERS ÉLECTRIQUES. Ne pas tenter de modifier le câblage et les connecteurs de l'onduleur ou des batteries. Toute tentative de modification peut provoquer des blessures.
- Les charges raccordées pourraient provoquer un courant de fuite élevé. La mise à la terre est donc obligatoire pour garantir la sécurité et le bon fonctionnement du produit. Lors de la vérification du fonctionnement de l'UPS, ne pas enlever la mise à la terre si des charges y sont raccordées.
- Ne pas ouvrir ni abîmer les batteries. L'électrolyte qu'elles contiennent est dangereux pour la peau et les yeux. Il peut être toxique.

CAUTION

Installation or servicing should be performed by qualified service personnel knowledgeable of batteries and required precautions. Keep unauthorized personnel away from batteries. Consider all warnings, cautions, and notes before installing or replacing batteries. *DO NOT DISCONNECT the batteries while the UPS is in Battery mode.*

- Replace batteries with the same number and type of batteries as originally installed in the system.
- Disconnect the charging source prior to connecting or disconnecting terminals.
- Determine if the battery is inadvertently grounded. If it is, remove the source of the ground. Contacting any part of a grounded battery can cause a risk of electric shock. An electric shock is less likely if you disconnect the grounding connection before you work on the batteries.
- Proper disposal of batteries is required. Refer to local codes for disposal requirements.
- Do not dispose of batteries in a fire. Batteries may explode when exposed to flame.
- Keep the UPS door closed and front panels installed to ensure proper cooling airflow and to protect personnel from dangerous voltages inside the unit.
- Do not install or operate the UPS system close to gas or electric heat sources.
- The operating environment should be maintained within the parameters stated in this manual.
- Keep surroundings uncluttered, clean, and free from excess moisture.
- Observe all DANGER, CAUTION, and WARNING notices affixed to the inside and outside of the equipment.

ATTENTION!

- L'installation et l'entretien doivent être effectués par du personnel qualifié en matière d'onduleurs et de batteries, il doit connaître les précautions qui s'imposent. Le personnel non autorisé doit être tenu à l'écart de l'équipement. Il est important de prendre connaissance des avertissements, des mises en garde et des avis avant de procéder à l'installation ou à l'entretien de l'équipement. *NE PAS DÉBRANCHER les batteries lorsque l'onduleur est en mode Batterie.*
- Ne jamais jeter les batteries au feu. L'exposition aux flammes risque de les faire exploser.
- Déconnecter la source d'alimentation avant de brancher ou débrancher les bornes.
- Vérifier que la batterie n'est pas, par inadvertance, reliée à la terre. Si c'est le cas, couper la source de mise à la terre. Les contacts avec une batterie reliée à la terre peuvent provoquer des risques de décharge électrique. Ces risques sont atténués si la mise à la terre est annulée avant le début des travaux sur les batteries.
- L'élimination appropriée des batteries est requise. Se reporter aux codes locaux pour connaître les exigences liées à l'élimination
- Ne pas jeter les batteries au feu. Les batteries peuvent exploser lorsqu'elles sont exposées à des flammes.
- Garder les portes de l'onduleur fermées et les panneaux avant en place pour garantir une circulation adéquate de l'air de refroidissement et pour protéger le personnel des tensions dangereuses dans l'unité.
- Ne pas installer ni faire fonctionner l'onduleur près d'une source de chaleur au gaz ou à l'électricité.
- Le milieu de fonctionnement doit toujours correspondre aux paramètres établis dans ce manuel.
- Maintenir les lieux rangés, propres et exempts d'une humidité excessive.
- Respecter les étiquettes DANGER, MISE EN GARDE et AVERTISSEMENT se trouvant à l'intérieur et à l'extérieur de l'équipement.

CAUTION

To prevent damage to the wiring channel and wiring in the UPS cabinet base when lifting or moving the cabinet:

- Lift and move the cabinet using only the front or rear forklift slots.
- Verify that the forklift forks are in a horizontal position before inserting them into the forklift slots. DO NOT angle fork tips upward.
- DO NOT angle fork tips upward.
- Insert the forks all the way through the base. DO NOT insert forks partially into the base to move the cabinet.
- Forks may be partially inserted into the front or rear forklift slots for minor positioning if the forks are kept in a horizontal position with no upward angling.
- DO NOT use the forklift slots on the end of the cabinet to move the cabinet.
- End forklift slots may be used for minor positioning if the forks are kept in a horizontal position with no upward angling.

If these instructions are not followed, damage to the wiring channel and wiring will occur.

ATTENTION!

Pour éviter d'endommager le câblage et son canal à la base de l'armoire de l'onduleur lorsque l'armoire est soulevée ou déplacée.

- Soulever ou déplacer l'armoire en n'utilisant que les passages de fourche à l'avant ou à l'arrière.
- Vérifier que les fourches du chariot élévateur sont en position horizontale avant de les insérer dans les passages de fourche.
- NE PAS orienter les pointes de fourche vers le haut.
- Insérer complètement les fourches dans les passages de fourche de la base. NE PAS insérer partiellement les fourches dans les passages pour déplacer l'armoire.
- Il est possible d'insérer partiellement les fourches dans les passages avant et arrière pour les petits déplacements, et ce, si les fourches sont en position horizontale sans pointer vers le haut.
- NE PAS utiliser les passages de fourche à l'extrémité de l'armoire pour la déplacer.
- Les passages de fourche à l'extrémité de l'armoire peuvent servir lors des petits déplacements, et ce, si les fourches sont en position horizontale sans pointer vers le haut.

Si ces instructions ne sont pas suivies, des dommages au câblage et à son canal surviendront.

2.1 Safety Instructions

Read and follow these instructions!

The following precautions are intended to ensure the user's safety and to prevent equipment and property damage. Before installing, handling, or operating this product, be sure to read all safety instructions in this document.

	**DANGER** Failure to comply with the instructions that have this symbol may result in a serious accident, causing death or severe injury.
	**DANGER!** Le non-respect des instructions portant ce symbole peut entraîner un accident grave, entraînant la mort ou des blessures graves.
	**WARNING** Failure to comply with the instructions that have this symbol may result in a serious accident, causing severe injury.

	**AVERTISSEMENT!** Le non-respect des instructions portant ce symbole peut entraîner un accident grave, provoquant des blessures graves.
	**CAUTION** Failure to comply with the instructions that have this symbol may result in minor or moderate injury.
	**ATTENTION!** Le non-respect des instructions portant ce symbole peut entraîner des blessures mineures ou modérées.
	**NOTICE** Provides information considered important but not hazard-related. The information relates mainly to potential equipment or property damage if not followed.
	**AVIS** Fournit des informations considérées comme importantes mais non liées aux dangers. Les informations concernent principalement des dommages potentiels à l'équipement ou aux biens si elles ne sont pas respectées.
	**IMPORTANT** Indicates valuable tips for optimal installation and proper operation of the product.
	**IMPORTANT** Indique de précieux conseils pour une installation optimale et un bon fonctionnement du produit.

2.2 General Instructions

Be aware that a battery system presents a serious risk of electrical shock, arc flash, and other hazards when not switched or operated as described in this manual and other supplemental documentation. Follow all safety precautions while installing, handling, or operating any part of the battery system.

- Remove watches, jewelry, rings, and other metallic items.
- Use tools with insulated switches to avoid inadvertent short circuits.
- Wear proper personal protective equipment.
- Do not rest or place tools or any other metal parts on any component of the battery system.
- Disconnect the charging source and/or load before connecting or disconnecting power terminals.
- Use proper lifting means when moving batteries.
- Batteries must be switched, transported and recycled or discarded in accordance with federal, state and local regulations. Refer to the Appendix in this manual for more details on disposal and recycling.
- Do not open or mutilate the batteries.
- Only authorized, properly trained and qualified technicians should perform maintenance.
- Only qualified personnel who are familiar with the batteries and safety precautions should installer maintain the battery system.
- Do not allow unauthorized personnel to contact the batteries.

	**DANGER**
	Failure to comply with the instructions that have this symbol may result in a serious accident, causing death or severe injury.

2.3 Safety Precautions

The following precautions are general safety guidelines that should be followed when working with or near the Energy Storage System (ESS). The user should develop complete, site-specific safety parameters and procedures.

- Review and refer to all safety warnings and cautions in this manual before installation.
- Build a clear, permanent, restricted access area around the system.
- Only authorized, properly trained electrical operators should be able to access the system.

The interior of this equipment must be considered a "no-go area except for qualified personnel who are familiar with the batteries and safety precautions." Consult local codes and applicable rules and regulations to determine permit requirements. If required, mark enclosures appropriately before beginning work.

NOTICE

This product shall be installed in a restricted access area where only the qualified personnel who are trained and have the knowledge of the product and the related safety precautions of the installation manual.
"Restricted access area" is area accessible only to the electrically skilled persons and electrically instructed persons with the proper authorization.

2.4 Recycling & Disposal Guide

1. Eaton/Samsung SDI li-ion batteries are recyclable.
2. Do not dispose Samsung batteries with general waste. Please follow the regulations and disposal instructions provided by manufacturers. Please contact the sales for the disposal instructions.
3. The customer is responsible for module disposal. Battery shall be disposed through an authorized waste disposal company in accordance with local regulations. In the following situations, do not use the battery and dispose it according to local regulations.
    - Battery is exposed to accidents such as conduction, drop, shock, fire (including high temperature exposure),moisture inflow, etc.
    - Battery is damaged or deformed.
    - Battery usage is terminated due to customer situation.

2.5 Requirements for Safe Battery Use

1. The battery system has a risk of serious safety issues caused by moisture, condensation and water leaks. Therefore, the humidity inside the battery room shall be controlled using HVAC at all times. Also, the system should be designed to prevent water leaks and condensation, and have a periodic checkup.
2. The difference between the internal and external temperature of the room where the battery system is installed may lead to condensation within the battery modules and electronics. Therefore, the temperature difference shall be managed to prevent condensation.
3. Dust may undermine the insulation performance. Therefore, care must be taken to ensure the cleanliness of the inside of the battery room at pollution degree 2 (PD2) or lower (Normally, only nonconductive pollution occurs; Temporary conductivity caused by condensation is to be expected). Periodic inspection and management are required. Dust filters shall be installed in the outside-air pathway to prevent an inflow of foreign substances.
4. The battery system shall be installed in high-lying areas to prevent any part of the system from being submerged in case of flooding. There shall also be a drainage near the system.

5. The battery room shall be designed and managed to prevent the entry of wild animals.
6. The structural materials of the battery room shall be flame-retardant/nonflammable. The battery room shall not contain any high-risk fire objects or direct heat sources.
7. It is forbidden to reuse damaged modules and BCUs. Damaged equipment should be immediately moved to and kept in a safe location prior to contacting Eaton for further instructions.
8. The battery is sensitive to temperature and humidity; therefore, the battery room's ambient temperature and humidity shall be managed at all times to comply with the conditions that were previously discussed with Eaton. Also, temperature and humidity measuring devices shall be installed in the battery room. The measured data should be saved so that it can be provided to Eaton, if required.
9. The upper/lower temperature deviation in any battery string in the room shall be managed within 5°C. Regular inspections are required to prevent hot/cold spots caused by abnormal air convection.
10. The battery room shall install a fire suppression system (FSS) dimensioned appropriately for the space. Clean fire extinguishing agents that have no harm to the environment are recommended. Eaton recommends the combination of automatic fire extinguishers and heat/smoke sensors. Heat/smoke sensors shall be placed in appropriate places that allow the monitoring of the entire battery room.
11. Check the battery data regularly using an EMS or monitoring devices. The battery data should be stored in storage units that are separately installed from the battery room. Consult Eaton for storage items, cycles and periods.
12. Circuit breakers, such as MCCBs, should be installed between the battery system and power converters.
13. To prevent battery damage from transient voltage surges, protective devices such as an SPD could be installed. The SPD should be UL1449 certified and meet the following specifications.
    - SPD should be type 1. In the OVCIII area, Battery system should be lowered to OVCII.
    - VPR (Voltage Protection Rating) : 4,000V or higher
    - MCOV (The maximum continuous operating voltage) : 600V or higher
    - I_N (Nominal discharge current) : 10kA or higher
    - SCCR (Short circuit current rating test) : 25kA or higher
14. The battery should operate under a floating condition. Rack frames shall be grounded separately from the UPS.

2.6 Personnel and Equipment Warnings

Personnel in contact with the battery system should be aware of the following hazards:

	**WARNING—SHOCK HAZARD** Do not make contact with high voltage system connectors or terminals. Do not open the enclosure doors unless proper lock out and tag out procedures and related trainings have been followed in accordance with local codes and regulations.
	**WARNING—ARC FLASH HAZARD** Do not make contact with high voltage system connectors or terminals. Do not open the enclosure doors unless proper lock out and tag out procedures and related trainings have been followed in accordance with local codes and regulations.
	**WARNING—FIRE HAZARD** Do not make contact with high voltage system connectors or terminals. Do not open the enclosure doors unless proper lock out and tag out procedures and related trainings have been followed in accordance with local codes and regulations.
	**CAUTION—PINCH POINTS** Do not make contact with high voltage system connectors or terminals. Do not open the enclosure doors unless proper lock out and tag out procedures and related trainings have been followed in accordance with local codes and regulations.
	**CAUTION—STATIC SENSITIVE** Do not make contact with high voltage system connectors or terminals. Do not open the enclosure doors unless proper lock out and tag out procedures and related trainings have been followed in accordance with local codes and regulations.

2.7 Dangerous Voltages

DANGER

The Energy Storage System (ESS) is powered by multiple power sources. Hazardous voltages may be present in the equipment even when it does not appear operational. The user is responsible for ensuring that all cautions and warnings in this manual are understood with no exceptions. Failure to do so may result in serious injury or death. Follow all manufacturer-published safety procedures.
Electrical equipment can present a risk of electrical shock and can cause an arc flash. The following precautions must be observed when working on or around electrical equipment:

- Remove watches, jewelry, rings, and other metallic items.
- Use tools with insulated switches to avoid inadvertent short circuits.
- Wear proper personal protective equipment.

2.8 Lock Out/Tag Out Guidelines

DANGER

Failure to follow all the applicable lock out/tag out (LOTO) procedures at all times may result in serious injury or death.
With power applied to the ESS, hazardous voltages are present on some components. To prevent death or injury, do not touch any components within the enclosure unless specifically directed to do so. To reduce the risk of electrical shock, make sure that all equipment is properly grounded. For more information, refer to the Installation Manual.

WARNING

Enclosure doors must remain closed except when access to the enclosure interior is required. Personnel should keep a safe distance from enclosures whenever the equipment is energized. Always comply with local, state, and national lock out/tag out guidelines when working with or near the ESS. The LOTO procedures must meet or exceed the requirements of all guidelines presented in Eaton safety documentation. Follow all requirements and recommendations in this manual before entering potentially hazardous areas or beginning work on the ESS.

- Wear proper personal protective equipment.
- Identify and remove all power and stored energy sources. Then, open all MCCBs and confirm that the voltage on the high voltage DC battery bus is zero.
- Apply appropriate LOTO devices. When applying a LOTO device to the ESS, do not touch anything within the enclosure except as specifically directed in the work procedures.
- Complete the site-specific LOTO procedure and safety checklist before beginning any work.

2.9 General Warnings

DANGER

When energized, the equipment presents a hazard of electric shock, death, and injury. Only authorized, properly trained personnel who are thoroughly familiar with the equipment shall install, operate, and maintain this equipment.

DANGER

To avoid death, injury, and property damage, follow all safety procedures promulgated by local, state, and federal Environmental Health and Safety (EHS) guidelines.

DANGER

To minimize exposure to hazards such electrical shock, death, and injury, approved grounding practices and procedures described in this document must be strictly followed.

WARNING

To avoid injury and equipment damage, personnel must adhere to the site protocol concerning working at heights.

WARNING

To avoid personal injury or equipment damage caused by equipment malfunction, only authorized, qualified, and trained personnel should modify any hardware or software component in the battery system.

WARNING

Always ensure that applicable standards and regulations are followed and only properly certified equipment is used as a critical component of a safety system. Never assume that a safety-critical control loop is functioning correctly.

2.10 Storage Instructions

The Eaton Samsung Gen 3 cabinets are designed to ship with the battery modules installed. However, if the customer requests the modules to be shipped separately, the following conditions should be observed:

- When storing or transporting the module in its packaging box, keep the box upright as shown in the figure below. Do not keep the box upside down or on its side.
- Do not stack more than 5 boxes.
- For the long-term storage of modules, SOC shall be kept between 10 and 25% SOC. If long-term storage of modules is required after installation, control power to the system shall be removed (disabled) to prevent cell over-discharge. The storage environmental conditions, including temperature and humidity, and maintenance charge frequency as stated in the table below shall be followed.
- Batteries have the properties of self-discharge (3% per month). M-BMS to measure the voltage and temperature of each cell, has cells as a power supply (5% per month, when there's communication to the external system). Therefore, regular voltage measurements are required to prevent electric damage resulting from the long-term storage. If necessary, recharge should be performed.

Figure 2. Battery Module Storage Method

Table 1. Storage Environment Specifications

Item		Standard	Comment
Voltage		28.704V – 29.104 V	It is required to measure the module voltage every 6 months. Recharge is required if the measured module voltage falls below the range specified in the following guidance. Any cell over-discharge that occurs due to the absence of regular voltage monitoring (and charging, as necessary) beyond the 6-month storage period will be deemed the fault of the customer and will void any product warranty. 1) The module voltage shall remain between the following voltages at all times during storage: 28.704 V (3.588 V/cell) - 29.104 V (3.638 V/cell) 2) The module voltage can be discharged/charged within the following range prior to installation: 21.6 V (2.7 V/cell) - 28.704 V (3.588 V/cell) 3) Notify Eaton if any module measures below 21.6V (2.7 V/cell). 4) After storage and prior to installation, the customer must confirm that the voltage difference between all modules within one rack frame is within 300 mV.
Temp	Module	5-28°C	For convenient battery installation, one of the storage conditions below can be temporarily allowed before installation. The customer should provide Eaton with the records of the storage period and the temperature & humidity management during storage, upon request. - Maximum 6 months: 5 to 28°C - Maximum 1 month: -20 to 40°C - Maximum 3 months: -20 to 40°C, Mean daily maximum temperature within 30°C. If storage is required after installation, the condition of 5 to 28 °C should be maintained for the module. Additional battery degradation may occur depending on the storage period after installation.
	BCU	5-40°C	
	Uniformity	Within 5°C	Temperature uniformity should be within 5°C during the storage period.
Humidity		20–80%	There must be no condensation.
Altitude		≤ 2000m	-
Pollution Degree		PD2 or better	The battery system should be stored under a condition where no foreign substances are generated. (Normally only nonconductive pollution occurs.)

NOTICE

Li-ion batteries may experience lifetime degradation or voltage deviation between each battery cells if they are stored for a long time after shipment or are not charging/discharging. This is an electrochemical phenomenon of li-ion batteries, which is not a significant issue. As this may, however, undermine the system performance, it is, therefore, required to perform cell balancing for two to seven days after installation and before battery operation. Contact Eaton for details.

2.11 Personal Protective Equipment (PPE)

Please be aware that batteries have a risk of electric shocks including high short-circuit current. Follow all the safety precautions when operating the battery system. Personnel must wear appropriate PPE according to the table below when installing and maintaining the system. The presented results of arc flash calculation are theoretical values and the calculation is based on the 1P configuration. Therefore, one-level-higher PPE should be applied when actually working with the system.

In order to reduce the risks of arc flash, each battery module is equipped with a fusible link inside, and a fast-acting fuse on the BCU (+) pole. Arc flash risks are analyzed using the peak current and arc time that are measured through a rack-level assessment, and protective measures are recommended accordingly.

Arc Flash Calculation

Arc energy is calculated like the table below using the arc time identified in the fault current and then PPE is determined according to the arc energy calculation. The incident arc energy will change depending on the platform configuration, contact Eaton for accurate calculations specific to the delivered system.

Fault current will be reduced at EOL (SOH 80%), so the arcing time will increase but the cell impedance will increase about 20%. As a result, the arc energy value will be similar.

Table 2. Arc Energy Calculation

U6A4 136S		Unit	Derived	Rack (BOL, 100% SOC, 100% SOH)	Rack (EOL, 100% SOC, 80% SOH)
V_{sys}	System voltage	V	Measured	571.2	571.2
R_{sys}	Impedance	Ω	Calculation	0.0733	0.0880
I_{bf}	Fault current	A	BOL Measured EOL Estimated	7,338	6,491
I_{arc}	Arcing current	A	Calculation, Ibf/2	3,669	3,245
T_{arc}	Arcing time	Sec	BOL Measured EOL Estimated	0.00174	0.002
IEm	**Arc Energy at 18"**	**Cal/cm2**	**Calculation**	**0.0174**	**0.0177**

The L/R time constant values for the 136S configuration are as follows:

☐ **BOL**: 33.0 µ / 73.3 mΩ

☐ **EOL**: 33.0 µ / 88.0 mΩ

Chapter 3 Installation Plan and Unpacking

Use the following basic sequence of steps to install the Eaton Samsung Gen 3 Battery Cabinet:

NOTE Contact your local Authorities Having Jurisdiction (AHJ), to discuss the planned lithium battery installation, including cabinet placement and spacing, as well as total quantities of lithium in the battery / UPS room. This should be done prior to the installation date. Fire, building, and electrical inspectors may enforce local and national codes that may impact the installation.

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

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

3.1 Creating an Installation Plan

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

- Physical features and requirements, including dimensions, single or multiple battery cabinet configurations.
- Power wiring installation notes
- Location of conduit and wire entry landing plates
- Location of power terminals

3.2 Preparing the Site

3.2.1 Environmental and Installation Considerations

The UPS system installation, including the Eaton Samsung Gen 3 battery cabinet, must meet the following guidelines:

- The system must be installed on a level floor suitable for computer or electronic equipment, and able to support the weight of the battery cabinet(s) and UPS. Each battery cabinet can weigh up to approximately 526 kg. (1160 lbs).
- The system must be operated at an altitude no higher than 2000 m (6600 ft) without derating. For additional information and assistance with high altitude operation, contact an Eaton service representative (see paragraph 1.6 *Getting Help*).
- The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.

- Specifications are subject to change.

Failure to follow guidelines may void your warranty.

The basic environmental requirements for operation of the battery cabinet are:

- The batteries are rated for a 18–28°C (64–82°F) ambient temperature to extend their useful life.
- Maximum Heat Rejection: 567 BTU/hr
- Maximum Relative Humidity: 20–80%, noncondensing

⚠CAUTION

It is recommended for optimal battery life and discharge performance to keep the ambient air temperature the battery is used in at 18–28°C (64–82°F). Operating temperatures above the recommended range will result in decreased battery life and performance, and will reduce or void the battery warranty. Refer to Eaton's Terms and Conditions of Sale with Battery Replacement Coverage and the Battery Replacement Price Book for more information. These documents can be found at www.eaton.com/powerquality or contact your service representative for information on how to obtain copies.

The operating environment must meet the weight requirements shown in Table 3 or and the size requirements shown in Figure 3 through Figure 8. Dimensions are in millimeters (inches). Specifications are subject to change.

Table 3. Eaton Samsung Gen 3 Cabinet Weights

Model	Weight kg (lb)	
	Shipping	Installed
Eaton Samsung Gen 3 128S (486V)	549 (1210)	507 (1118)
Eaton Samsung Gen 3 136S (517V)	568 (1252)	526 (1160)

The Eaton Samsung Gen 3s use natural convection cooling to regulate internal component temperature. The primary air inlets are in the front of the cabinet, side and rear panels are vented to allow for air flow. Allow clearance in front of the cabinet for proper air circulation. The clearances required around the cabinet are shown in Table 4.

Table 4. Cabinet Clearances

From Top of Cabinet	170 mm (7") working space
From Front of Cabinet	914.4 mm (36") working space and ventilation
From Back of Cabinet	76 mm (3") for ventilation
From Right Side of Cabinet	None Required
From Left Side of Cabinet	None Required

⚠CAUTION

The shelf life for the batteries installed in the Eaton Samsung Gen 3 is 12 months from the date code on the battery. The recharge date is also stated on a label inside the Eaton Samsung Gen 3's cabinet lower door.

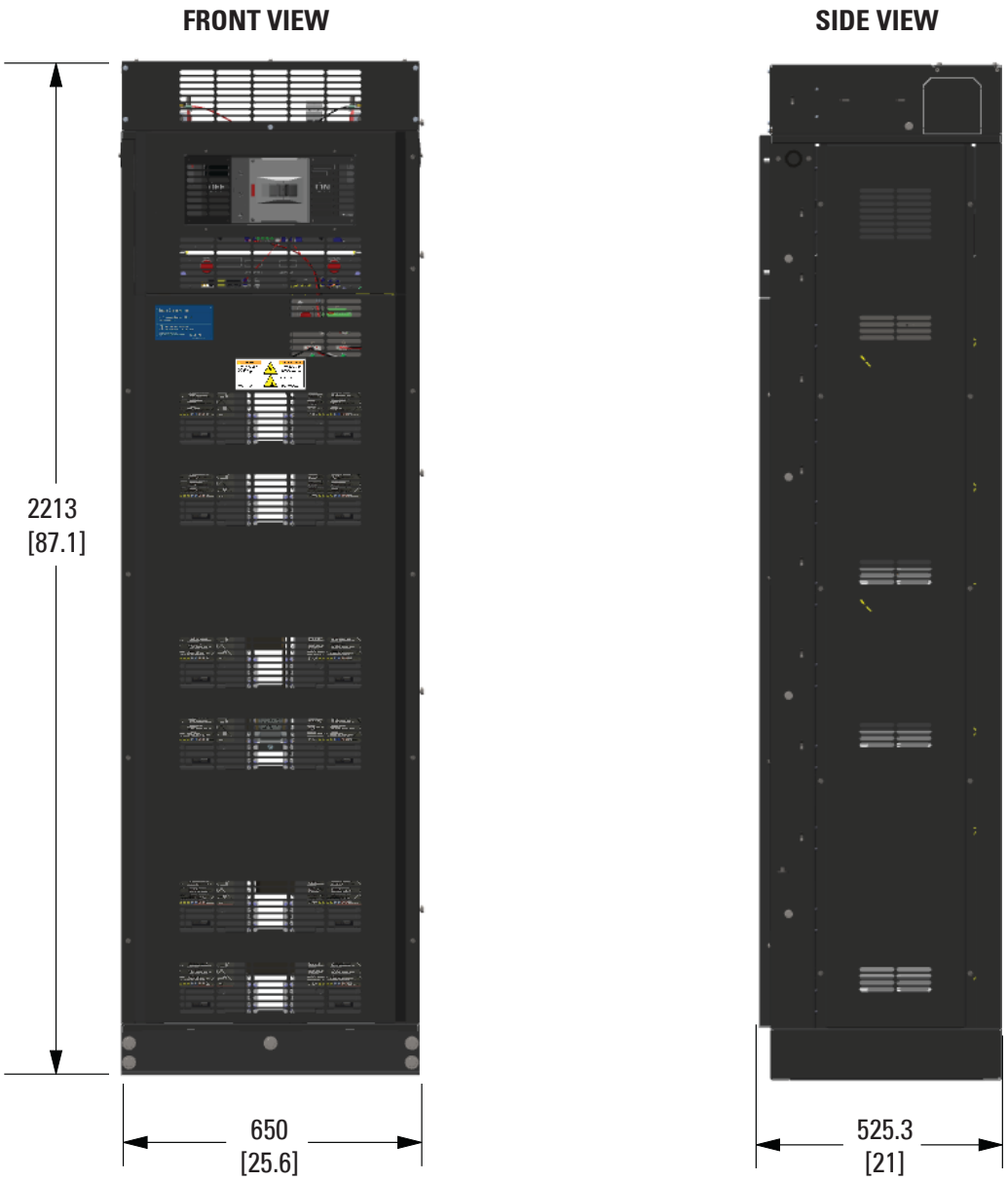
Failure to recharge the batteries before the expiration of the shelf life will result in reduced discharge time, shorter float service life, and will void the warranty.

⚠ ATTENTION!

La durée de conservation des batteries installées dans le Eaton Samsung Gen 3 est de 12 mois à compter du code de date sur la batterie. La date de recharge est également indiquée sur une étiquette à l'intérieur de la porte inférieure de l'armoire du Eaton Samsung Gen 3.

Le fait de ne pas recharger les batteries avant l'expiration de la durée de conservation entraînera une réduction du temps de décharge, une durée de vie plus courte du flotteur et annulera la garantie.

Figure 3. Eaton Samsung Gen 3 Dimensions (Front and Right Side Views)



Dimensions are in millimeters [inches]

Figure 4. Eaton Samsung Gen 3 Dimensions (Rear View)

NOTE The Eaton Samsung Gen 3 Front Floor Mounting Bracket's mounting dimensions are identical to the Rear Floor Mounting Bracket dimensions.

Figure 5. Eaton Samsung Gen 3 Dimensions (Top and Bottom Views)

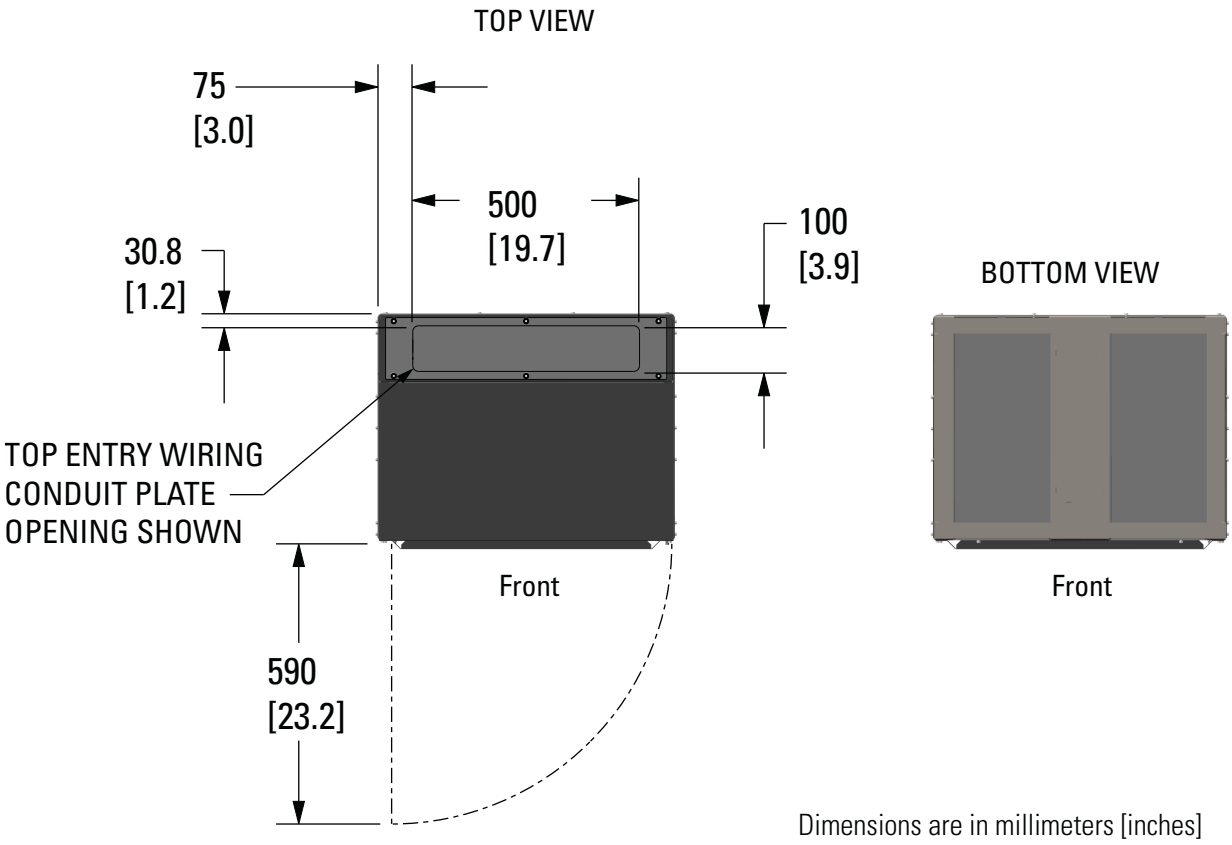


Figure 6. Eaton Samsung Gen 3 Model 128S — Component Locations

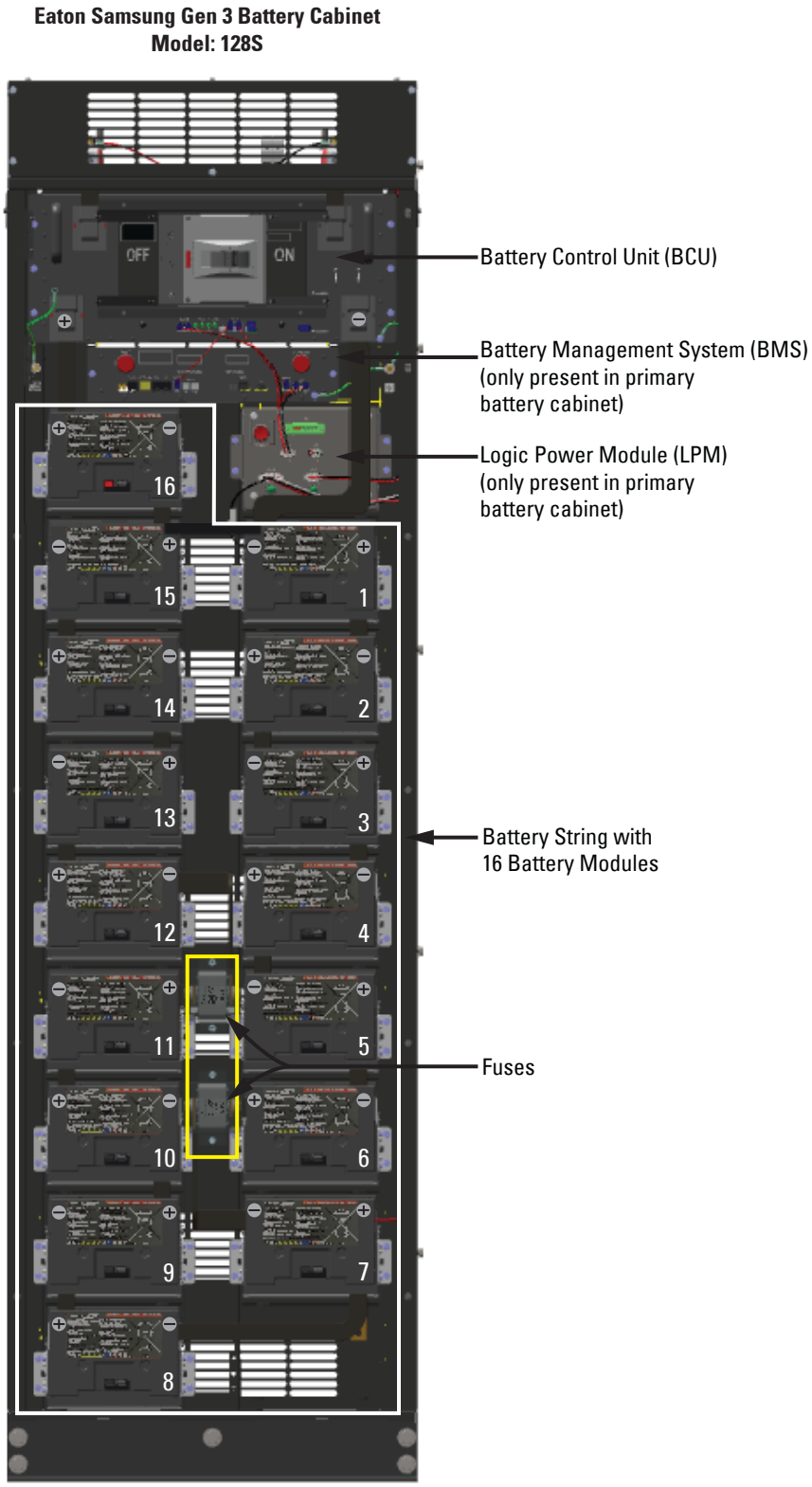


Figure 7. Eaton Samsung Gen 3 Model 136S — Component Locations

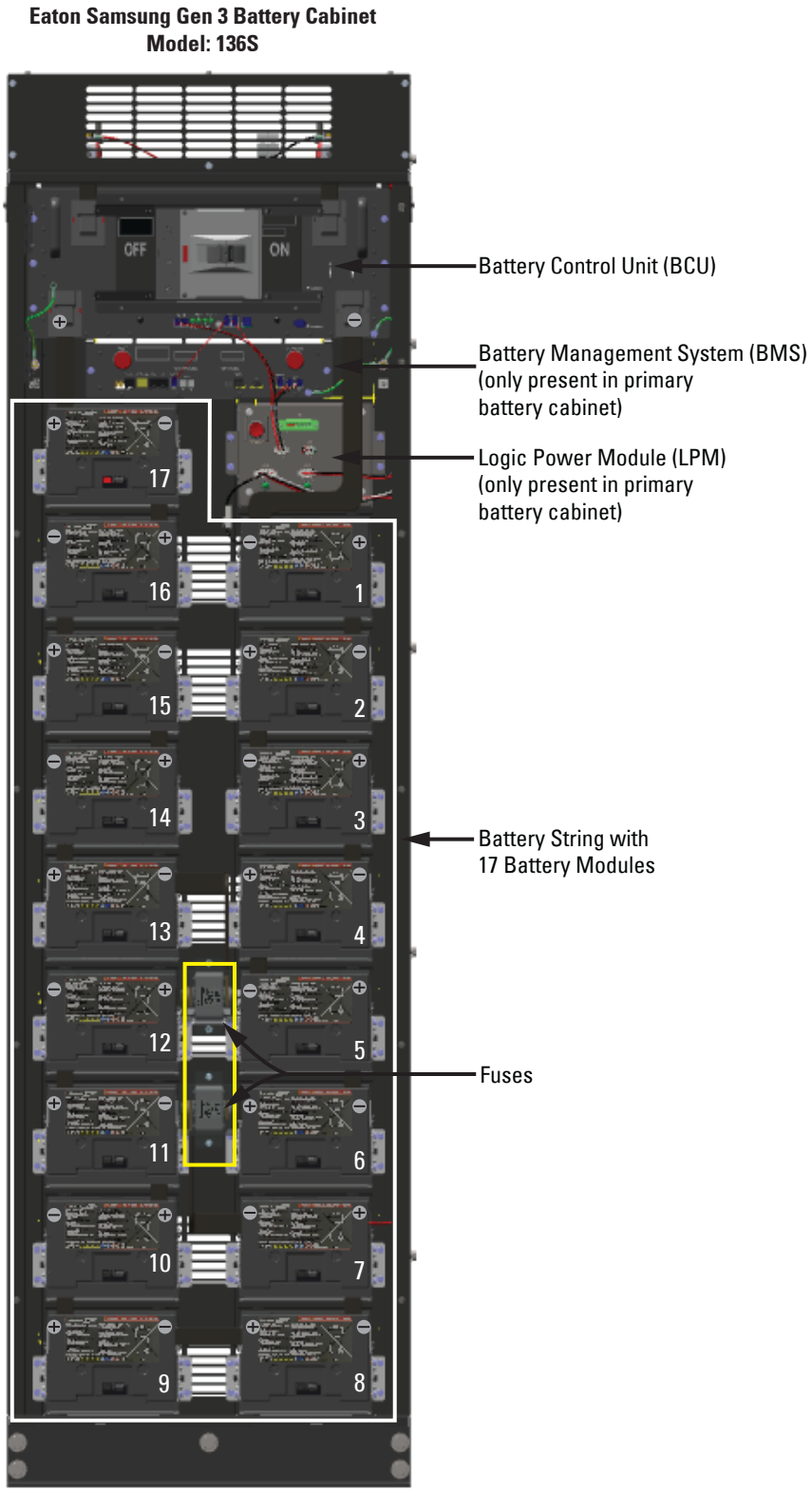


Figure 8. Eaton Samsung Gen 3 Center of Gravity

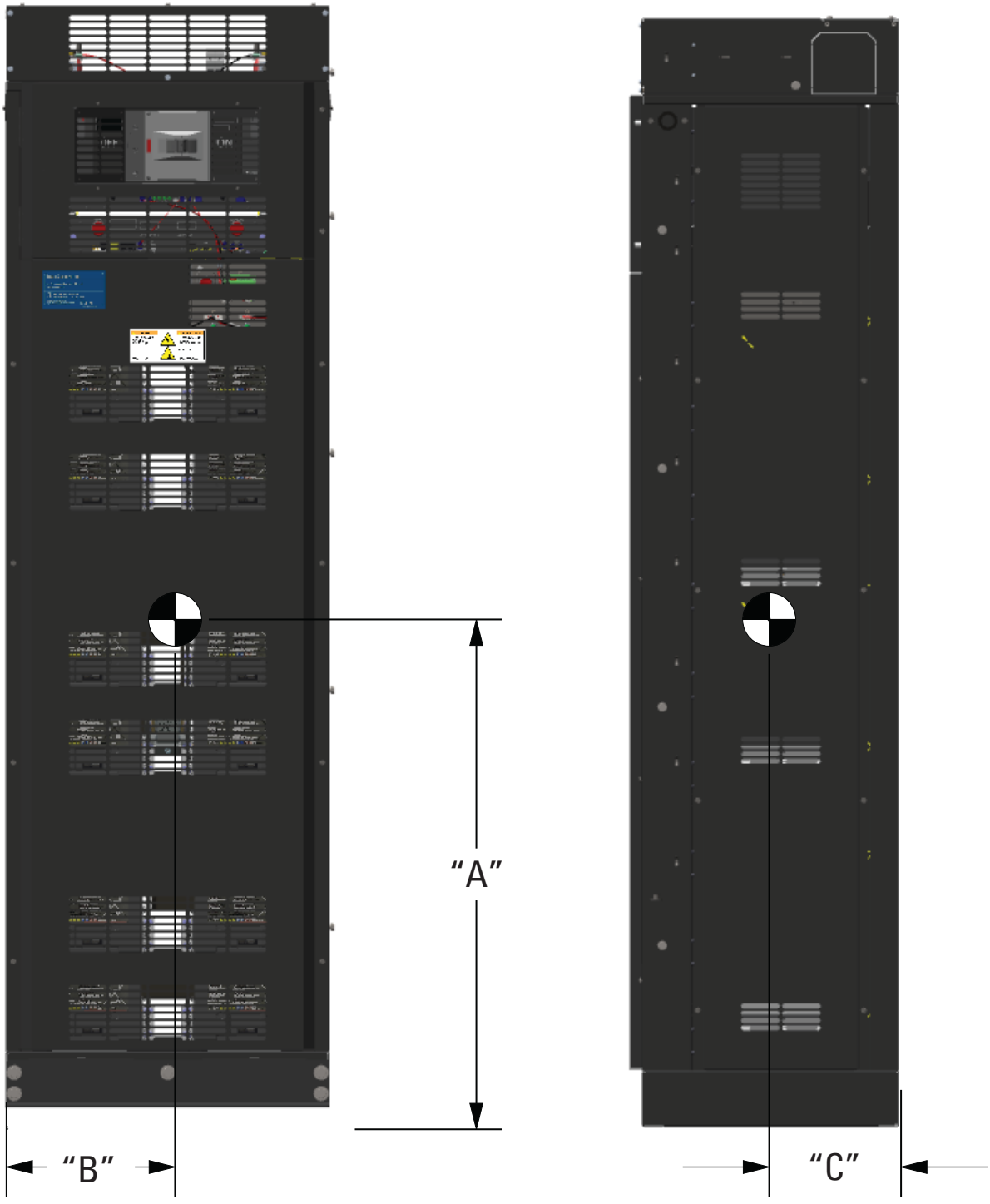


Table 5. Battery Cabinet – Center of Gravity

Weight and Center of Gravity (letters A, B, and C map to Figure 8)				
	Dimensions			
	A mm (in)	B mm (in)	C mm (in)	Installed Weight kg (lb)
Eaton Samsung Gen 3 128S (486V)	965 (38)	316 (12.4)	238 (9.4)	507 (1118)
Eaton Samsung Gen 3 136S (517V)	936 (36.9)	321 (12.6)	237 (9.3)	526 (1160)

3.2.2 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 operation by any action that includes removal of the earth (ground) connection with loads attached.

⚠ AVERTISSEMENT!

Les charges raccordées pourraient provoquer un courant de fuite élevé. La mise à la terre est donc obligatoire pour garantir la sécurité et le bon fonctionnement du produit. Lors de la vérification du fonctionnement de l'UPS, ne pas enlever la mise à la terre si des charges y sont raccordées.

- Refer to national and local electrical codes for acceptable external wiring practices.
- Material and labor for external wiring requirements are to be provided by the customer.
- For external wiring, use 90°C copper wire.

⚠CAUTION

This product has been evaluated for use with **copper wire** *only*.

⚠ ATTENTION!

Ce produit a été évalué pour une utilisation avec du fil de cuivre uniquement

Wire sizes listed in Table 6 are for copper wiring only.

- Recommended wire sizes are based on Table 310-16 of the National Electrical Code® (NEC®). Specification is for copper wire with a 90ºC rating.
- The battery wiring used between the battery and the UPS for standalone installations should be a maximum of 20 meters (65 feet) with a voltage drop of less than 1% of nominal DC voltage at rated battery current.
- Refer to NEC Article 250 and local codes for proper grounding practices.
- The battery cabinet frame is not referenced to the DC circuit.
- Each battery cabinet has its own overcurrent protection device.

- Internal battery strings are to be connected by an authorized Eaton Customer Service Engineer.
- Refer to the appropriate UPS installation and operation manual for UPS cabinet conduit and terminal specifications and locations.
- The term standalone refers to accessory cabinets that are located separate from the UPS.

Table 6. Standalone External Power Wiring Recommendation — (600A Breaker)

Battery System Model	Module Model	Upper Limit of Charging Current, A	Upper Limit of Discharge Current, A	Wire Size
Eaton Samsung Gen 3 128S	MS2043E101A MS2043E102A	67A	450A	2 x 4/0 AWG per Pole
Eaton Samsung Gen 3 136S				

The power wiring terminals are pressure terminations, UL and CSA rated at 90°C copper stranded wire. See Table 7 for external power cable terminations.

Figure 20 shows the location of the battery cabinet power cable terminals.

Table 7. External Power Cable Terminations – Eaton Samsung Gen 3 Battery Cabinet

Terminal Function	Terminal	Wiring Size	Recommended Torque	2 Hole Lug Landing — Spacing	Screw Size and Type
DC Output	Battery +	4/0 AWG, 2X Per Pole, 2 Conduits	25 Nm (18.4 lb-ft)	1–3/4"	M10 Hex
	Battery –				
Customer Ground	Ground	(2X) #4 AWG (or 1X #2 AWG)	25 Nm (18.4 lb-ft)		M10 Hex

NOTE Customer ground, sized in accordance with NEC Table 250.122, can be run in any conduit listed. Refer to the appropriate UPS manual.

3.2.3 Interface Wiring Preparation

Interface wiring for features and options should be connected at the customer interface terminals and connector blocks located on the interface tray located inside the Eaton Samsung Gen 3 System upper cabinet.

Table 8. Interface Control Wire Sizing

Terminal Type	Recommended Wire Size	Recommended Torque
Control	#18 AWG (Max #12) (TB-1)	0.5-0.6 Nm
AC Aux (LPM-2 Only)	#14 AWG (Max #10) (TB-2)	0.6-0.8 Nm

⚠WARNING

Do not directly connect relay contacts to the mains related circuits. Reinforced insulation to the mains is required.

AVERTISSEMENT!

Ne pas directement brancher les contacts de relais aux circuits du réseau. Une isolation renforcée des réseaux est nécessaire.

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

- Because of the battery shunt trip wiring route in the UPS cabinet, the wiring from the Eaton Samsung Gen 3 to the UPS must use wire rated for 600V and Class 1 wiring methods.
- The battery detect signal wiring from the battery cabinet must be connected to a programmed UPS building alarm.
- Battery detect and (48VDC) shunt trip or 48VDC UVR wiring should be a minimum of 18 AWG. Contact Eaton for alternate configurations.
- Use twisted-pair wires for each input and return or common.
- All interface wiring and conduit is to be supplied by the customer.
- Interface wiring can be installed using the inter-cabinet wiring access pass-through or by routing wiring through conduit between cabinets.
- Install the interface wiring in separate conduit from the power wiring.

3.3 Inspecting and Unpacking the Eaton Samsung Gen 3

The cabinet is shipped bolted to a pallet (see Figure 9), and covered with outer protective packaging material. The Conduit Landing Box (CLB) is packed separately from the battery cabinet but is shipped with the unit. The Conduit Landing Box is installed after the battery cabinet has been placed at its installation location.

NOTE 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 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

Unpacking and unloading instructions must be closely followed, otherwise the cabinet may tip and cause serious injury.

AVERTISSEMENT!

Suivre attentivement les instructions de déchargement et de déballage pour eviter de renverser les armoires, ce qui pourrait causer de graves blessures.

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

CAUTION

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

ATTENTION!

Ne pas installer une armoire endommagée. Signaler les dommages au transporteur et communiquer avec un représentant du service Eaton immédiatement.

NOTE For the following step, verify that the forklift or pallet jack is rated to handle the weight of the cabinet (see Table for cabinet weights).

2. Use a forklift or pallet jack to move the packaged cabinet to the installation site, or as close as possible, before unpacking. If possible, move the cabinet using the pallet. Insert the forklift or pallet jack forks between the supports on the bottom of the pallet. See Figure 8 for the Eaton Samsung Gen 3 cabinet center of gravity measurements.

CAUTION

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

ATTENTION!

Ne pas incliner les armoires à plus de 10 degrés de la verticale puisqu'elles pourraient se renverser.

T

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

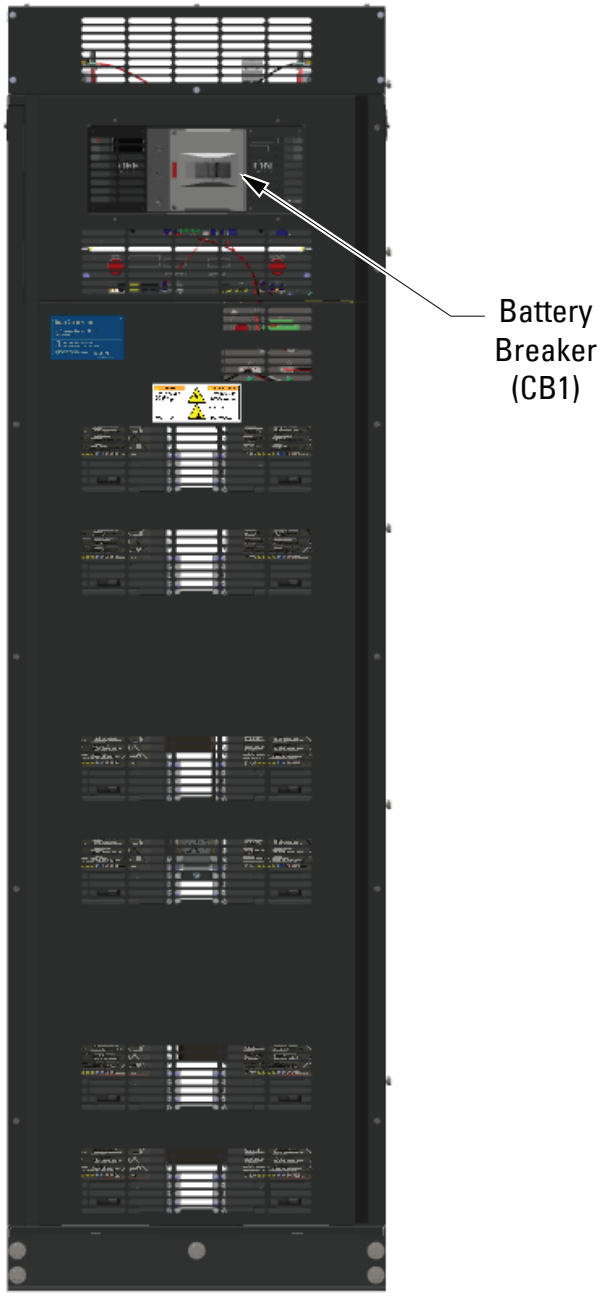
NOTE While waiting for installation, protect the unpacked cabinet from moisture, dust, and other harmful contaminants. Failure to store and protect the Eaton Samsung Gen 3 properly may void the warranty.

Figure 9. Eaton Samsung Gen 3 Battery Cabinet as Shipped on Pallet

3.4 Battery Breaker Location

Figure 10 shows the location of the battery breaker in the Eaton Samsung Gen 3 Battery Cabinet.

Figure 10. Battery Breaker Location (Front View)



Chapter 4 Installation

4.1 Preliminary Installation Information

⚠WARNING

Installation should be performed only by qualified personnel knowledgeable of batteries and the required precautions.

⚠ AVERTISSEMENT!

L'installation ne doit être effectuée que par du personnel qualifié.

Observe these precautions while installing the Battery Cabinet:

- Remove watches, rings, or other metal objects.
- Use tools with insulated handles.
- Wear voltage rated gloves and electrical hazard footwear.
- Do not lay tools or metal parts on top of batteries or battery cabinets.
- Review 3.3 *Inspecting and Unpacking the Eaton Samsung Gen 3* for cabinet dimensions, equipment weight, wiring and terminal data, and installation notes.

4.2 Unloading the Eaton Samsung Gen 3 Cabinet from the Pallet

NOTE Both a forklift and a narrow pallet jack will be needed in order to remove the battery cabinet from its pallet

⚠WARNING

- The battery cabinet is heavy (see Table 3). If unpacking and unloading instructions are not closely followed, the cabinet may tip and cause serious injury.
- RISK OF INSTABILITY. Do not remove any internal panels until the cabinet is removed from and lowered from the pallet.
- Do not tilt the cabinet more than 10° from vertical or the cabinet may tip over.
- Lift the cabinets only with a forklift or pallet jack or damage may occur.
- Ensure forklift is rated to handle the weight of the cabinet.

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

AVERTISSEMENT!

- L'armoire de batterie est lourde (voir le Table 3). Suivre attentivement les instructions de déchargement et de déballage pour éviter de renverser les armoires, ce qui pourrait causer de graves blessures.
- RISQUE D'INSTABILITÉ. Ne retirez aucun panneau interne tant que l'armoire n'est pas retirée et abaissée de la palette.
- Ne pas incliner les armoires à plus de 10 degrés de la verticale puisqu'elles pourraient se renverser.
- Soulevez les armoires uniquement avec un chariot élévateur ou un transpalette, sinon des dommages pourraient survenir.
- Assurez-vous que le chariot élévateur est conçu pour supporter le poids de l'armoire.

Le non-respect de ces instructions peut entraîner des blessures graves, voire la mort.

NOTE For the following procedures, verify that the forklift and pallet jack is rated to handle the weight of the cabinet (see Table 3 for cabinet weight).

The Eaton Samsung Gen 3 Battery Cabinet is bolted to a pallet consisting of two metal angle supports positioned at the front and rear of the cabinet.

To remove the pallet:

CAUTION

Perform pallet removal only on a hard surface, such as concrete. If necessary, remove the pallet on a hard surface and use a pallet jack to move the cabinet to its final installation position.

ATTENTION!

Effectuez le retrait des palettes uniquement sur une surface dure, comme le béton. Si nécessaire, retirez la palette sur une surface dure et utilisez un transpalette pour déplacer l'armoire jusqu'à sa position d'installation finale.

1. If not already accomplished, use a forklift or pallet jack to move the battery cabinet to the installation area, or as close as possible, before unloading from the pallet. Insert the forklift or pallet jack forks between the supports on the bottom of the pallet (see Figure 8 for the battery cabinet center of gravity measurements).
2. Remove the front and rear shipping brackets that hold the cabinet to the pallet. Discard the brackets and hardware. Insert the forklift tines into the openings at the base of the cabinet, and lift it slightly, about 3mm (1/8") above the pallet. The pallet may now be moved out from under the cabinet, and the cabinet lowered slowly to the floor. At this point, the cabinet may be moved either by a forklift or pallet jack to its final installation location.

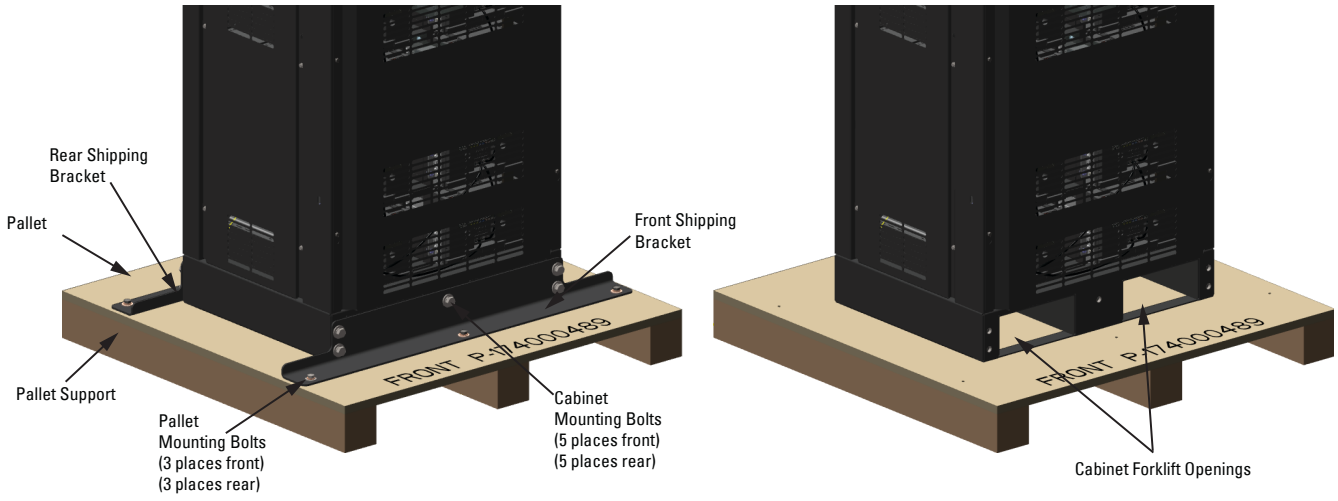
WARNING

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

AVERTISSEMENT!

RISQUE D'INSTABILITÉ. Pour éviter de basculer l'armoire, ne soulevez pas l'armoire de plus de 3 mm (1/8") au-dessus de la palette (juste assez pour permettre le retrait de la palette). Le non-respect de ces instructions peut entraîner des blessures graves, voire la mort.

Figure 11. Removing the Cabinet from the Pallet



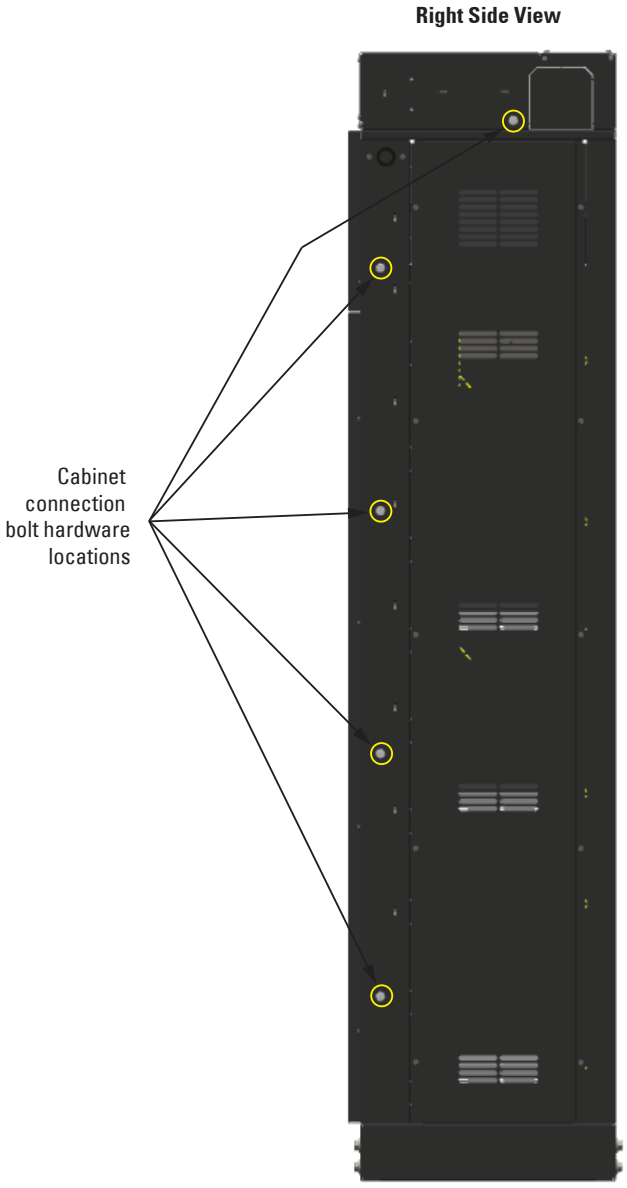
3. **For single battery cabinet installations**, use a narrow pallet jack to move the battery cabinet to its permanent location. If the floor is not level, use shims to level the cabinet. Proceed to paragraph 4.4 *Installing Power Wiring*.
4. **For multiple-cabinet installations** If the battery cabinets are installed in the same room as the UPS, position the primary cabinet closest to the UPS.

NOTICE

The Primary battery cabinet must be positioned first then the remainder of the battery cabinets will be positioned and installed to the right of it.

5. Once the primary battery cabinet has been positioned, the remaining battery cabinets will be installed to the right of the Primary battery cabinet.
6. Remove the inter-cabinet control wiring pass through covering for each cabinet on the sides where the cabinets will be joined. See Figure 19 for details on the covering found in the upper frame area (Conduit Landing Box).
7. Position a secondary battery cabinet next to the primary cabinet.
8. Align the cabinets and use shims as necessary to level the cabinets.
9. In the included accessory kit, locate the cabinet connection hardware and install to secure the cabinets to each other. See Figure 12 for cabinet connection bolt locations.

Figure 12. Cabinet Connection Bolt Locations



NOTE: Bolt locations are identical for left and right side panels.

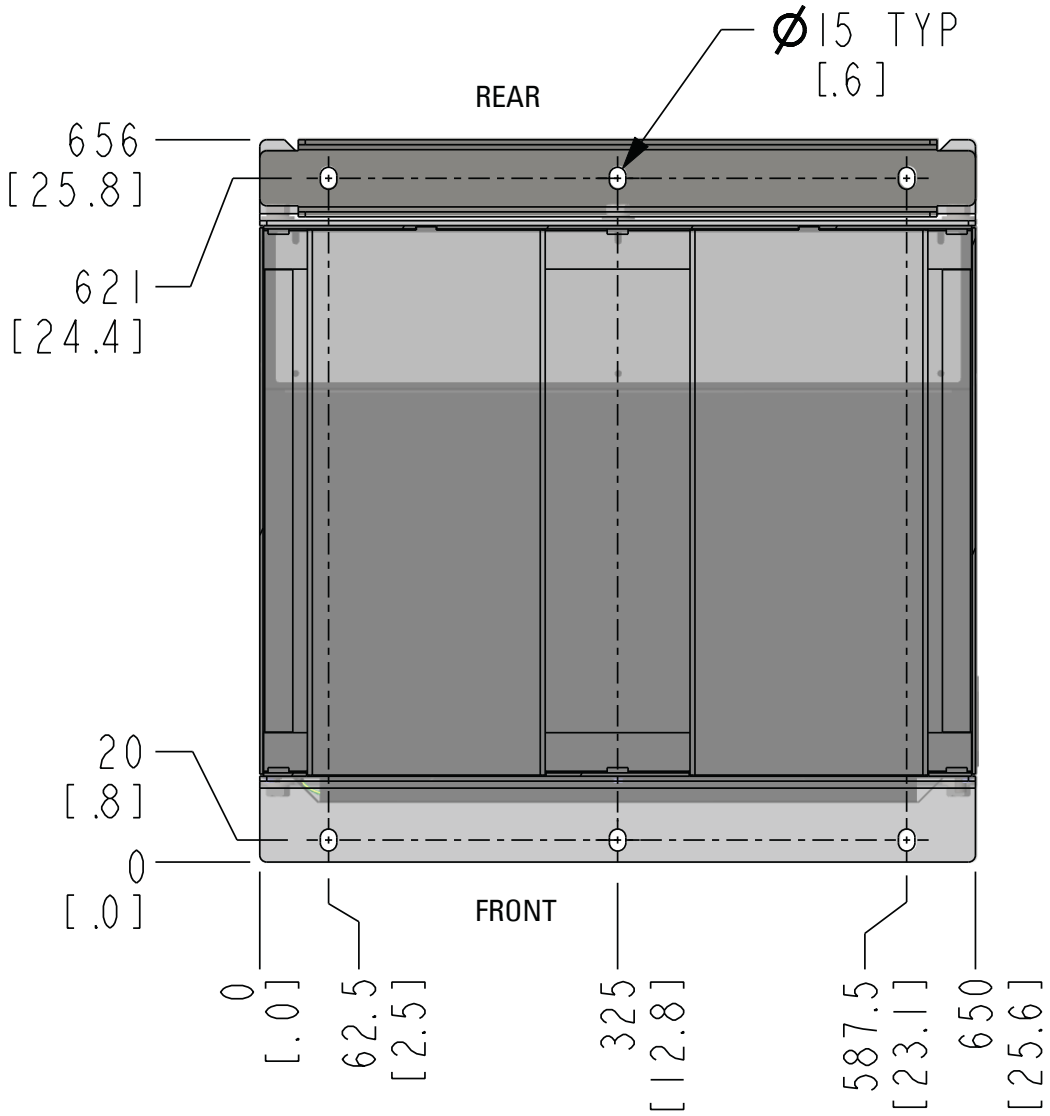
10. Repeat Step 6 through Step 9 for each additional cabinet.
11. Proceed to paragraph *4.3 Floor Mounting Bracket (Seismic) Installation*4.4 *Installing Power Wiring*.

4.3 Floor Mounting Bracket (Seismic) Installation

The Floor Mounting Bracket (Seismic) Kit was shipped with your Eaton Samsung Gen 3 Battery Cabinet.

1. Review Figure 13 for the bracket installation location and dimensions for the floor anchoring hardware.

Figure 13. Floor Mounting Bracket Location and Dimensions (Top View)



Dimensions are Millimeters [Inches]

2. Drill holes in the floor for the mounting brackets. Size the holes for the type of customer-supplied hardware being used to secure the bracket to the floor. See Table 9 for floor anchoring hardware requirements.

Table 9. Customer-Supplied Floor Anchoring Fastener Requirements

Battery Cabinet Model	Bolt Type and Size	Torque	Quantity
128S or 136S	Class 8.8, M12 or Grade 5, ½ in	87 Nm [64 lb-ft]	6

3. Using the hardware from the installation kit, install the front floor mount bracket to the battery cabinet. See Figure 14 and Table 10 for installation details.

Figure 14. Front Floor Mount Bracket to Cabinet Installation

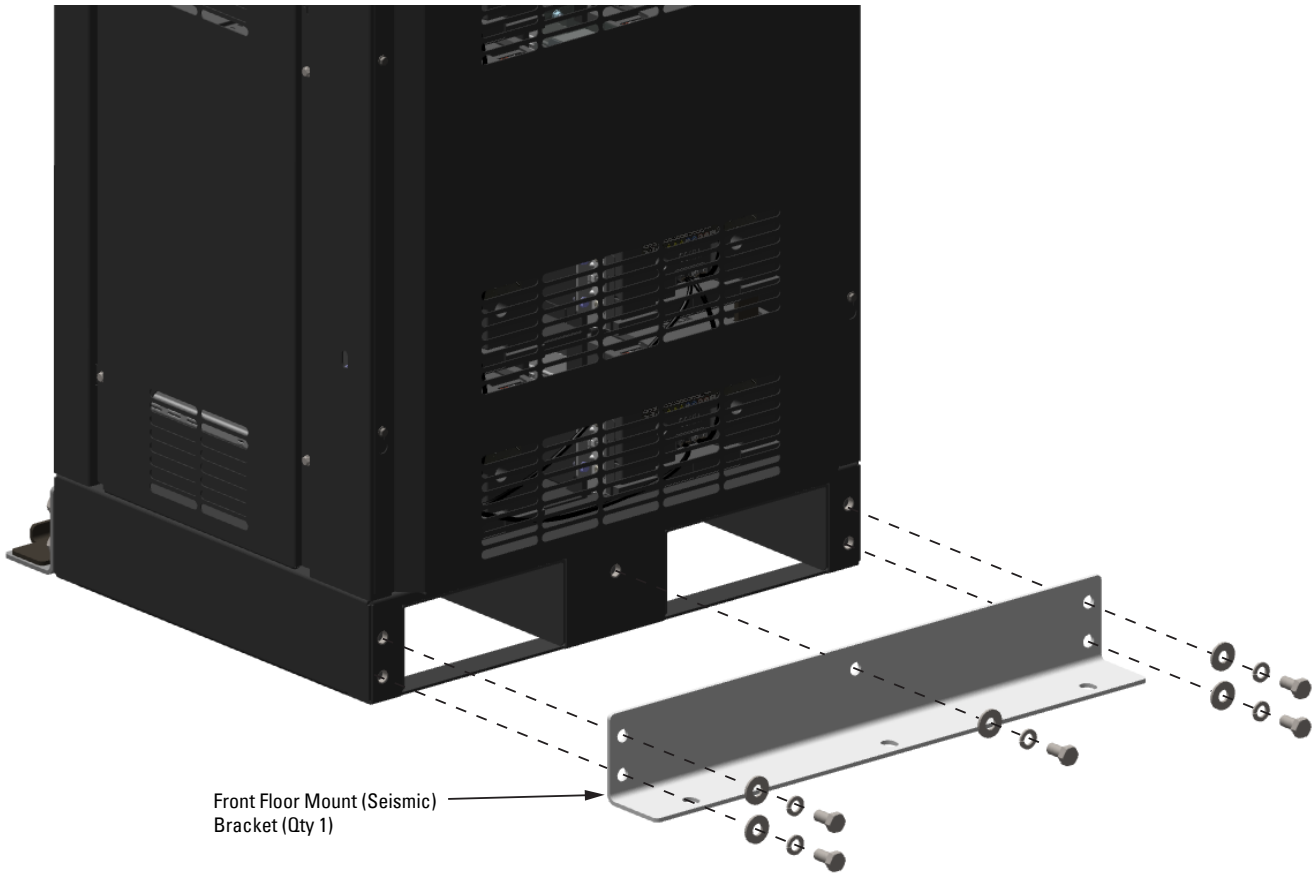


Table 10. Floor Mounting Kit - Bracket to Cabinet Bolt Requirements

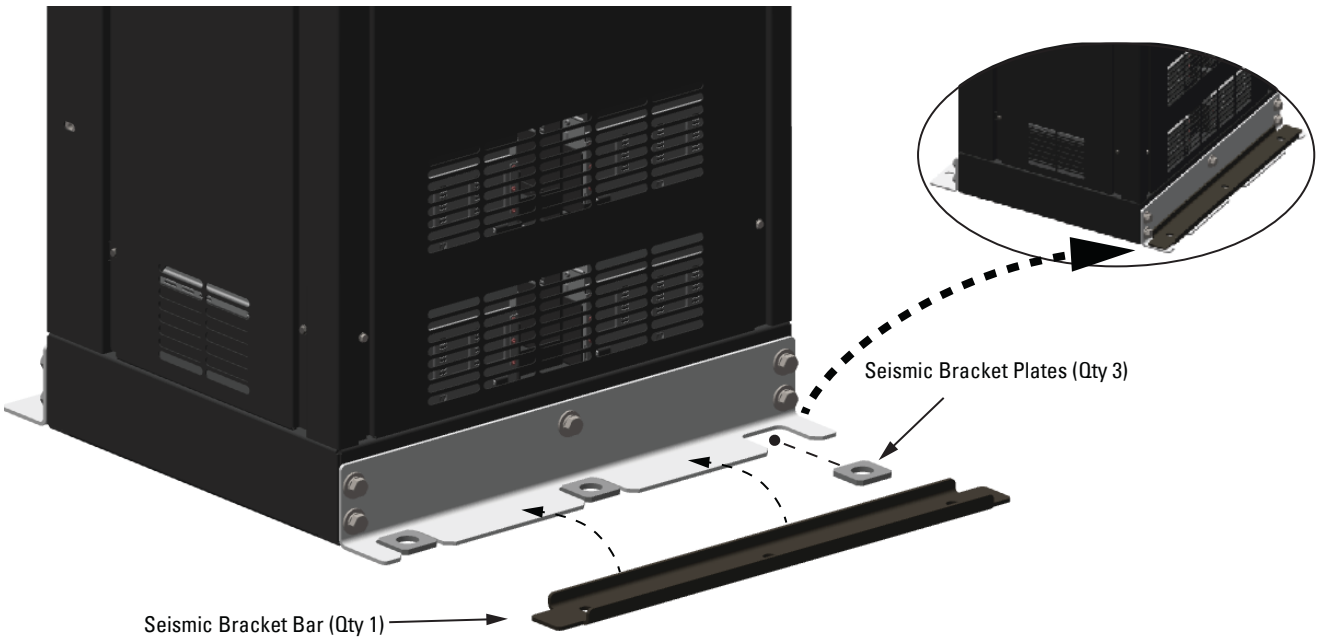
Battery Cabinet Model	Bolt Type and Size	Torque	Quantity
128S or 136S	Class 8.8, M12x25 Bolt	87 Nm [64 lb-ft]	10

4. Using the hardware from the installation kit, install the rear floor mount bracket to the battery cabinet. See Figure 15 and Table 10 for installation details.

Figure 15. Rear Floor Mount Bracket to Cabinet Installation

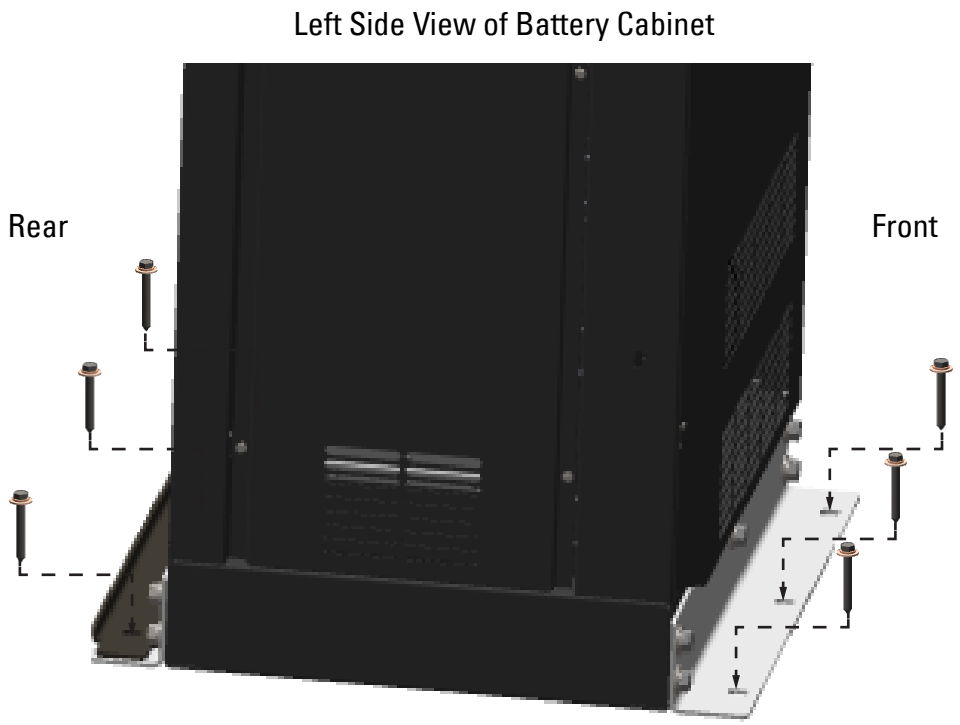
5. Place the bracket plates within the notched area in the Rear Floor Mounting Bracket. Place the bracket bar on top of the bracket and plate assembly as detailed in Figure 16.

Figure 16. Rear Floor Mount Bracket Plates and Bar Installation



6. Install the customer-supplied anchoring hardware torqued to the specifications listed in Table 9, securing the cabinet to the facility floor. See Figure 17 for anchoring bolt locations.

Figure 17. Floor Mounting Bracket Anchoring Bolt Locations



Floor Mounting Hex Bolts: Class 8.8, M12 or 1/2" Bolt, Qty **6** (3 per side),
Torque Value: 87 Nm [64 lb-ft.]

7. Repeat Step 2 through Step 6 for each additional battery cabinet.
8. Once all battery cabinets are anchored to the facility floor, proceed to paragraph 4.4 *Installing Power Wiring*.

4.4 Installing Power Wiring

Battery cabinets can be installed as either a single cabinet system or a multi-cabinet in a line-up configuration. The power wiring is attached to the DC power terminals in the cabinet's conduit landing box (see Figure 20) and routed to the UPS via conduit.

4.4.1 Single or Multiple Cabinet Power Wiring

	NOTE 1	See Table 6, and Table 7 for wiring and termination requirements.
	NOTE 2	Refer to the applicable UPS Installation and Operation manual for UPS cabinet termination requirements.

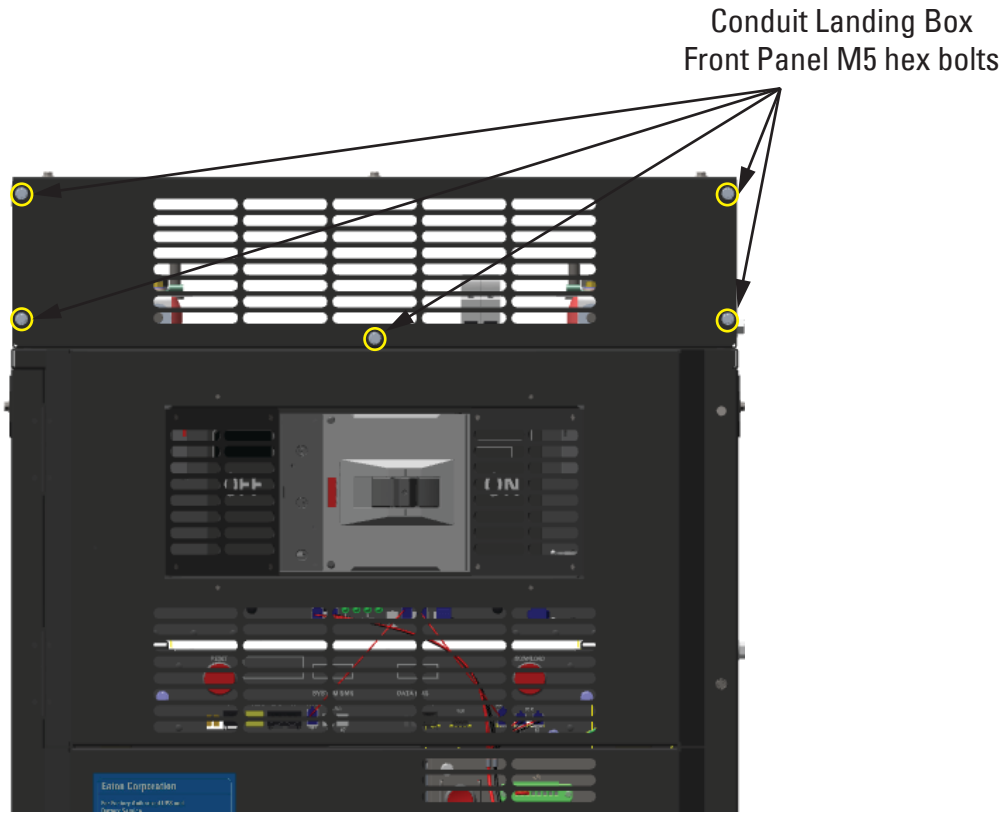
Use this procedure to wire the Eaton Samsung Gen 3 Battery Cabinets to the UPS cabinet.

To install wiring to connections:

1. Verify the UPS system is turned off and all power sources are removed. Refer to the applicable UPS Installation and Operation manual for UPS operating procedures.

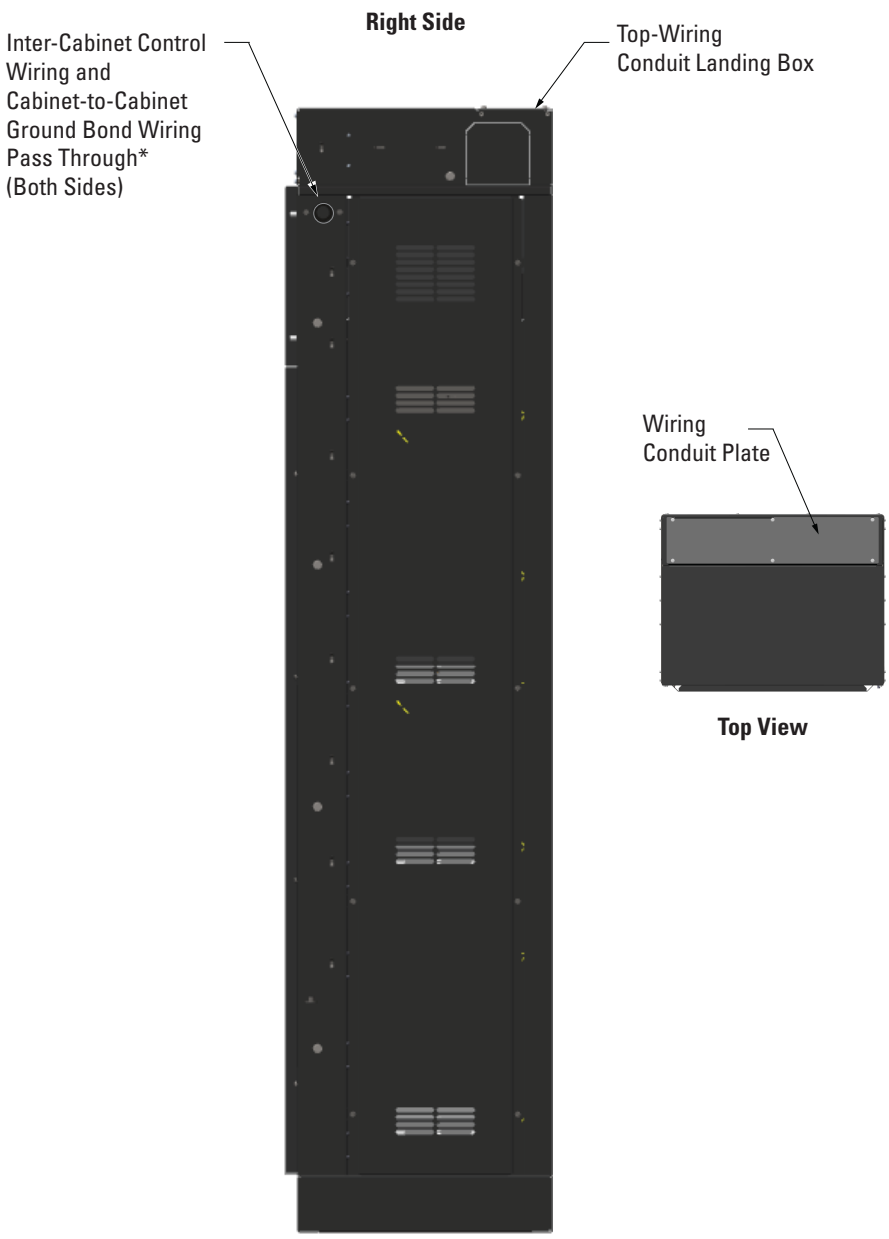
2. Verify the battery cabinet's Main Circuit Breaker (CB1) is turned off.
3. If not already removed, remove the Conduit Landing Box's front panel by removing the (5) M5 hex bolts on the front of the CLB. See Figure 18 for details.

Figure 18. Conduit Landing Box — Front Panel Bolt Locations



4. Locate and remove the conduit landing plate located on the top of the cabinet. Cut this landing plate with properly sized holes to match the conduit being used by the installer. See Figure 19 for conduit plate location.

Figure 19. Conduit and Wire Entry Locations



*Remove the inter-cabinet control wiring cover on the side of the cabinet that will be joined with another battery cabinet.

5. Route the battery wiring (positive, negative, and ground) through the conduit from the DC terminals in the UPS over to the DC terminals located in the top of the battery cabinet. See Figure 20 for terminal locations.

⚠WARNING

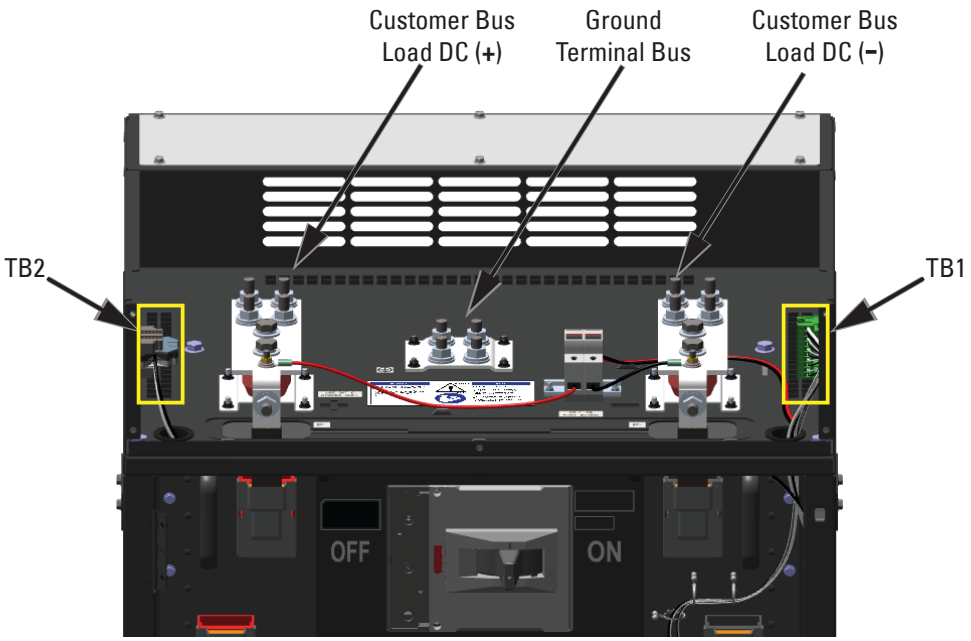
Verify polarity of connections. Risk of personal injury and damage to equipment from arc flash if connections are reversed.

⚠ AVERTISSEMENT!

Vérifiez la polarité des connexions. Risque de blessures corporelles et de dommages matériels dus à un arc électrique si les connexions sont inversées.

6. Route the ground wiring from the conduit landing to the ground bus terminal in the upper frame area of the conduit landing box..
7. Connect the ground wiring to the ground terminal on the battery cabinet. See Figure 20 for terminal locations.

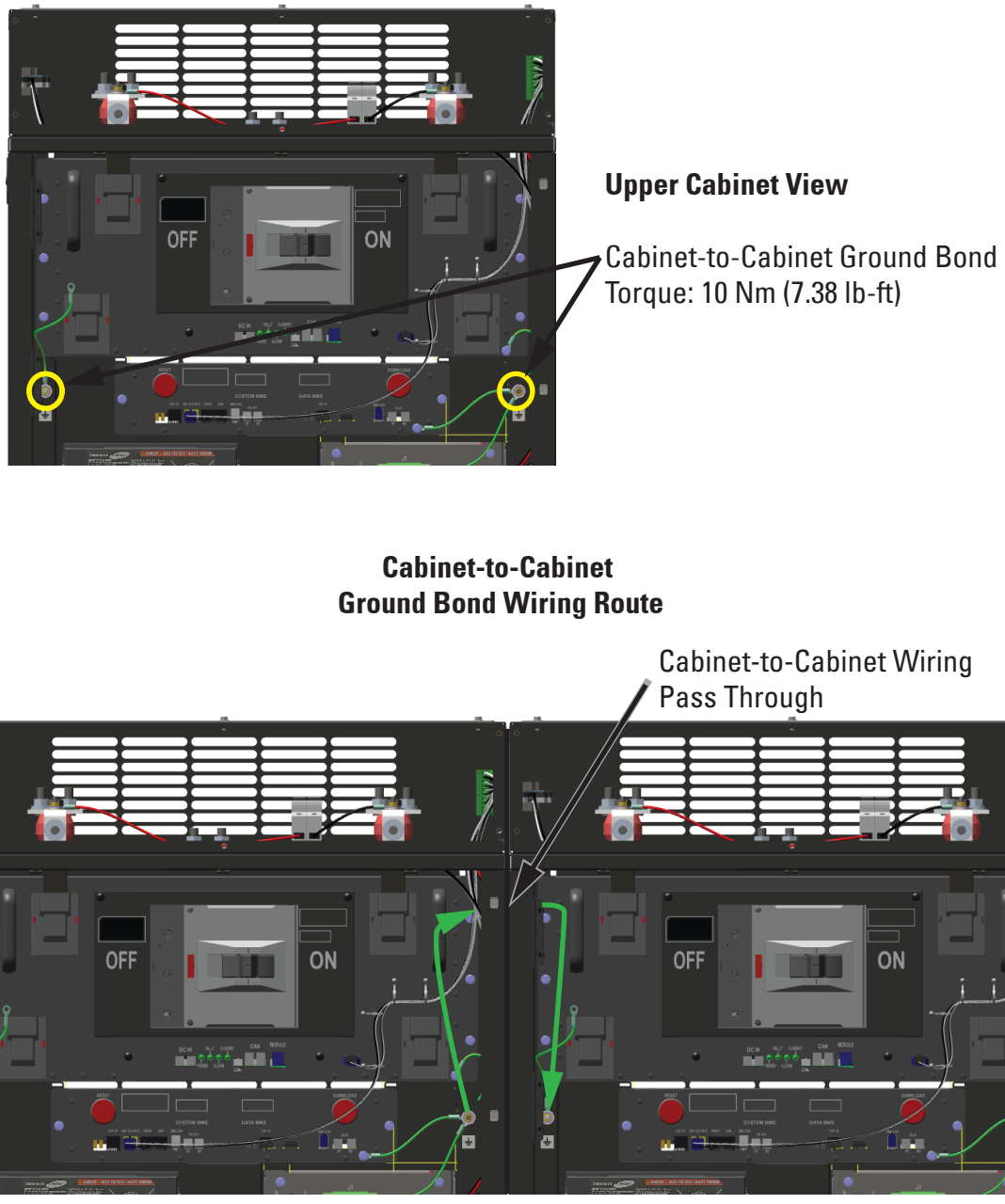
Figure 20. DC Power and Ground Terminal Locations



8. Connect the positive, and negative DC power wiring to the terminal blocks in the Conduit Landing Box, see Table 7 for termination requirements.
9. Refer to the applicable UPS Installation and Operation manual for UPS cabinet terminal locations and termination requirements.
10. Connect the ground, positive, and negative power wiring to the UPS cabinet external battery ground and input terminals.
11. If installing more than one battery cabinet, proceed to Step 12; otherwise proceed to Step 16.
12. In multiple battery cabinet installations, complete Step 1 through Step 10 for each additional battery cabinet, then proceed to Step 13.

13. Route the ground bond wiring from the battery cabinet's ground bond bolt, through the cabinet-to-cabinet wiring pass through to the adjacent cabinet's ground bond bolt. See Figure 21 for ground bond bolt locations and wiring route.

Figure 21. Cabinet-to-Cabinet Ground Bond Location and Wiring Route



14. Torque the ground bond wiring bolts to 10 Nm (7.38 lb-ft).
15. Complete the ground bond wiring process for each adjacent battery cabinet.

16. Reinstall the cover(s) removed in Step 3 and Step 4.
17. Proceed to paragraph 4.5 *Installing Battery Cabinet Interface Wiring*.

⚠CAUTION

For parallel battery cabinets that do not use a tie cabinet and the power wires are brought directly to the UPS unit; the wire lengths between the cabinets shall not vary by more that 2% in length. This is to create current share and to ensure all cabinets charge and discharge at the same rate. Failure to do so will result in uneven battery voltages during discharge.

4.5 Installing Battery Cabinet Interface Wiring

Battery cabinets should be installed in a line-up configuration with the interface wiring routed through the battery cabinet, and then over to the UPS cabinet using conduit.

See paragraph 3.2.3 *Interface Wiring Preparation* and Table 8 for wiring and termination requirements. See Table 11, and Figure 23 through Figure 30 for terminal assignments.

4.5.1 Installing Battery Detect Interface Connections

NOTE Interface wiring terminations by installer will be made in the Conduit Landing Box. The CLB contains removable terminal blocks for installer supplied cables that will be routed from the CLB through the inter-cabinet pass-through holes to terminals on the other cabinets in a multi-cabinet system.

To install wiring:

1. Remove the top conduit plate (see Figure 19) from the top of the battery cabinet. Identify all conduit requirements and mark their location. Drill and punch all conduit holes in the top conduit plate prior to mounting on the cabinet. Install the conduit plate and install all conduit runs into the plate. Pull the wiring through the conduit into the wiring area in front of the BCU.

NOTE In multiple cabinet installations, route the battery interface wiring between cabinets through the top section of the adjacent cabinet using the top inter-cabinet access pass-through (see Figure 19).

2. Route the battery interface wiring from the UPS battery cabinet (building alarm) interface terminals through the top of the battery cabinet and the top inter-cabinet wiring access pass-through
3. Connect the battery interface wiring to the battery interface terminals.
4. Connect the battery interface wiring to the UPS battery cabinet interface (building alarm) terminals. Refer to the applicable Eaton UPS Installation and Operation manual for UPS cabinet termination requirements.
5. Proceed to paragraph 4.6 *Completing the Installation Checklist*.

Figure 22. Interface Terminal Location – TB1

Table 11. Eaton Samsung Gen 3 Interface Connections

	Terminal	Name
TB1	TB1–10	UVR/ST Com
	TB1–9	UVR/ST
	TB1–8	CHARGE STOP COM
	TB1–7	CHARGE STOP
	TB1–6	MINOR ALARM COM
	TB1–5	MINOR ALARM
	TB1–4	MAJOR ALARM COM
	TB1–3	MAJOR ALARM
	TB1–2	MCCB COM
	TB1–1	MCCB NO
TB2	3⌀ 208 VAC L1-L2 *or* 3⌀ 480 VAC L1-L2 *or* 3⌀ 480 VAC L1-N	
	*Customer AC source ground wiring connects to the Ground Bus terminal. See Figure 20 for ground bus location.	

Figure 23. Eaton Samsung Gen 3 LPM1 Interface Connection to Eaton 93PM-HV UPS — Wiring Diagram

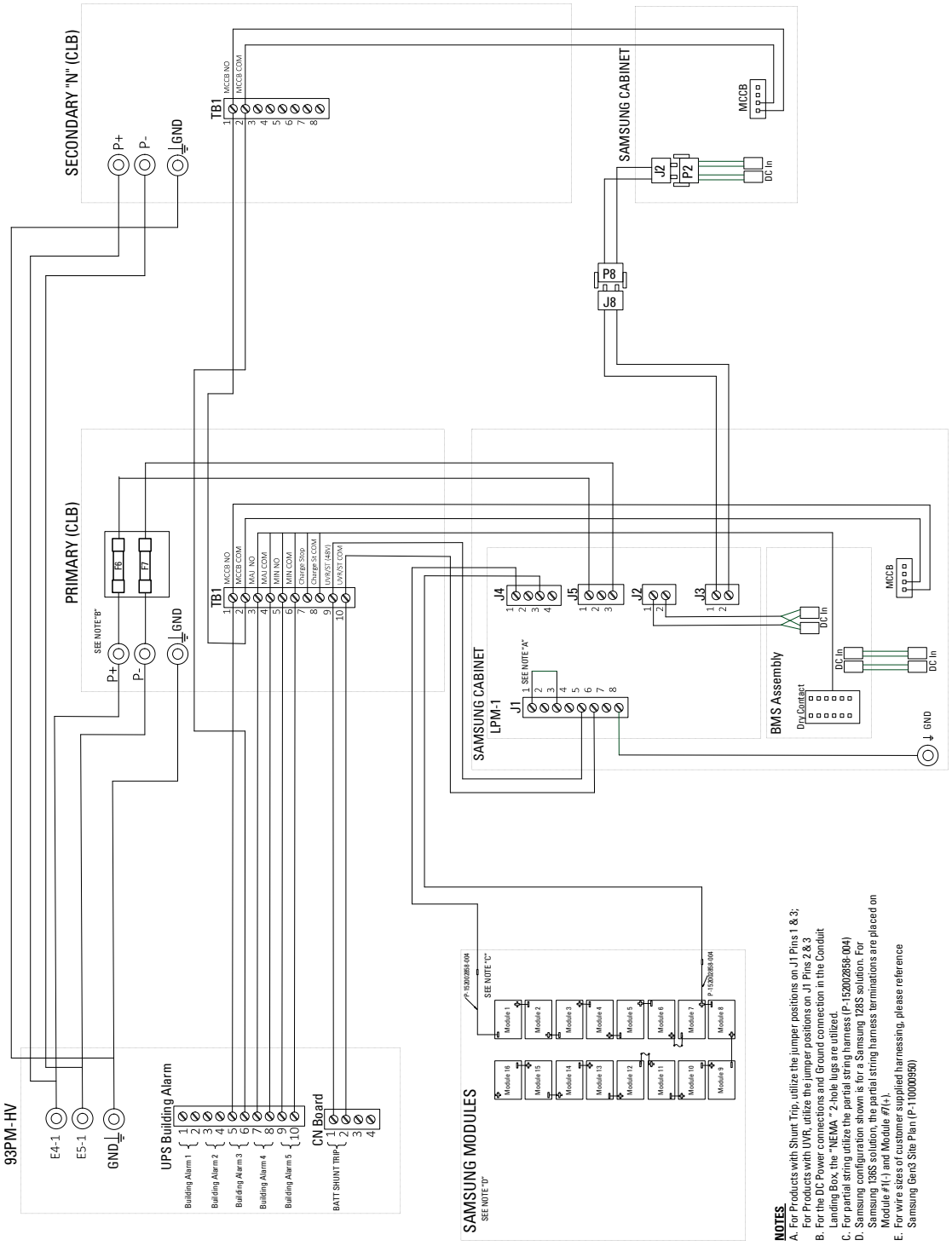


Figure 24. Eaton Samsung Gen 3 LPM2 Interface Connection to Eaton 93PM-HV UPS — Wiring Diagram

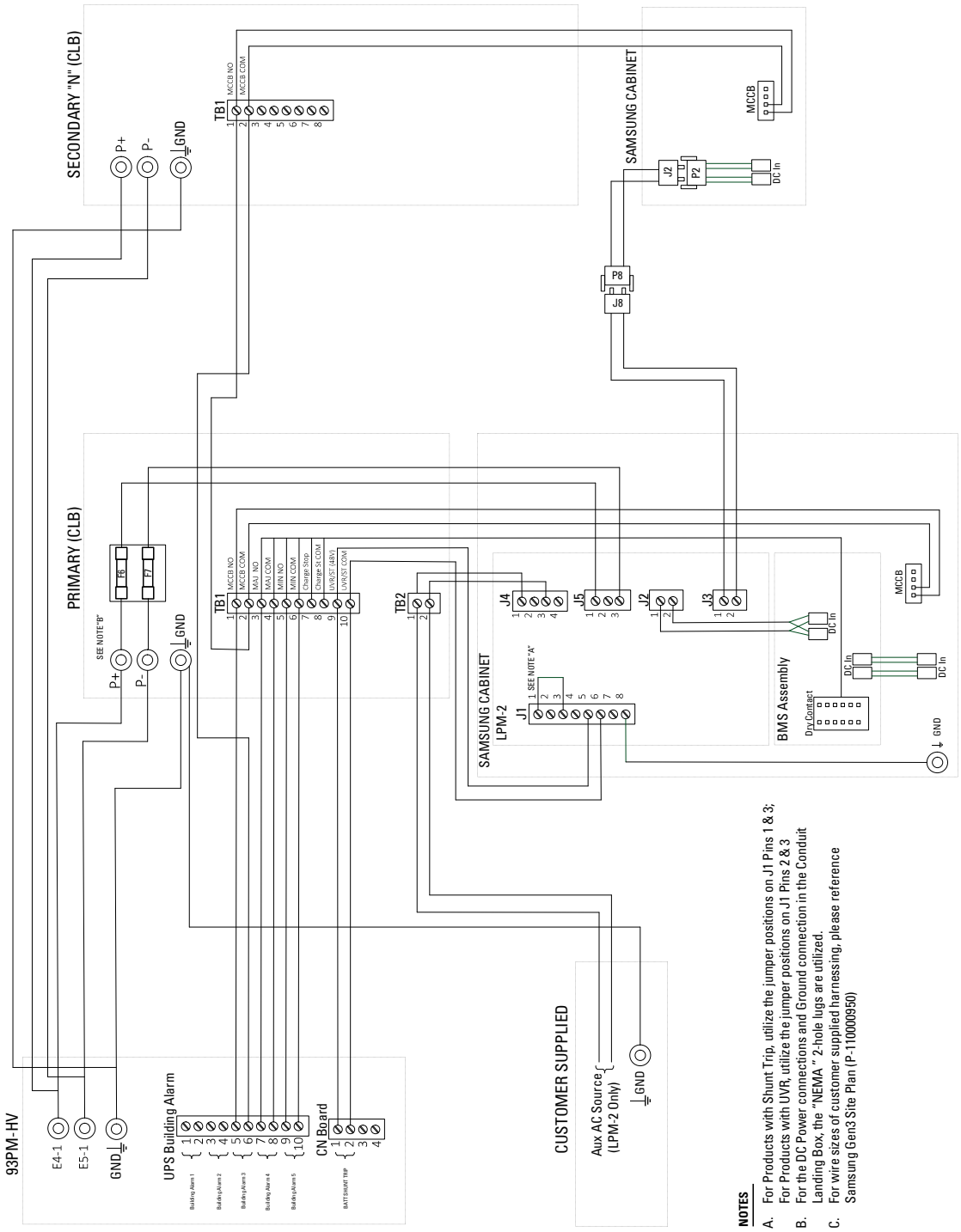


Figure 25. Eaton Samsung Gen 3 LPM1 Interface Connection to Eaton 93PM-LV UPS — Wiring Diagram

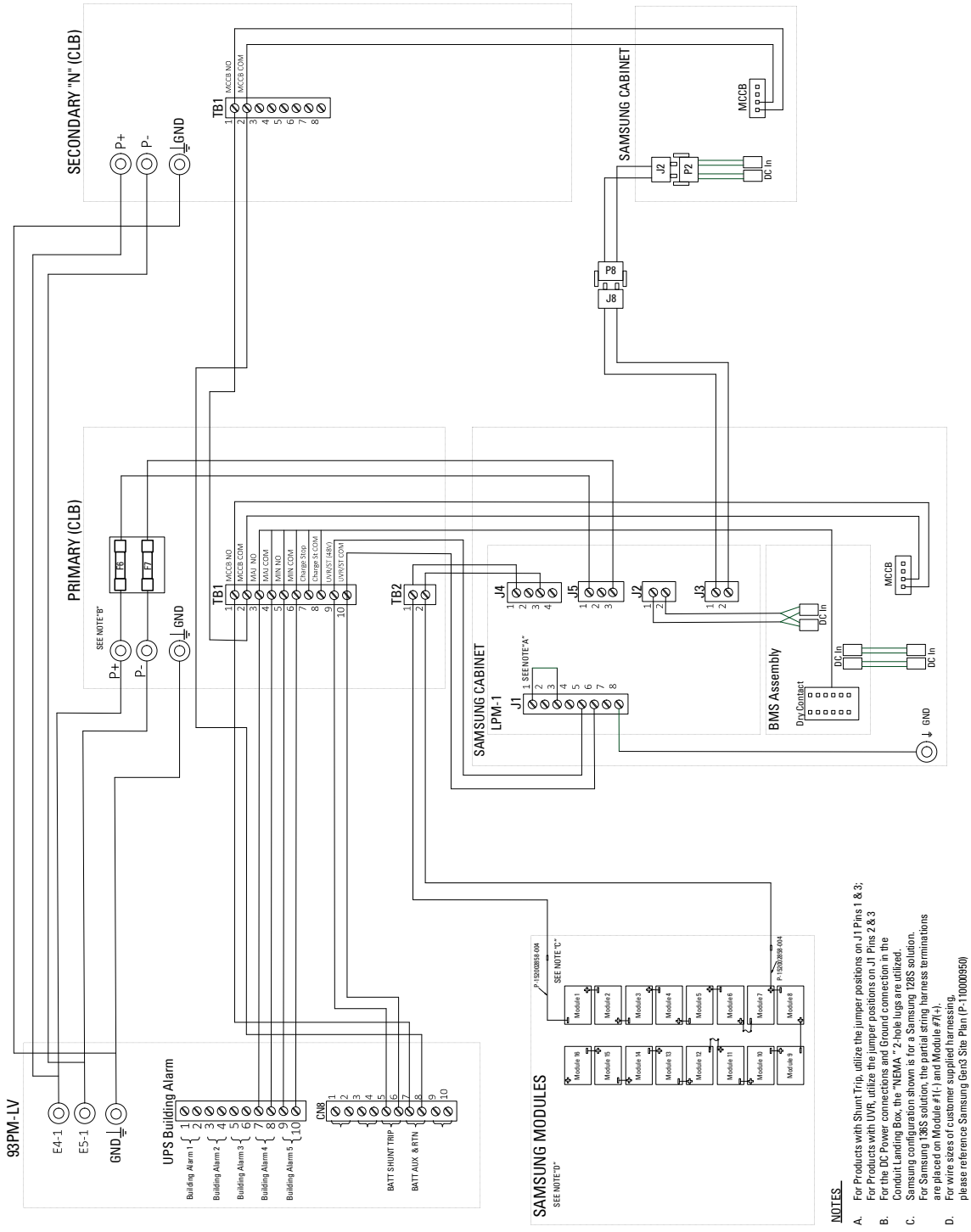


Figure 26. Eaton Samsung Gen 3 LPM2 Interface Connection to Eaton 93PM-LV UPS — Wiring Diagram

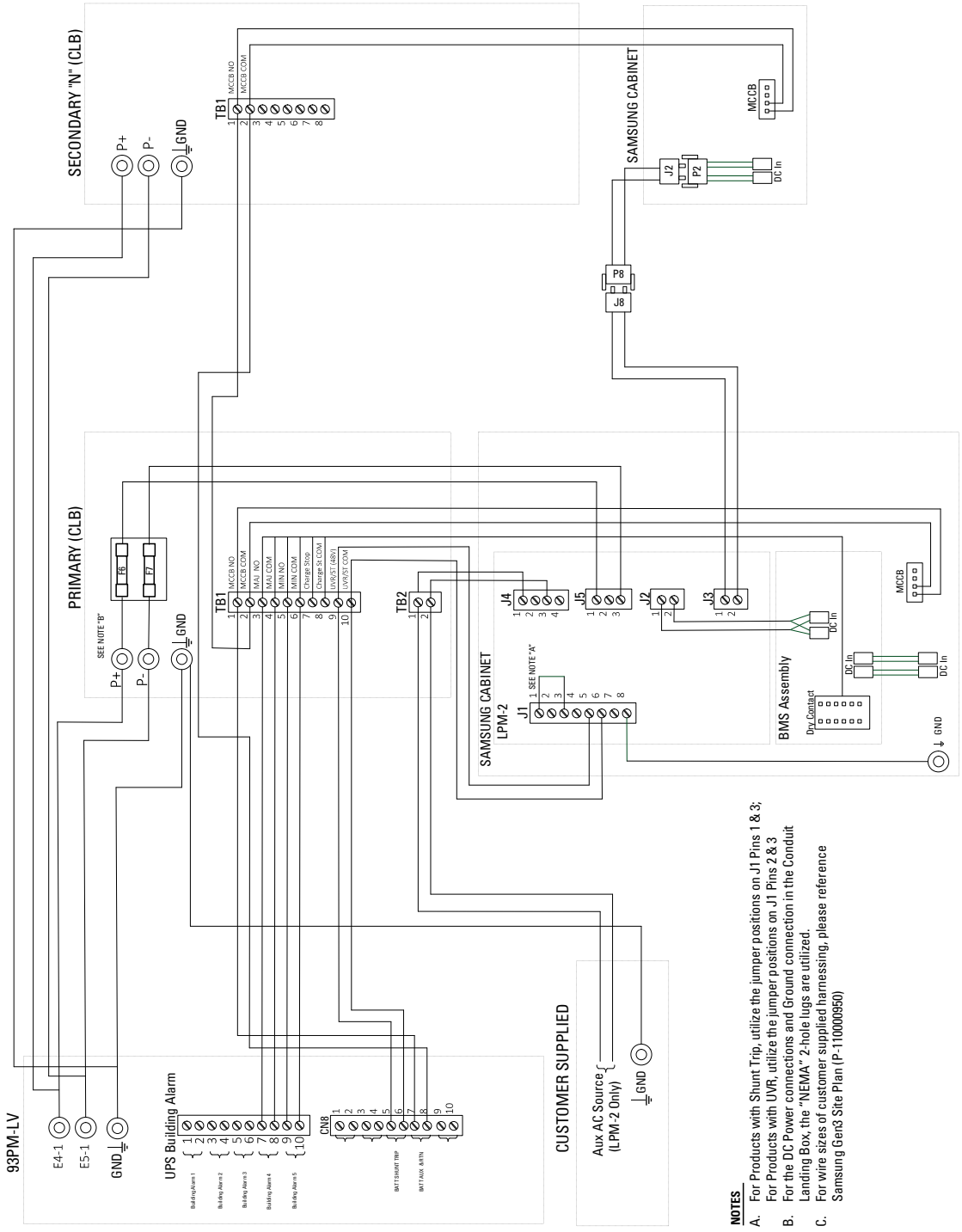


Figure 27. Eaton Samsung Gen 3 LPM1 Interface Connection to Eaton 9395–9395P UPS — Wiring Diagram

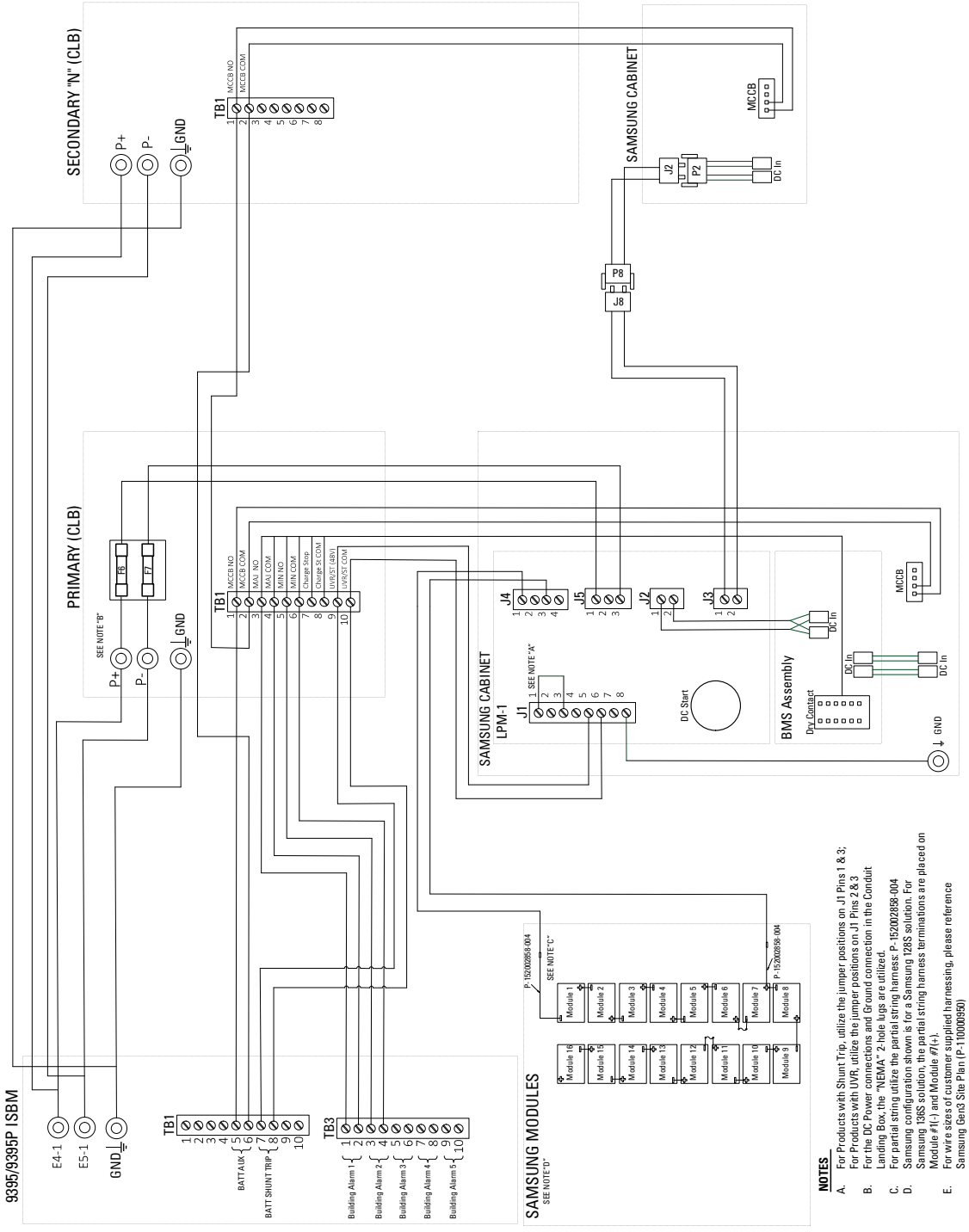


Figure 28. Eaton Samsung Gen 3 LPM2 Interface Connection to Eaton 9395–9395P UPS — Wiring Diagram

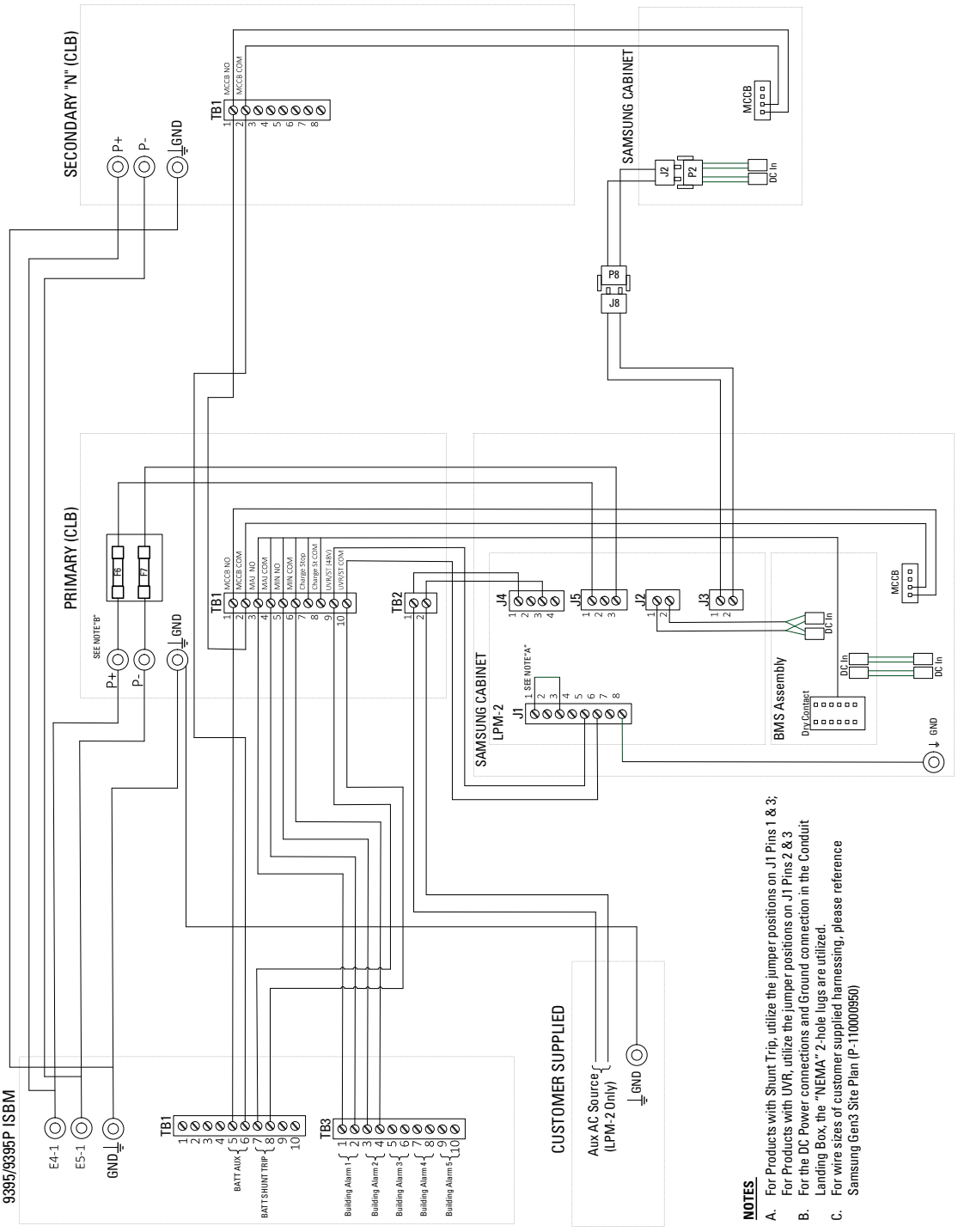
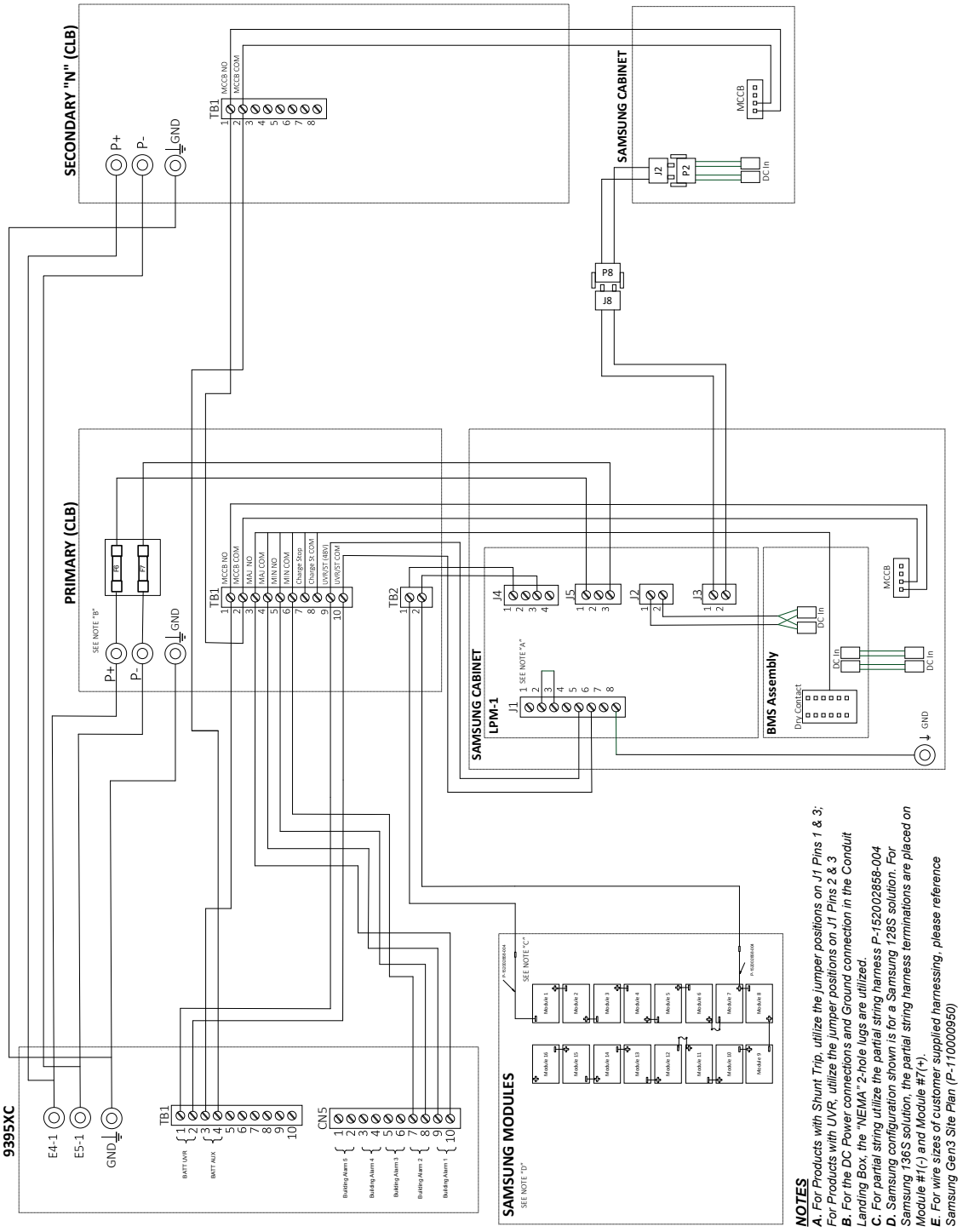


Figure 29. Eaton Samsung Gen 3 LPM1 Interface Connection to Eaton 9395XC UPS — Wiring Diagram



NOTES

A. *For Products with Shunt Trip, utilize the jumper positions on J1 Pins 1 & 3; For Products with UVR, utilize the jumper positions on J1 Pins 2 & 3*

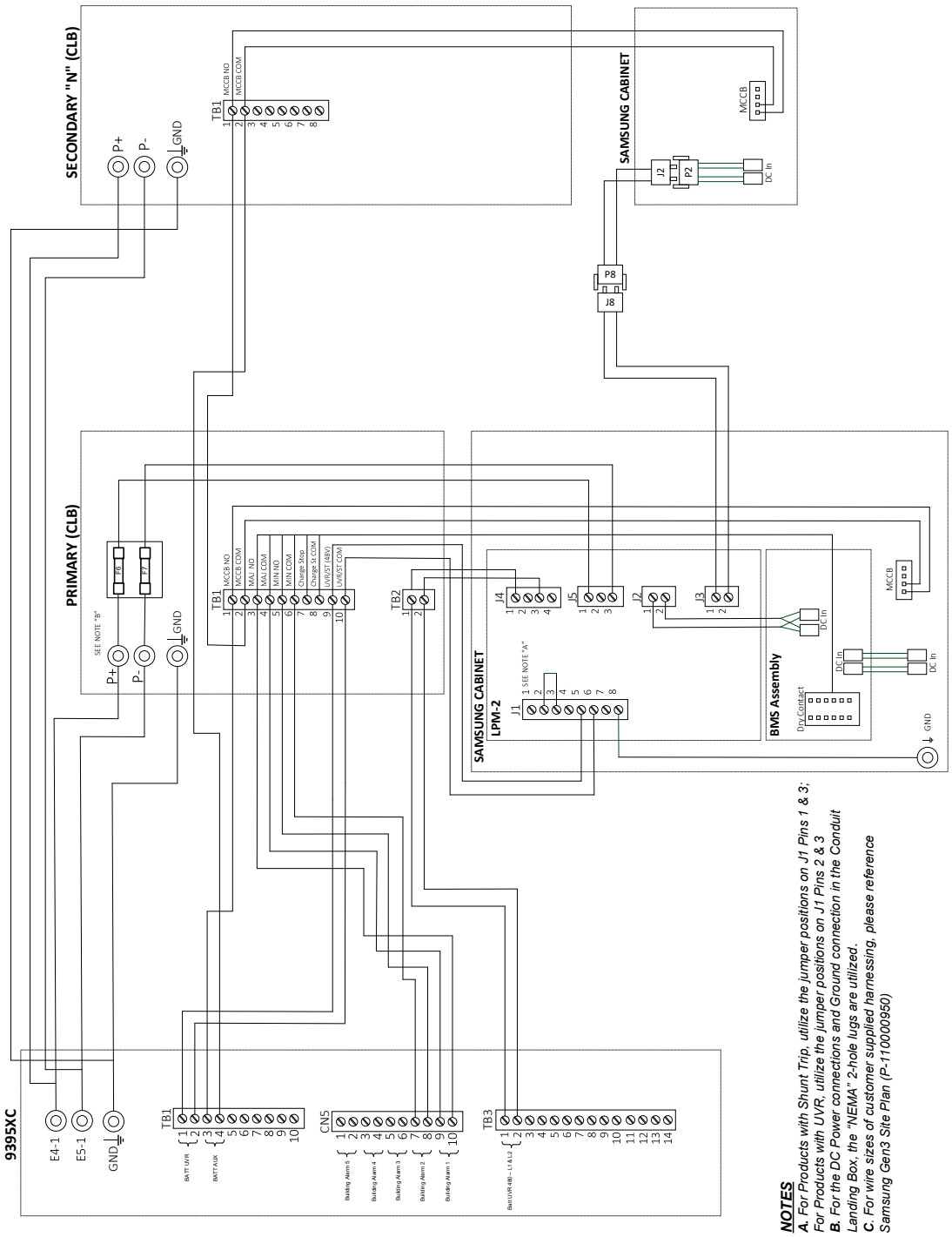
B. *For the DC Power connections and Ground connection in the Conduit Landing Box, the "NEMA" 2-hole lugs are utilized.*

C. *For partial string utilize the partial string harness P-152002858-004*

D. *Samsung configuration shown is for a Samsung 128S solution. For Samsung 136S solution, the partial string harness terminations are placed on Module #1(-) and Module #7(+).*

E. *For wire sizes of customer supplied harnessing, please reference Samsung Gen3 Site Plan (P-110000950)*

Figure 30. Eaton Samsung Gen 3 LPM2 Interface Connection to Eaton 9395XC UPS — Wiring Diagram



4.6 Completing the Installation Checklist

The final step in installing the Eaton Samsung Gen 3 battery system is completing the following Installation Checklist. This checklist ensures that you have completely installed all hardware, cables, and other equipment. Complete all items listed on the checklist to ensure a smooth installation. Make a copy of the Installation Checklist before filling it out, and retain the original.

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

NOTE The Installation Checklist MUST be completed prior to authorized Eaton Customer Service engineer starting the UPS system for the first time.

4.7 Installation Checklist

- ❑ All packing materials and restraints have been removed from each cabinet.
- ❑ The battery cabinets are installed on a level floor suitable for computer or electronic equipment.
- ❑ The battery cabinets are placed in their installed location.
- ❑ All conduits and cables are properly routed.
- ❑ All power cables are properly sized and terminated.
- ❑ A ground conductor is properly installed.
- ❑ Battery cables are terminated on the positive and negative terminals in the UPS cabinet.
- ❑ Battery Shunt Trip and other signal wiring is connected from the battery cabinet to the UPS.
- ❑ All internal safety shields and access panels are installed.
- ❑ Facility air conditioning equipment is installed and operating correctly.
- ❑ The area around the UPS and battery cabinet is clean and dust-free.
- ❑ Adequate workspace exists in front of the battery cabinet and other cabinets.
- ❑ Adequate lighting is provided around all Eaton Samsung Gen 3 Battery Cabinets and UPS equipment.
- ❑ A 120 Vac service outlet is located within 7.5 meters (25 feet) of the battery system and UPS equipment.
- ❑ Startup and operational checks are performed by an authorized Eaton Customer Service Engineer.
- ❑ For multiple-cabinet installations: Cables from each individual cabinet to the UPS are of the same length
- ❑ Visit www.eaton.com/pq/register to register your new Eaton UPS / Eaton UPS Accessory.

4.8 Initial Startup

NOTE 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. 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.

Notes:

Chapter 5 Battery Cabinet Modules and Specifications

This chapter describes the Eaton Samsung Gen 3 battery cabinet system components, configurations and specifications.

- Battery Module
- Battery Control Unit (BCU)
- Battery Management System (BMS) Assembly
- Logic Power Module
- Battery Cabinet Specifications

5.1 Battery Module

The Eaton Samsung Gen 3 Battery cabinet contains a single battery string that is composed of multiple battery modules connected in series. Eaton Samsung Gen 3 136S has 17 modules, and the Eaton Samsung Gen 3 128S has 16 modules. The Battery Module is the most basic component of the battery system, and it contains the energy storing battery cells. There is a Module BMS inside each Battery Module. Module BMS checks the status of a Battery Module by measuring its voltage and temperature. It also communicates with the Battery Control Unit (BCU) to send all measured voltage and temperature data, and to receive commands to control cell balancing.

There are two types of battery modules that differ based on the position of the battery modules terminal polarity. A **Type A module** has its positive (+) terminal on the right side, as seen from the front and a **Type B module** has its positive (+) terminal on the left side.

There are two fuses installed in the battery cabinet wired in series with the string of battery modules, refer to Table 13 for fuse ratings. See Figure 6 and Figure 7 for fuse location. See Figure 32 and Figure 33 for simplified system schematics.

Figure 31. Battery Module Types and Module Layout

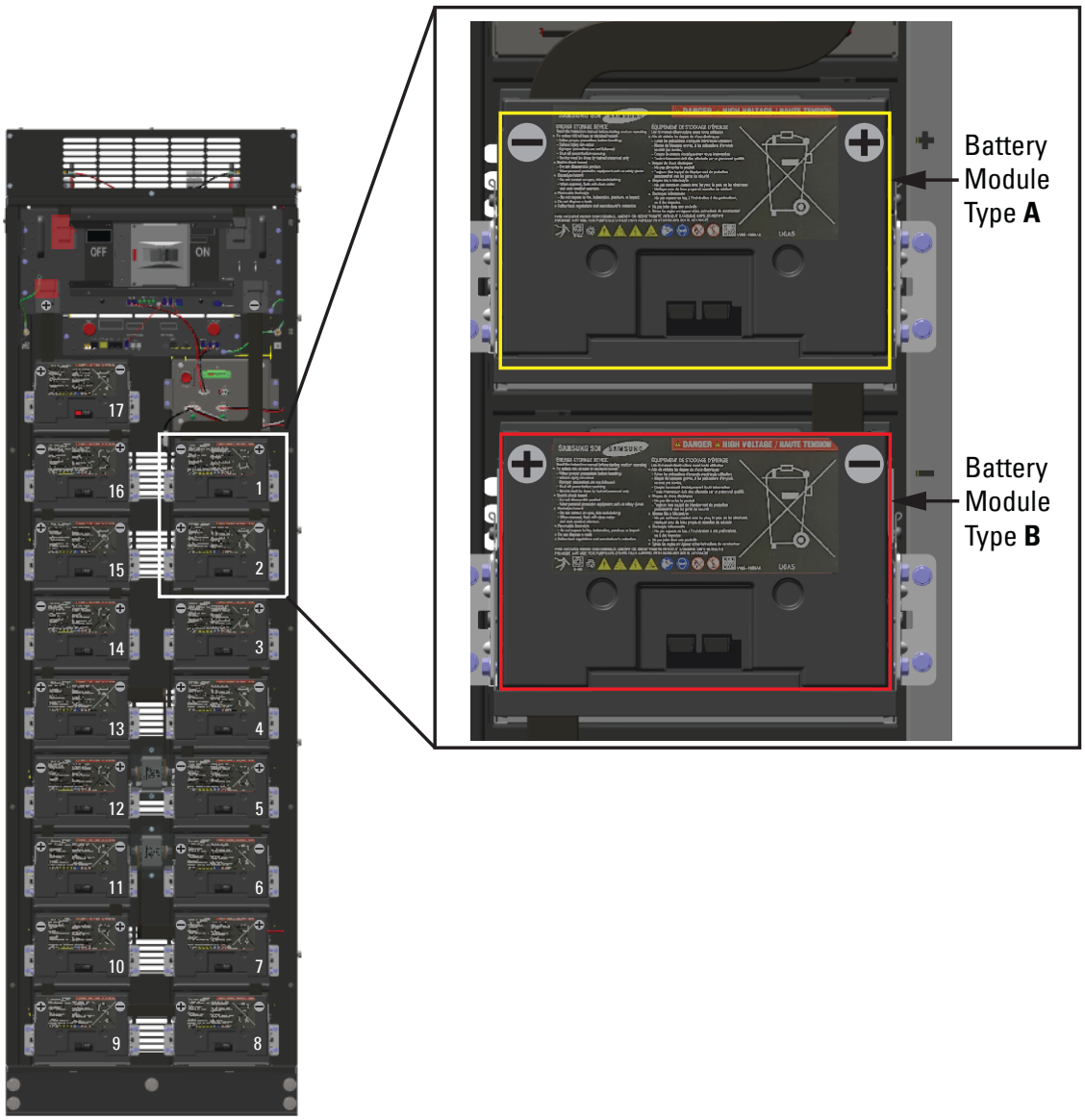


Table 12. Battery Module Specifications

Configuration	8S 1P
Cell Type	LMO
Nominal Capacity	67 Ah
Nominal Voltage	30.4V
Maximum Voltage	33.6V
Module Weight	19.5 kg (43 lb.)

Figure 32. Eaton Samsung Gen 3 Oneline Schematic — 128S Model

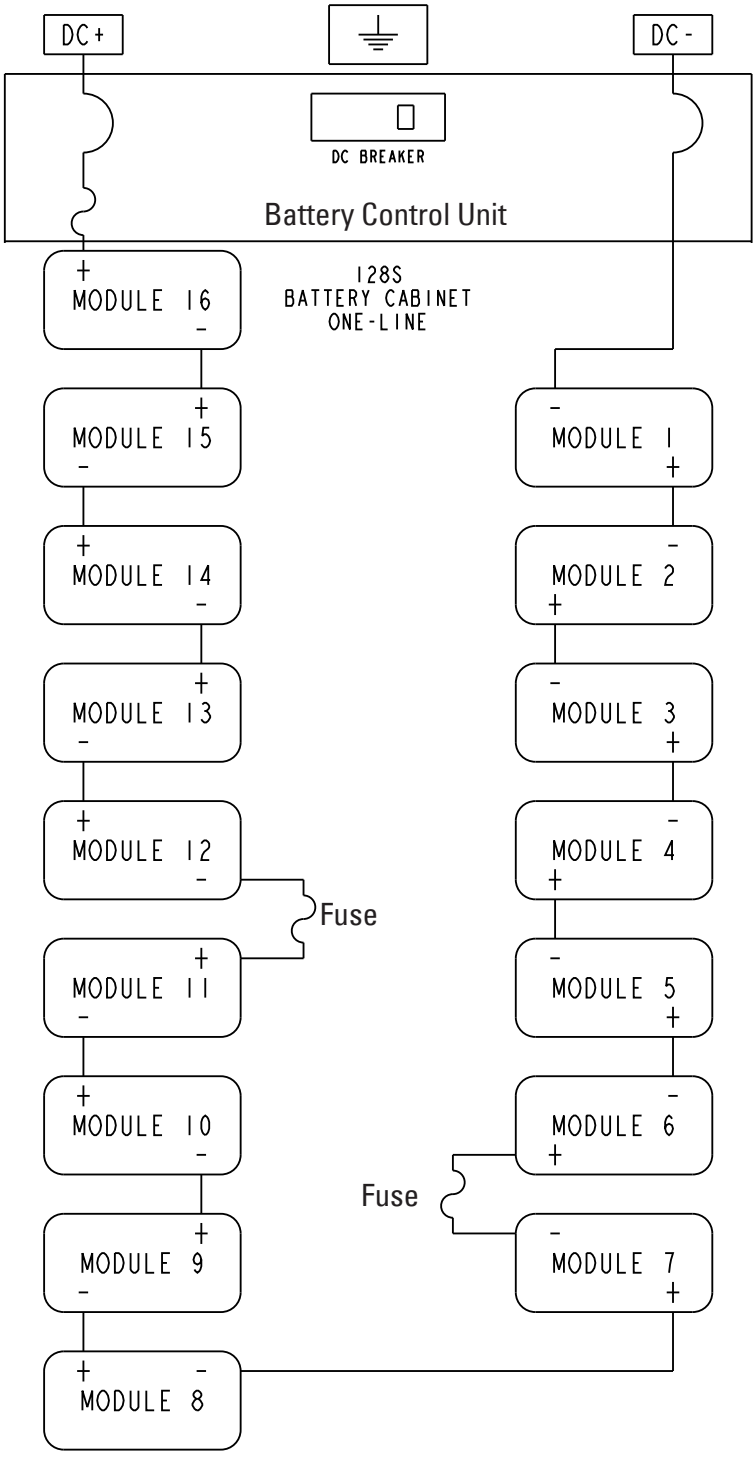
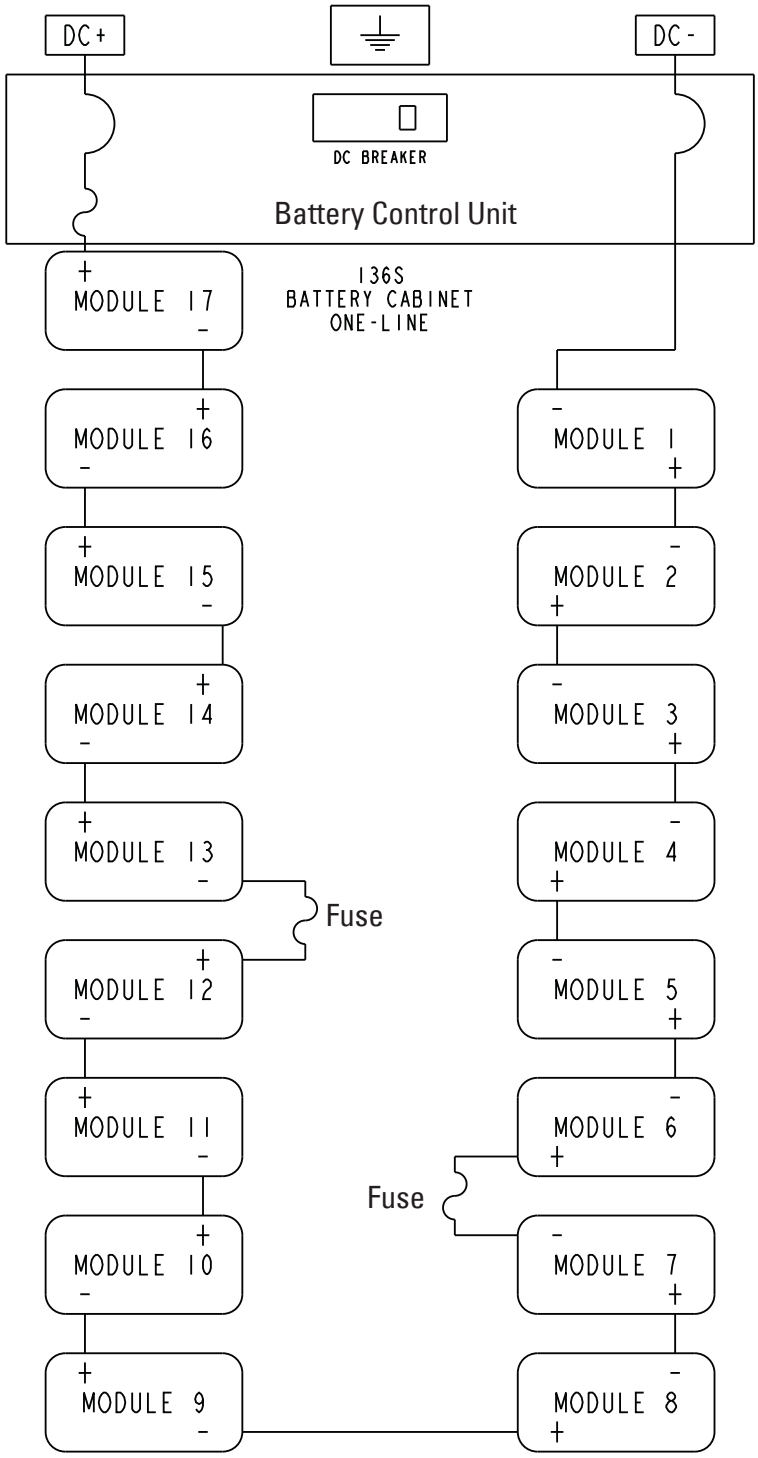


Figure 33. Eaton Samsung Gen 3 Oneline Schematic — 136S Model



5.2 Battery Control Unit (BCU)

Each battery cabinet is equipped with a Battery Control Unit (BCU). A BCU includes a Moulded Case Circuit Breaker (MCCB), fuses (for short circuit protection), relays (for charge and pre-charge protection), and a battery management system that monitors and protects the battery string in the cabinet. BCU collects all information about the battery system and controls the battery system by switching the main power line and controls each Battery Module by cell balancing. BCU calculates the state of charge (SOC) and state of health (SOH) of the battery system. Key components in the BCU are Rack BMS, Fuse and MCCB. Rack BMS is the main controller that takes all data from the Module BMS, measures the string voltage and current, determines the state of the battery and controls the MCCB accordingly.

Figure 34. Battery Control Unit

Table 13. BCU Component Ratings and Battery String Fuse Rating

BCU Breaker	600A
BCU Fuse	500A
Battery String Fuse	500A, 600VDC

⚠WARNING

Do not disassemble or attempt to repair the unit or components of the control box under any condition.

⚠ AVERTISSEMENT!

Ne démontez pas et n'essayez pas de réparer l'unité ou les composants du boîtier de commande sous aucune condition.

⚠WARNING

Accidental short circuit may result in contactor permanent failure even if the fuse interrupts the short circuits for a short time.

⚠ AVERTISSEMENT!

Un court-circuit accidentel peut entraîner une défaillance permanente du contacteur même si le fusible interrompt le court-circuit pendant une courte période.

5.3 Battery Management System (BMS) Assembly

The BMS Assembly will be included only in the first cabinet of a multi-cabinet system. BMS Assembly is comprised of System BMS and Data BMS. System BMS controls and monitors all connected Rack BMS. Data BMS has datalogging capability. BMS Assembly provides a communication interface between the battery system, the UPS, and the customer via RS485, TCP/IP, Dry contact, and USB Port.

5.4 Logic Power Module

The LPM provides 24V DC logic power required to power the BCU and BMS Assembly. The LPM goes on the first cabinet of the battery system and can provide 24V DC for up to 14 cabinets. There are two configurations of LPM available: LPM-1 & LPM-2.

5.4.1 LPM-1

LPM-1 uses battery voltage to power the 24V DC output. See Section 6 for startup procedure.

Figure 35. LPM-1 — Details

5.4.2 LPM-2

LPM-2 uses an external AC source to power the 24V DC output. The AC source can be single phase or three phase. The input wires from the customer AC source are connected to the terminal block TB2 on the CLB. See Figure 36 for location of TB2.

Figure 36. Interface Terminal Location — TB2

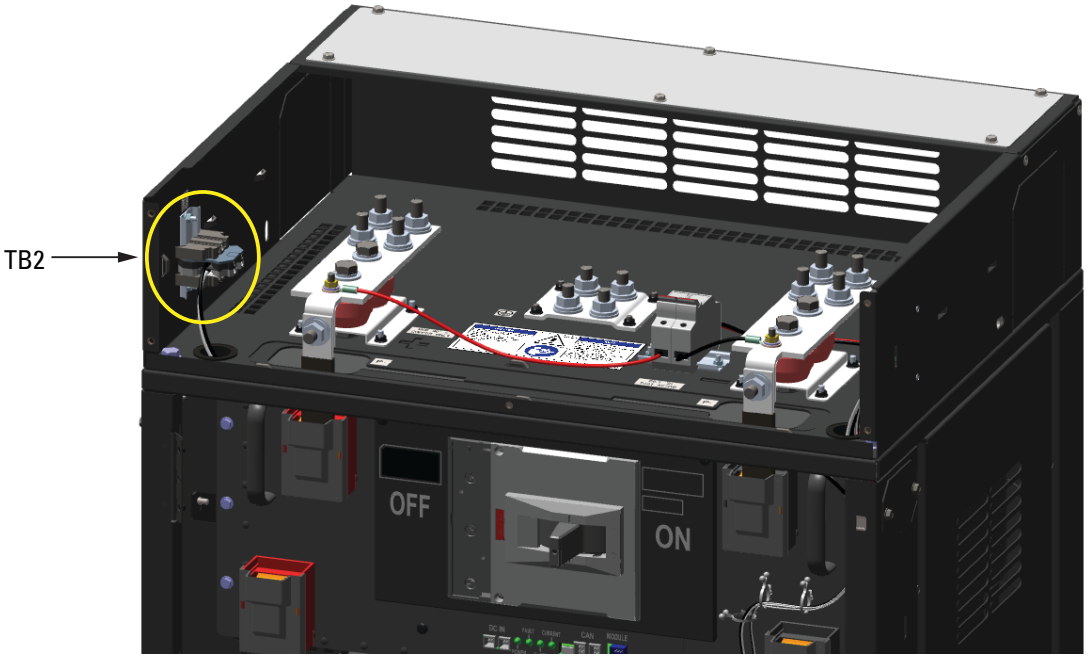


Figure 37. LPM-2 — Details

5.4.3 LPM Specifications

Table 14. LPM Input Specification

Model	Input Types
LPM-1 Nominal Input Voltage	212.8V DC – Partial String Input
	517V DC – Full String Input
LPM-2 Nominal Input Voltage	480V – Three Phase AC
	208V – Single Phase AC

Table 15. LPM Connector Description

Port	Type	Description
J1	Input	Shunt Trip / UVR from the UPS, and LPM ground
J2	Output	24V DC
J3	Output	24V DC
J4	Input	Partial Battery string DC Voltage (LPM-1) or External AC Voltage (LPM-2)
J5	Input	Battery Full String DC Voltage

5.5 Eaton Samsung Gen 3 Battery Cabinet – Specifications

Table 16. Battery System Electrical Characteristics

Battery System Specification	Model		Remarks
	Eaton Samsung Gen 3 136S	Eaton Samsung Gen 3 128S	
Number of Modules	17 (8 Type A, 9 Type B)	16 (8 Type A, 8 Type B)	
Nominal Capacity	34.6 kWh	32.6 kWh	
Nominal Voltage	516.8V DC	486.4V DC	3.8V/cell
Maximum Voltage	571.2V DC	537.6V DC	4.2V/cell
End of Discharge Voltage	408V DC	384V DC	3.0V/cell
Recommended EOD Voltage	435.2V DC	409.6V DC	3.2V/cell
Max Continuous Discharge Power	183.6 kW	172.8 kW	
Discharging Method	Constant Power	Constant Power	
Charging Method	CC-CV, Floating	CC-CV, Floating	
Floating Charging Voltage	571.2V DC	537.6 VDC	4.2V/cell
Standard Charging Current	22.3 A	22.3 A	1/3C
Max Continuous Charging Current	67A	67A	1C

Table 17. Environmental and Safety Specifications

Operating Temperature	23 ± 5°C
Storage Temperature	0 ~ 40°C
Operating Altitude	Maximum 2000m above sea level
Ventilation	Natural Convection
Relative Humidity (operating and storage)	20–80%, noncondensing
Regulatory	UL9540A and UL1973

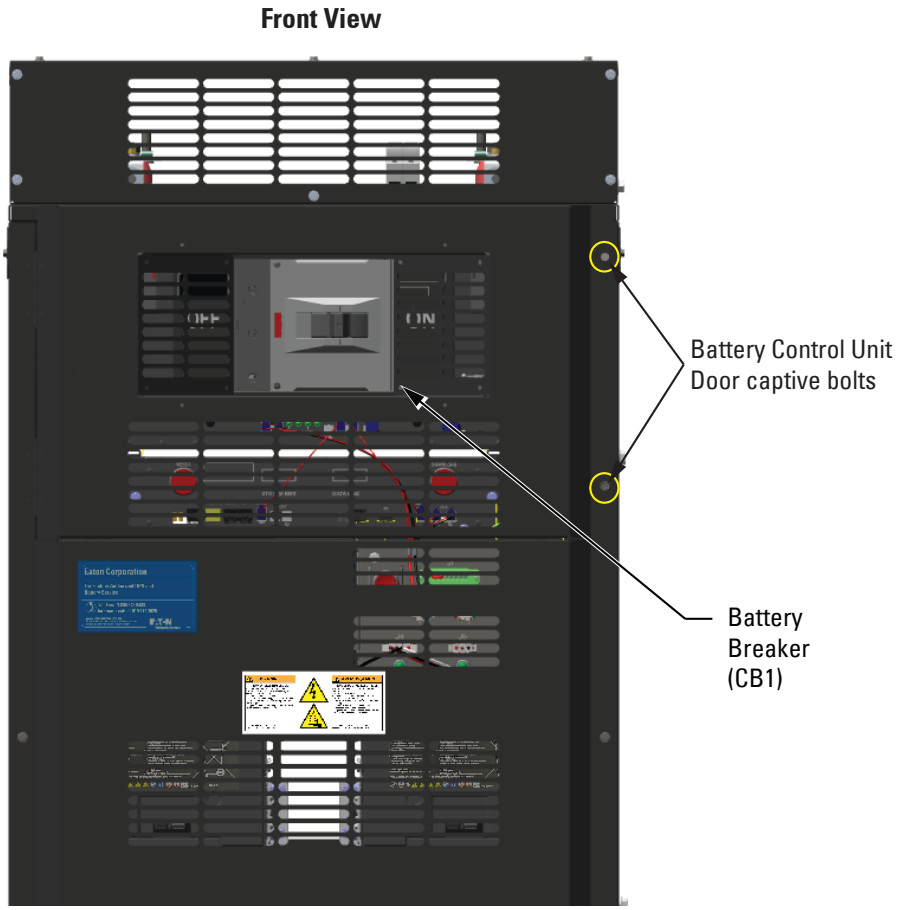
Chapter 6 Starting the Battery System

This section describes the starting and stopping of the Eaton Samsung Gen 3.

6.1 Starting System with LPM-1

1. Ensure that the UPS is off. Start with the first cabinet in the system with the LPM.
2. Open the BCU door by loosening the two captive screws on the right side of the BCU door. See Figure 38 for captive screw location.
3. Press the 'START' red push button on the LPM, see Figure 35. (for the start button on the LPM).
4. A single green LED light on the LPM will light up. This indicates the presence of 24V DC logic power.
5. Close (to On position) the circuit breaker (CB1) in the BCU, see Figure 38.

Figure 38. Battery Breaker (CB1) Location



6. Release the push button.
7. For a multi-cabinet system, when the 2nd green LED lights up (approximately 2 seconds) proceed to close (to On position) the circuit breaker (CB1) of all the cabinets in sequence.

8. Close and secure the BCU door.

⚠CAUTION

Make sure all cabinets in a multi-cabinet system are at the same voltage before operating the circuit breaker.

⚠CAUTION

Do not press the 'START' push button after turning on the cabinets. This push button is designed to only start the system. Pressing the push button during normal operation will cause all battery breakers to TRIP.

6.2 Starting System with LPM-2

The LPM-2 provides constant 24V DC output to the BCU and BMS Assembly as long as the customer wiring is connected at TB1.

1. Ensure that the UPS is off. Start with the first cabinet in the system with the LPM.
2. Open the BCU door by loosening the two captive screws on the right side of the BCU door. See Figure 38 for captive screw location.
3. Check for a single green LED light on the LPM, this indicates presence of 24V DC logic power.
4. Close (Turn ON) the circuit breaker (CB1) in the BCU, see Figure 38.
5. For a multi-cabinet system, proceed turning the circuit breaker (CB1) of all the cabinets in sequence.
6. Close and secure the BCU door.

⚠CAUTION

Make sure all cabinets in a multi-cabinet system are at the same voltage before operating the circuit breaker.

Chapter 7 Maintenance

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

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

7.1 Important Safety Instructions

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

⚠WARNING

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

⚠ AVERTISSEMENT!

- Aucun composant réparable par l'utilisateur.
- L'installation et l'entretien ne doivent être effectués que par du personnel qualifié.
- PRÉSENCE DE TENSIONS MORTELLES. Ne pas faire fonctionner cette unité lorsque les portes de l'armoire sont ouvertes ou si les panneaux de protection ne sont pas en place. Ne jamais faire de suppositions au sujet de l'état électrique des armoires du système d'onduleu

7.2 Performing Preventive Maintenance

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

7.2.1 DAILY Maintenance

Perform the following steps daily:

1. Check the area surrounding the battery system. Ensure the area is not cluttered, allowing free access to the unit.
2. Ensure the air intakes on the Accessory cabinets are not blocked.
3. Ensure the operating environment is within the parameters specified in paragraph 3.2.1 Environmental and Installation Considerations.

7.2.2 PERIODIC Maintenance

Periodic inspections of the battery cabinet should be made to determine if components, wiring, and connections exhibit evidence of overheating. Particular attention should be given to the compression lug

connections. Maintenance procedures should specify that the compression lug connections be re-torqued to values listed in this manual.

7.2.3 ANNUAL Maintenance

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

7.2.4 BATTERY Maintenance

Contact an Eaton service representative for battery maintenance. Battery replacement and maintenance should be performed only by authorized service personnel.

7.2.5 BATTERY Shelf Life

The shelf life for the batteries installed in the battery cabinet is 12 months from the date code on the battery. The recharge date is also stated on a label inside the battery cabinet.

⚠CAUTION

Failure to recharge the batteries before the expiration of the shelf life will result in reduced discharge time, shorter float service life, and will void the warranty.

7.3 Recycling the Used Batteries

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

⚠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.
- A battery can cause electrical shock, burn from high short-circuit current, or fire. Observe proper precautions.

⚠ AVERTISSEMENT!

- Une batterie peut prêsenter un risque de choc êlectrique, de brulure, ou d'incendie. Suivre les précautions qui s'imposent.
- Pour le remplacement, utiliser le même nombre et modéle des batteries.
- L'élimination des batteries est règlementée. Consulter les codes locaux à cet effet.

NO DISPOSAL

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

ATTENTION!

Ne jetez pas les piles à la poubelle. Ce produit contient des piles au lithium scellées et doit être éliminé correctement. Pour plus d'informations, contactez votre centre local de recyclage/réutilisation ou de déchets dangereux.

NO DISPOSAL

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

ATTENTION!

Ne pas éliminer les déchets d'équipements électriques et électroniques (DEEE) aux ordures. Pour connaître la méthode d'élimination appropriée, communiquer avec le centre régional de récupération/réutilisation ou d'élimination des déchets dangereux.

For additional information on UPS Battery Recycling and recycling centers near you, see UPS Battery Recycling.

7.4 Maintenance Training

A basic training course, available from Eaton, gives you a competent working knowledge of the UPS system and Battery cabinet operation and teaches you how to perform first level corrective maintenance. For more information about training and other services, contact the Customer Reliability Center (see paragraph 1.6 *Getting Help*).

Chapter 8 Warranty

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

https://www.eaton.com/content/dam/eaton/products/backup-power-ups-surge-it-power-distribution/backup-power-ups/portfolio/eaton-three-phase-ups-pdu-rpp-sts-li-ion-battery-warranty-mn153008en.pdf

Eaton battery systems – Samsung Battery warranty information. Click the link or copy the address to download from the Eaton website: Eaton battery systems – Samsung Battery Warranty

https://www.eaton.com/content/dam/eaton/products/backup-power-ups-surge-it-power-distribution/backup-power-ups/portfolio/eaton-samsung-gen3-warranty-mn153007en.pdf

EQUIPMENT REGISTRATION

Please visit www.eaton.com/pq/register to register your new Eaton Samsung Gen 3 Battery Cabinet.

Model Number:

Serial Number:

P-164001177 06