

# Integrated Battery Rack

## Installation Instructions

### Purpose

This document provides instructions for initial assembly and installation of the OutBack Integrated Battery Rack (IBR).

### Scope

This document applies to **all models** of the IBR. Figure 1, the three-shelf IBR-3-48-175, depicts OutBack EnergyCell RE batteries. Figure 2, the two-shelf IBR-2-48-175, depicts OutBack EnergyCell GH batteries. If other batteries are used, they must be 12 Vdc batteries which also meet the following requirements:

- AGM valve-regulated lead-acid recombinant type
- Maximum discharge 100 cc/hr per battery
- Maximum discharging temperature 160°F (60°C)

### Parts Included

- Rack assembly
- Front protective shields
- Side protective shields
- Hardware for protective shields
- EnergyCell Battery Manual
- IBR Installation Instructions (this document)

### Assembly

**NOTE:** If installed in the United States, all wiring methods shall be in accordance with the National Electrical Code (NFPA 70), Current Edition. If installed in Canada, all wiring methods shall be in accordance with the Canadian Electrical Code, C22.1, Current Edition.



**Figure 1 IBR-3-48-175**



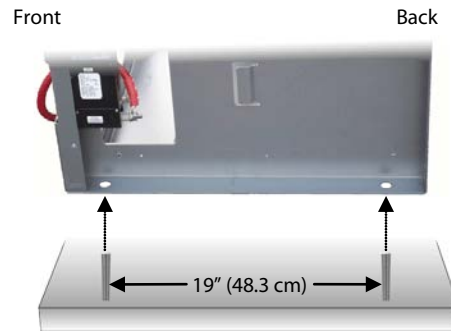
**Figure 2 IBR-2-48-175**

# EnergyCell RE Battery Rack Instructions

## To assemble the integrated battery rack:

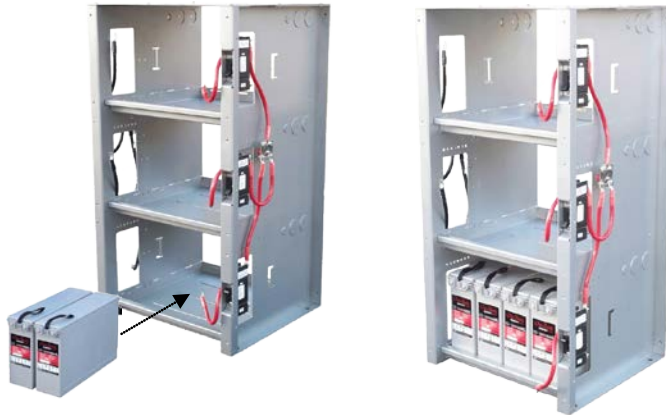
1. Install four ½" studs into the mounting surface (concrete or a similarly reinforced material). From the front to the back, the stud centers should be spaced 19" (48.3 cm) apart, as shown in Figure 3. Spacing from left to right should be 25" (63.5 cm) apart.
2. Lower the battery rack over the four studs as shown in Figure 3 and settle the rack in place.  
Alternately, ½" bolts can be inserted through the mounting holes into prepared openings.

**IMPORTANT:** The battery rack **must** be mounted on a level surface.



**Figure 3 Mounting on Floor Studs**

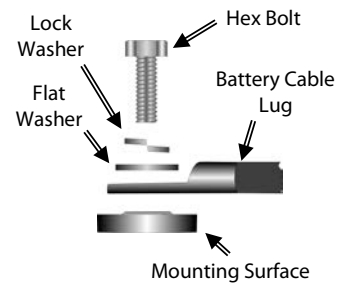
3. Secure the studs or bolts with nuts or appropriate hardware. Anchor the rack according to local building codes.
4. Load the batteries into the rack. Load the bottom shelf first to prevent balancing issues. Proceed to the next shelf.



**NOTE:** Slots are present under the front edge of each shelf for strapping the batteries down if necessary.

**Figure 4 Inserting Batteries**

5. Attach the interconnect bars to place the batteries in series. Batteries should be connected in series as appropriate to meet the system voltage requirements. Follow all instructions in the battery manual and use the recommended torque values. Install hardware in the order shown in Figure 5. Do not install hardware in a different order than shown unless specified by the battery manual or instructions.



**Figure 5 Battery Interconnect Bars and Hardware**

6. The rack is equipped with cables for each shelf (positive on the right, negative on the left). Connect each cable to the appropriate side of each battery string. The cables lead to separate buses on each side of the rack that place each string in parallel. (See Figure 7.)

Each positive (red) cable is connected to a 175-amp circuit breaker which protects the batteries on that shelf.



Negative Cable

Positive Cable

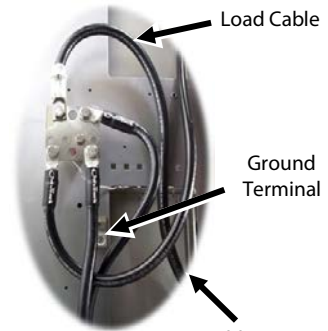
**Figure 6 Battery Connections**

# EnergyCell RE Battery Rack Instructions

The positive and negative bus bars are marked with "+" and "-" symbols respectively. The ground terminal is marked with the  $\oplus$  symbol.

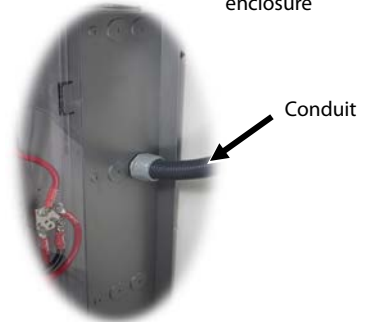


7. Connect a ground cable to the battery rack. The ground terminal is located directly below the negative bus bar (see right). Make sure to follow all applicable electrical codes when grounding the rack.
8. The positive and negative bus bars have multiple attachment points. The battery cables inside the rack are already attached (see left). The user should attach a fourth cable for battery loads (see right). This load cable should be sized appropriately. As shown to the right, the load cable must be routed inside the enclosure using one of the side openings. To complete the circuit, the return load cable should connect to the bus bar on the other side of the rack and also routed inside the enclosure.



9. After load cables have been routed inside the enclosure, they should exit using one of the conduit openings. The IBR-3-48-175 has six 2" conduit knockouts on each side of the rack. The IBR-2-48-175 has four 2" conduit knockouts on either side of the rack and three on top.

**For users of the GS Load Center:** The top knockouts are designed to align with the GSLC cabling for ease of installation.



**Figure 7 Bus and Load Cabling**

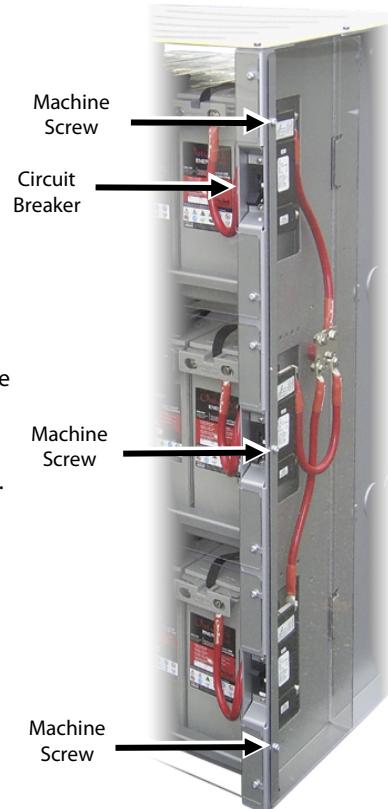
10. Install the protective shields on the left and right sides of the battery rack. Each shield has an edge which is designed to slide into a metal tab on the rack. (See below.) Once the edge of the shield is secured, the other side can be attached using M6 screws. (See the illustration to the right.)

11. Install the protective shields on the front of each battery shelf. Make certain to orient the shield correctly. The shield has an opening to allow access to the circuit breaker for each set of batteries. (See the illustration to the right.) If the shield is oriented incorrectly, it will block access to the circuit breaker.



**NOTE:** The battery rack does not require additional ventilation.

Provide adequate ventilation for the room where the battery rack is installed.



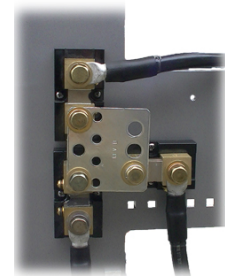
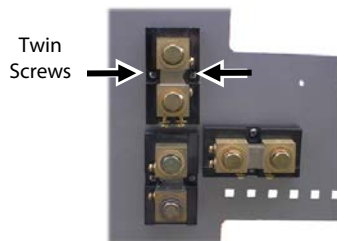
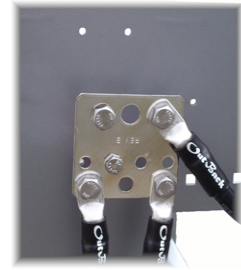
**Figure 8 Protective Shields (sides and front)**

## Installing Shunts

### To Install a Shunt or Shunts:

Up to three shunts may be installed for the use of a battery monitor such as the FLEXnet DC. Perform the following steps before step 5 on page 2.

1. Remove the negative bus bar and cables from the left side of the rack (see right). Unbolt the individual cables from the bus bar.
2. Three pairs of holes are located in the area where the bus bar is mounted (below, left). A shunt can be placed over each set of holes. Each shunt has twin screws (below, center) which can be used for mounting.
3. Reinstall the negative bus bar so that it mounts across the inner terminal of each shunt (below, right). Each negative battery cable must not be bolted to the bus bar, but should connect to the outer terminal of each shunt. However, the load cable must connect to the negative bus bar.
4. The battery monitor's voltage sensing wires must connect to the bus bars (positive and negative), not the batteries.



**Figure 9 Installing Shunts**

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