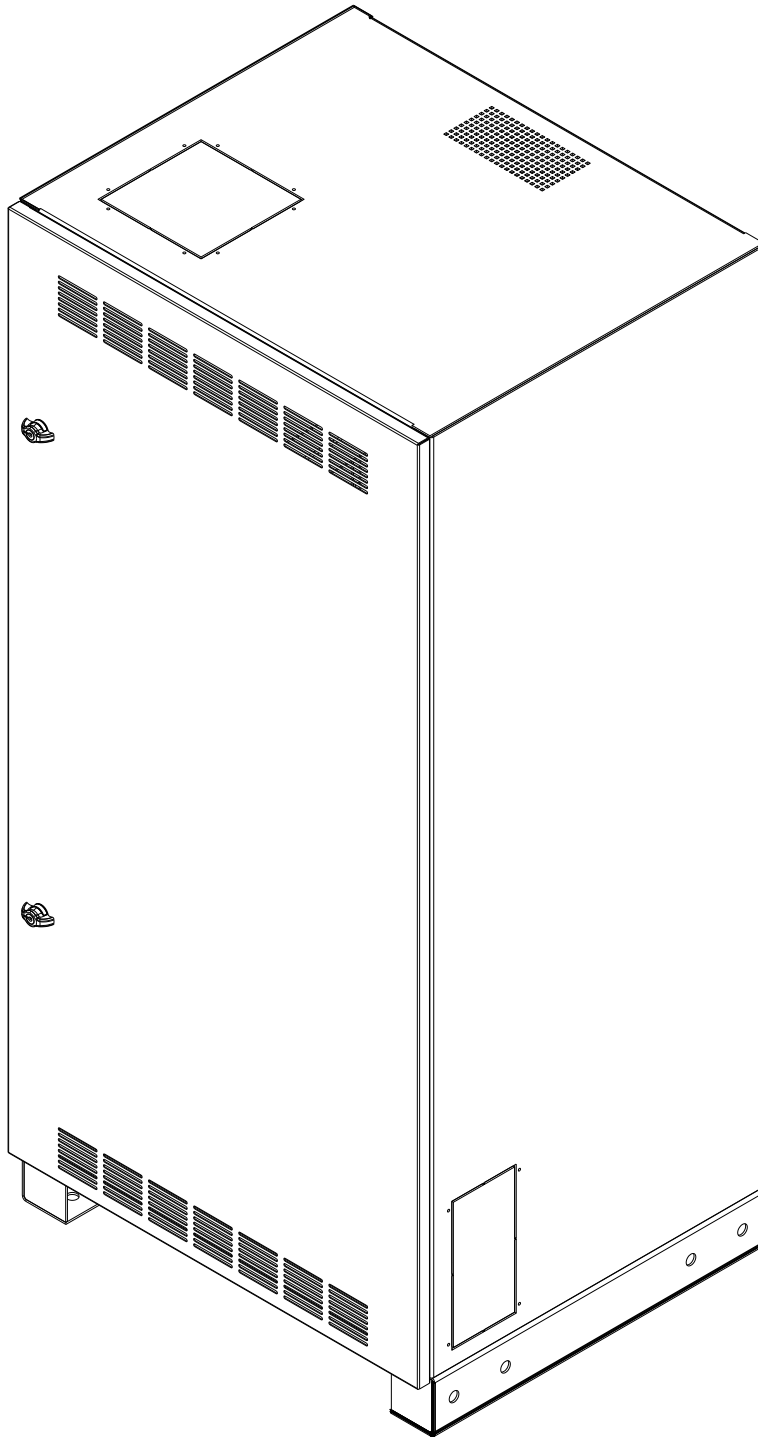




Mitsubishi Electric Power Products, Inc.

BC34 Battery Cabinet

Installation, Operation, & Maintenance Manual



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TABLE OF CONTENTS

1. Important Information About This Manual	6
1.1 Manual Symbols	6
2. Introduction:	7
3. Safety Precautions	8
4. Inspection Upon Receipt of Goods.....	10
4.1 General	10
4.2 Visible Damage	10
4.3 Concealed Damage.....	10
4.4 Return of Damaged Goods	10
5. System Overview	11
6. System Specifications.....	12
6.1 Batteries.....	12
6.2 System Grounding.....	12
6.3 DC Output	12
6.4 General Specifications.....	13
7. Installation	14
7.1 Preparation.....	14
7.1.1 Equipment Inspection.....	14
7.1.2 Necessary Equipment and Tools	14
7.1.3 Installation Safety Precautions	14
7.2 Installation Steps	15
7.2.1 Equipment Location	15
7.2.2 Equipment Mounting.....	15
7.2.3 Equipment Grounding	15
7.2.4 DC Connections.....	17
7.2.5 System Operation	17
8. System Maintenance.....	18
8.1 Battery Replacement	18
9. Warranty	20

1. IMPORTANT INFORMATION ABOUT THIS MANUAL

SAVE THESE INSTRUCTIONS! This manual contains important information that is needed during the installation and maintenance of the system.

1.1 MANUAL SYMBOLS

**Warning:**

Indicates information provided to protect the user against personal injury and/or safety hazards.

**Caution:**

Indicates information provided to protect the user against safety hazards and/or possible equipment damage.

**Important:**

Indicates information provided as an installation or operating instruction or tip as well as general important installation and system information.

2. INTRODUCTION:

The C&C Power family would like to thank you for choosing a C&C Power Inc. product for your equipment needs. We know there are a lot of choices in the industry and we appreciate the opportunity to supply each of our customers with the highest quality power products manufactured in the United States today. All of C&C Power's solutions are factory tested to some of the highest standards in the industry. Every battery cabinet system is Hi Pot tested to UL standards at our facility prior to shipment.

Sales support for future equipment needs or upgrades is provided by our regional sales staff and qualified representatives. All technical questions and service issues should be directed to our main office by dialing the number listed below. This is a 24-hour, 7-day service number. After normal working hours, please leave a detailed message with your phone number on the voice mail system and a qualified service representative will contact you as quickly as possible.

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3. SAFETY PRECAUTIONS



Before installing or maintaining this system, it is extremely important to read this manual and be sure that all system drawings and schematics are reviewed and clearly understood. If there are any questions concerning this manual or any of the installation or maintenance procedures and/or requirements please contact a C&C Power representative before proceeding.



When installing this power system, follow all applicable federal, state and local regulations as well as industry guidelines to insure proper system installation.



Only qualified electricians or DC power technicians should attempt to install or service this equipment.



System installation and maintenance should always be performed with heavily insulated tools. It is also recommended to wear rubber gloves, boots, and use insulating mats to stand on when working on this equipment.



Always wear eye protection when installing or maintaining batteries and/or power equipment.



Battery cabinet systems are extremely heavy. Use a minimum of two people when unloading and setting equipment in place.



Do not smoke or present open flames near any battery system.



For the safety of others, never leave an open cabinet or panel unattended.



To reduce the risk of fire, replace fuses with the same type and rating of fuses supplied with the system.



DC Power and Batteries can be very dangerous and have extremely high short circuit current. Electrical shock, severe burns, fire or death can result from a system short.



To avoid personal injury including electrical shock, severe burns and possible death, all jewelry including bracelets, rings and watches must be removed prior to installing or servicing this system.



Do not open or mutilate batteries. Opened or severely damaged batteries can release toxic electrolyte which is harmful to the skin and eyes.



Never lay loose cables, metal parts or tools on top of batteries.



Under certain conditions, batteries can vent potentially explosive gas (hydrogen). Never enclose batteries or battery cabinets in a sealed room.

4. INSPECTION UPON RECEIPT OF GOODS

4.1 GENERAL

Special precautions and care have been taken to ensure the system arrives safe and undamaged. However, upon receipt, you should inspect the entire shipment, including the crate and any boxes for evidence of damage that may have occurred during transit.

4.2 VISIBLE DAMAGE

It is the responsibility of the person receiving the shipment to inventory and fully inspect all materials against the bill of lading or weigh bill IMMEDIATELY while the carrier representative is still present. Insure that all items are accounted for, including number of skids and quantity of boxes. Also note any visible external damage that may have occurred during transit. Make all applicable notations on the delivery receipt before signing and file a damage report with the carrier.

4.3 CONCEALED DAMAGE

Within 3 to 30 days of receipt (depending on courier), unpack the system and check for any concealed damage. Check the materials received against the detailed packing list to verify the quantity and the condition as complete and satisfactory.

Note any damage to the internal packaging, then request an inspection by the carrier and file a concealed damage claim. If there is a material shortage, contact a C&C Power representative at the main office to file a claim.

**Please contact your shipping company for all shipping damage.
C&C Power is not responsible for any shipping damage.**

4.4 RETURN OF DAMAGED GOODS

Should equipment be damaged and require return to C&C Power for repair, a representative will provide instructions along with an RMA number to expedite the return.

A RMA number must be obtained before returning equipment to C&C Power, Inc.

5. SYSTEM OVERVIEW

During normal operating conditions the UPS supplies power to the load as well as the necessary power required to keep the batteries at the proper float voltage. When AC power fails, the batteries will discharge in order to provide the necessary backup power to the load. It is the responsibility of the customer to make sure the batteries are not discharged below manufactures recommendations. After any battery discharge has occurred, the batteries should be recharged as soon as possible. Batteries will be damaged if not properly recharged right away. See the UPS manual for more information on charging the batteries.

6. SYSTEM SPECIFICATIONS

6.1 BATTERIES

Please refer to system drawings for model specific information.

Type: Valve Regulated Lead Acid (VRLA), sealed, non-spillable

Voltage: 12 VDC Nominal



Only cabinets with **Flame Retardant Batteries** are suitable for computer room use.

6.2 SYSTEM GROUNDING



All system ground wires should be derived from the main building ground source.

Cabinet Safety Ground: Each cabinet is supplied with a mechanical ground lug that accepts bare wire from #6 AWG to 300 MCM cable.

Torque: 325 lb-in

Wire Size and Type: Ground wire should be sized per NEC and/or all applicable national and local codes.

Minimum Size Conductor for Grounding the Battery Cabinet		
Battery Cabinet Breaker or Fuse Size	Copper Wire Size	Aluminum Wire Size
Up to 200 Amps	6 AWG	4 AWG
201-300 Amps	4AWG	2 AWG
301-400 Amps	3AWG	1 AWG
401-500 Amps	2 AWG	1/0 AWG
501-600 Amps	1AWG	2/0 AWG

6.3 DC OUTPUT

Please refer to system drawings for model specific information.

Voltage: 12-480 VDC Nominal

Circuit Breaker: UL Listed 600 VDC rated. See system drawings for details.

Fuse Type:

A50QS, A50P or equivalent (for 384VDC Nom. bus or less)

A70QS, A70P or equal (for 480VDC Nom. bus or less)

Type HSJ

Wire Size and Type: Per 75°C rating ; size per NEC Table 310.16 and/or all applicable national and local codes.



Wire should be sized for a maximum voltage drop of 0.5 volt.

6.4 GENERAL SPECIFICATIONS

Cabinet Size: 32"W x 27"D x 67.3"H

Empty Cabinet Weight (approximately): 450 lbs.

Operating Temperature: 20°C to 25°C (68°F to 77°F) recommended for optimum battery performance.

Ventilation: Through ventilation slots front and rear. A minimum of four inches is required in front and behind the cabinet. This refers to obstruction of ventilation only. Clearance around the equipment should be as suggested by NEC and/or all applicable national and local codes.



Under certain conditions, batteries can vent potentially explosive gas (hydrogen). Never enclose batteries or battery cabinets in a sealed room.



Batteries should be stored no longer than three months at 25°C (77°F) or lower before recharging. Exceeding the recommended ambient storage temperature may cause damage to the batteries.

7. INSTALLATION

7.1 PREPARATION

7.1.1 EQUIPMENT INSPECTION

Remove the equipment from the packaging material and inspect for any shipping damage that may have been overlooked upon receipt of goods. Verify that the system includes all necessary hardware for installation.

7.1.2 NECESSARY EQUIPMENT AND TOOLS

- Heavily insulated assortment of hand tools
- Digital voltmeter

7.1.3 INSTALLATION SAFETY PRECAUTIONS



Before proceeding with system installation, be sure to review and understand all of the SAFETY PRECAUTIONS in this manual!



DC VOLTAGE WARNING!

Hazardous DC voltages are present in the system. This hazard will always be present in a battery system including when it is offline. Accidental short circuit of the positive and negative terminal will cause tremendous currents to flow resulting in electrical shock, severe burns, fire and possible death! Use extreme caution when installing and maintaining the system!

7.2 INSTALLATION STEPS



Before installing or maintaining this system, it is extremely important to read this manual and be sure that all system drawings and schematics are reviewed and clearly understood. If there are any questions concerning this manual or any of the installation or maintenance procedures and/or requirements please contact a C&C Power representative before proceeding.

7.2.1 EQUIPMENT LOCATION

Prior to installation, verify floor loading requirements and all applicable codes pertaining to the related equipment. Environmental conditions should also be reviewed. Battery systems require an area with proper ventilation and cooling. An ambient temperature between 20°C to 25°C (68°F to 77°F) is recommended for optimum battery life and performance. The cabinet has vent holes located at the front and rear of the system. Never install the cabinet into a sealed enclosure. Clearance around the equipment should be as suggested by NEC and/or all applicable national and local codes.



Under certain conditions, batteries can vent potentially explosive gas (hydrogen). Never enclose batteries or battery cabinets in a sealed room.

7.2.2 EQUIPMENT MOUNTING



Battery cabinet systems are extremely heavy. Use a minimum of two people when unloading and setting equipment in place.

1. The battery cabinet is equipped with pallet jack or forklift access opening in the front and rear of the cabinet. Move the equipment into the desired location and set in place.
2. On the floor in the desired location, mark the location of the 4 mounting holes found at the bottom of the 2 cabinet legs. You may also use the bottom view layout drawing for this; however the results may not be as accurate.
3. Move the cabinet out of the way and drill holes for the recommended hardware.
4. Move the cabinet back into place, align holes, and tighten hardware.
5. Should any drilling be performed on this equipment, make sure all exposed batteries and connections are completely covered using insulated type mats.

7.2.3 EQUIPMENT GROUNDING



All system ground wires should be derived from the main building ground source.



For multi cabinet systems, each cabinet needs to have a designated cabinet ground wire derived from the main building ground source.

Terminate a cabinet ground wire from the main building ground source to the supplied #6-300MCM mechanical lug located on the breaker pan. See section 6.2 for sizing recommendations. Wire should be sized per NEC and/or all applicable national and local codes.

7.2.4 DC CONNECTIONS



Review the attached system drawings and schematics for model specific information on DC output connections.



Wire should be sized for a maximum voltage drop of 0.5 volt.



Battery cabinets that are not supplied with an incorporated DC output disconnect device must have an appropriate disconnect device provided external to the cabinet.



Verify that the output breaker is in the off/open position before making any DC connections to additional cabinets or to the UPS. Also verify that the UPS charger is not running.

1. Open the front door on the cabinet and check for any noticeable problems or damage that may have occurred during shipment.
2. Review the attached installation drawing and schematic. Note that a cable has been left off in the middle of the battery string for safety purposes and will be installed later.
3. Check and re-torque internal battery connections, as shipping may have caused these connections to come loose. Proper torque values are noted on the drawing and also on the battery case.
4. Connect main cables from the UPS or charger source to the battery cabinet output. The battery cabinet output connection point will vary depending on the cabinet configuration. The main output connection point may be directly to the circuit breaker, to the fuse block, or to a terminal block or bus bars. Review the supplied cabinet drawing for information on the battery cabinet output. All cables should be sized per Sections 6.2 and 6.3 of this document. Refer to the UPS or charger manual for wiring external batteries. Note! Make sure any charging source is disconnected before making these connections.
5. Connect the cable that was left off during shipment and install as shown on the wiring drawing. Torque connections properly.

7.2.5 SYSTEM OPERATION

Please refer to the UPS system manual for system start up and operation information.

8. SYSTEM MAINTENANCE



Before proceeding with system maintenance, be sure to review and understand all of the SAFETY PRECAUTIONS in this manual!



Verify that the output breaker is in the off/open position before servicing the system.

8.1 BATTERY REPLACEMENT



When batteries are replaced they must be properly installed paying special attention to terminal polarity orientation! If wired incorrectly it will cause a short in the system and can result in electrical shock, severe burns, fire and possible death! Be sure to review the system schematics before terminating any battery cables.



Caution: Risk of explosion if batteries are replaced by an incorrect type.



Do not dispose of batteries in a fire. The batteries may explode. Contact your local hazardous waste or recycling center for battery disposal requirements.



Do not discard batteries in the trash. This product contains sealed lead acid batteries. Contact your local hazardous waste or recycling center for battery disposal requirements.

1. Prepare the new battery for installation. Verify that the battery is the same type and amp-hour rating as the batteries that are in the system.
2. Using a digital voltmeter, measure the battery voltage to verify that it is 12.4 VDC or above.
3. Use a brass wire brush or abrasive pad to polish the battery terminals.
4. Apply no-ox type terminal grease to the battery terminals to avoid corrosion.
5. Disconnect the UPS from the battery string by turning off (opening) the circuit breaker in the battery cabinet.
6. Remove the center jumper on the battery string to reduce the voltage. If replacing all batteries, continue reducing the voltage by removing the inter-shelf jumpers.
7. Disconnect the cables from the battery to be replaced.
8. Remove the bad battery. Depending on battery location, it may be necessary to remove additional batteries to safely gain access to the bad battery.
9. Put the new battery into place. Make sure new battery is installed properly regarding polarity orientation. Use the supplied wiring drawing found inside the battery cabinet door to verify the cabinet wiring.
10. Reconnect the cables to battery and make sure the connections are properly torqued.
11. Reconnect any removed string jumpers and make sure the connections are properly torqued.
12. Check the battery string voltage at input side of the circuit breaker.

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13. Reconnect the UPS to the battery string by turning on (closing) the circuit breaker in the battery cabinet.

9. WARRANTY

LIMITED WARRANTY AND EXCLUSIONS

C&C Power, Inc. strives to produce quality products at reasonable prices. If you are not satisfied with our product because of a defect, we will repair or replace the defective part or parts free of charge for a period of one year from the date of purchase. In the event you claim that the product contains a defect, simply notify C&C Power, Inc. of the defect, and we will arrange for repair or replacement. The sole and exclusive remedy against C&C Power, Inc. relating in any way to a product defect shall be the repair or replacement of defective parts as provided for under this LIMITED WARRANTY. No other remedy, including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss, is available. This LIMITED WARRANTY shall not be deemed to have failed of its essential purpose so long as C&C Power, Inc. is willing and able to repair or replace defective parts in the manner prescribed in this LIMITED WARRANTY.

Certain integrated products, which are not manufactured by C&C Power; will be warranted by the applicable manufacturer. These warranties shall be between the manufacturer and the user. Terms and conditions may vary. These integrated products include, but may not be limited to, the following products: Batteries, Inverters and UPS Systems.

Any action for breach relating to the sale of a C&C Power, Inc. product must be commenced within one year after the cause of action has accrued.

THIS LIMITED WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, AND ALL SUCH WARRANTIES ARE EXCLUDED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

