

# AES RACKMOUNT

Energy Storage System

## AES RACKMOUNT Quick Stack Rack Manual

READ AND SAVE THESE INSTRUCTIONS

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Quick Stack Rack 950-0050

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## INTRODUCTION

The AES RACKMOUNT Quick Stack Rack is designed for indoor use with AES RACKMOUNT Battery Modules and with the AES RACKMOUNT Battery Module Combiner to create an open stacking system containing up to six Battery Modules with one Battery Module Combiner.

## 1. AUDIENCE, WARNINGS, MESSAGES, GENERAL SAFETY, PERSONAL PROTECTIVE EQUIPMENT

### 1.1 Audience

Configuration, installation, service, and operating tasks should only be performed by qualified personnel in consultation with local authorities having jurisdiction and authorized dealers. Qualified personnel should have training, knowledge, and experience in the:

- Installation of electrical equipment
- Application of electrical codes, safety and installation standards
- Analysis and reduction of hazards involved in performing electrical work
- Installation and configuration of batteries

### 1.2 Warning, Caution, Notice, and Note Messages

Messages in this manual are formatted according to this structure.

#### **WARNING**

Important information regarding hazardous conditions that may result in personal injury or death.

#### **CAUTION**

Important information regarding hazardous conditions that may result in personal injury.

#### **NOTICE**

Important information regarding conditions that may damage the equipment but not result in personal injury.

#### **NOTE**

Ad hoc information concerning important procedures and features unrelated to personal injury or equipment damage.

### **1.3 Safe Handling Procedures**

Before using the AES RACKMOUNT Quick Stack Rack with AES RACKMOUNT Battery Modules and AES RACKMOUNT Battery Combiner Modules, read all instructions and cautionary markings on the units and all appropriate sections of this manual.

- Use personal protective equipment when working with the Quick Stack Rack and Battery Modules.
- Dispose of or recycle a Quick Stack Rack following local regulations.
- Do not modify, re-manufacture, or attempt to insert foreign objects into the Quick Stack Rack, immerse or expose the Quick Stack Rack to water or other liquids, fire, explosion, or other hazards.
- Use the Quick Stack Rack only with the AES RACKMOUNT Battery Combiner, Battery Modules, or with batteries that Discover Energy Systems specifies as compatible.
- Do not lift or carry while in operation.
- Take precautions when handling electrical cables.
- Do not submerge the Battery Modules or Battery Module Combiner.
- Do not install the Battery Module or Battery Module Combiner with the faceplate down.
- Do not use the Battery Module Combiner with Battery Modules or a Power Conversion system that exceeds the specifications of the Battery Module Combiner. Using Battery Modules or a Power Conversion system that exceeds breaker, cable, and fuse specifications may present a fire risk or other hazards.
- Do not short-circuit a Battery Module or Battery Module Combiner or allow metallic conductive objects to contact cable ends and terminals.
- Do not drop the Battery Module or the Battery Module Combiner.
- If the Battery Module or Battery Module Combiner is damaged, take it to a service center for inspection.

### **1.4 Personal Protective Equipment**

When handling or working near a battery:

- Use Personal Protective Equipment, including clothing, glasses, insulated gloves, and boots.
- Do not wear metal rings, watches, bracelets, or necklaces.

## 2. ITEMS SHIPPED IN THE BOX

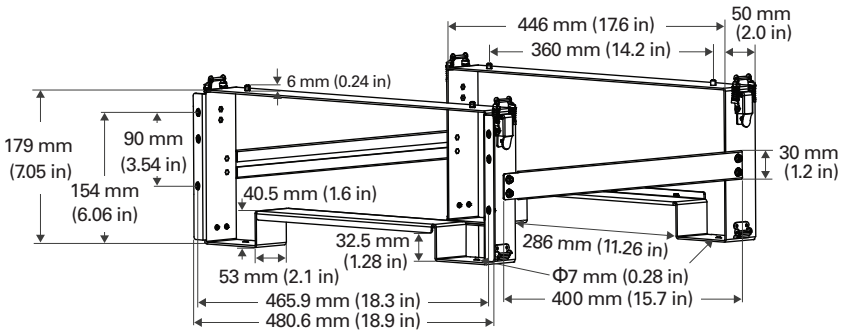
The Quick Stack Rack is designed for use with the AES RACKMOUNT Battery Module and Battery Module Combiner. Use the Quick Stack Rack to stack a maximum of six Battery Modules plus one battery combiner.

**Table 2.1, AES RACKMOUNT Quick Stack Rack contents**

ITEMS	DESCRIPTION
1	Front End bracket
1	Back End bracket
2	Side Arm
8	Side Arm Nut (M4)
4	Mounting Screw (M6)
1 set	Spares: Mounting Screw (2), Side Arm Nut (2)

## 3. SPECIFICATIONS

### 3.1 Mechanical Specifications



**Figure 1. Quick Rack Dimensions**

**Table 3-1, Quick Stack Rack Dimensions**

<b>Mechanical Specifications</b>	<b>AES RACKMOUNT Quick Stack Rack (3U) 950-00050</b>
<b>Front End Bracket</b>	
Height	179.0 mm (7.05 inch)
Width	480.6 mm (18.9 inch)
Depth	53.0 mm (2.1 inch)
<b>Holding pins</b>	
Height	6.0 mm (0.24 inch)
Diameter	6.0 mm (0.24 inch)
<b>Back End Bracket</b>	
Height	179.0 mm (7.05 inch)
Width	446.0 mm (17.6 inch)
Depth	50.0 mm (2.0 inch)
<b>Holding pins</b>	
Height	6.0 mm (0.24 inch)
Diameter	6.0 mm (0.24 inch)
<b>Side Arm</b>	
Height	30.0 mm (1.2 inch)
Length	400.0 mm (15.7 inch)
<b>Environment</b>	Indoors

### **3.2 Environment**

Use the Quick Stack Rack indoors in a dry location.

<b>NOTICE</b>
<ul style="list-style-type: none"><li>• Do not install outdoors.</li><li>• Do not install in wet locations.</li></ul>

### **4. TOOLS**

- Settable torque driver with bits matched to nut and screw heads in use.

## 5. ASSEMBLY

### ⚠ CAUTION

#### RISK OF INJURY

- Use Personal Protective Equipment, including gloves and boots, when assembling the Quick Stack Rack.
- Without protection, the metal edges of the Quick Stack Rack can nick your hands and fingers.

Failure to follow these instructions may result in injury.

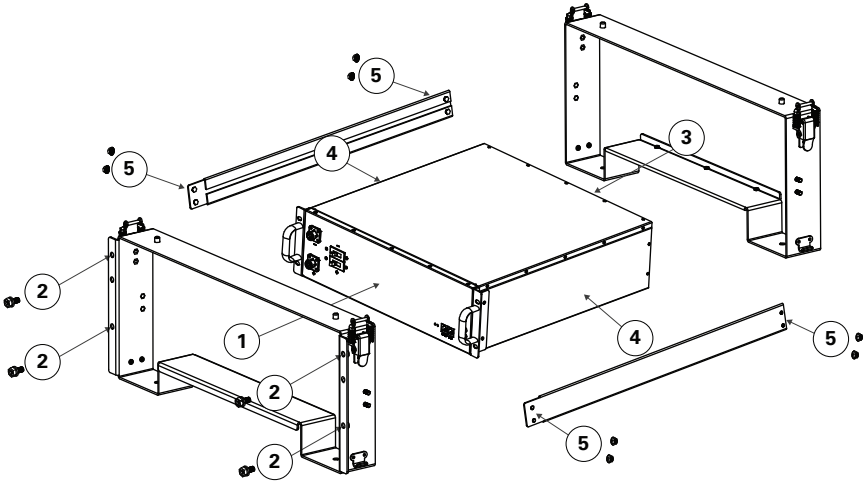


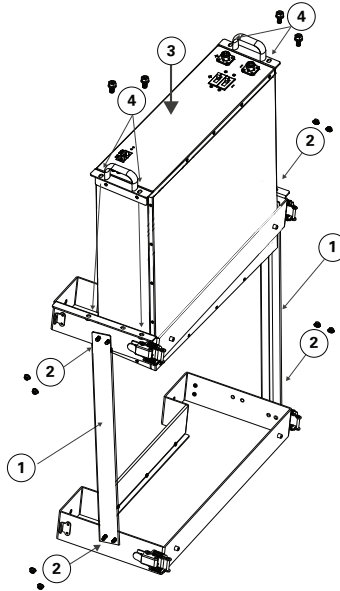
Figure 2. AES RACKMOUNT Quick Stack Rack Assembly

### 5.1 Attaching the Brackets and Side Arms

1. Slide the Front End Bracket onto a Battery Module or Battery Module Combiner.
2. Secure the side flanges of the AES RACKMOUNT Battery Module to the Front End Bracket using the mounting screws that came with the Battery Module (torque of 8 to 10 Nm [5.9 to 7.4 ft/lbs]).
3. Slide the Back End Bracket onto the Battery Module.  
Note the screw thread ends protruding from the sides of the Front End and Back End Brackets.
4. Attach the Side Arms, so the holes line up with the screw thread ends.
5. To secure the Side Arms, screw on the M4 nuts to a torque of 2.5 to 3 Nm (1.85 to 2.2 ft/lbs).
6. Repeat as necessary for all the AES RACKMOUNT Battery Modules.
7. For the AES RACKMOUNT Battery Module Combiner, attach the Front End and Back End Brackets and the Side Arms the same way.

## 5.2 Alternative Method of Attaching the Brackets and Side Arms

One alternative is to connect a single Quick Stack Rack and lower the AES RACKMOUNT battery module into the front opening.



**Figure 3. Alternative Method of Quick Stack Rack Assembly**

1. Line up the holes of the Side Arms with the screw thread ends protruding from the Front End Bracket and Back End Bracket.
2. Screw on the M4 nuts (torque 2.5 to 3 Nm (1.85 to 2.2 ft/lbs)) to secure the Side Arms to the Front End Bracket and Back End Bracket.
3. Once the single Quick Stack Rack is constructed, flip it vertically so the Back End Bracket is on the ground. Using a two-person lift, slowly lower the Battery Module through the Front End Bracket and then through the Back End Bracket.
4. Secure the side flanges of the AES RACKMOUNT Battery Module to the Front End Bracket using the mounting screws that came with the Battery Module (torque of 8 to 10 Nm [5.9 to 7.4 ft/lbs]).
5. Repeat as necessary for all the AES RACKMOUNT Battery Modules.

### NOTICE

#### EQUIPMENT DAMAGE

Slowly lower the AES RACKMOUNT battery module through the Quick Stack Bracket to minimize scratches to the finish and to the safety and specification decals.

**Failure to follow these instructions may result in equipment damage.**

### NOTE

This alternative assembly method is not suited for the Battery Module Combiner due to the interference caused by the pre-installed battery cables.



## 6. INSTALLATION

When using Quick Stack Rack Brackets, the Battery Module Combiner should be placed in the middle of the stack so the battery cables can reach the terminals of all the Battery Modules. Secure the entire stacked structure to a nearby wall or frame.

### 6.1 Location

The Quick Stack Rack must be installed and used indoors in a dry location on a flat surface with at least 1U (44.45 mm, 1.75 inch) clearance space above and on both sides of the Battery Modules and Battery Module Combiner. Provide enough space at the back of the modules to accommodate DC cables. For more installation details, refer to the (805-0043) AES RACKMOUNT Installation and Operation Manual and the (805-0055) AES RACKMOUNT Battery Module Combiner User Manual.

### 6.2 Stacking Battery Modules with the Battery Module Combiner

#### ⚠ CAUTION

##### TIPPING HAZARD

- Do not stack more than six Battery Modules and one Battery Module Combiner.
- Install the Battery Module Combiner in the middle of the stack.
- Secure stacked Battery Modules to a wall or nearby frame.

**Failure to follow these instructions may result in injury.**

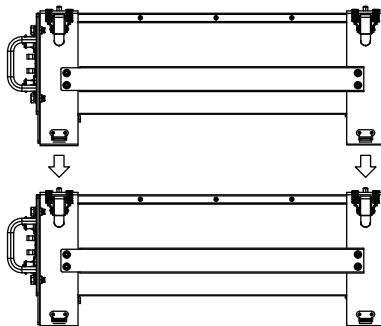
#### ⚠ CAUTION

##### HEAVY OBJECT

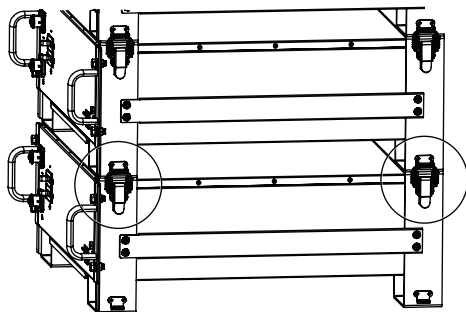
Two-person lift is recommended for Battery Modules and the Battery Module Combiner.

**Failure to follow these instructions may result in injury.**

Before stacking Battery Modules, the Front End and Back End brackets and the side arms must be attached to all Battery Modules and the Battery Module Combiner.



**Figure 4. Align pins on the lower unit's brackets with holes in the upper unit's brackets**

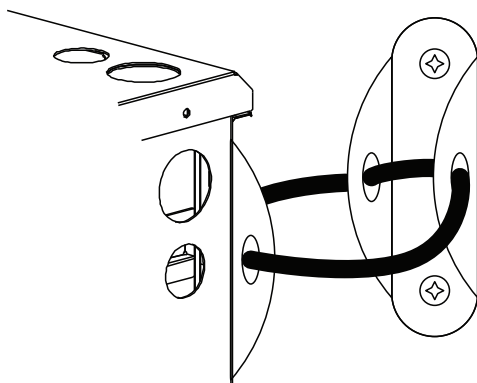


**Figure 5. Secure Stacked Modules with Snap Lock Clasps**

1. As a base, place a Battery Module, with brackets attached, in the final installation location.
2. Stack a second Battery Module on top of the first Battery Module.
3. Mate the holes in the bottom of the upper unit's brackets with the holding pins on the top of the lower unit's brackets to correctly position the Battery Module.
4. Secure the lower brackets to the upper brackets using the snap lock clasps.
5. Repeat until all the Battery Modules and Battery Module Combiner are stacked and secured.
6. Attach the Battery Module Combiner in the middle of the stack.

### **6.3 Securing the Stack**

Secure the stack of AES RACKMOUNT Battery Modules and the Battery Module Combiner to a wall or nearby frame.



**Figure 6. Seismic Restraint Strap**

## 7. ROUTINE INSPECTION

### CAUTION

#### ELECTRIC SHOCK HAZARD

- Do not touch the energized surfaces of any electrical component in the stack system.
- Follow all procedures to fully de-energize the stack system.
- Follow the Safe Handling Procedures prescribed in all relevant manuals when working with a stacked system.

**Failure to follow these instructions may result in injury.**

Periodically inspect the stacked system and each Quick Stack Rack.

1. Ensure that all DC cables and connections are secure and torqued to their specification.
2. Ensure all networking cables and connectors are secure and tight.
3. Ensure that the installation location is clean and free from debris.
4. Inspect the casing of all Battery Modules and Battery Module Combiners for cracks or damage.
5. Replace any cracked or damaged Battery Modules and Battery Module Combiners.
6. Replace any frayed, cut, or damaged cables.
7. Ensure the stack is balanced.
8. Ensure the stacked structure is secured to a nearby wall or frame.
9. Inspect all Quick Stack Racks for any bending, damage, or rust.
10. Replace any damaged or rusted Quick Stack Rack brackets.

## 8. RELATED INFORMATION

Find information about Discover Energy Systems at [discoverlithium.com](https://discoverlithium.com).