



Installation Manual

6 Battery Only Storage System: BOSS.6

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1.0 – IMPORTANT SAFETY INFORMATION



CAUTION: DO NOT VOID YOUR WARRANTY- FOLLOW THESE INSTRUCTIONS CAREFULLY AND REVIEW WARRANTY DOCUMENT PRIOR TO INSTALLATION

1.1 - Safety Instructions

1. Before assembling or using the SimpliPhi Battery Only Storage System for Six Batteries (BOSS.6), read all instructions and cautionary markings included in this manual.
2. Perform all electrical work on the BOSS.6 Enclosure in accordance with local, state and federal electrical codes.
3. The BOSS.6 Enclosure is NEMA 3R-rated for a degree of protection against debris, as well as rain, sleet and ice. The Enclosure is NOT watertight and should therefore be protected against excessive exposure to liquids. For extreme weather protection, Rain Hoods are available (RH-44) and can be ordered with the BOSS.6 Enclosure.
4. To reduce the chance of short-circuits and/or electrical shock, always use insulated tools when installing or working with this equipment. For the same reason, remove all jewelry such as rings, watches, bracelets, etc., and wear insulated rubber electrical gloves when installing or performing maintenance on the BOSS.6 Enclosure or the PHI battery modules contained within.
5. Before assembling or using the BOSS.6, inspect the shipment and the product itself for signs of damage. Do not use the BOSS.6 Enclosure if there are indications that it has been damaged during shipping or otherwise. Refer to Section 3.1 – Inspection of this Guide for further instruction.
6. Do not dismantle the BOSS.6 Enclosure; there are no user-serviceable parts contained in this product. Doing so will Void the Warranty.
7. The BOSS.6 Enclosure is designed for the housing and wiring of up to 6 SimpliPhi PHI 3.8, 3.5, or 3.4 kWh batteries (measuring ~13.5" wide x 15.5" high with terminals x 8.1" deep) or up to 6 SimpliPhi PHI 2.9, 2.7 or 2.6 kWh batteries (measuring 11.25" W x 12.75" high with terminals x 9.5" deep). Check with SimpliPhi Technical Support (techsupport@simpliphipower.com) prior to using the BOSS.6 Enclosure with any other PHI battery models.

8. Prior to installing or performing maintenance on the BOSS.6 Enclosure, turn all included PHI Battery module built-in circuit breakers' "ON/OFF" switches to the "OFF" position, and disconnect all wiring leading from the batteries to the ExprESS fully integrated unit or other Balance of System equipment. Doing so will minimize the risk of shock or sparks during the batteries' installation.

Before commissioning the ExprESS or BOSS.6 Enclosure with Batteries, PHI batteries MUST be fully charged. Failure to do so will Void the batteries' Warranty.
9. In addition to the instructions outlined in this BOSS.6 Enclosure manual, adhere to all installation and commissioning protocols outlined in the [PHI Battery Installation Manual](#). **Failure to do so will Void the batteries' Warranty.**
10. Verify polarity at all battery module connections with a standard voltmeter before:
 - 1) energizing the system and,
 - 2) turning the PHI Battery's circuit breaker "ON/OFF" switch to the "ON" position. Reverse polarity at the PHI Battery terminals will Void the Warranty and destroy the PHI Batteries.
11. Do not operate if the PHI Battery has been dropped or damaged in any way during shipping or otherwise.

1.2 - Limitations of Use

The BOSS.6, ExprESS unit and PHI battery modules are not intended for use in connection with life support systems or other medical equipment or devices.

2.0 - Product Description

2.1 - Introduction

This installation guide covers the recommended installation of the BOSS.6 Enclosure. More information on SimpliPhi products, including the SimpliPhi batteries that the Enclosure is designed to house, can be found on our website: <http://simpliphipower.com/>.

2.2 - Overview

The BOSS.6 Enclosure is intended for the housing and wiring of up to six (6) PHI 3.8, 3.5 or 3.4 kWh deep-cycle Lithium Ferro Phosphate (LFP) batteries, or up to six (6) PHI 2.9, 2.7 or 2.6 kWh LFP batteries. The Enclosure may be used with the AccESS or ExprESS fully integrated units, or as a PHI Battery enclosure for any other installation with SimpliPhi compatible equipment.

When the BOSS.6 Enclosure is used with the AccESS or ExprESS fully integrated units, the additional Enclosure containing additional PHI batteries allows for an increased amount of available energy storage capacity, beyond the PHI Batteries already included in the fully integrated AccESS or ExprESS units.



All PHI batteries must be fully charged BEFORE commissioning. Failure to do so will Void the Warranty.

As outlined in the PHI Battery Installation Manual, **batteries must always be connected in parallel** (Positive to Positive / Negative to Negative). Any bussing used within the BOSS.6 Enclosure must be used to parallel the batteries only; no series connections are permitted and will destroy PHI batteries and Void the Warranty. More detailed connection instructions are included in later sections of this manual.

2.3 - Specifications

Review Table 1 below for BOSS.6 Enclosure specifications, including physical dimensions, Warranty period and technical data.

Table 1 – BOSS.6 Enclosure Specifications

| BOSS.6 Enclosure | |
|------------------|---|
| WEIGHT | 270 lbs. (122.5 kg.) Without Batteries |
| DIMENSIONS | 36" W x 36"H (40" w/feet) x 16" D / 91.4 cm W x 91.4 cm H (101.6 cm w/feet) x 40.64 cm D |
| MOUNTING | Free Standing or Pad Mounted |
| KNOCK-OUTS | 3 x Trade Size 1 Knockouts on each side |
| WARRANTY PERIOD | 5 Years |
| DC CONNECTIONS | 2 x 5-Point Terminal Blocks, 3/8" lugs, 650 Amps DC |

3.0 - Installation

3.1 - Inspection

Immediately inspect the BOSS.6 Enclosure upon its arrival to the site. Inspect the packaging as well as the BOSS.6 Enclosure itself for signs of rough handling or damage. If there is any evidence of damage, record the damage on the receiving document before signing for receipt of the equipment. Damage claims should be filed directly with the carrier. Not doing so can limit your ability to claim damage of equipment with the carrier.

3.2 - Unpacking

After the shipment's inspection is completed, perform the following steps to unpack the equipment:

1. Open all cartons.
2. Compare the items received against the packing list to see if any items are missing. If an item is missing or damaged, contact SimpliPhi Power (805-640-6700).
3. Remove all packing materials, envelopes, and boxes from the cartons. Keep all packing materials and cartons in case you need to transport or ship the unit at a later date.

The BOSS.6 Enclosure shipment includes the items listed in Table 2 on the following page.

Table 2 – Items Included in the BOSS.6 Enclosure Shipment

| Item Number | Description | Quantity |
|-------------|---|----------|
| 1 | BOSS.6 Carbon Steel Enclosure | 1 |
| 2 | Shelf (Mounted Within the Enclosure) | 1 |
| 3 | Built-in Enclosure Vent | 2 |
| 7 | Built-in Corrosion-Resistant Equipment-Cooling Fan | 1 |
| 8 | ¼"-20 ½" Long High Strength Steel Hex Head Screw | 2 |
| 9 | ¼" Stainless Steel Washer | 2 |
| 10 | 1-5/8" High Channel ¼"-20 Strut Channel Nut with Spring | 2 |

| | | |
|----|--|---|
| 16 | Built-in Positive 5-Point Terminal Block | 1 |
| 17 | Built-in Negative 5-Point Terminal Block | 1 |
| 18 | Enclosure Filter | 1 |
| 19 | 10-32 Pan Head Screw | 4 |
| NP | 96" 2/0 Battery Inverter Cables (one negative, one positive) | 2 |

Figure 1 – Unpacked Enclosure



Not Included

The BOSS.6 Enclosure does not include:

- Interconnecting busbars or battery cables for the purpose of paralleling the batteries.
 - Interconnecting busbars for paralleling two or three PHI batteries (SKU numbers BB-2-6 and BB-3-6, respectively) are sold separately and may be purchased from any SimpliPhi distributor: <https://simpliphipower.com/distributors/>.
 - The built-in 5-point terminal blocks includes 3/8" posts. Cables wired to and from the terminal blocks should therefore have 3/8" lugs.

- Busbar and cabling kits can be ordered from any SimpliPhi distributor for the specified number of batteries to be used within the BOSS.6 Enclosure. Please refer to Table 3 for guidance.

All batteries contained within the PHI battery bank must be identically grouped (i.e. do not use both the BB-2-6 and BB-3-6 busbar products within the same PHI battery bank. Doing so will Void the Warranty on the PHI batteries.

Consider these limitations when wiring fewer than 6 PHI batteries in the BOSS.6 enclosure.

Table 3 – Recommended Battery-to-Terminal Block Wiring

| Number of PHI Batteries | Recommendation |
|-------------------------|---|
| 6 | Order 2 x BB-3-6 busbar sets (2 positive, 2 negative) with 4 total 1/0 AWG Arctic Ultraflex Blue® cables with 3/8" lugs (for busbar-to-terminal block wiring connections). |
| 5 | Not Supported- Consider increasing battery bank to 6. |
| 4 | Order 2 x BB-2-6 busbar sets (2 positive, 2 negative) with 4 total 1/0 AWG Arctic Ultraflex Blue® cables with 3/8" lugs. |
| 3 | Order 1 x BB-3-6 busbar set (1 positive, 1 negative) with 2 total 1/0 AWG Arctic Ultraflex Blue® cables with 3/8" lugs. |
| 2 | Order 1 x BB-2-6 busbar set (1 positive, 1 negative) with 2 total 1/0 AWG Arctic Ultraflex Blue® cables with 3/8" lugs. |

Terminal block-to-inverter cables are included with the BOSS.6 purchase. SimpliPhi typically uses two (one positive, one negative) 96"-long 2/0 AWG [Arctic Ultraflex Blue®](#) cables with 3/8" lugs for terminal block-to-inverter wiring for the BOSS.6. However, the length and gauge of these cables may need to change depending on the Balance of System (BoS) equipment, maximum potential instantaneous power draw from the PHI battery bank, distance between the PHI battery bank and the BoS equipment, ambient temperature and local codes.



CAUTION: [Arctic Ultraflex Blue®](#) cables are sized differently than standard THHN/THWN wire: <http://www.polarwire.com/properties-specs.pdf> . Use different wire sizes if different make cable is used. Always adhere to the National Electrical Code.

Required Tools for Installation

The following tools are required to assemble the BOSS.6 Enclosure:

- Torque Wrench
- 9/16" socket
- 11/16" socket
- 17mm socket
- Protective wear

Installation Site Location

12. The BOSS.6 Enclosure may be installed indoors or outdoors mounted onto a concrete pad. The BOSS.6 Enclosure is NEMA 3R-rated for a degree of protection against debris, as well as rain, sleet and ice. The Enclosure is NOT watertight and should therefore be protected against excessive exposure to liquids. For extreme weather protection, Rain Hoods are available (RH-44) and can be ordered with the BOSS.6 Enclosure. Keep the BOSS.6 Enclosure isolated from flammable materials or vapors.

Clearance Requirements

The BOSS.6 Enclosure can be installed directly adjacent to the AccESS or BOSS.6 fully integrated units. Ensure that any ventilation is not blocked on the sides of the AccESS or BOSS.6 units. If mounting several cabinets together, allow for at least 8" of clearance on the external sides not adjacent to each other for ventilation, and 4 feet of clearance in front of the BOSS.6 Enclosure and/or AccESS or ExprESS units for front door access. The BOSS.6 Enclosure can be placed flush against a wall, without any clearance at the back of the Enclosure.

Knock-Out Location

Three Trade Size 1 knockouts are located on either side of the BOSS.6 Enclosure. They can be used for routing battery cables from the enclosure to the inverter's power panel. Not all knockouts must be used.

Pad Mounting

The BOSS.6 Enclosure must be installed and secured on level concrete. For a pre-cast concrete pad, a 4" minimum thickness is required.

The BOSS.6 is not suited for wall mounting. Any attempt to wall-mount the BOSS.6 Enclosure will Void the Warranty.

Six 1-inch knockouts are located in the base and mounting feet of the BOSS.6 for tool accessibility when mounting the BOSS.6 to a concrete pad. Cover knockout holes with sealing tape after pad mount installation, and prior to installing the PHI Batteries into the base of the cabinet. Failure to seal the knockout holes will Void the warranty.

Secure the BOSS.6 to the concrete with concrete anchors, such as threaded rods, masonry bolts, or carriage bolts, minimum ½" diameter.

3.3 – Assembling the BOSS.6 Enclosure

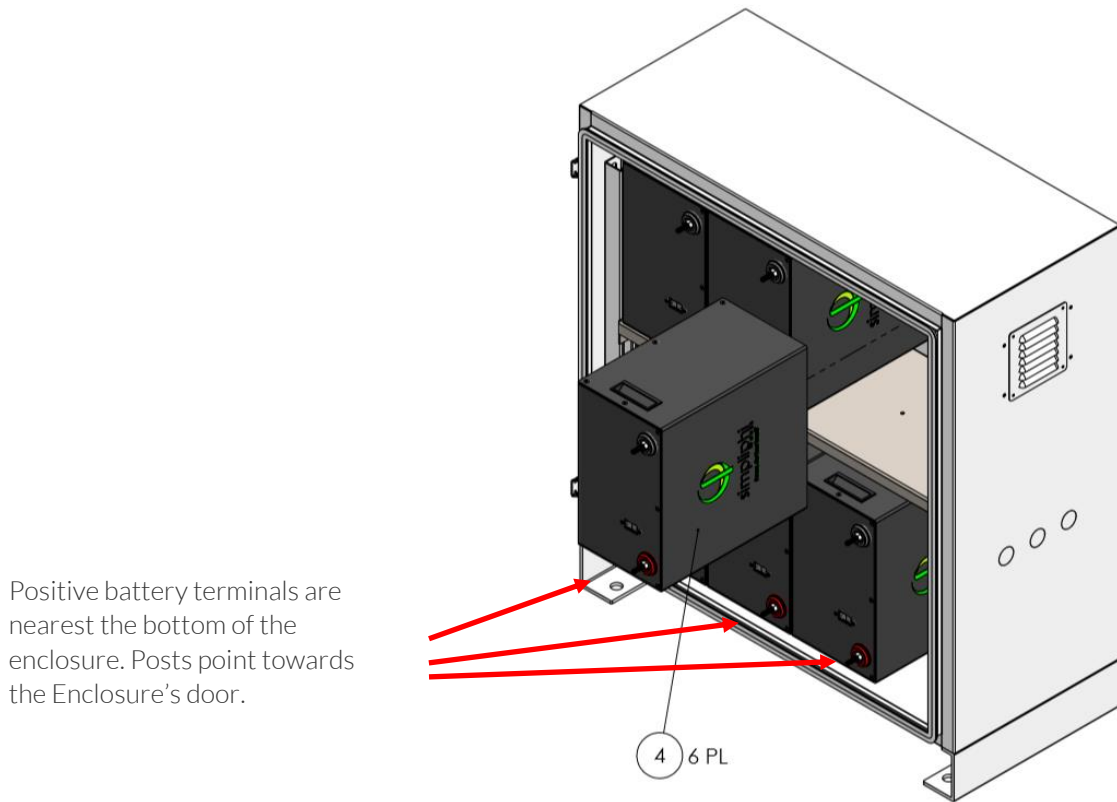
4. Make sure all PHI battery module circuit breakers are in the "OFF" position. Prepare the battery modules for installation by removing all plastic terminal covers, 11/16" stainless steel hex nuts and 3/8" lock washers from the batteries' terminals and set aside.



CAUTION: Do not attempt to loosen the large brass nut at the base of the battery terminals. Doing so will Void the Warranty

5. Install the battery modules in the Enclosure starting at the bottom of the Enclosure.
6. Arrange up to three battery modules on each shelf. Orient the modules so that the battery terminals point forward toward the door, with the positive posts nearest the bottom of the Enclosure. Illustrations shown are for six batteries per unit.

Figure 2 –6 PHI Battery Module Arrangement within the Enclosure



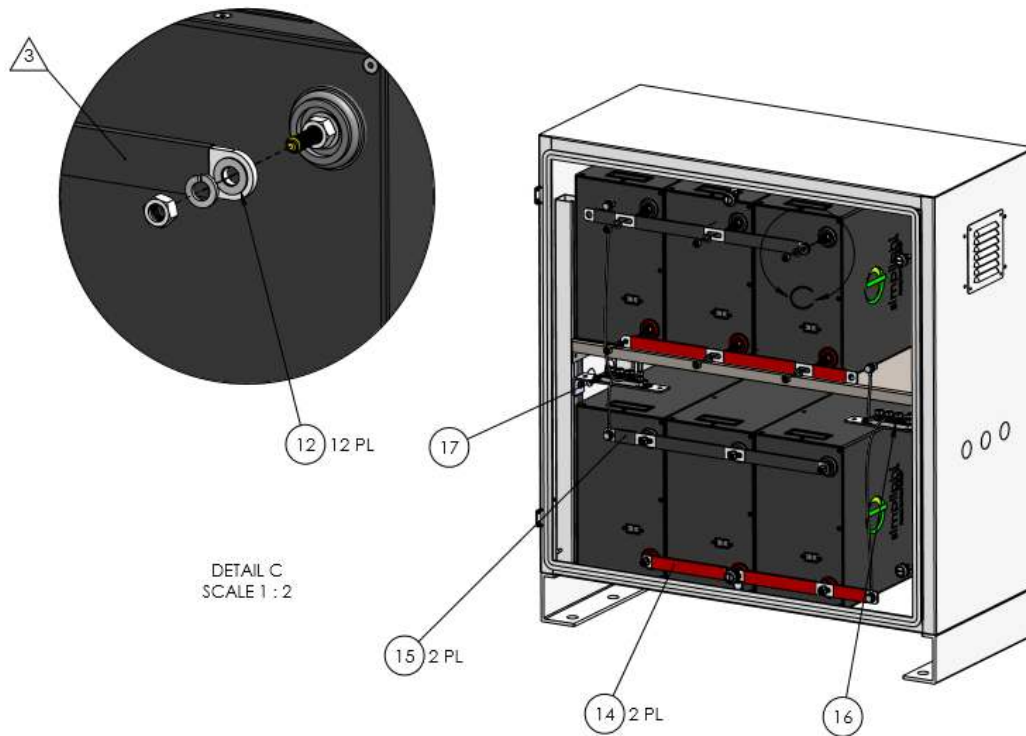
7. After securely placing all the battery modules in the BOSS.6 Enclosure, confirm that all the battery module circuit breakers are still in the “OFF” position.
8. Attach negative interconnecting busbars onto the batteries’ negative terminals. Secure the busbars to the batteries’ terminals using a 11/16” wrench socket to tighten the 3/8” flat washers (included with cabinet), 3/8” lock washers and 11/16” stainless steel hex nuts (originally included on the batteries). Tighten the nuts to 160 in-lbs.
9. Attach positive interconnecting busbars directly onto the batteries’ positive terminals. Secure the busbars to the batteries’ terminals using a 11/16” wrench socket to tighten the 3/8” flat washers (included with cabinet), 3/8” lock washers and 11/16” stainless steel hex nuts (originally included on the batteries). Tighten the nuts to 160 in-lbs.

Interconnecting busbars are not included with Enclosure, please refer to Table 3 for ordering guidance.



CAUTION: Do not place any material (such as a washer) between the large brass nut at the base of the battery terminal and the interconnect. (Refer to the [Connecting a busbar to terminals on a SimpliPhi battery video](#).)

Figure 3 – Interconnecting Busbars Attach to PHI Battery Terminals



**3 Battery Busbars =
SKU# BB-3-6**

**2 Battery Busbars =
SKU# BB-2-6**

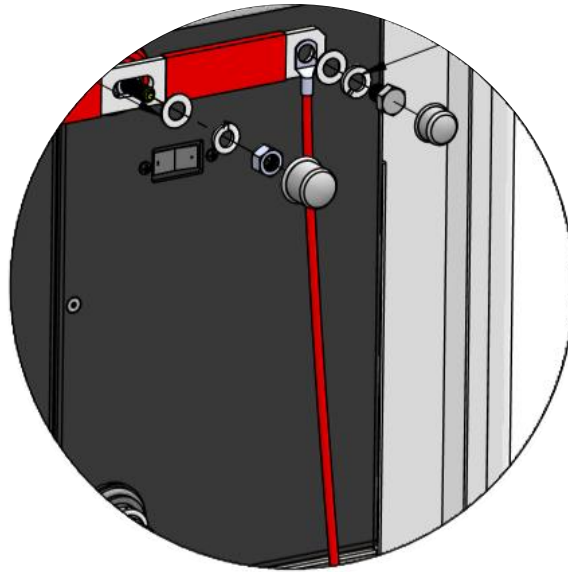
Interconnecting busbars are not included with Enclosure, please refer to Table 3 for ordering guidance.

10. Wire the negative interconnecting busbar(s) (used to parallel the batteries) to the built-in negative 5-point terminal block.

- i) Secure the included cable to the ends of each negative interconnecting busbar (two cables total are needed for two negative interconnecting busbars).

(1) Busbars and cables are not included, but recommendations as outlined in Table 3 of this Manual may be purchased directly from SimpliPhi. Otherwise, the installer may size busbar-to-terminal block cables according to the number of batteries connected in parallel and in accordance with local codes and purchase separately.

(2) When busbar kits are ordered from SimpliPhi or from a SimpliPhi distributor, they will come with the 3/8" flat washers, 3/8" lock washers and 3/8"-1.6 1/2"-long brass hex head screws needed to secure cables to the ends of the busbars, along with the correct positive and negative cables to wire from the bus bars to the terminal blocks. These connections should tighten to a torque value of 120 in-lbs.



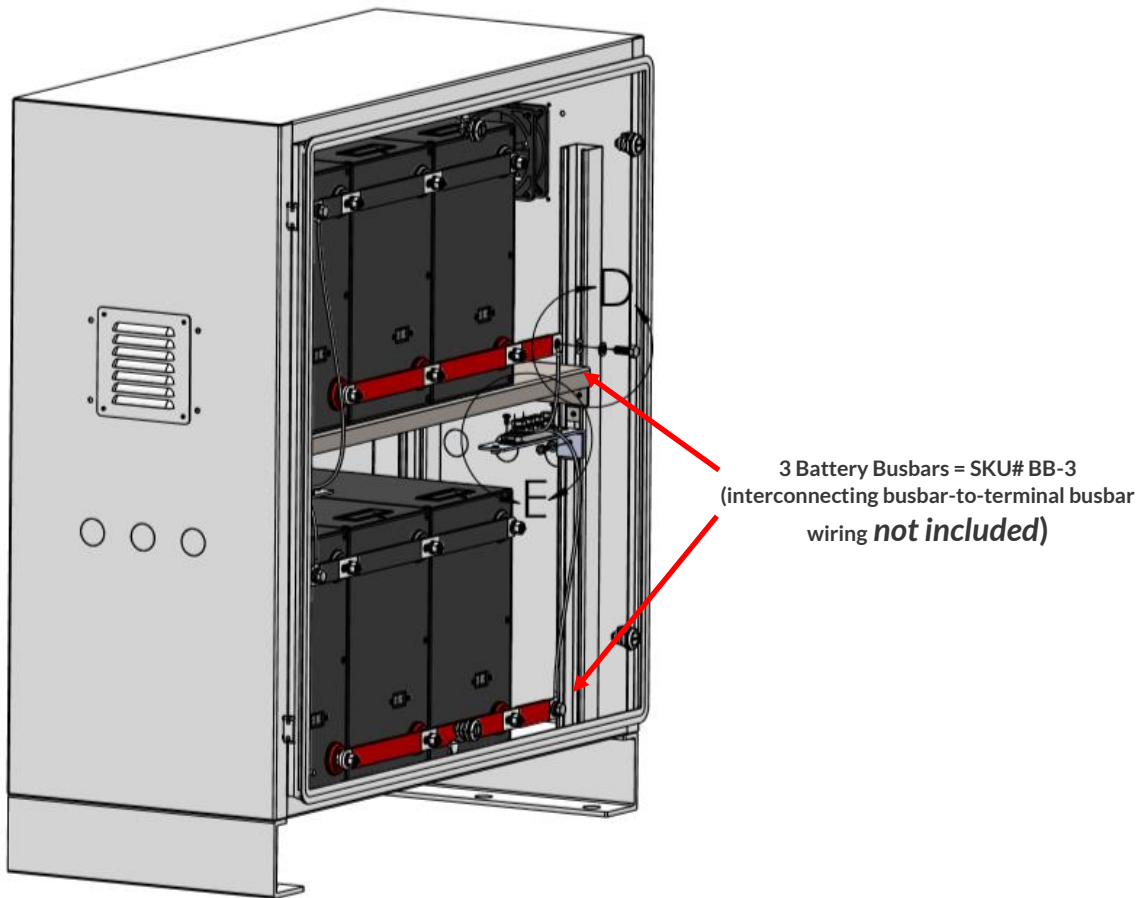
- b) Secure the cable lug(s) to the negative 5-point terminal block using a 7/16" wrench socket to tighten the 1/4"-20 nut(s). The cables should include 3/8" lugs to fit onto the 3/8" posts on the 5-point terminal block.

11. Wire the positive interconnecting busbar(s) to the built-in positive 5-point terminal block.

- i) Secure the included cable to each positive interconnecting busbar.

- ii) Secure the cable lug(s) to the positive 5-point terminal block using a 17mm wrench socket to tighten the 1/4"-20 nut(s). The cables should include 3/8" lugs to fit onto the 3/8" posts on the 5-point terminal block.

Figure 4 – Cables Wired from Each Interconnecting Busbar to the 5-Point Terminal Busbar



- 12. Route battery-to-inverter cables, included with the BOSS.6 Enclosure through conduit (**not included**) using the desired knockouts on the side of the BOSS.6 Enclosure. DC Positive and DC Negative cables run from the Enclosure's 5-point terminal blocks to the inverter power panel of any equipment compatible with SimpliPhi's batteries (refer to the Integration Guides listed in the Product

Documentation section of SimpliPhi's web page for a list of compatible equipment:

<https://simpliphipower.com/product-documentation/>.

13. Set the circuit breakers for all battery modules to the ON position. PHI batteries must be fully charged before commissioning.



CAUTION: Turn the inverter's main DC Disconnect on only **AFTER ALL** the built-in circuit breakers in the PHI Battery bank are turned on. (Refer to the System Commissioning SimpliPhi battery video.)

This completes the installation procedure for the BOSS.6 Enclosure.



Remember, all Balance of System equipment must be programmed to SimpliPhi's specified settings and PHI batteries must be fully charged before commissioning the system (i.e. before connecting the batteries to any loads).

4.0 – Care & Maintenance

The BOSS.6 Enclosure is designed to deliver many years of reliable service in a wide variety of environments. The BOSS.6 is resistant to most environmental elements, but should be isolated from excessive water or moisture, extreme heat, solvents, flammable materials, and environmental hazards.

If the BOSS.6 becomes dirty or grimy, wipe it as you would any kitchen cabinet. Do not use a pressure washer or hose to clean the BOSS.6.

5.0 – Technical Support

For technical support related to your BOSS.6 Enclosure, please contact us as at:

805.640.6700

techsupport@simpliphipower.com