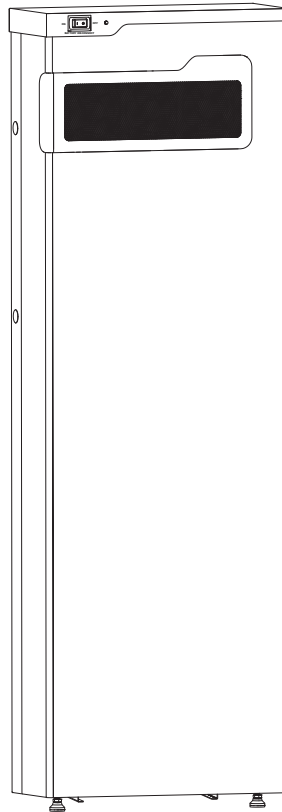


Installation Manual

Generac PWRcell™ Battery



008980



WARNING

Loss of life. This product is not intended to be used in a critical life support application. Failure to adhere to this warning could result in death or serious injury. (000209b)

Register your Generac product at:

<https://pwrfleet.generac.com>

1-888-GENERAC
(888-436-3722)

Para español, visita: <http://www.generac.com/service-support/product-support-lookup>

Pour le français, visiter: <http://www.generac.com/service-support/product-support-lookup>

SAVE THIS MANUAL FOR FUTURE REFERENCE

Use this page to record important information about your Generac Product

Record the information found on your unit data label on this page. See [Serial Number Locations](#).

When contacting an Independent Authorized Service Dealer (IASD) or Generac Customer Service, always supply the complete model number and serial number of the unit.

Operation and Maintenance: Proper maintenance and care of the energy storage system ensures a minimum number of problems and keeps operating expenses at a minimum. It is the operator's responsibility to perform all safety checks, to verify that all maintenance for safe operation is performed promptly, and to have the equipment checked periodically by an IASD. Normal maintenance, service and replacement of parts are the responsibility of the owner/operator and, as such, are not considered defects in materials or workmanship within the terms of the warranty. Individual operating habits and usage may contribute to the need for additional maintenance or service.

Table 1 - Important Information

Description	Model Number	Serial Number	Date Purchased	Date Commissioned
PWRcell Battery				
Battery Module 1				
Battery Module 2				
Battery Module 3				
Battery Module 4				
Battery Module 5				
Battery Module 6				



WARNING

CANCER AND REPRODUCTIVE HARM

www.P65Warnings.ca.gov

(000393a)

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Section 1: Safety Rules & General Information

Introduction

This installation manual provides instructions and recommendations for installing and commissioning the Generac PWRcell™ Battery. The PWRcell battery is designed to house compatible lithium ion battery modules, and connects directly to the PWRcell inverter and other REbus™- compatible components of the PWRcell system.

This installation manual includes full details on installation, wiring, safety, inverter integration, and other key aspects of installing the battery. The companion document to this installation manual is the Generac PWRcell Battery Owner's Manual. See the Generac PWRcell Battery Owner's Manual for complete information on user-configurable features.

The information in this manual is accurate based on products produced at the time of publication. The manufacturer reserves the right to make technical updates, corrections, and product revisions at any time without notice.

Read This Manual Thoroughly



Consult Manual. Read and understand manual completely before using product. Failure to completely understand manual and product could result in death or serious injury. (000100a)

If any section of this manual is not understood, contact the nearest Independent Authorized Service Dealer (IASD) or Generac Customer Service at 1-888-436-3722 (1-888-GENERAC), or visit www.generac.com for starting, operating, and servicing procedures. The owner is responsible for correct maintenance and safe use of the unit.

This manual must be used in conjunction with all other supporting product documentation supplied with the product.

SAVE THESE INSTRUCTIONS for future reference. This manual contains important instructions that must be followed during placement, operation, and maintenance of the unit and its components. Always supply this manual to any individual that will use this unit, and instruct them on how to correctly start, operate, and stop the unit in case of emergency.

Safety Rules

The manufacturer cannot anticipate every possible circumstance that might involve a hazard. The alerts in this manual, and on tags and decals affixed to the unit, are

not all-inclusive. If using a procedure, work method, or operating technique that the manufacturer does not specifically recommend, verify that it is safe for others and does not render the equipment unsafe.

Throughout this publication, and on tags and decals affixed to the unit, DANGER, WARNING, CAUTION, and NOTE blocks are used to alert personnel to special instructions about a particular operation that may be hazardous if performed incorrectly or carelessly. Observe them carefully. Alert definitions are as follows:



Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

(000001)



Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

(000002)



Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

(000003)

NOTE: Notes contain additional information important to a procedure and will be found within the regular text of this manual.

These safety alerts cannot eliminate the hazards that they indicate. Common sense and strict compliance with the special instructions while performing the action or service are essential to preventing accidents.

How to Obtain Service

For assistance, contact the nearest Independent Authorized Service Dealer (IASD) or Generac Customer Service at 1-888-436-3722 (1-888-GENERAC), or visit www.generac.com.

When contacting Generac Customer Service about parts and service, always supply the complete model and serial number of the unit as given on its data decal located on the unit. Record the model and serial numbers in the spaces provided on the front cover of this manual.

General Hazards

DANGER

Loss of life. Property damage. Installation must always comply with applicable codes, standards, laws and regulations. Failure to do so will result in death or serious injury. (000190)



WARNING

Electrocution. Potentially lethal voltages are generated by this equipment. Render the equipment safe before attempting repairs or maintenance. Failure to do so could result in death or serious injury. (000187)

WARNING

Equipment damage. Only qualified service personnel may install, operate, and maintain this equipment. Failure to follow proper installation requirements could result in death, serious injury, and equipment or property damage. (000182a)

WARNING

Electric shock. Only a trained and licensed electrician should perform wiring and connections to unit. Failure to follow proper installation requirements could result in death, serious injury, and equipment or property damage. (000155a)

WARNING

Risk of injury. Do not operate or service this machine if not fully alert. Fatigue can impair the ability to service this equipment and could result in death or serious injury. (000215)



WARNING

Loss of life. This product is not intended to be used in a critical life support application. Failure to adhere to this warning could result in death or serious injury. (000209b)

CAUTION

Equipment damage. Connect only to REbus-compatible devices to the DC bus. Never connect to any other DC power source. Connecting to other DC power sources could result in equipment damage. (000598a)

- Connecting the PWRcell system to the electric utility grid must only be done after receiving prior approval from the utility company.
- Only competent, qualified personnel should install, operate, and service this equipment. Strictly comply to local, state, and national electrical and building codes. When using this equipment, comply with regulations established by the National Electrical Code (NEC), CSA Standard; the Occupational Safety and Health Administration (OSHA), or the local agency for workplace health and safety.
- Protection against lightning surges in accordance with local electric codes is the responsibility of the installer.

NOTE: Lightning damage is not covered by warranty.

- If working on energized equipment while standing on metal or concrete, place insulative mats over a dry wood platform. Work on this equipment only while standing on such insulative mats.
- Never work on this equipment while physically or mentally fatigued.
- Any voltage measurements should be performed with a meter that meets UL3111 safety standards, and meets or exceeds overvoltage class CAT III.

Electrical Hazards

**⚠ DANGER**

Electrocution. Never connect this unit to the electrical system of any building unless a licensed electrician has installed an approved transfer switch. Failure to do so will result in death or serious injury.

(000150)

**⚠ DANGER**

Electrocution. PWRcell Battery front cover should be removed by a qualified technician only. Removing the front cover could result in death, serious injury, equipment or property damage.

(000604)

**⚠ DANGER**

Electrocution. Do not wear jewelry while working on this equipment. Doing so will result in death or serious injury.

(000188)

**⚠ DANGER**

Electrocution. Water contact with a power source, if not avoided, will result in death or serious injury.

(000104)

**⚠ DANGER**

Electrocution. In the event of electrical accident, immediately shut power OFF. Use non-conductive implements to free victim from live conductor. Apply first aid and get medical help. Failure to do so will result in death or serious injury.

(000145)

**⚠ DANGER**

Electrocution. Turn battery disconnect OFF and de-energize REbus before touching terminals. Failure to do so will result in death, serious injury, equipment and property damage.

(000599)

**⚠ DANGER**

Electrocution. Turn utility supply OFF before working on utility connections of the transfer switch. Failure to do so will result in death or serious injury.

(000123)

**⚠ DANGER**

Electrocution. Verify electrical system is properly grounded before applying power. Failure to do so will result in death or serious injury.

(000152)

**⚠ WARNING**

Electrocution. Refer to local codes and standards for safety equipment required when working with a live electrical system. Failure to use required safety equipment could result in death or serious injury.

(000257)

⚠ CAUTION

Equipment damage. Exceeding rated voltage and current will damage the auxiliary contacts. Verify that voltage and current are within specification before energizing this equipment.

(000134a)

⚠ CAUTION

Equipment damage. Verify all conductors are tightened to the factory specified torque value. Failure to do so could result in damage to the switch base.

(000120)

Battery Hazards



⚠️ WARNING

Explosion. Do not dispose of batteries in a fire. Batteries are explosive. Electrolyte solution can cause burns and blindness. If electrolyte contacts skin or eyes, flush with water and seek immediate medical attention.

(000162)

⚠️ WARNING

Environmental Hazard. Always recycle batteries at an official recycling center in accordance with all local laws and regulations. Failure to do so could result in environmental damage, death, or serious injury.

(000228)

⚠️ CAUTION

Equipment damage. Use ONLY manufacturer approved battery modules. Using any other module could damage Generac PWRcell Battery and may void the warranty.

(000601)

Always recycle batteries in accordance with local laws and regulations. Contact your local solid waste collection site or recycling facility to obtain information on local recycling processes. For more information on battery recycling, visit the Battery Council International website at: <http://batteryCouncil.org>

Fire Hazards



⚠️ WARNING

Fire hazard. Never attempt to fight a fire yourself. Evacuate the building and contact emergency services. Inform dispatcher that lithium-ion batteries are in the building. Failure to do so could result in death, serious injury, or property or equipment damage.

(000603)



⚠️ WARNING

Fire and explosion. Installation must comply with all local, state, and national electrical building codes. Noncompliance could result in unsafe operation, equipment damage, death, or serious injury.

(000218)



⚠️ WARNING

Risk of Fire. Unit must be positioned in a manner that prevents combustible material accumulation underneath. Failure to do so could result in death or serious injury.

(000147)

General Rules

⚠️ DANGER

Loss of life. Property damage. Installation must always comply with applicable codes, standards, laws and regulations. Failure to do so will result in death or serious injury.

(000190)

⚠️ DANGER

Loss of life. Only qualified personnel may install this battery system. Installation of a PWRcell Battery by a homeowner is prohibited. Installation by unqualified personnel will result in death, serious injury, equipment or property damage.

(000638)

⚠️ WARNING

Environmental Hazard. Always recycle batteries at an official recycling center in accordance with all local laws and regulations. Failure to do so could result in environmental damage, death or serious injury.

(000228)

- Follow all safety precautions in the owner's manual, installation guidelines manual, and other documents included with the equipment.
- Never energize a new system without opening all disconnects and breakers.
- Always consult local code for additional requirements for where unit is being installed.
- Incorrect installation can result in personal injury and damage to the unit. It may also result in the warranty being suspended or voided. All instructions listed below must be followed including location clearances and conduit sizes.

Before You Begin

- Contact your local utility provider for approval before installation. Install the battery in accordance with all utility installation requirements.
- Contact local inspector or city hall to be aware of all federal, state, and local codes which could impact installation. Secure all required permits before installing.
- Fully comply with all relevant NEC, NFPA, and OSHA standards, as well as all federal, state, and local building and electric codes. This unit must be installed in accordance with current NFPA and ICC standards, and any other federal, state, and local codes for minimum distances from other structures.

Standards Index



WARNING

Loss of life. This product is not intended to be used in a critical life support application. Failure to adhere to this warning could result in death or serious injury. (000209b)

Strictly comply with all applicable national, state, and local laws, as well as codes or regulations pertaining to the installation of the system. Use the most current version of applicable codes or standards relevant to local jurisdiction, equipment used, and installation site.

NOTE: Not all codes apply to all products and this list is not all-inclusive. In the absence of pertinent local laws and standards, the following publications may be used as a guide (these apply to localities which recognize NFPA and ICC).

1. National Fire Protection Association (NFPA) 70: The NATIONAL ELECTRIC CODE (NEC) *
2. NFPA 855: Standard for the Installation of Stationary Energy Storage Systems
3. NFPA 10: Standard for Portable Fire Extinguishers *
4. NFPA 70E: Standard For Electrical Safety In The Workplace *
5. NFPA 220: Standard on Types of Building Construction *
6. NFPA 5000: Building Code *
7. International Building Code **
8. International Fire Code
9. International Residential Code
10. Agricultural Wiring Handbook ***
11. Article X, NATIONAL BUILDING CODE
12. ASAE EP-364.2 Installation and Maintenance of Farm Standby Electric Power ****

This list is not all-inclusive. Check with the Authority Having Local Jurisdiction (AHJ) for any local codes or standards which may be applicable to your jurisdiction. The above listed standards are available from the following Internet sources:

* www.nfpa.org

** www.iccsafe.org

*** www.nerc.org Rural Electricity Resource Council P.O. Box 309 Wilmington, OH 45177-0309

**** www.asabe.org American Society of Agricultural & Biological Engineers 2950 Niles Road, St. Joseph, MI 49085

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Section 2: General Information

Specifications

Description	Units	PWRcell 9	PWRcell 12	PWRcell 15	PWRcell 17
Energy					
Usable Energy	kWh	8.6	11.4	14.3	17.1
Power					
Continuous*	kW	3.4	4.5	5.6	6.7
60 minutes**	kW	4.2	5.6	7.0	8.4
2 minutes**	kW	5.0	6.7	8.4	10.0
Battery Modules					
Number	-	3	4	5	6
DC Voltage (per module)	VDC	46.8 (39-52)			
REbus					
Communication Protocol	-	REbus DC nanogrid			
Voltage: Input/Output***	VDC	360-420			
Round-Trip Efficiency (DC to DC)	%	96.5			
Temperature					
Operating Temperature Limits****	°F (°C)	41-113 (5-45)			
Recommended Temperature Range	°F (°C)	54-86 (13-30)			
Installation Altitude					
Maximum Installation Altitude*****	ft (m)	9834 (3000)			
Weight					
Enclosure	lb (kg)	115 (52)			
Installed	lb (kg)	280 (127)	335 (152)	390 (178)	445 (202)
Compliance					
UL	-	UL 9540, UL 1973, UL 1642,			
CSA	-	CSA 22.2			
*Full cycle: 0% to 100% to 0% SoC @ 30° C					
** Discharge @ 25° C					
***380VDC Nominal					
****Reduced performance at extreme temperatures					
*****Module warranty void if installed above limit					
Specifications are subject to change without notice. Refer to the product specification sheet for complete list.					

Serial Number Locations

Refer to [Figure 2-1](#) to locate serial numbers for the unit (A) and the individual battery modules (B). Record this information in [Table 1: Important Information](#) on the inside front cover of this manual so it is available if the tags are lost or damaged. When ordering parts or requesting assistance, you may be asked to provide this information.

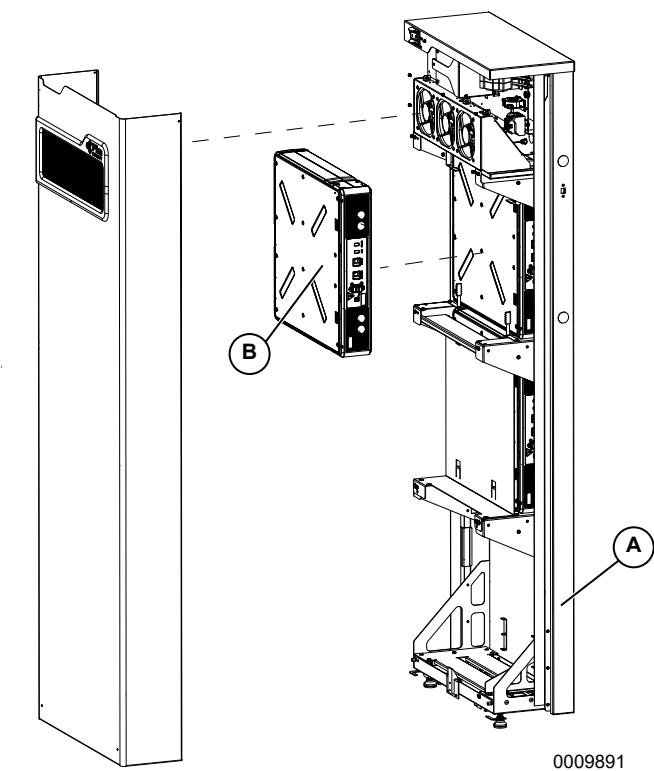


Figure 2-1. Serial Number Location

Unit Dimensions

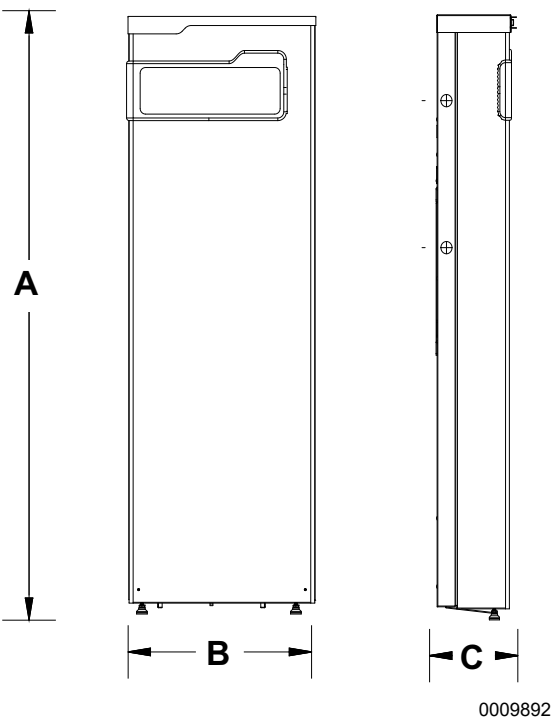


Figure 2-2. Unit Dimensions

A	67-5/8 in (1737 mm)
B	22 in (558 mm)
C	9-7/8 in (251 mm)

About PWRcell Battery

The PWRcell battery is the storage component of the PWRcell system. The battery can be used for grid-connected solar applications such as self-supply, rate arbitrage and clean backup power. The battery is designed to work seamlessly with Generac PV Links and the PWRcell inverter to form the PWRcell system for grid-tied solar-plus-storage.

All PWRcell products use the REbus 380VDC nanogrid to connect to each other. The REbus nanogrid automates the flow of power to enable plug-and-play setup and operation of PWRcell equipment.

In **Figure 2-3**, a REbus-compatible PWRcell Inverter (E) is directly connected to PV Link (B) and PWRcell battery (C) on the DC (REbus) line (D). To the right of the inverter are AC lines: 240VAC or 208VAC for grid and home loads, and critical load support up to 50A.

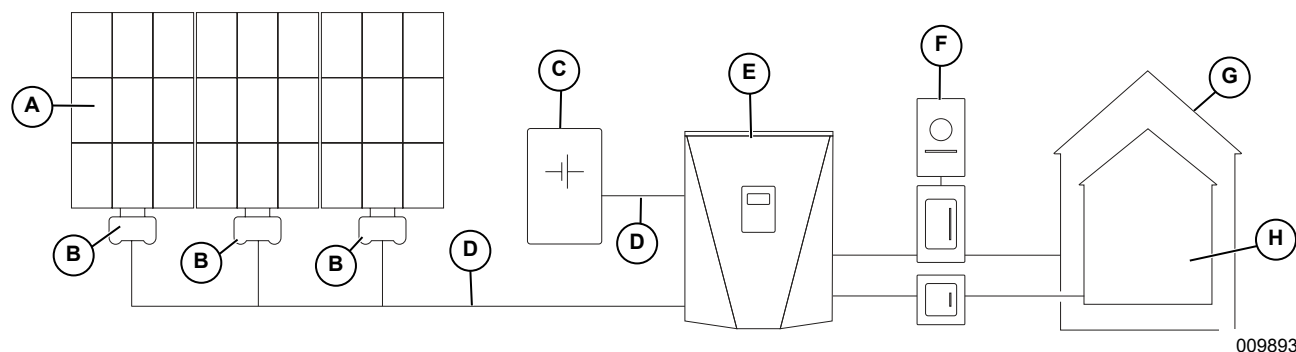


Figure 2-3. Generac PWRcell System Example.

- | | |
|-----------------------------|---------------------------|
| A Solar Panels | E PWRcell Inverter |
| B PV Link Optimizers | F Grid |
| C PWRcell Battery | G Loads |
| D REbus | H Protected Loads |

Component Locations

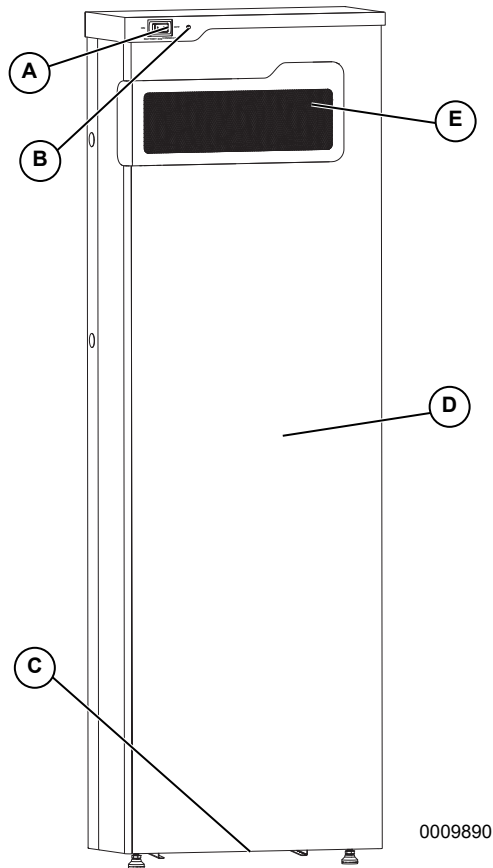


Figure 2-4. Component Locations

- A** Battery disconnect switch
- B** Battery status LED
- C** Intake filter
- D** Front cover
- E** Exhaust vent

Battery Disconnect Switch



⚠ DANGER

Electrocution. Initiate a system-wide shutdown and turn the PWRcell Disconnect Switch OFF on all connected batteries before performing service. Failure to do so will result in death, serious injury, equipment and property damage.

(000600)

See **Figure 2-4**. Battery Disconnect switch (A) disconnects the battery string from the battery monitoring system (BMS) electronics.

The Battery Disconnect must be locked in the OFF position during installation. The switch bracket accepts a standard lockout/tagout lock.

NOTE: Turn Battery Disconnect OFF whenever system will be powered down and left inactive for an extended period of time.

Battery Status LED

See **Figure 2-4**. The color and strobing interval of LED (B) communicates battery status.

Table 2-1. Battery Status LED

LED State	Interpretation (strobe interval)
Green, 3 sec solid at power up	Enabled, operation starting
Red, 3 sec solid at power up	Disabled
Red/green, alternating	Initializing, connecting battery and REbus, system energizing
Green, solid	Enabled, charging
Green, strobe	Enabled, standby (3 sec)
Green, rapid flashing	Enabled, discharging
Orange, solid	Waiting
Orange, strobe	Asleep (8 sec)
Red, strobe	Disabled (3 sec)
Red, rapid flashing	Error state

Section 3: Location and Compliance

Location and Clearances

Install the PWRcell battery in dwelling units in the following permitted locations only:

- Attached garages separated from dwelling unit habitable spaces in accordance with local building code.
- Detached garages and accessory structures.
- Enclosed utility closets and storage or utility spaces.
- Basements.

NOTE: Refer to the local Building Code for permitted locations for commercial installations.

When selecting a location, consider the following:

- Install in protected indoor locations only. If the room or space where the battery is to be installed is not finished, the wall and ceilings of the room or space shall be protected in accordance with local building codes with not less than 5/8 in (15.875 mm) Type X gypsum board per NFPA 855 and in accordance with local building codes.
- Do not install in any habitable room within a dwelling unit.
- Install only in a clean, dry, well ventilated location.
- Do not allow bottom or front vents to become blocked.
- The battery installation location must meet the working space requirements in NEC Article 110.26.
- Multiple battery units must be separated by minimum 3 ft (91.44 cm) between the units per NFPA 855.
- If installed in a garage or other location where the battery could be damaged by a vehicle, the battery must be protected by approved barriers that are installed in accordance with local building code.

- Interconnected smoke alarms must be installed throughout the dwelling unit, including rooms, attached garages, and areas in which the battery is installed in accordance with local building codes. If the battery is installed in an attached garage or area where smoke alarms cannot be installed in accordance with their listing, an interconnected listed heat alarm must be installed and connected to the smoke alarm system in accordance with local building code.
- Do not expose the battery to extreme temperatures. See **Specifications** for recommended and acceptable operating temperatures. Operating the battery outside of the recommended range may degrade performance.

NOTE: Consider year-round temperature extremes when choosing a location. In extreme climates, always install the battery in a conditioned space. Generac recommends installing the battery in a conditioned space regardless of climate.

- See **Table 3-1**. Ensure minimum clearances are met.

Table 3-1. Minimum Airspace Clearances

Sides	2 in (5.08 cm)	Minimum 2 in (5.08 cm) on each side to operate cover.
Top	3 in (7.62 cm)	Minimum 3 in (7.62 cm) on top so installer can lift body onto mounting bracket.
Front	36 in (91.4 cm)	Minimum 36 in (91.4 cm) in front for maintenance/service in accordance with NEC Article 110.26.

Compliance

DANGER

Loss of life. Property damage. Installation must always comply with applicable codes, standards, laws and regulations. Failure to do so will result in death or serious injury. (000190)



WARNING

Electrocution. Refer to local codes and standards for safety equipment required when working with a live electrical system. Failure to use required safety equipment could result in death or serious injury. (000257)

WARNING

Equipment damage. Only qualified service personnel may install, operate, and maintain this equipment. Failure to follow proper installation requirements could result in death, serious injury, and equipment or property damage. (000182a)

Follow all instructions included in this manual and use appropriate practices for all product wiring and installation.

NOTE: It is the responsibility of the installer to ensure conformance with NFPA70E, Article 120, lockout/tagout procedures. If the PWRcell inverter is installed out of sight of the AC distribution panel, a correctly rated disconnect switch must be installed within sight of the PWRcell inverter. In the situation where the PWRcell inverter is installed out of sight of the PWRcell battery product, a correctly rated DC disconnect switch must be installed within sight of the PWRcell battery.

Note on DC Wiring and the NEC

Some electricians or installers may be unfamiliar with DC wiring in a residential setting. Note the following:

- NEC 215.12(C)(2) for correct DC wiring coloring.
- NEC 210.5(C)(2) for identification of DC conductors carrying more than 50V.

Always adhere to applicable codes when marking and installing DC conductors.

See [Table 3-2](#). For all REbus DC wiring observe the following coloring convention:

Table 3-2. REbus DC Wiring Coloring Convention

Wire	Color
REbus + (RE+)	Red
REbus - (RE-)	Black or Blue
Ground (GND)	Green or bare

NOTE: Mark or flag all conductors as appropriate.

Section 4: Installing Generac PWRcell Battery

Carton Contents

- Wall bracket
- Chassis (gray), including pre-installed electronics package and battery jumpers
- Cover (white)
- Hardware kit
- Generac PWRcell Battery Installation Manual and Generac PWRcell Battery Owner's Manual

NOTE: Lithium ion battery modules are shipped separately. Keep battery modules in their original packaging until installation. Observe storing and stacking requirements.

Preparing Location

- Verify grade is smooth. A sharply sloping or irregular floor may hinder front cover installation.
- Sweep away any debris or dust that could get pulled into the PWRcell battery bottom intake vent.

Unboxing Generac PWRcell Enclosure

1. Lay package on one of the long edges.
2. Remove top cardboard cap.
3. Remove Documentation and Hardware box and set aside in a safe place.
4. Remove cardboard sleeve.
5. Lay unit onto its back.
6. Remove bottom cardboard cap.
7. Remove the battery front cover by sliding cover toward the top of the unit, swinging cover bottom out, and pulling the cover down.
8. Set cover aside in a safe place.

NOTE: Do not adjust the feet at this time. The feet are shipped pre-positioned to ensure sufficient clearance for front cover.

Installing Battery Cabinet

WARNING

Personal Injury. Use caution when handling heavy parts and battery modules. Lift heavy parts in teams if necessary. Failure to do so could result in death, serious injury, and equipment or property damage.

(000697)

WARNING

Personal Injury. Install the PWRcell battery cabinet before installing battery modules within the cabinet. Failure to do so could result in death, serious injury, and equipment or property damage.

(000698)

Fastener Recommendations

NOTE: The details below are minimum guidance. Consult local building codes and a structural engineer to ensure the use of appropriate fasteners.

- Minimum 4 structural fasteners, corrosion protected steel, diameter 1/4 in.
- Fastener head clearance 5/8 in tall, 7/8 in diameter.
- If fastener is not flanged head, corrosion protected style, install a steel washer between the fastener head and wall bracket.

Installing and Leveling Wall Bracket

See [Figure 4-1](#) on the following page for battery dimensions and knockout locations.

1. See [Specifications](#) for unit weight.
2. Mount bracket to walls with the following requirements:
 - Bottom edge of bracket is 29-5/8 in (752 mm) off the floor.
 - Bracket must be level.
 - Each horizontal brace requires a minimum of two fasteners. Four total fasteners are required.
 - If mounting into stud framing, the bracket must be fastened to a minimum of two separate structural members.
 - All fasteners must engage with a structural member. If mounting into stud framing use a stud finder to locate the center of the stud.
3. Rough in field wiring if applicable.

Battery Dimensions and Knockout Locations

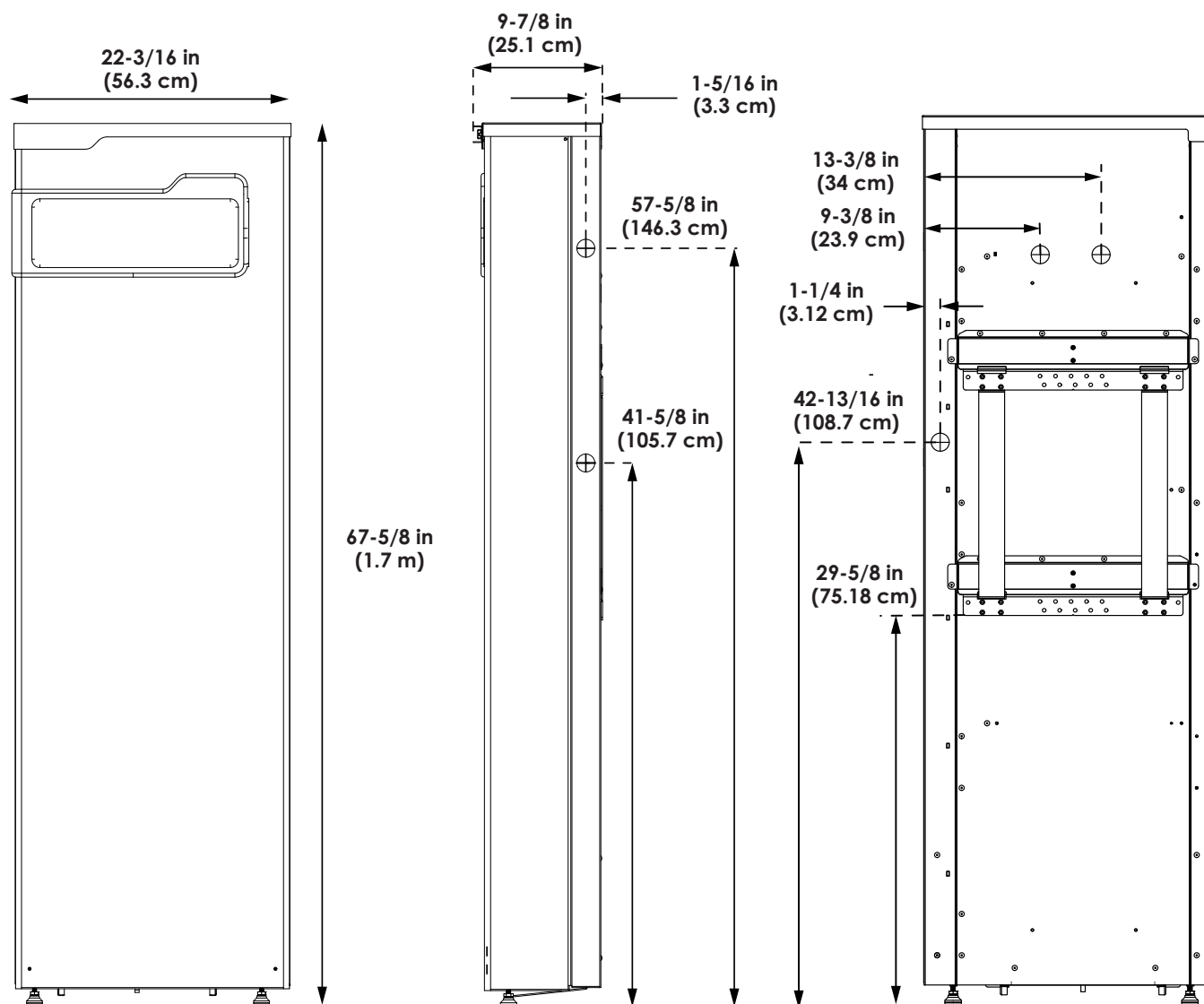


Figure 4-1. Battery Dimensions and Knockout Locations

Placing Body onto Bracket and Leveling Feet

1. See **Figure 4-2**. Lift body (A) onto bracket (B). Keep body tight to the wall while lowering body onto bracket. Verify bracket tabs (C) hook into body pockets (D).

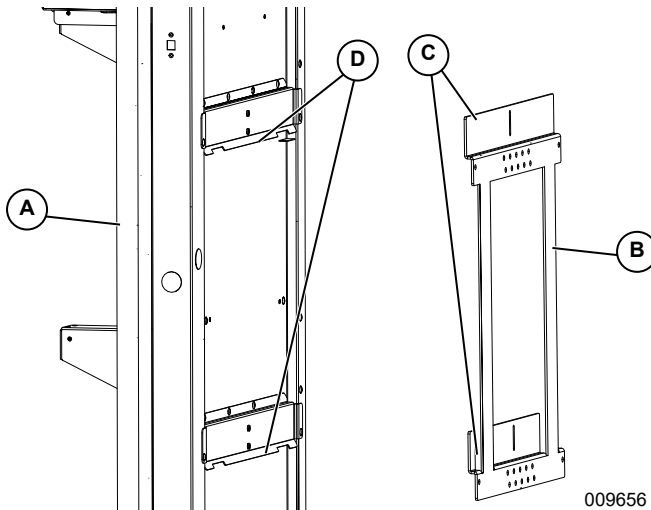


Figure 4-2. Mounting Bracket (1 of 2)

2. See **Figure 4-3**. Align body slots (E) with wall bracket holes (F).

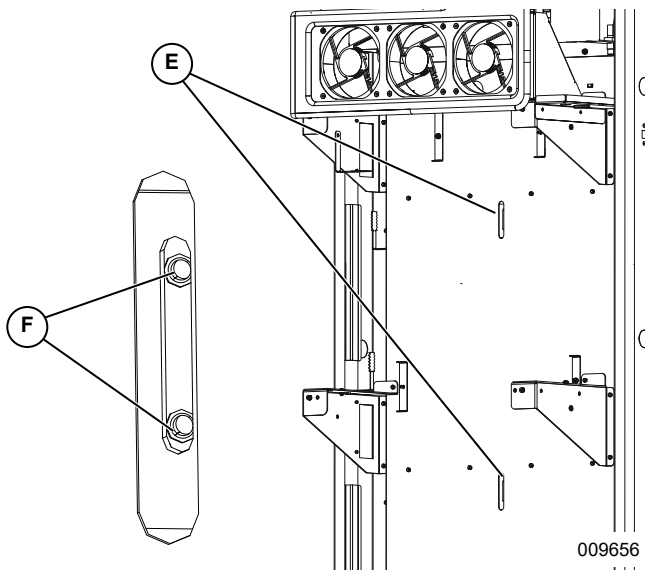


Figure 4-3. Mounting Bracket (2 of 2)

3. Fasten body to bracket with two included M4x8mm SEMS screws in each horizontal bracket brace.

NOTE: Start screws. Do not tighten.

4. Adjust feet as necessary to ensure the feet are carrying the weight of the unit.
5. Check unit for plumb side to side. Adjust feet as necessary ensure both stay in full contact with the floor.

IMPORTANT NOTE: Do not lift the body off the bracket by over-lengthening the feet.

6. Verify there is minimum 1-3/4 in (4.45 cm) gap between the bottom of the body and the floor.
7. Tighten machine screws to bracket and torque to 13 in-lb (1.47 Nm).
8. Verify feet have not lifted from floor.
9. Tighten feet jam nuts to lock them in place.

Installing REbus wiring



⚠ DANGER

Electrocution. Put the Generac PWRcell Inverter into Shutdown before installing wiring. If there are any other batteries connected to REbus, toggle their front Battery Disconnect switches to OFF. Failure to do so will result in death or serious injury. (000606)

⚠ WARNING

Equipment damage. Never connect REbus conductors to ground. Connecting REbus conductors to ground could result in equipment damage. (000607)

⚠ CAUTION

Equipment damage. Connect only to REbus-compatible devices to the DC bus. Never connect to any other DC power source. Connecting to other DC power sources could result in equipment damage. (000598a)

When installing REbus wiring:

- Wiring must be installed in accordance with Article 706 in the NEC.
- Wiring must comply with local electrical codes
- Wiring must be grounded according to local codes. When required, grounding is the responsibility of the installer. For proper REbus communication, ensure the chassis is securely bonded to the PWRcell inverter via the grounding bar in the PWRcell inverter wiring compartment.
- Wiring must be protected from exposed metal edges by using appropriate bushings, fittings, and restraints.
- Wiring must adhere to the following specifications:

Table 4-1. Wiring Specifications

Specification	Min	Max	Units
Allowable wire size	10	6	AWG
Torque	13.3 (1.5)	15.9 (1.8)	lb-in (N-m)
Strip length	3/8 (10)		in (mm)
Temperature rating	90		C

To install REbus wiring:

1. See [Figure 4-4](#). Install REbus conductors to their terminal blocks: RE+ to red (A), RE- to blue (B).
2. Install equipment grounding conductor to green terminal block (C).
3. If required, route field wiring conductors through the grommet wiring chase baffle (D).

NOTE: Do not route wires around the baffle.

4. At the PWRcell inverter, install RE+ and RE- conductors to any unused 30A REbus DC disconnect.
5. Secure equipment grounding conductor to the PWRcell inverter ground bar.

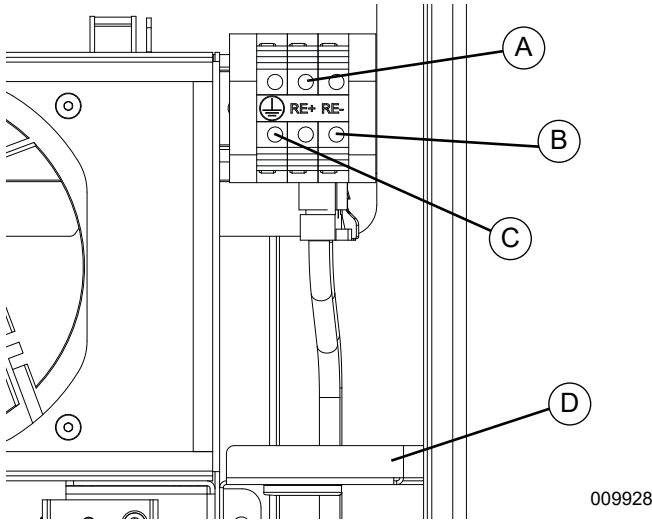


Figure 4-4. REbus Wiring

Connecting Blackstart Battery

See [Figure 4-5](#). Connect blackstart battery lead to battery terminal (E).

NOTE: One lead is already connected to terminal (F).

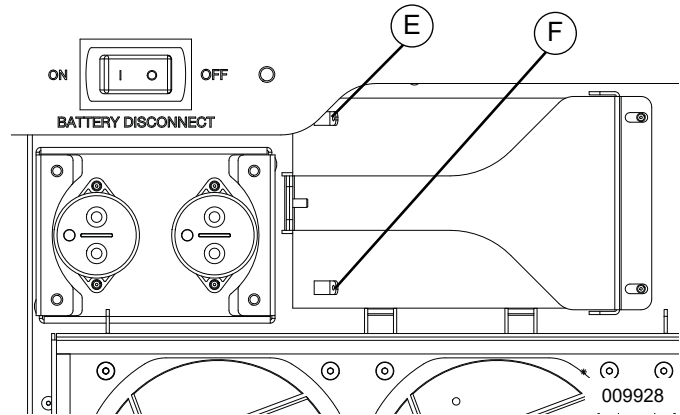


Figure 4-5. Blackstart Battery Connections

Installing Battery Modules

- Record battery module serial numbers prior to installation in [Table 1: Important Information](#) located in the inside front cover of this manual.
- When installing battery modules, install top, rear module first, regardless of configuration.
- See [Figure 4-6](#) for the order of battery module and spacer installation for PWRcell 9 (B), PWRcell 12 (C), PWRcell 15 (D), and PWRcell 17 (E).

NOTE: Module spacers (F) are required on PWRcell 9 (B) and 15 (D) configurations.

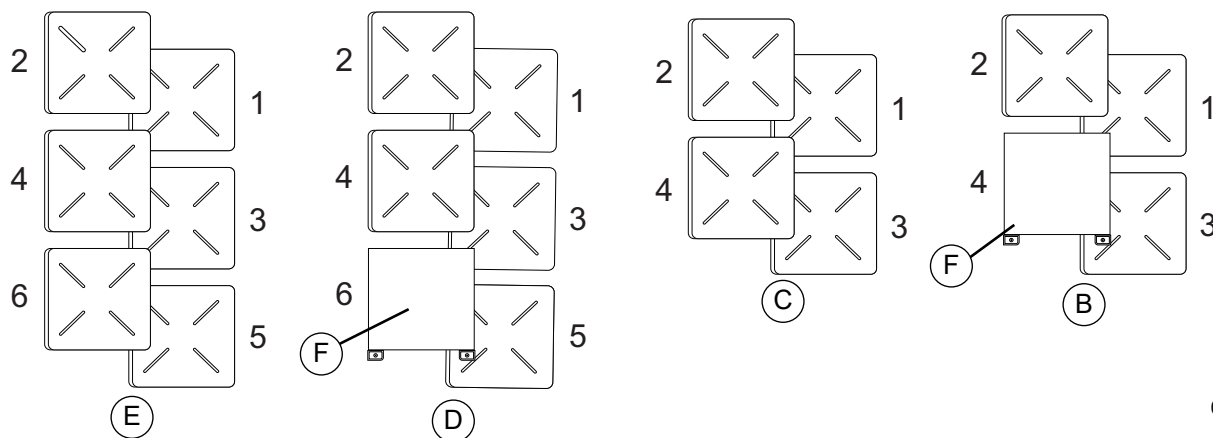


Figure 4-6. Battery Module/Spacer Order of Installation

Installing Rear Modules

1. See [Figure 4-7](#). Angle top of battery module (G) under and behind bracket lip (H).

NOTE: Battery module ports (I) must face the right side of the PWRcell battery body with the COM ports above the power port.

2. Slide bottom of module to back of PWRcell battery chassis (J).
3. Push bottom of module against grounding clips (K).

NOTE: Grounding clips are designed to contact and bite into the battery module case to provide an equipment grounding connection.

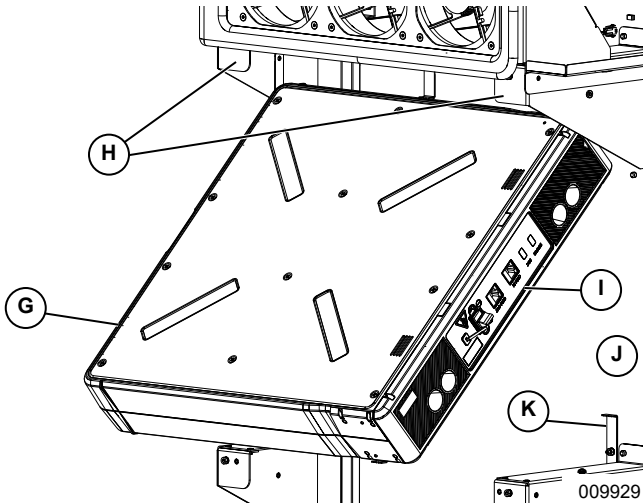


Figure 4-7. Installing Rear Battery Modules

Installing Grounding Tabs

1. See [Figure 4-8](#). Install two L-shaped grounding tabs (L) at the bottom of the module on both sides.
2. Fasten each grounding tab with a M4x8 mm SEMS screw (M) torque to 13 in-lb (1.47 Nm).

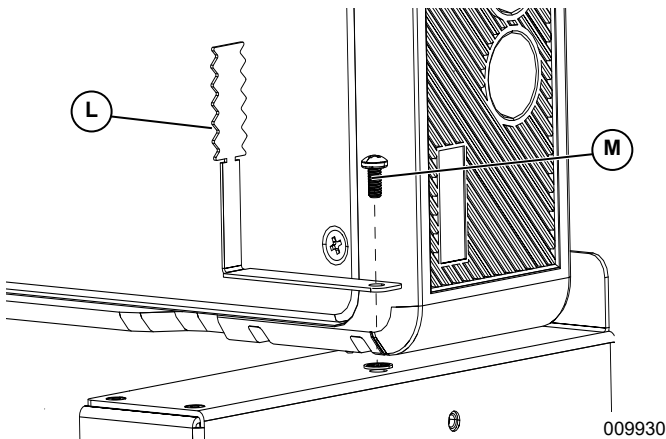


Figure 4-8. Installing Bottom Grounding Tabs

3. See [Figure 4-9](#). Install grounding tabs (L) at the top of the module on both sides.
4. Fasten each grounding tab with a M4x8 mm SEMS screw (M) and torque to 13 in-lb (1.47 Nm).

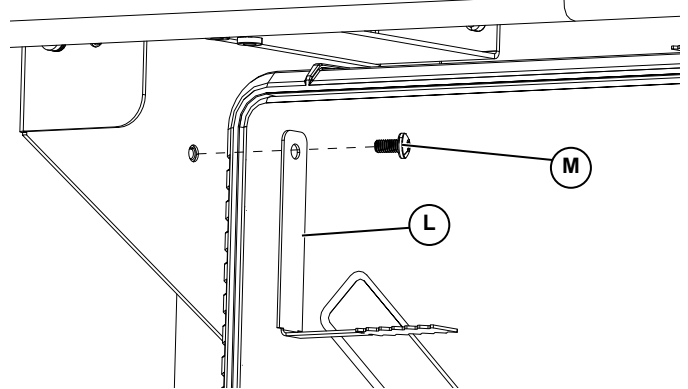


Figure 4-9. Installing Top Grounding Tabs

Installing Front Modules

See [Figure 4-10](#). Install front battery modules (N) using the same procedure as used on the rear modules. See [Installing Rear Modules](#)

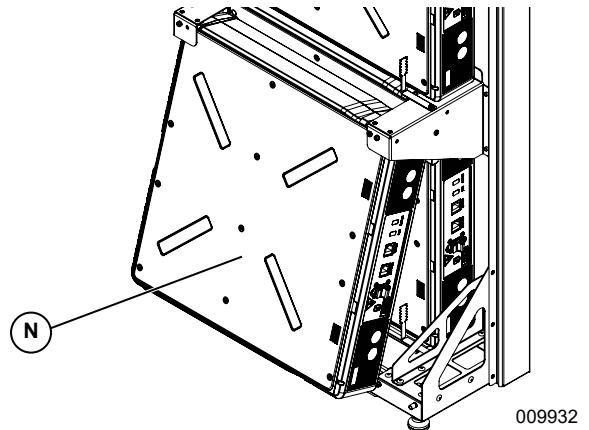


Figure 4-10. Installing Front Battery Modules

Installing Module Spacer (PWRcell 9 and PWRcell 15 only)

See [Figure 4-11](#). Module spacers (O) must be installed on any single module shelf.

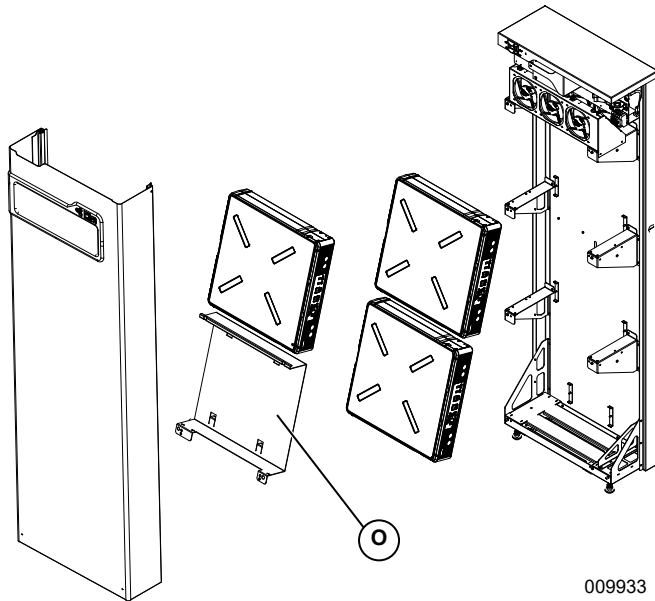


Figure 4-11. Module Spacer

PWRcell modules and upgrade kits can be obtained by contacting Generac Customer Service at 1-888-436-3722 (1-888-GENERAC), or www.generac.com.

NOTE: Kits must be installed by a qualified individual.

Table 5 – Module Spacer Kit

Module Spacer Kit	Part Number
Generac PWRcell Spacer Kit	APKE00008

To install module spacer:

1. See [Figure 4-12](#). Angle top of spacer (P) under and behind bracket lip (Q).

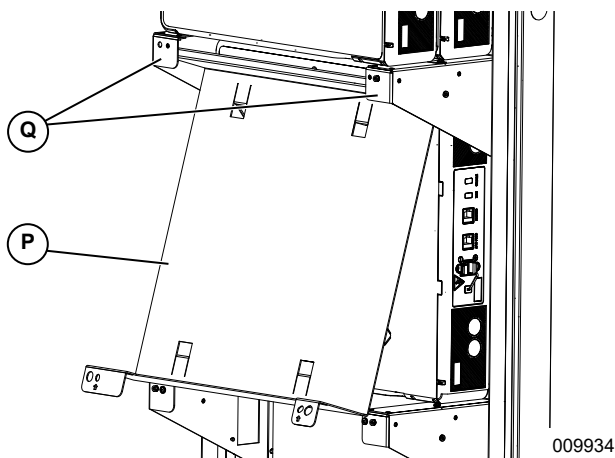
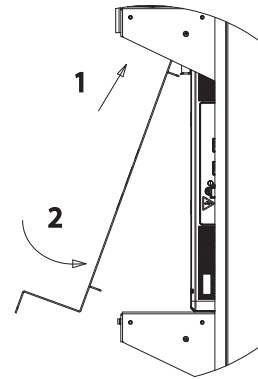


Figure 4-12. Installing Module Spacer (1 of 3)

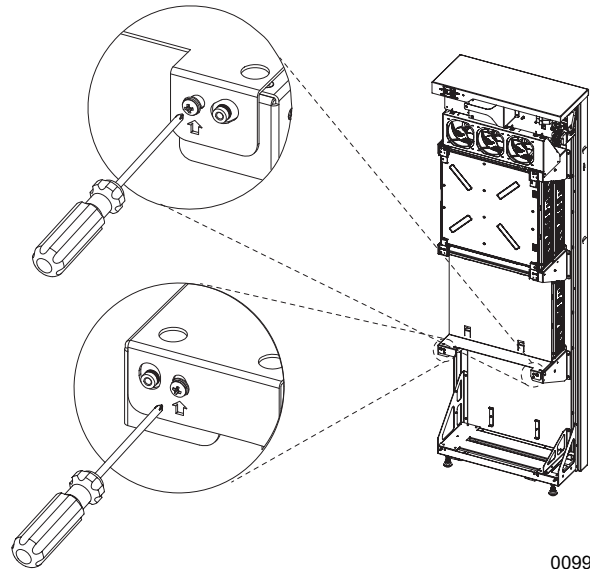
2. See [Figure 4-13](#). Slide spacer up between brackets.
3. Push bottom of spacer in.



009935

Figure 4-13. Installing Module Spacer (2 of 3)

4. See [Figure 4-14](#). Secure spacer with two M4X8 SEMS screws and torque to 13 in-lb (1.47 Nm).

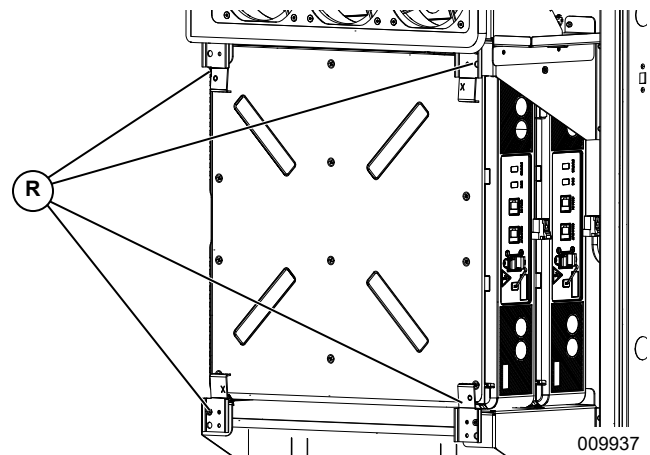


009936

Figure 4-14. Installing Module Spacer (3 of 3)

Installing Retention Clips

See [Figure 4-15](#). All front battery modules must be secured with retention clips (R).



009937

Figure 4-15. Retention Clips (1 of 3)

See **Figure 4-16**. Note that there are three types of retainer clips: double retention clips (U), single retention clips marked O (T) and single retention clips marked X (S).

- Install single retention clips (T) (S) at the top and bottom of the stack.
- Install double retention clips (U) between rows of modules.

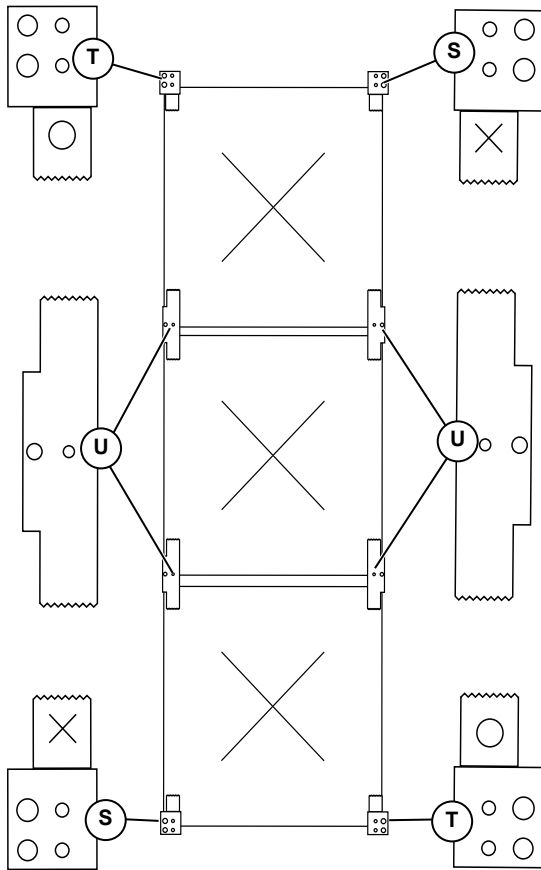


Figure 4-16. Installing Retention Clips (2 of 3)

To install retention clips:

1. See **Figure 4-17**. Align holes in retention clip (V) with stud (W) and mounting hole (X)

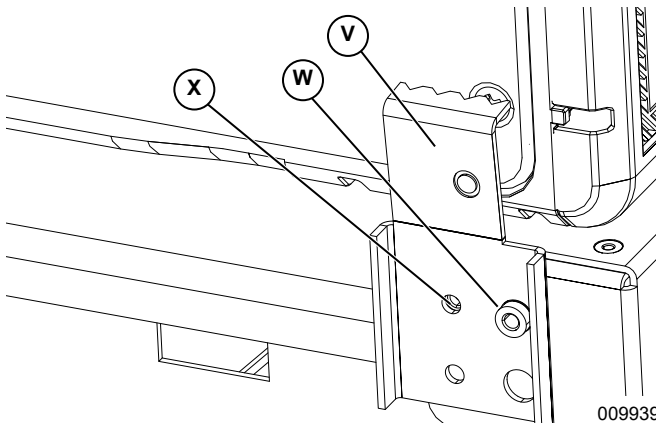


Figure 4-17. Retention Clips (3 of 3)

2. Apply gentle pressure to ensure all grounding tabs and clips make firm contact with case.

3. Secure retention clip to bracket with a M4X8 mm screw and torque to 13 in-lb (1.47 Nm).

Connecting COM Cables

1. See **Figure 4-18**. Locate multicolored CAT5 cables attached to battery power cable harness on body (Y) and top, rear battery module (Z).
2. Connect Gray CAT5 cable to battery module COM IN (A)
3. Connect Black CAT5 jumper to battery module COM OUT (B).

NOTE: Black CAT5 jumper is found in hardware kit.

4. Connect the other end of Black CAT5 jumper to COM IN port (D) on front battery module (C).
5. Connect Blue CAT5 cable to COM OUT port (E).
6. Connect the other end of Blue CAT5 cable to COM IN port (G) on lower, rear battery module (F)

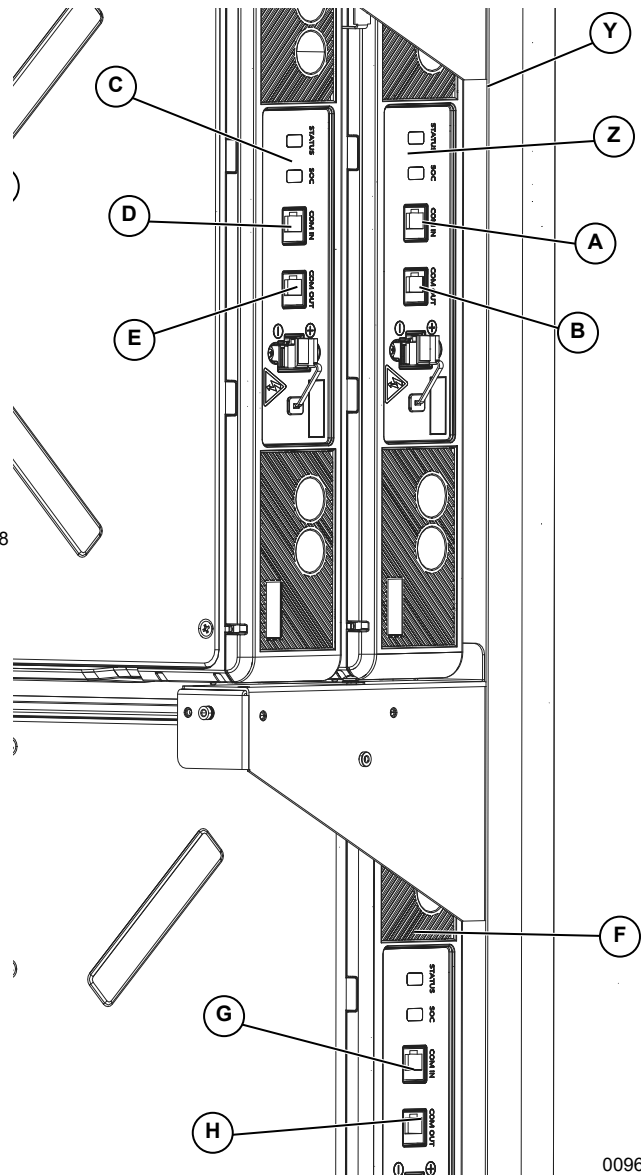
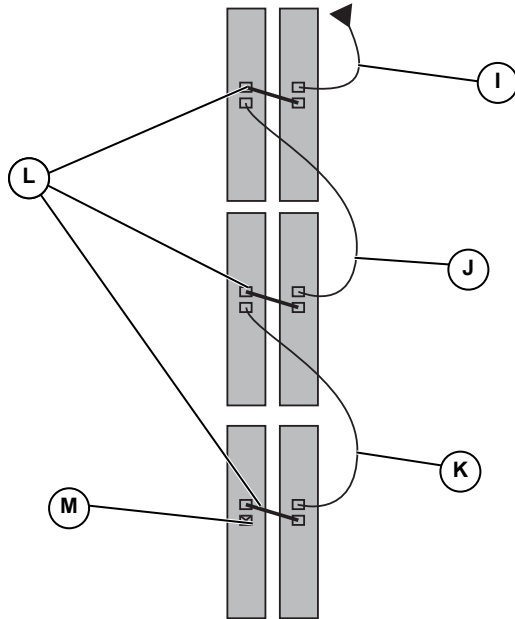


Figure 4-18. Module COM Cabling (1 of 2)

7. See **Figure 4-19**. Continue connecting the remaining battery modules. While installing CAT5 cables:
- Work from top to bottom
 - Connect battery modules sharing a shelf with a black jumper cable (L) going from the rear battery COM OUT port to the front battery COM IN port
 - Do not install a CAT5 cable to the last battery module's COM OUT port (M)
 - Remaining COM cables can be left disconnected.
 - Unused CAT5 jumpers should be kept in safe place for future module upgrades.



009941

Figure 4-19. Module COM Cabling (2 of 2)

- I Gray CAT5
- J Blue CAT5
- K Orange CAT5
- L Black CAT5 Jumpers

Connecting Battery Power Cable



⚠ DANGER

Electrocution. Never reach into port or touch battery terminals with hands or tools. Doing so will result in death, serious injury, equipment or property damage.

(000639)

1. See **Figure 4-20**. Remove gray rubber cap (A) from each module power port.
2. Plug black power cable connectors into battery module power ports (B).

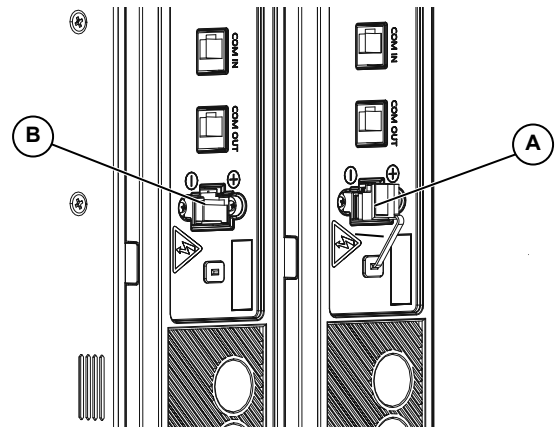


Figure 4-20. Power Cable Ports

3. See **Figure 4-21**. Install loop jumper (C) on every unused power cord connector (D).

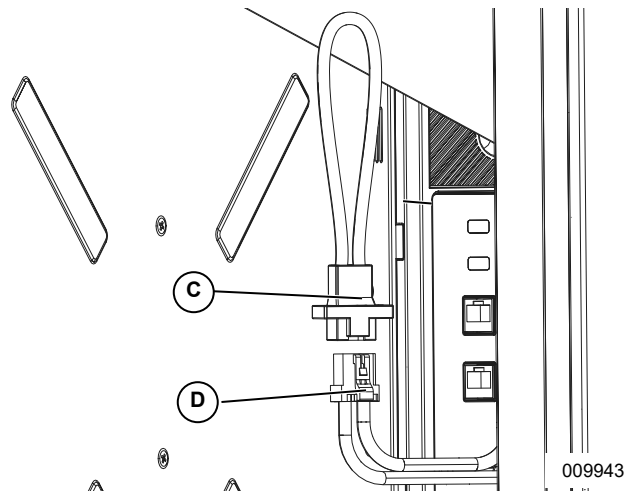
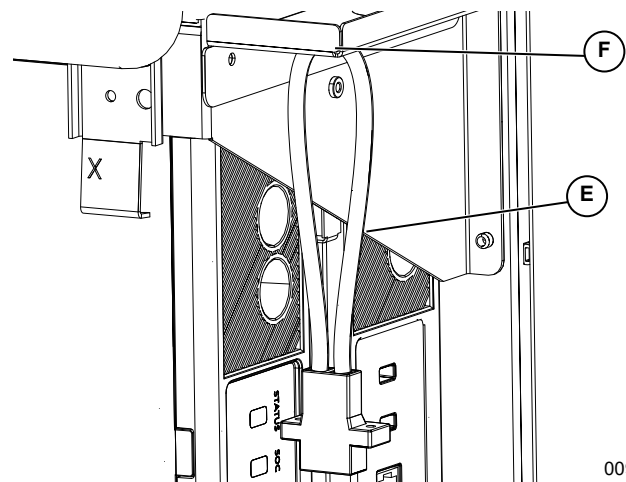


Figure 4-21. Installing Loop Jumper

4. See **Figure 4-22**. Tie unused loop jumpers (E) to wiring chase baffle slot (F) for future use.

NOTE: If a battery module needs to be replaced, spare loop jumpers can be used to keep the PWRcell battery running until the replacement battery module gets installed.



009944

Figure 4-22. Unused Loop Jumpers

Installing Cover

1. See [Figure 4-23](#). Place cover (A) upright in front of unit.
2. Slide cover straight back until it engages with body (B).
3. Verify all angled guides are tucked inside body. The back edges of the cover should be against the rubber gasket along their entire length (C).

NOTE: Do not force cover into place.

4. Lift straight up. Pins on cover will automatically engage and hold the top of the cover in place.
5. Gently push in on the bottom of the cover. This will lock the bottom of the cover in place.
6. Peel off the protective plastic sheet from the cover.
7. Install two M4X16 mm screws (D) and torque to 13 in-lb (1.47 Nm).

To remove the cover:

1. See [Figure 4-23](#). Remove the two M4X16 mm SEM (D) securing cover (A) to body (B).
2. Lift cover up.
3. Pull cover bottom out slightly and lower to the floor.

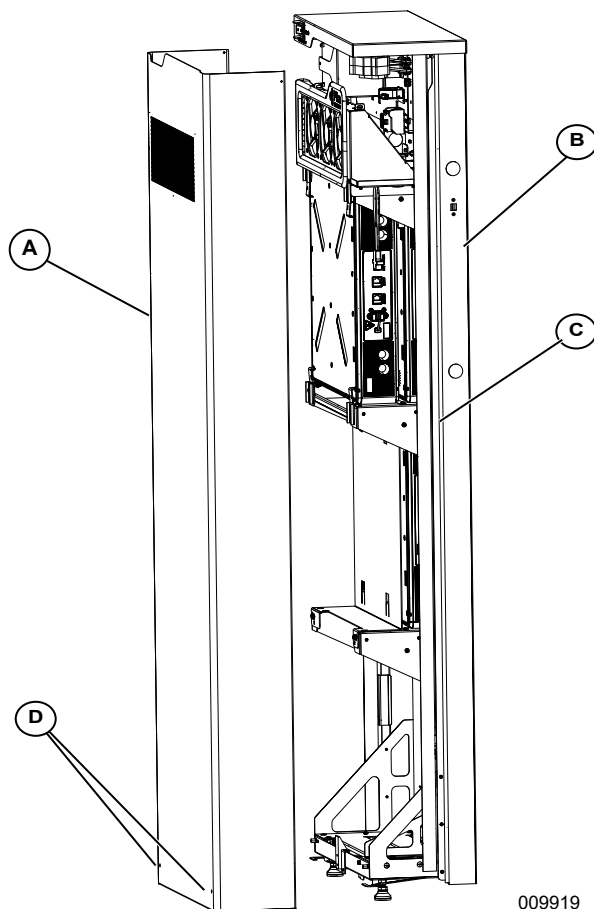


Figure 4-23. Installing Front Cover

Upgrading PWRcell Battery

See [Figure 4-23](#). Inside of the PWRcell battery, battery modules are stacked 2-deep on three levels, allowing for up to 6 modules to be connected in a series. In systems with less than 6 modules, a PWRcell battery can be upgraded with additional modules up to a total of 6 modules.

Whenever upgrading a PWRcell battery:

- A Vset Function must be performed. See [Using Vset Function](#).
- A module spacer must be installed on any single module shelf. See [Installing Module Spacer \(PWRcell 9 and PWRcell 15 only\)](#).

Using Vset Function

NOTE: VSet Function needs to be performed before installing new battery modules into the PWRcell battery.

NOTE: To perform Vset Function the PWRcell battery must be at a 50% state of charge or greater.

To perform a Vset Function:

1. Initiate a shutdown. See the Generac PWRcell Inverter Installation Manual for more information on performing a shutdown
2. Measure the voltages of each new battery module at the module main power terminals using a multi-meter set to DC volts and record the voltage values for each module.

NOTE: If the new modules have slightly different readings, average the values to get a single measurement.

3. Recover from shutdown by pressing the center button on the inverter control panel.
4. Change system mode to Priority Backup.
 - Navigate to the System Mode menu on the inverter control panel.
 - Select Priority Backup.
 - Select Confirm to save the setting.
5. Enable the PWRcell battery.
 - Navigate to the battery device page.
 - Select Enable.
 - Select Confirm.
6. Input voltage values into Module Vset.
 - Navigate to the battery device page.
 - Press inverter center button to access device sub menu.
 - Select Mod. Settings.
 - Select Module Vset.
 - Input the average voltage value from step 2.
 - Select Commit at the bottom of the menu to save the change.

7. Enable the PWRcell inverter.
 - Navigate to the inverter device page.
 - Select Enable.
 - Select Confirm.
8. Perform Vset.
 - Navigate to the battery device page.
 - Select Start Vset.
 - Select Confirm.
 - Verify the battery is discharging.

NOTE: The battery status LED on the front of the PWRcell battery unit will flash green when the battery is discharging and the inverter home screen will show power flowing from the battery.

9. During Vset the PWRcell battery will balance the voltage between modules then disable itself. This process can take several hours. Do not proceed until the battery has disabled itself.
10. Power down the battery by disabling REbus and turning OFF the Battery Disconnect switch on the front of the PWRcell battery.

11. Add the new modules into the string.
 - Connect power and communications cables in the appropriate sequence.
 - See [Installing Battery Modules](#) for more information.
12. Replace and secure front cover. See [Installing Cover](#).
13. Power on the battery.

NOTE: If the unit stalls in an Initializing or Waiting state, power cycle the controller by performing a shutdown.

14. Enable all devices to resume normal operation.
15. Return sysmode to original setting.

Maximizing Battery Capacity After Upgrade

To maximize battery capacity after adding new battery modules, change the system mode to Priority Backup and allow the battery to charge to 100%.

Leave the battery in this state for several days to allow the battery cells to balance.

Section 5: Commissioning

General Information

NOTE: Register the PWRcell inverter are commissioning at <https://pwrfleet.generac.com>.

Before commissioning PWRcell battery verify all wiring is correct and secure and that the front cover is securely in place. For more information, see:

- [Installing REbus wiring](#)
- [Installing Battery Modules](#)
- [Installing Retention Clips](#)
- [Connecting Battery Power Cable](#)
- [Installing Cover](#)

PWRCell systems installed in one- and two-family dwelling units shall be commissioned as follows:

1. Verify system is installed in accordance with the installation instructions in this manual and all local code requirements.
2. Provide a copy of the PWRcell battery installation and owner's manual to the system owner.
3. Provide training to the system owner on the proper operation and maintenance of the battery system.
4. Provide a label on the installed system containing contact information for the qualified maintenance and services providers.

NOTE: See the Generac PWRcell Inverter Owner's Manual for complete information on enabling the inverter and using the display and keypad, as well as information on the different operational modes and their uses.

Commissioning Procedure

Select System Operational Mode and Enable Inverter

1. Turn the PWRcell battery REbus DC disconnect ON.
2. Turn the PWRcell inverter ON.
3. Select desired operational mode using the PWRcell inverter control panel.
4. Enable the PWRcell inverter to energize the REbus nanogrid.

Configure Battery

1. Select Mod. Settings on the PWRcell inverter control panel.
2. Configure Mod. Settings setpoints as desired. See the Generac PWRcell Battery Owner's Manual.
3. For multi-system configuration, refer to the Generac PWRcell Inverter Installation Manual.

NOTE: PWRcell battery will auto-detect the number of lithium-ion modules.

Enable Battery

1. Turn the PWRcell battery Disconnect ON.
2. Select Enable and confirm on the PWRcell inverter control panel device page.

Confirm System Islanding is Enabled.

1. Select Mod. Settings on the PWRcell inverter control panel device page.
2. Select Enalnding and set it to Yes. Commit the new settings.
3. If using an external automatic transfer switch, refer to the Generac PWRcell Inverter Manual for switch wiring and configuration.

IMPORTANT NOTE: Islanding must be enabled for inverter to provide power during outages.

Operating Modes, Charging Parameters, and Setpoints

The PWRcell battery's internal control electronics come preprogrammed for the safe and effective charge and discharge of the battery modules.

PWRcell supports multiple storage interactive system modes. For complete information on the different system modes and how to select them, see the Generac PWRcell Inverter Owner's Manual.

For full operation and maintenance instructions, including information on setpoints, see the Generac PWRcell Battery Owner's Manual.

Decommissioning

WARNING

Environmental Hazard. Always recycle batteries at an official recycling center in accordance with all local laws and regulations. Failure to do so could result in environmental damage, death, or serious injury. (000228)

WARNING

Environmental Hazard. Decommissioning must be performed by qualified personnel. Decommissioning performed by unqualified personnel could result in environmental damage, death, or serious injury. (000654)

PWRcell battery modules will be required to be decommissioned at the battery module end of life stage or if the PWRcell system will be removed from the premises in accordance with these instructions, the requirements in NFPA 855, and all applicable code requirements. The authority having jurisdiction (AHJ) shall be notified prior to the decommissioning of the battery system.

Decommissioning Plan

The owner of the PWRcell battery system and the qualified Generac Service Dealer shall prepare a written decommissioning plan that provides the overview of the decommissioning process developed specifically for the system that is to be decommissioned. The decommissioning plan shall provide the requirements and methods necessary to safely discharge the stranded energy in battery modules and the proper removal from the installation site including the transportation and recycling process for the battery modules.

After the system has been decommissioned, a decommissioning report shall be prepared by the owner of the system and the qualified Generac Service Dealer indicating the date the system was decommissioned, the final results of the decommissioning process, and any issues that were identified during the decommissioning process and the required measures taken to resolve those issues.

Battery Recycling

Always recycle batteries in accordance with local laws and regulations. Contact your local solid waste collection site or recycling facility to obtain information on local recycling processes. For more information on battery recycling, visit the Battery Council International website at: <http://batteryCouncil.org>

Section 6: Troubleshooting

General Troubleshooting

Some of the more common problems are listed in the table below. This information is intended to be a check or verification that simple causes can be located and fixed. It does not cover all types of problems. Procedures that require in-depth knowledge or skills should be referred to a Generac Authorized Service Dealer.

Table 6-1. General Troubleshooting Guide

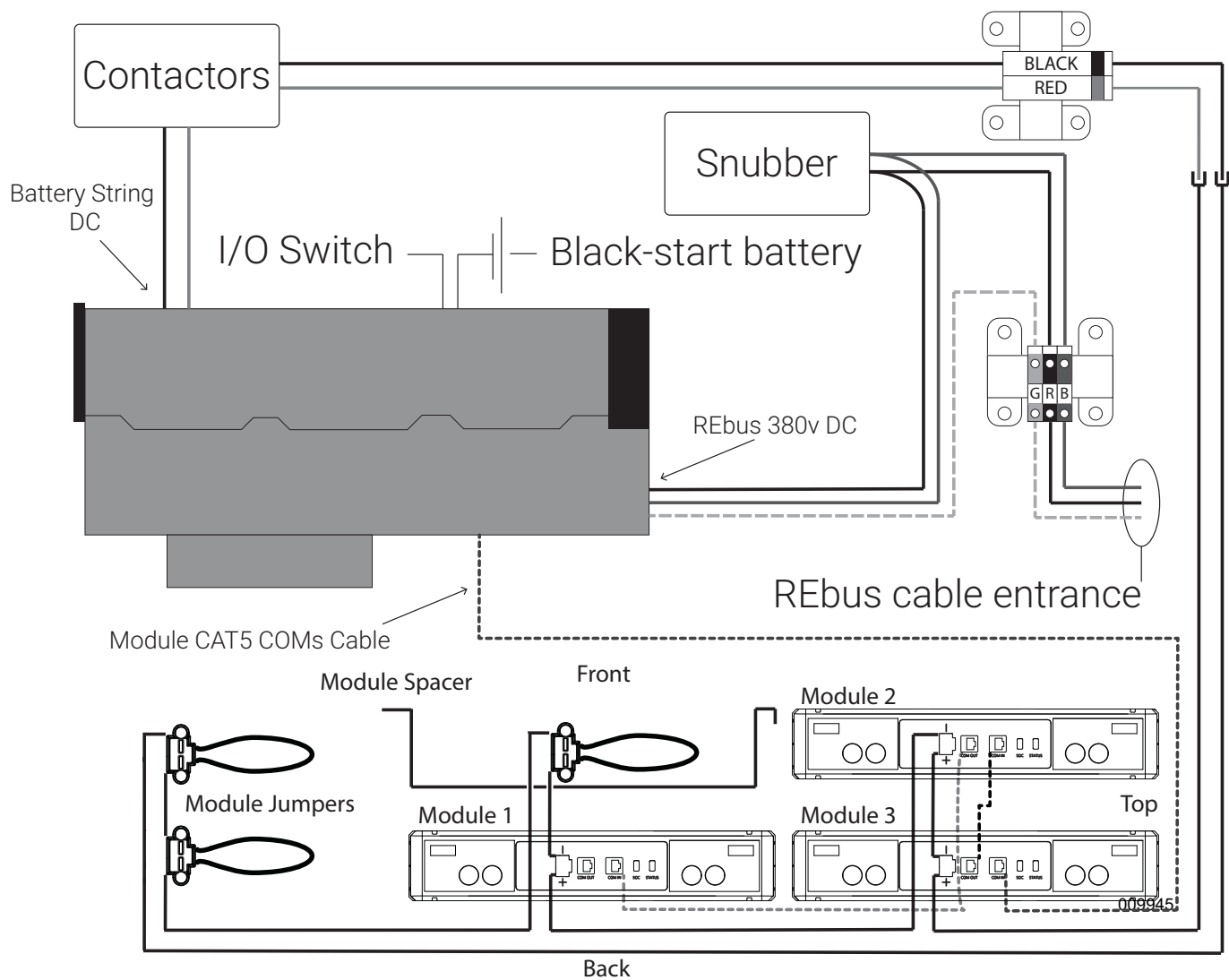
Problem	Possible Cause	Solution
Battery remains in Waiting state	Battery disconnect OFF	Turn battery disconnect switch ON.
Battery not recognized by inverter	Inverter disabled	Enable inverter
	REbus not operating	Verify REbus is operating correctly.
	DC disconnect OFF	Verify inverter is disabled, then turn DC disconnect ON.
	Loose connection	Verify connections are secure.
	Insufficient voltage	Measure voltage at the REbus terminals; there should be at least 360V between RE+ and RE-.
	Inverter and battery not using same PLM channel	Set inverter and battery to same PLM channel.

If problems persist, contact the nearest Independent Authorized Service Dealer (IASD) or Generac Customer Service at 1-888-436-3722 (1-888-GENERAC).

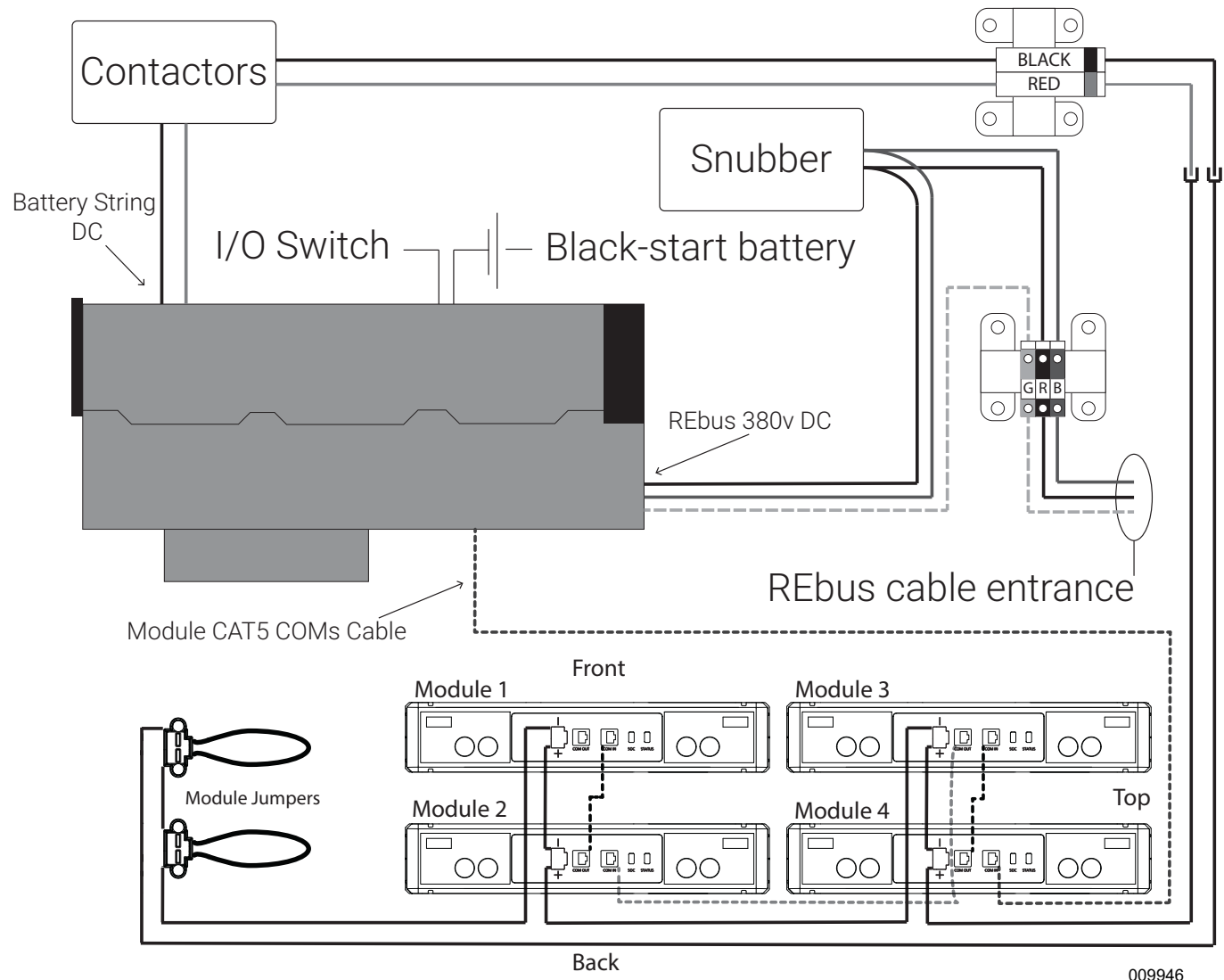
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Section 7: Wiring Diagrams

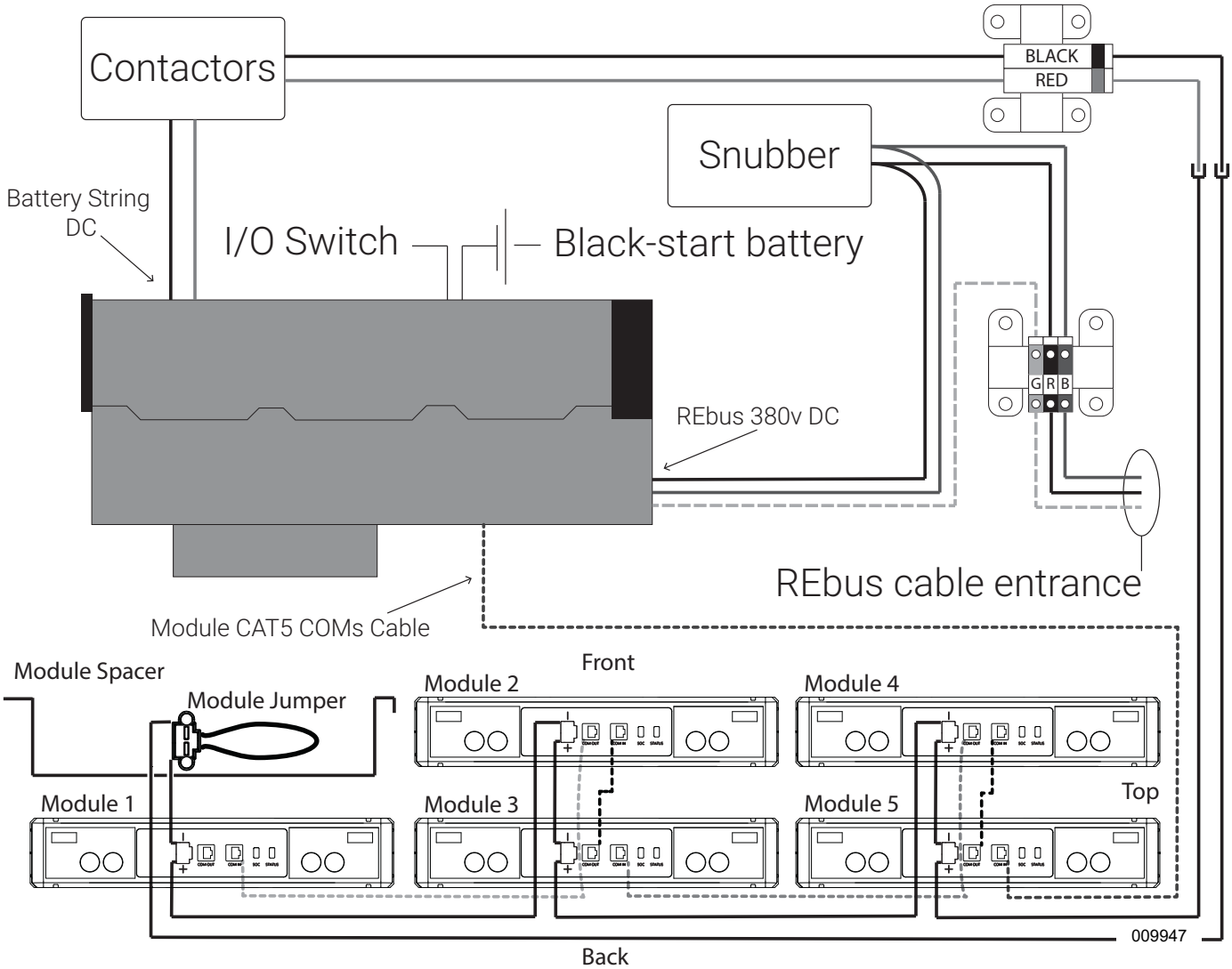
PWRcell 9



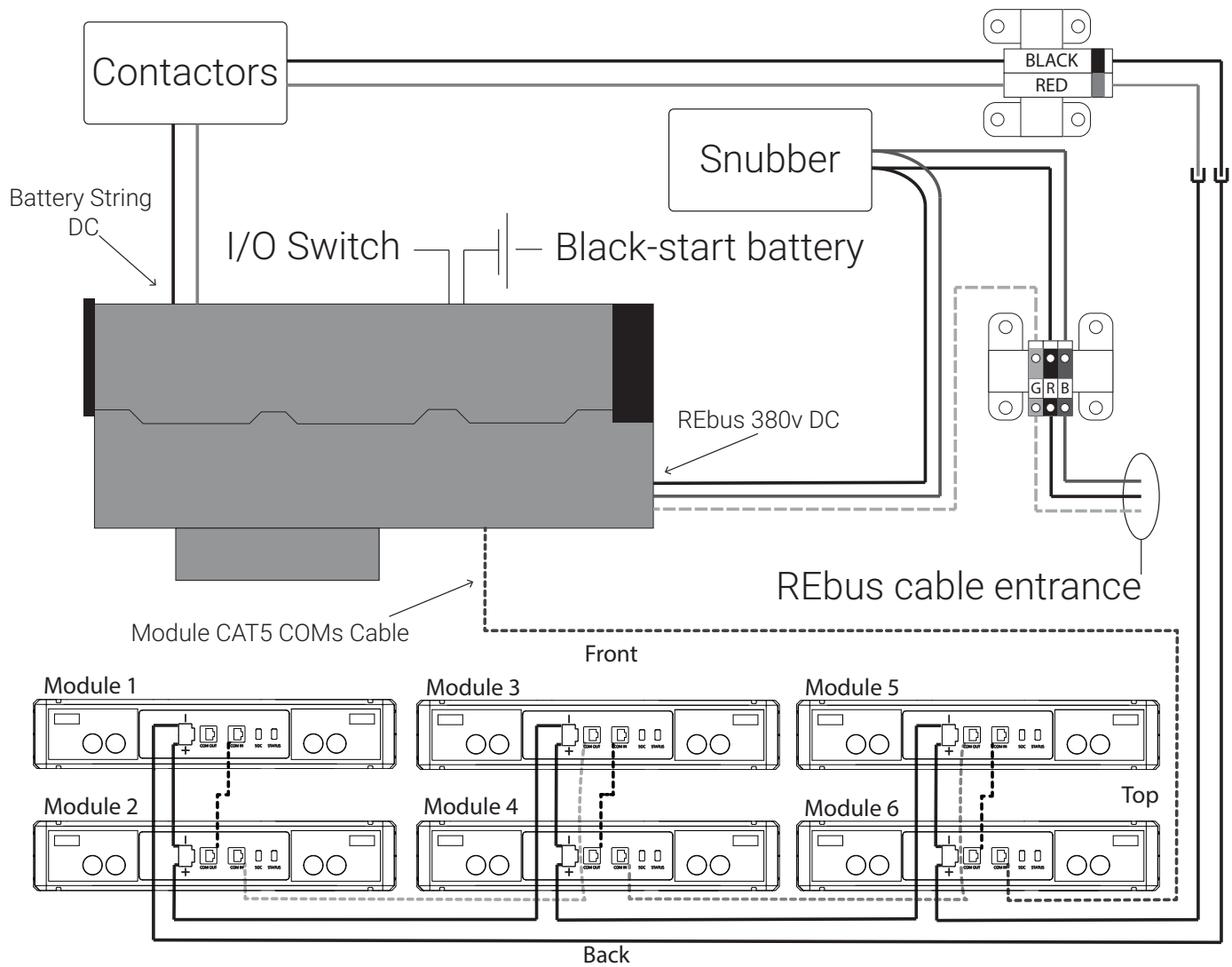
PWRcell 12



PWRcell 15



009947

PWRcell 17

009948

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