

## Profile Wizard

In the MATE3s system display, the **Profile Wizard** allows quick setup of parameters that apply to all systems. The **Profile Wizard** is reached from the **Main Menu** as shown in **B**.

The Profile Wizard is useful for rapid setup of multiple parameters including date, time, battery charging, AC source size and limits, and system type. It can also configure functions such as **High Battery Transfer** and **Grid Use** times. Note that the last two items are not available if the System Type is set to **Off Grid**.

**NOTE:** The Wizard does not configure the entire system. For example, it does not select AC input modes for the FXR inverter, parameters for automatic generators, or "fully charged" parameters if the FLEXnet DC battery monitor is in use. If settings are made in the wrong order, the Wizard can overwrite some customized settings.

See the literature for the system display and FXR inverter for more information on all of these topics.

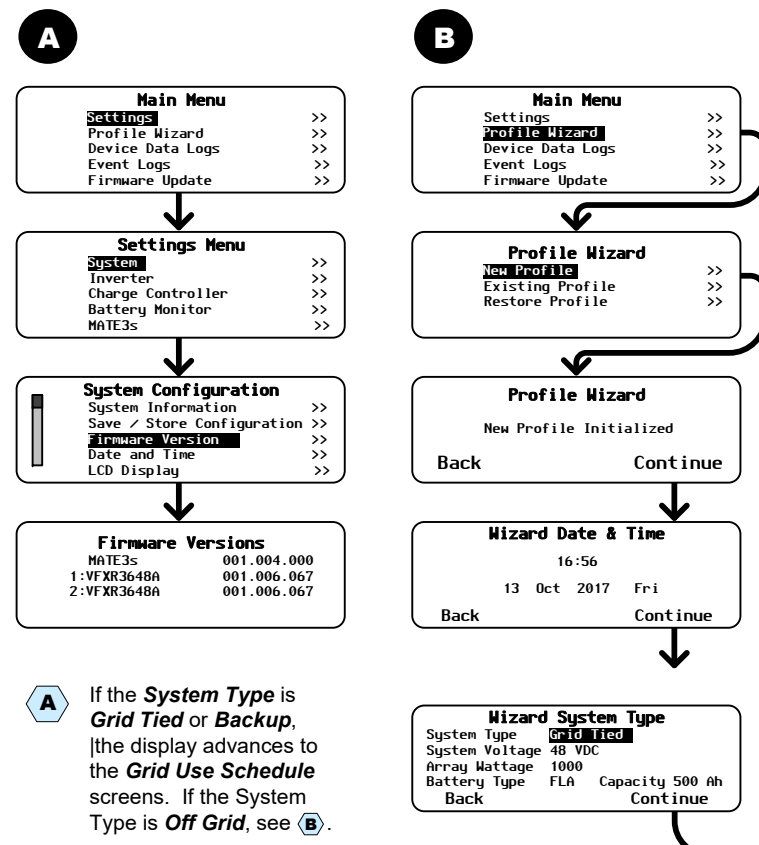
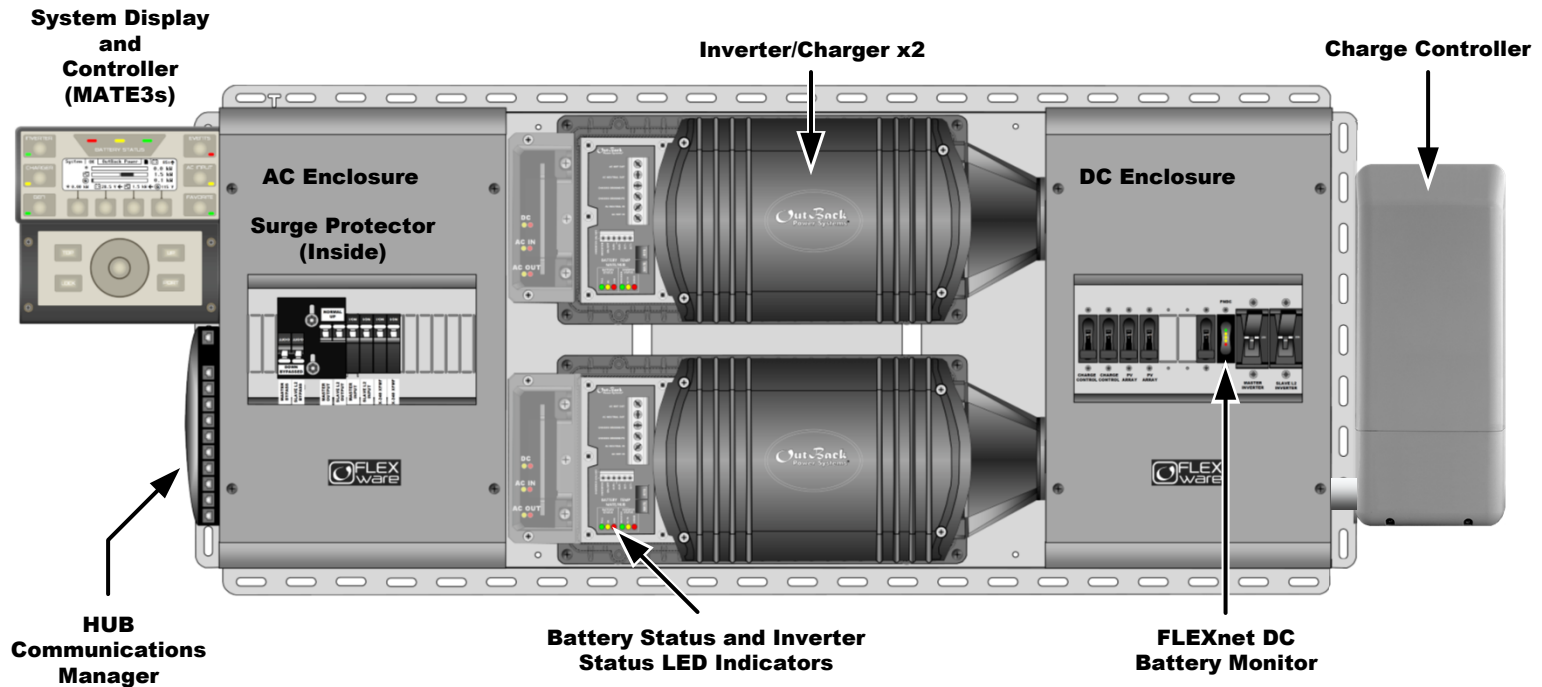
The firmware revision of most devices can be confirmed by navigating from the **Main Menu** as shown in **A**. Upgrades to the firmware revision of certain devices can be downloaded from the OutBack website [www.outbackpower.com](http://www.outbackpower.com).

**CAUTION: Equipment Damage**

These procedures should be done by a qualified installer who is trained on programming inverter power systems. Failure to set accurate system parameters could potentially cause equipment damage. Damage caused by inaccurate programming is not covered by the limited system warranty.

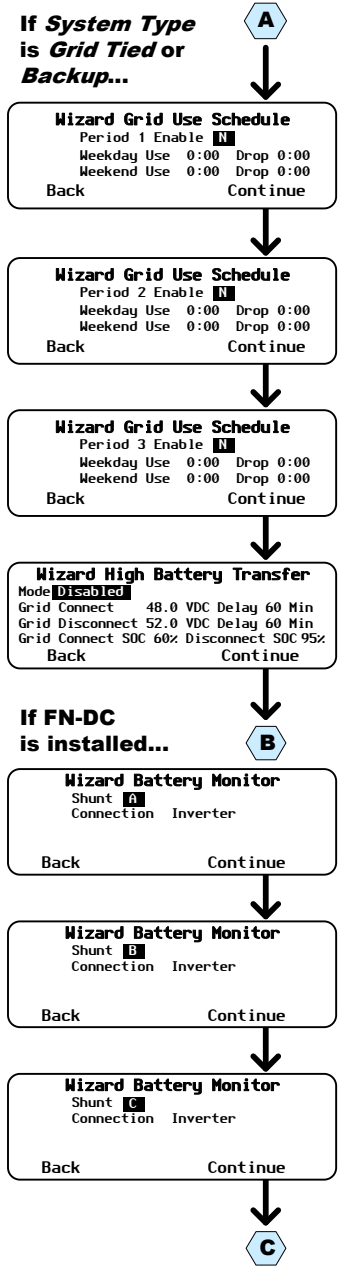
**IMPORTANT**

- Ensure all settings are correct for the system. The Profile Wizard can be used for rapid setup. For Grid Support functions it may be necessary to load a .GIP file.
- Verify the firmware revision of all OutBack devices before use. The Radian inverter and system display may not communicate or operate correctly unless their firmware is above a specified revision number.
- For firmware and .GIP file installation, see the *Installation Manual*. For settings and functions, see the *Operator's Manual*.



- A** If the **System Type** is **Grid Tied** or **Backup**, the display advances to the **Grid Use Schedule** screens. If the System Type is **Off Grid**, see **B**.
- B** If the FLEXnet DC is installed, the display advances to the **Shunt** screens. If the FLEXnet DC is not installed, see **C**.
- C** This advances the display to the **Setup Complete** screen.

**Date and Revision**  
October 2019, Revision C



Major Components	
FLEXpower System Products	
Inverter/Chargers (x2)	
AC Conduit Box (with Bypass Assembly)	
DC Enclosure Box (with Inverter Circuit Breakers)	
System Display and Controller	
Charge Controller	
Communications Manager	
FLEXnet DC Monitor (FN-DC)	
Surge Protector	
Remote Temperature Sensor (RTS)	
Ground Fault Detector/Interruptor (GFDI) (not all systems; see <b>IMPORTANT</b> )	

Customer-Supplied Components	
AC Source (Utility Grid or AC Generator)	
Main Electrical Panel (or overcurrent device for the AC source)	
Electrical Distribution Subpanel (Load Panel)	
Battery Bank	
Photovoltaic (PV) Array (with PV Combiner Box if needed)	

LED Indicators on the Inverter				
Battery Status LED Indicators				
Color	12 V Inverter	24 V Inverter	48 V Inverter	
Green	12.5 Vdc or higher	25.0 Vdc or higher	50.0 Vdc or higher	
Yellow	11.5 to 12.4 Vdc	23.0 to 24.8 Vdc	46.0 to 49.6 Vdc	
Red	11.4 Vdc or lower	22.8 Vdc or lower	45.6 Vdc or lower	
Inverter Status LED Indicators				
Green	Inverter on (solid) or standing by (flash)			
Yellow	AC source in use (solid) or standing by (flash)			
Red	Inverter error or warning (see manual)			

Surge Protector LEDs		
Active	Error	Phase
Yellow	Red	DC
Yellow	Red	AC IN
Yellow	Red	AC OUT

FN-DC LED Indicators	
Color	Battery State-of-Charge
Green	> 90% (blinks if charge parameters are met)
Yellow	≥ 80%
Yellow	≥ 70%
Yellow	≥ 60%
Red	≥ 60% off, < 60% solid, < 50% blinks

**IMPORTANT**

- Check all connections for tightness. They may have loosened in transport.
- Before operating, perform a complete charge cycle until the FN-DC registers a full battery bank.
- Systems equipped with the FM100-AFCI have both AFCI and GFDI functionality.

**IMPORTANT:**  
Not intended for use with life support equipment.

**OPTICS RE Compatible**



**WARNING: Fire/Explosion Hazard**  
Do not place combustible or flammable materials within 12 feet (3.7 m) of the equipment. This unit employs mechanical relays and is not ignition-protected. Fumes or spills from flammable materials could be ignited by sparks.

**WARNING: Personal Injury**  
Use safe lifting techniques and standard safety equipment when working with this equipment.

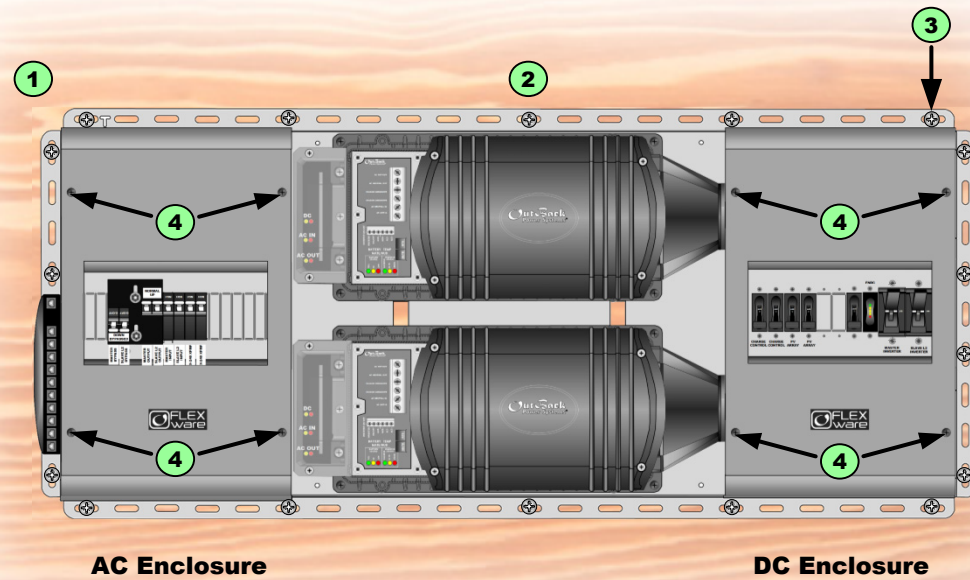
**IMPORTANT:**  
Clearance and access requirements may vary by location. Maintaining a 36" (91.4 cm) clear space in front of the system for access is recommended. Consult local electric code to confirm clearance and access requirements for the specific location.

## FP2 Mounting:

## FP2 Dimensions:

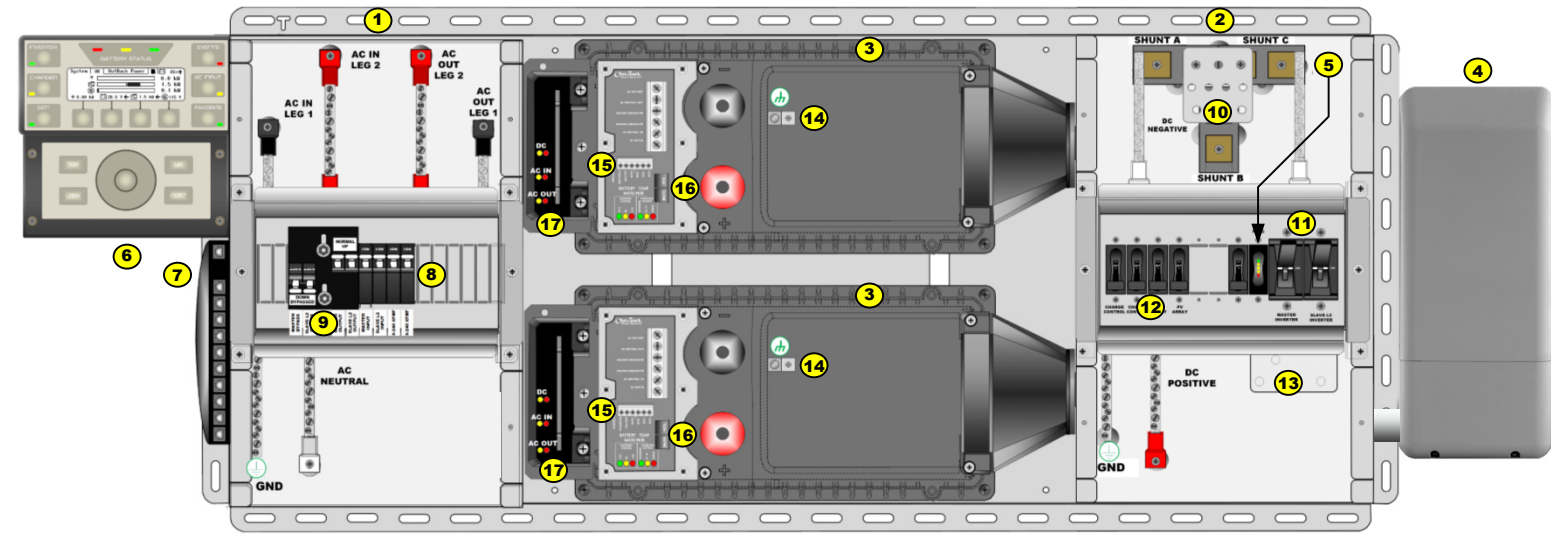
20.25" (51.4 cm) H × 46.5" (118.1 cm) W × 13.5" (34.3 cm) D

- 1 Ensure the mounting surface is strong enough to handle 3 times the total weight of all the components.
- 2 Using additional people to assist with lifting, place the panel on the wall. Ensure the panel is level.
- 3 Secure the panel into the surface using a minimum of 10 lag bolts (or other appropriate hardware).
- 4 Remove the covers from the AC Enclosure and the DC Enclosure.
- 5 Follow the instructions for installing the MATE3s mounting bracket.
- 6 Follow the instructions for installing charge controllers. The illustration below shows bracket mounting for the FM60 or FM80. The FM100 does not attach to the FP2.



AC Enclosure

DC Enclosure



- 1 AC Enclosure
- 2 DC Enclosure
- 3 Inverter
- 4 Charge Controller, FM\_\_\_\_ (including PV, battery, ground, and Aux terminals, RTS port and communication port)
- 5 FLEXnet DC (FN-DC) (including communication port)
- 6 MATE3s System Display and Controller
- 7 HUB10.3 Communication Manager
- 8 AC Circuit Breakers
- 9 Mechanical Interlock (Bypass)
- 10 DC Negative (-) Plate
- 11 Battery (DC) Circuit Breakers
- 12 PV Input Circuit Breakers (may include GFDI)
- 13 DC Positive (+) Plate
- 14 Inverter Chassis Ground
- 15 Aux Output and ON/OFF Terminals
- 16 RTS and Communication Ports
- 17 Surge Protector

## AC Wire Sizes and Torque Values

Wire Size	Torque	
	In-lb	Nm
#14 to 10	20	2.3
#8	25	2.8
#6 to 4	35	4.0
#3	35	4.0
#2	40	4.5
#1	50	5.6
1/0	70	5.6

OutBack recommends that conductors be #6 AWG THHN copper, or larger, rated to 75°C (minimum) unless local code requires otherwise.

## Torque requirements for the conductor lugs

Circuit Breaker Stud	Torque	
	In-lb	Nm
M8	20	2.3
1/4 - 20	35	4.0
5/16 - 18	50	5.6
3/8 - 16	225	25.4

## Minimum DC Cable based on the DC Circuit Breaker

DC Circuit Breaker	Cable Size	Torque	
		In-lb	Nm
60	#6 AWG (16 mm <sup>2</sup> )	35	4.0
80	#4 AWG (25 mm <sup>2</sup> )	35	4.0
125	1/0 (70 mm <sup>2</sup> )	50	5.6
175	2/0 (70 mm <sup>2</sup> )	225	25.4
250	4/0 (120 mm <sup>2</sup> )	225	25.4

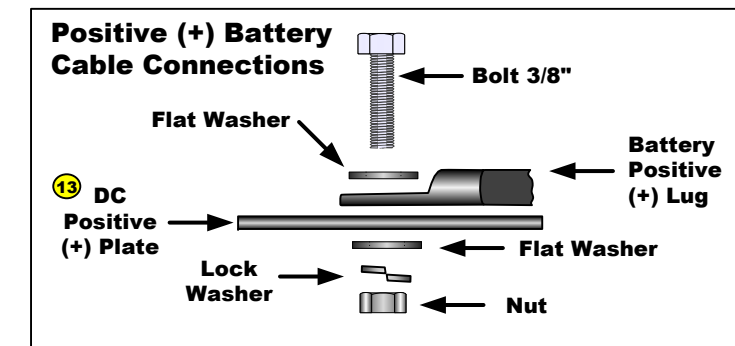
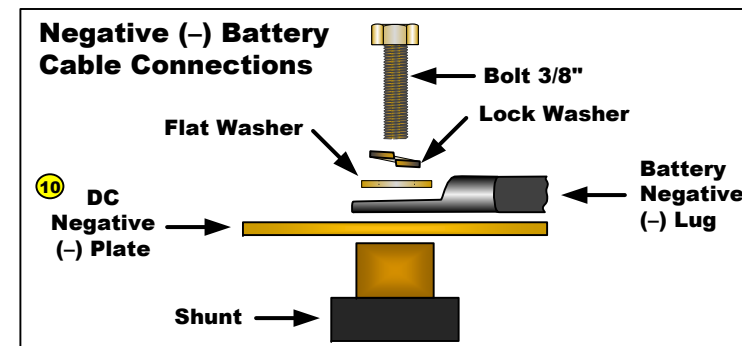
**Control Wiring Terminal Block:**

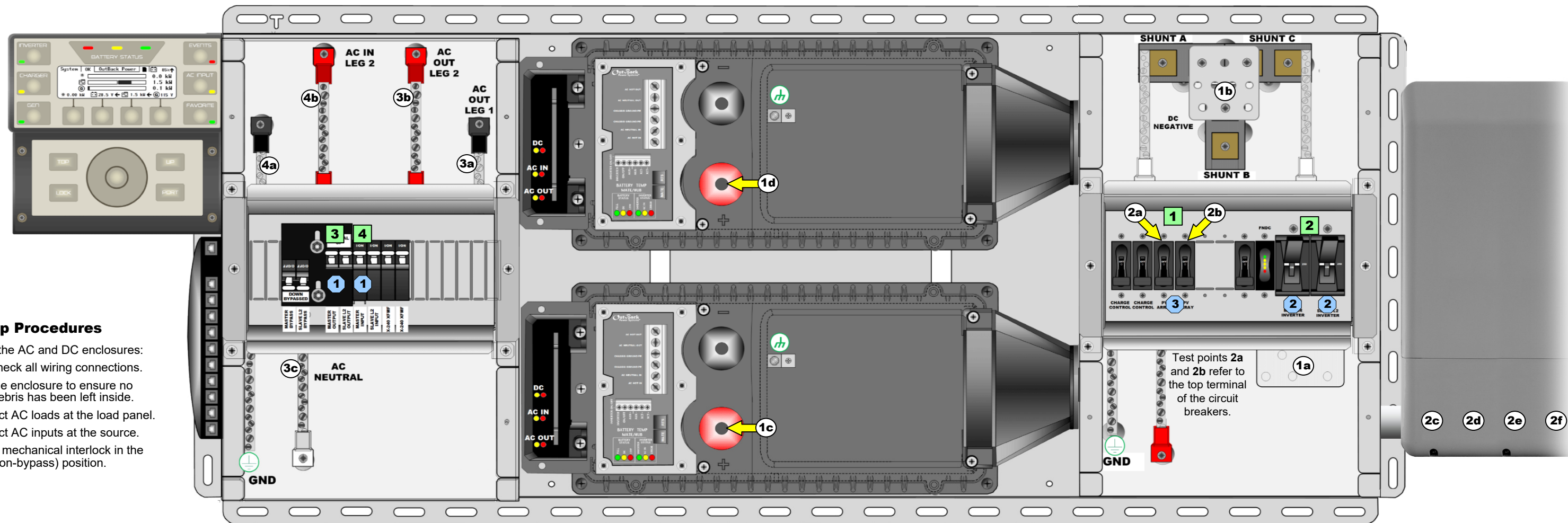
The INVERTER ON/OFF terminals are used to connect an external ON/OFF switch. To use this feature, the jumper must be removed. (See installation manual for details.)

The Aux terminals provide a 12 Vdc signal. The Aux terminals can be used to start a generator or to control external devices.

Aux terminals are also available on the charge controller and the FLEXnet DC. (See the charge controller or FN-DC literature for details.)

**CAUTION: Equipment Damage**  
When connecting cables from the inverter to the battery terminals, ensure the proper polarity is observed. Connecting the cables incorrectly can damage or destroy the equipment and void the product warranty.





### Pre-startup Procedures

After opening the AC and DC enclosures:

1. Double-check all wiring connections.
2. Inspect the enclosure to ensure no tools or debris has been left inside.
3. Disconnect AC loads at the load panel.
4. Disconnect AC inputs at the source.
5. Place the mechanical interlock in the normal (non-bypass) position.

### Functional Test Points

<b>Battery Voltage Test Points</b>	
(1a) (1b) (1c) (1d)	
<b>PV Voltage Test Points</b>	
(2a) (2b)	Charge controller disconnect (and second charge controller if present)
(2c) (2d)	PV + and - (charge controller)
(2e) (2f)	PV + and - (second charge controller if present)
<b>AC OUT Voltage Test Points</b> (Terminal bus bar = TBB)	
(3a) (3b) (3c)	
<b>AC IN Voltage Test Points</b> (Terminal bus bar = TBB)	
(4a) (4b) (3c)	

### To energize or start up the OutBack devices:

1. Using a digital voltmeter (DVM), verify 12, 24, or 48 Vdc on the DC input terminals by placing the DVM leads on (1a) and (1b). Confirm that the voltage is correct for the inverter and charge controller models. **Confirm the polarity.**
  2. Verify that the PV input for each charge controller is in the correct range of open-circuit voltage and confirm the polarity by:
    - a) placing the DVM leads on (2a) and (1b), and
    - b) placing the DVM leads on (2b) and (1b) (if a second charge controller is present).
  3. Verify 120/240 Vac on the terminals of the AC source and connect the source.
  4. Verify 120 Vac on the **AC INPUT L1** TBB by placing the DVM leads on (4a) and (3c).
  5. Verify 120 Vac on the **AC INPUT L2** TBB (4b) and (3c).
  6. Verify 240 Vac between the **AC INPUT** TBBs by placing the DVM leads on (4a) and (4b).
  7. Turn on the GFDI circuit breaker if present. Turn on (close) the PV input circuit breakers. **1**
  8. Turn on (close) the DC circuit breakers from the battery bank to the inverter. **2**  
**NOTE:** The factory labeling on these circuit breakers may not be correct.
  9. Check the system display or LED indicators. Ensure the inverter is in the **ON** state. The factory default state for FXR inverters is **OFF**.
  10. Turn on (close) the FN-DC circuit breaker.
  11. Turn on (close) the AC output circuit breakers. **3**
  12. Verify 120 Vac on the **AC OUTPUT L1** TBB by placing the DVM leads on (3a) and (3c).
  13. Verify 120 Vac on the **AC OUTPUT L2** TBB (3b) and (3c).
  14. Verify 240 Vac between the **AC OUTPUT** TBBs by placing the DVM leads on (3a) and (3b).
- NOTE:** Assumes correct stacking programming (see inverter literature).
15. Replace the covers on the AC and DC enclosures.
  16. Turn on (close) the AC input circuit breakers. **4**
  17. Turn on the AC disconnects at the load panel and test the loads.

**CAUTION: Equipment Damage**  
Incorrect battery polarity will damage the equipment.

### To de-energize or shut down the OutBack devices:

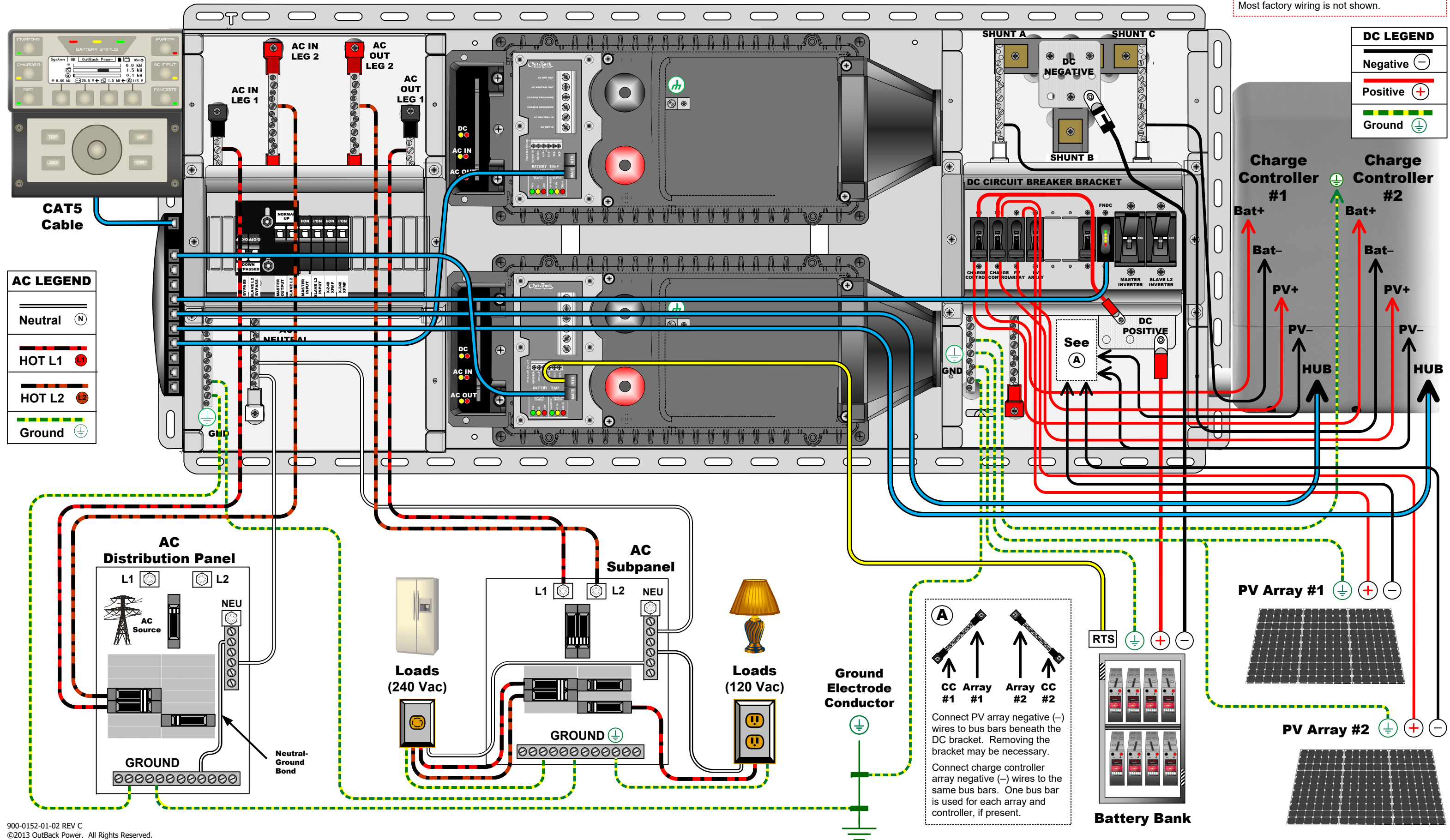
1. Turn off (open) the AC circuit breakers. **1**
2. Turn off (open) the DC circuit breakers for the battery. **2**  
Wait 5 minutes for the devices to internally discharge themselves.
3. Turn off (open) the PV circuit breakers. Turn off the GFDI if present. **3**  
**NOTE:** To completely de-energize the product for safety, disconnect all incoming PV circuits and AC sources outside the FLEXpower TWO.
4. Verify 0 Vdc on the DC input terminal of the L1 inverter by placing the voltmeter leads on (1b) and (1c).
5. Verify 0 Vdc on the DC input terminal of the L2 inverter by placing the voltmeter leads on (1b) and (1d).
6. Verify 0 Vdc on the PV terminals of one charge controller by placing the voltmeter leads on (2c) and (2d).
7. Verify 0 Vdc on the PV terminals of the other charge controller (if present) by placing the voltmeter leads on (2e) and (2f).
8. Verify 0 Vac on the AC output circuit breakers by placing the voltmeter leads on (3a) and (3c). Repeat this step for (3b) and (3c).

**WARNING: Lethal Voltage**  
Review the system configuration to identify all possible sources of energy. Ensure ALL sources of power are disconnected before performing any installation or maintenance on this equipment. Confirm that the terminals are de-energized using a validated voltmeter (rated for a minimum 1000 Vac and 1000 Vdc) to verify the de-energized condition.

**WARNING: Lethal Voltage**  
The numbered steps will remove power from the inverter and charge controllers. However, sources of energy may still be present in the AC and DC wiring boxes. To ensure absolute safety, disconnect ALL power connections at the source.

**WARNING: Burn Hazard**  
Internal parts can become hot during operation. Do not remove the cover during operation or touch any internal parts. Be sure to allow the parts sufficient time to cool down before attempting to perform any maintenance.

**IMPORTANT:** Example only. Actual wiring may vary depending on local electric code. Most factory wiring is not shown.



**AC LEGEND**

Neutral	(N)
HOT L1	(L1)
HOT L2	(L2)
Ground	(GND)

**DC LEGEND**

Negative	(-)
Positive	(+)
Ground	(GND)

**A**

CC Array #1    Array CC #2

Connect PV array negative (-) wires to bus bars beneath the DC bracket. Removing the bracket may be necessary.

Connect charge controller array negative (-) wires to the same bus bars. One bus bar is used for each array and controller, if present.