

# Battery Rack

## 3000lb Seismic Battery Rack System

### General Installation Guide

Part# 9400008-J2

Effective: 2/2014



Alpha's industry leading, standalone battery racks feature 3000lb Z4 seismic rating in a single rack:

- A 5 tray version capable of handling 5 strings of the larger format batteries that require 8RU spacing between battery trays
- A 6 tray version capable of handling 6 strings of batteries that require 7RU spacing between battery trays

### BATTERY RACKS (black, 23", rated at 3000lb)

Part Number	Voltage	System Capacity	No. of Trays	Breaker Size
0912001-001	48V Pos.Gnd	400A	5	100A
0912001-002	48V Pos.Gnd	500A	5	125A
0912001-003	48V Pos.Gnd	600A	5	150A
0912001-004	48V Pos.Gnd	800A	5	200A
0912001-005	48V Pos.Gnd	1000A	5	250A
0912002-001	24V Neg.Gnd	800A	5	100A
0912002-002	24V Neg.Gnd	1000A	5	125A
0912003-001	48V Pos.Gnd	480A	6	100A
0912003-002	48V Pos.Gnd	600A	6	125A
0912003-003	48V Pos.Gnd	720A	6	150A
0912003-004	48V Pos.Gnd	960A	6	200A
0912004-001	24V Neg.Gnd	960A	6	100A

NOTE: For standalone rack Zone 4 certified and NEBS L3 compliant upto 2400lb, order part # 0300163-001.

### ACCESSORIES (for racks listed above)

Part Number	Width	Description
0380042-021 (black)	NA	Mounting Kit Note: Seismic Kit includes seismic anchors and washers
0380195-001	23"	Insulation Kit: includes insulation pad and bushings
5610292-001	23"	Top insulation cover

Figure 1 — Seismic battery rack (front view)

Dimensions

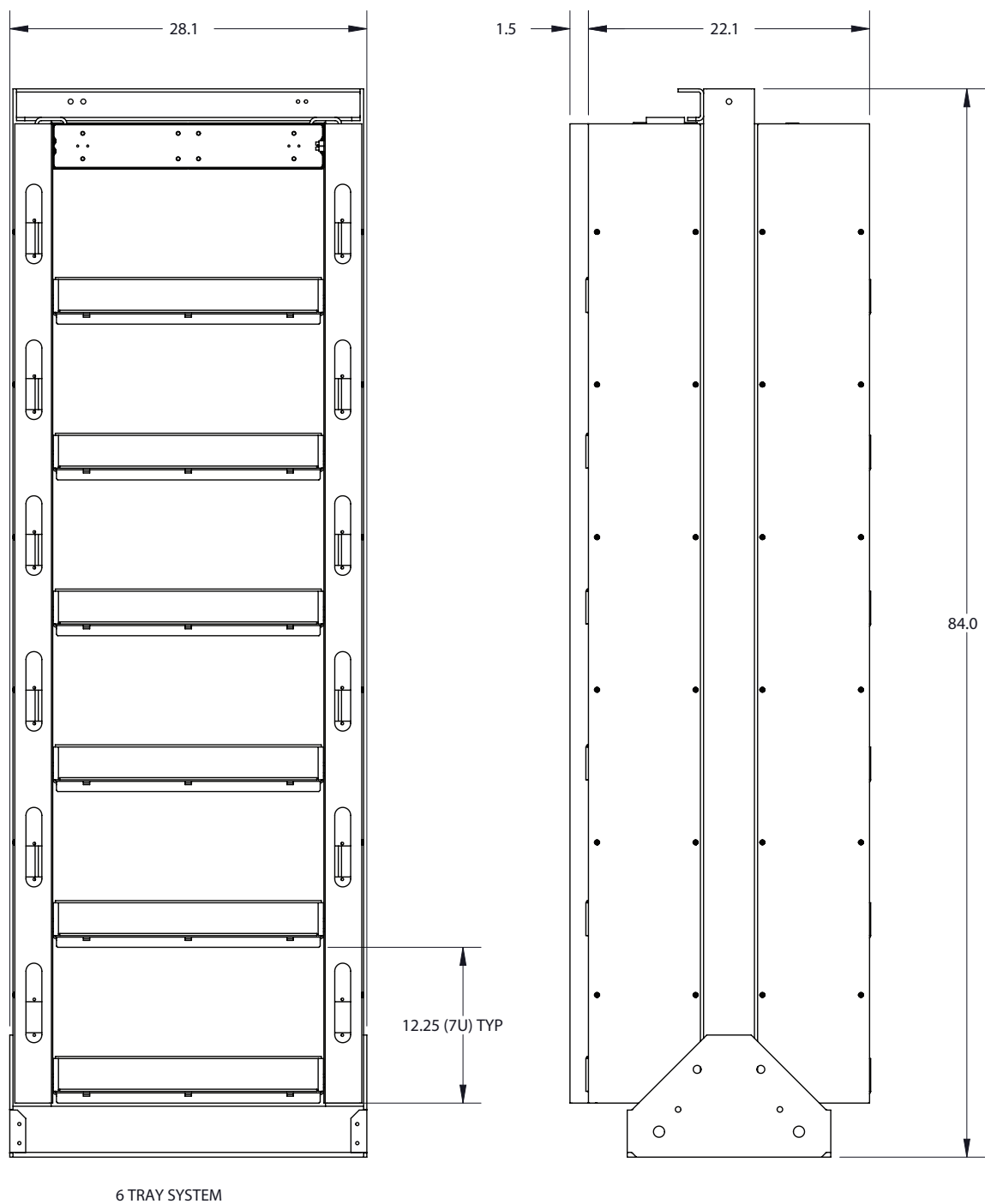


Figure 2 — Front and side view (6-shelf model shown)

## Mounting Details

### WARNING!

This system is designed to be installed in a restricted access location that is inaccessible to the general public.

#### NOTE:

1. Use a rebar locator to plan for the anchor positions.
2. Use the template provided to mark the anchor hole positions (see Figure 3).
3. If applicable, place the floor insulation pad where the rack is to be installed.
4. Move the rack to its exact final position over the anchoring holes (and the insulation pad if applicable).
5. Install the anchoring hardware (and the insulation bushing if applicable) for each anchor FINGER TIGHT.

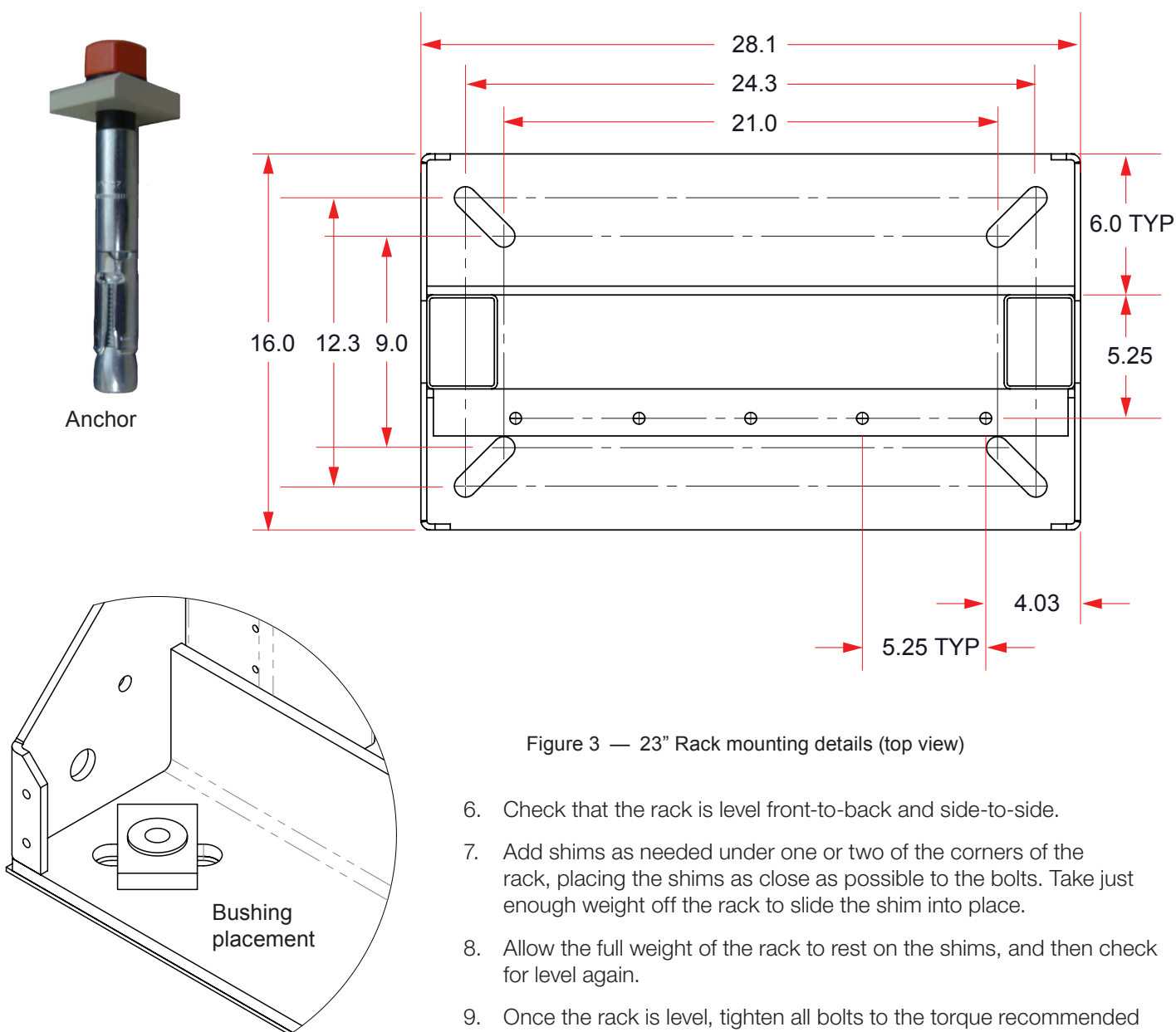


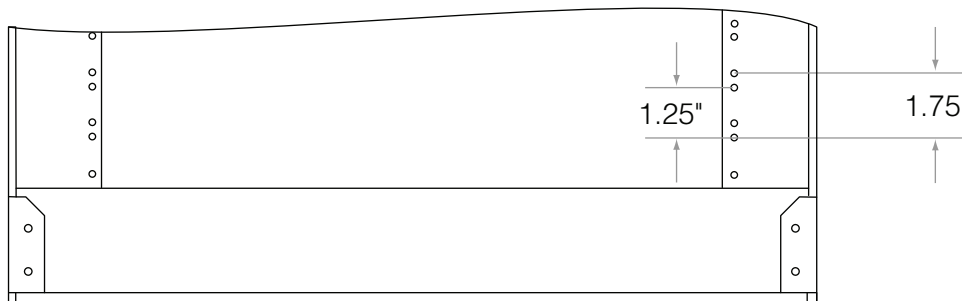
Figure 3 — 23" Rack mounting details (top view)

6. Check that the rack is level front-to-back and side-to-side.
7. Add shims as needed under one or two of the corners of the rack, placing the shims as close as possible to the bolts. Take just enough weight off the rack to slide the shim into place.
8. Allow the full weight of the rack to rest on the shims, and then check for level again.
9. Once the rack is level, tighten all bolts to the torque recommended by the anchor manufacturer.

## Rack Features

### Spacing

Use 12-24 thread forming screws.



### Frame Ground

The power plant frame must be connected to the MGB or FGB. This connection is necessary for personnel safety and to meet many telco-grounding requirements.

Use #6 AWG (16mm) cable for small to medium size power plants and #2/0 cable for large plants (> 800A). Remove paint in lug contact area (Figure 4) to ensure a good electrical connection.

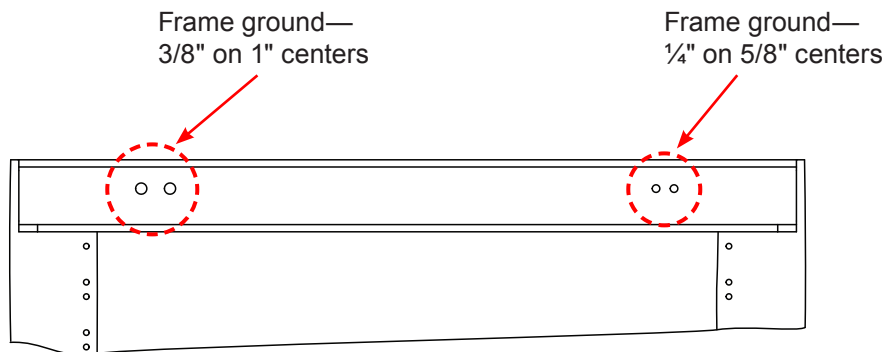


Figure 4 — Ground connections on rack upper cross bar

### Joining Two Racks Together

The rack has clearance holes for 3/8" hardware that can be used to join the racks.

## Customer Cable Termination

5x 3/8" hole on 1" centers, or 5x 1/2" hole on 1 3/4" centers

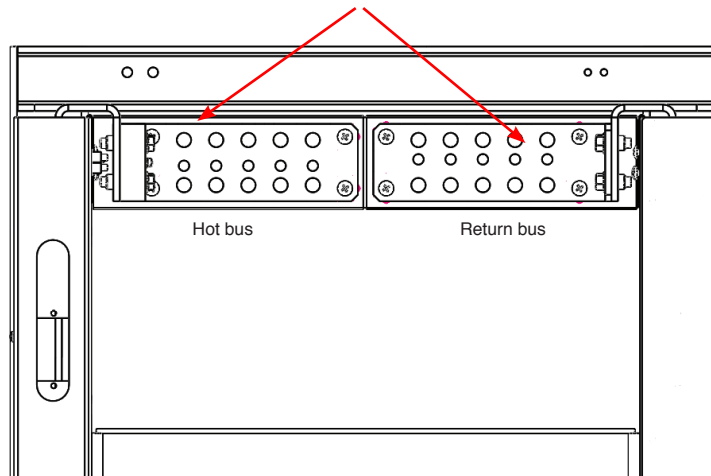
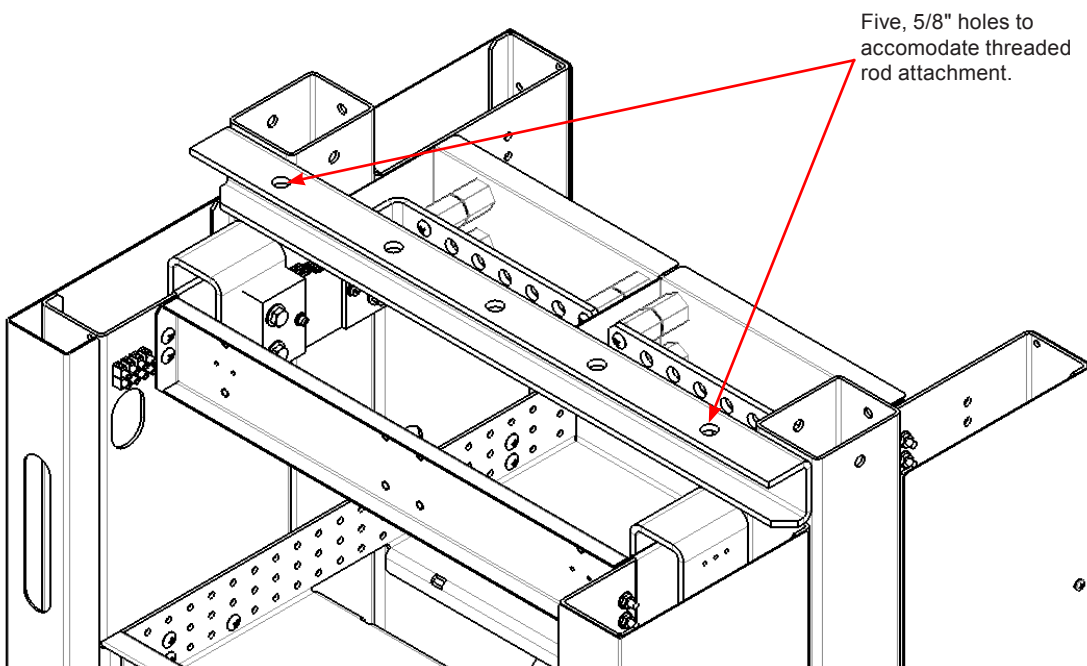


Figure 5 — Cable Termination

## Connecting to Overhead Trays

The rack upper cross bar has five 5/8" diameter holes to accommodate threaded rod attachment to overhead trays.



### Wiring the Batteries

#### Battery Safety



##### WARNING!

Hazardous voltages are present at the input of power systems. The DC output from rectifiers and batteries, though not dangerous in voltage, has a high short-circuit current capacity that may cause severe burns and electrical arcing.

Servicing and connection of batteries must be performed by, or under the direct supervision of, personnel knowledgeable of batteries and the required safety precautions.

Before working with any live battery or power system, follow these precautions:

- Remove all metallic jewelry, such as watches, rings, metal rimmed glasses, or necklaces.
- Always wear safety glasses with side shields, rubber gloves, and a protective vest when working near batteries.
- Use OSHA approved insulated hand tools. Do not rest tools on top of batteries.

Batteries contain or emit chemicals known to cause cancer and birth defects or other reproductive harm. Battery post terminals and related accessories contain lead and lead compounds. Wash your hands after handling batteries.



##### WARNING!

Follow battery manufacturer's safety recommendations when working around battery systems. Do not smoke or introduce an open flame when batteries (especially vented batteries) are charging. When charging, batteries vent hydrogen gas, which can explode.

Batteries are hazardous to the environment and should be disposed at a recycling facility. Consult the battery manufacturer for recommended local authorized recyclers.

#### Preparing the Batteries

1. Verify that all battery breakers, DC circuit breakers, and fuses on the distribution panels are either in the OFF position or removed.
2. Clean the batteries according to the battery manufacturer's recommendations. First neutralize any acid with a baking soda and water solution, rinse the batteries with clean water, and then wipe them dry.
3. Install gaskets at the front and rear of each 3 of 4 batteries.
4. Remove any NO-OX-ID "A"™ grease from the battery terminals. Burnish the terminal posts with a non-metallic brush, polishing pad, or 3M Scotch Brite™ scouring pad.
5. Apply a light coating of NO-OX-ID "A"™ grease to the terminal posts.
6. If lead plated inter-unit connectors are used, burnish and apply NO-OX-ID "A"™ grease as above.

## Wiring the Batteries—2x 24V Battery Strings

Each shelf has a breaker and battery cables for each 24V battery string.

1. Fill the shelves sequentially from bottom to top.
2. Lift each battery onto the front edge of the shelf and then slide the battery into the shelf.
3. Install the inter-unit connectors between each of the two batteries in the two strings (between batteries 1 and 2 and between batteries 3 and 4 in Figure 5. Torque to the battery manufacturer's specification.
4. Connect the negative (-) battery cables to the negative terminals of the battery strings, and the positive (+) battery cables to the positive terminals of the battery strings.
5. When the batteries are wired, measure the voltage at the battery connection terminals. It should read between 21 and 24V.

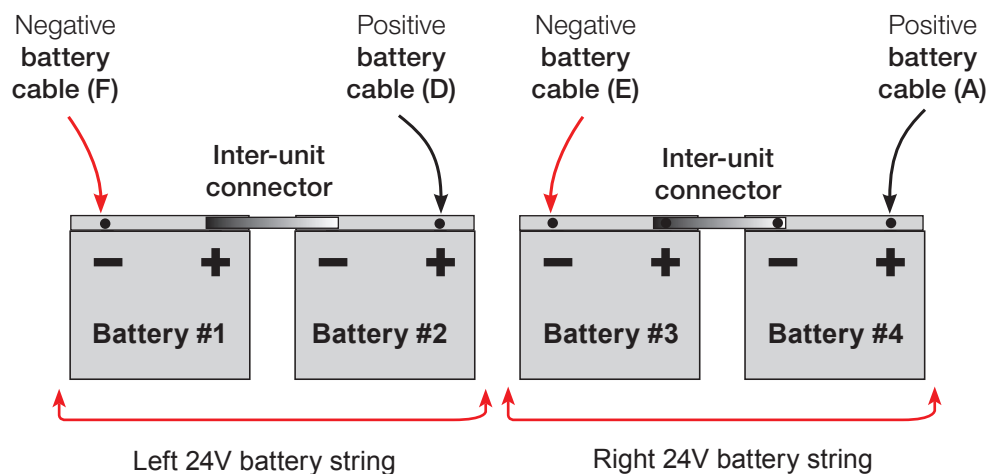


Figure 6 — Battery wiring schematic for a tray with 2x 24V battery strings

6. Torque the battery terminals according to the manufacturer's specifications on the battery name plate or data sheet.
7. Install the terminal covers and battery retainers.
8. If multiple battery strings are used, repeat steps 2 to 7 as required.

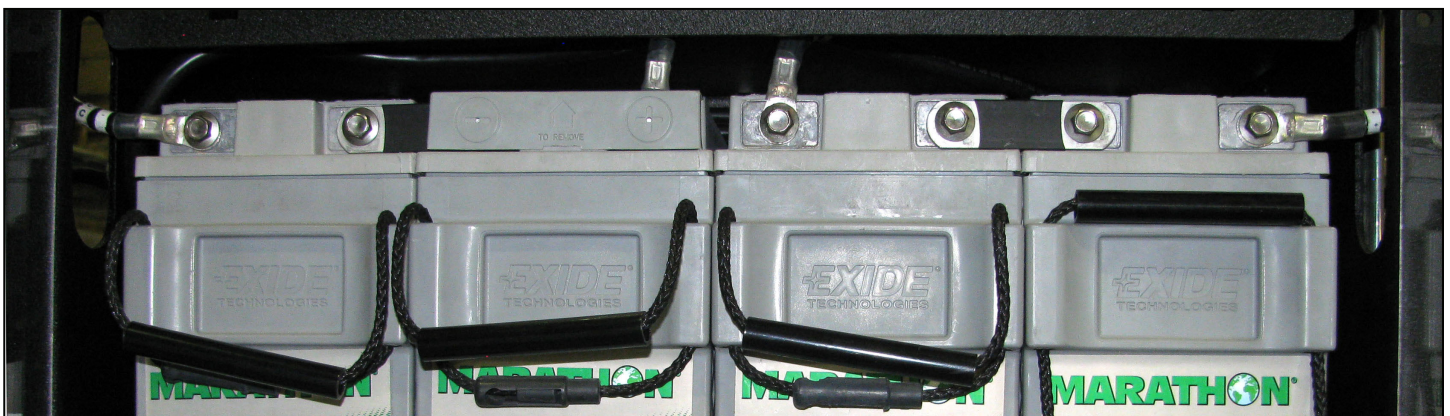


Figure 7 — Example of completed battery wiring (2x 24V strings)

## Wiring the Batteries—1x 48V battery string

Each shelf has a breaker and battery cabling for 1x 48V battery strings.

1. Fill the shelves sequentially from bottom to top.
2. Lift each battery onto the front edge of the shelf and then slide the battery into the shelf.
3. Install the inter-unit connectors between the batteries in the string (Figure 7). Torque to the battery manufacturer's specification.
4. Connect the negative (-) battery cable to the negative terminal of the battery string, and the positive (+) battery cable to the positive terminal of the battery string.
5. When the batteries are wired, measure the voltage at the battery connection terminals. It should read between 42 and 48V.

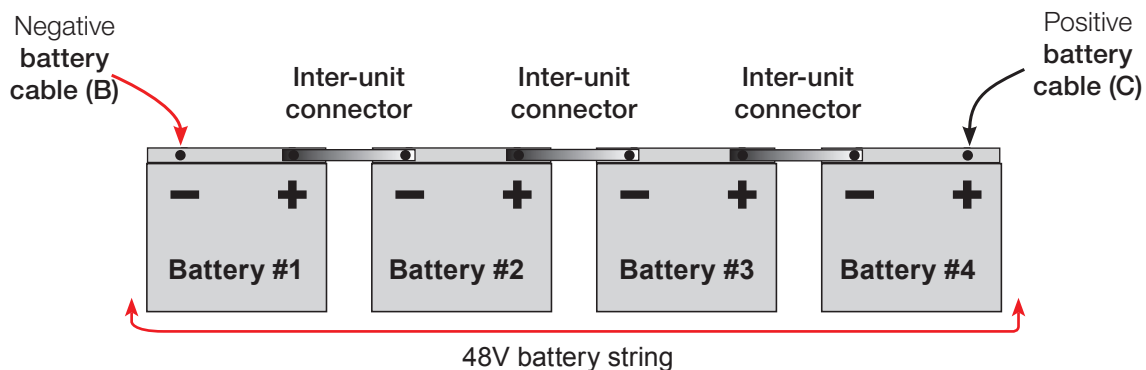


Figure 8 — Battery wiring schematic for a tray with a single 48V string

6. Torque the battery terminals according to the manufacturer's specifications on the battery name plate or data sheet.
7. Install the terminal covers and battery retainers.
8. If multiple battery strings are used, repeat steps 2 to 7 as required.

## Wiring the Battery Breaker Alarm

Connect a #18 AWG wire from the terminal block position "Alarm" on the battery rack to a digital input on the power system controller.