

Profile Wizard

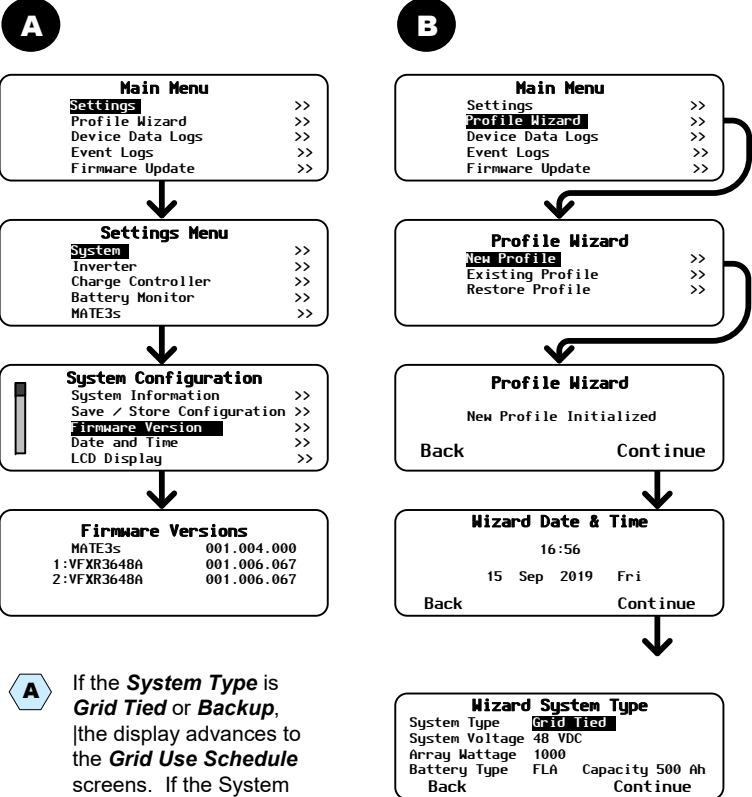
In the MATE3s system display, the **Profile Wizard** allows quick setup of parameters that apply to all systems. The **Profile Wizard** is reached from the **Main Menu** as shown in **A**.

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 or from the AOE website www.alpha-outback-energy.com.



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.



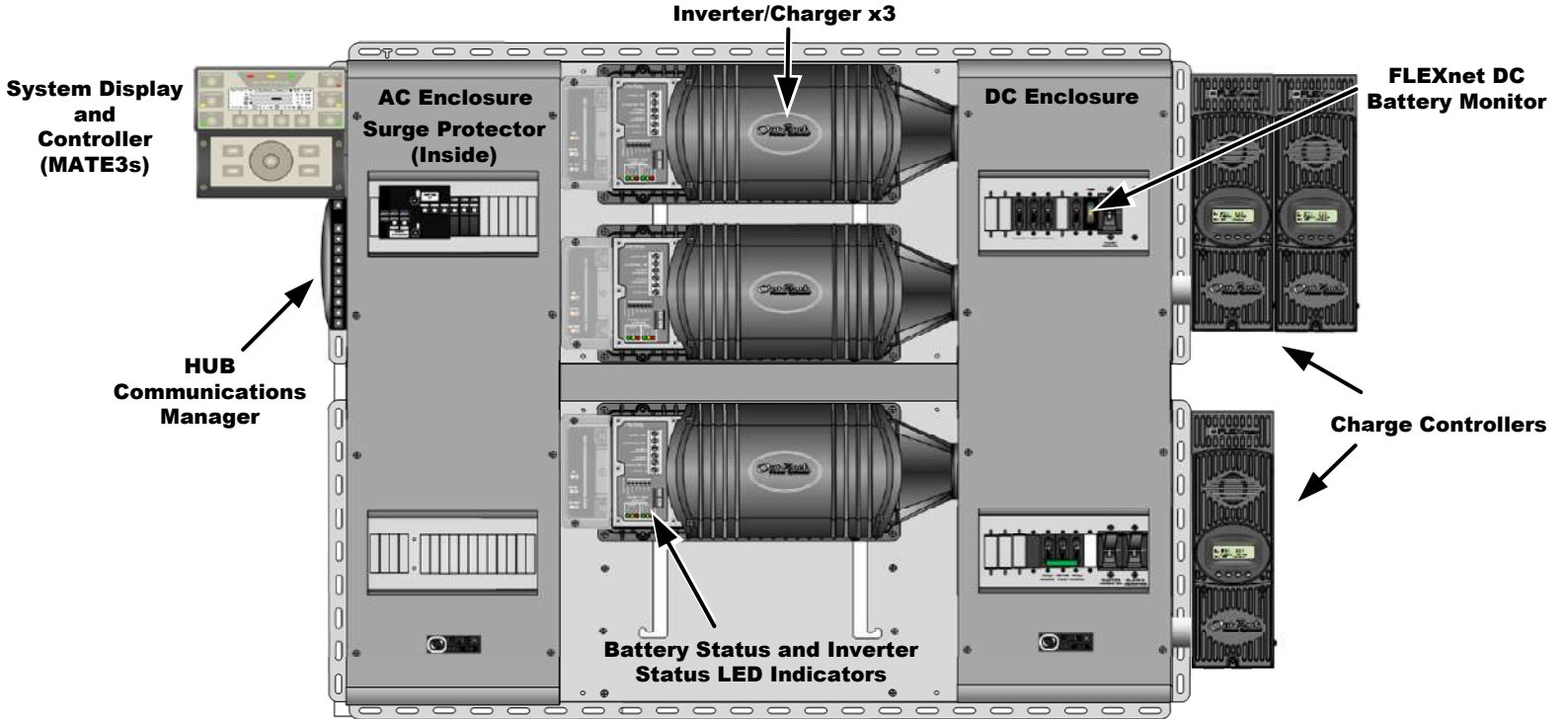
CAUTION: Equipment Damage

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 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*.



Major Components	
FLEXpower System Products	
Inverter/Chargers (x3)	
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)	

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

IMPORTANT: Not intended for use with life support equipment.



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

OPTICS RE Compatible

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.



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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.

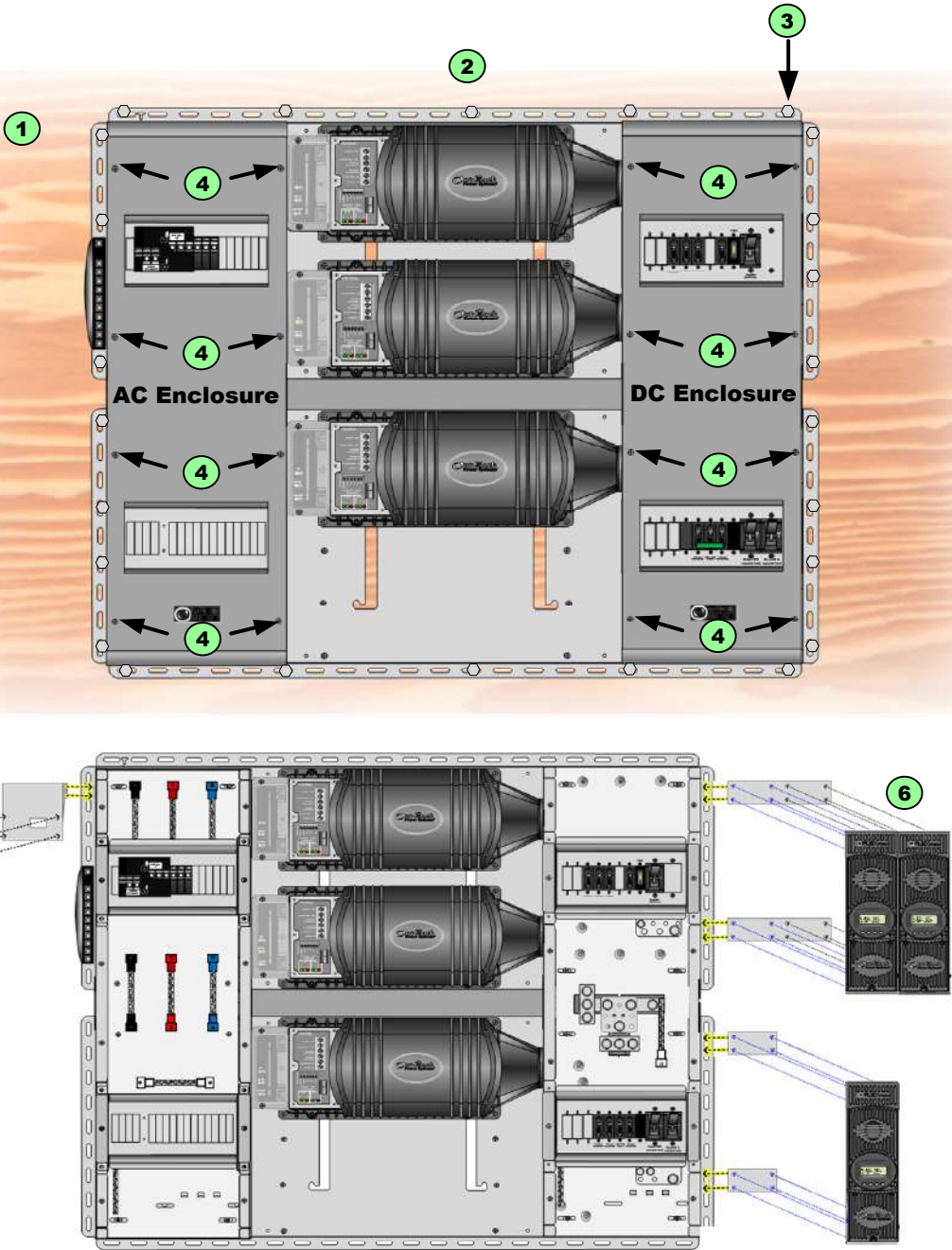
IMPORTANT:
Clearance and access requirements may vary by location. Maintaining a 36" (91.4 cm) clear space in front of the system for access is recommended. Consult local electric code to confirm clearance and access requirements for the specific location.

FP3 Mounting:

FP3 Dimensions:

46" (116.8 cm) H × 58.4" (148.4 cm) W × 13" (33 cm) D

- 1
- Ensure the mounting surface is strong enough to handle 3 times the total weight of all the components (433 lb / 96 kg).
- 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 20 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 FP3.



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	
AWG	mm ²	In-lb	Nm
#14 to 10	2.5 to 6	20	2.3
#8	10	25	2.8
#6 to 4	16 to 25	35	4.0
#3	35	35	4.0
#2	35	40	4.5
#1	50	50	5.6
1/0	70	50	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

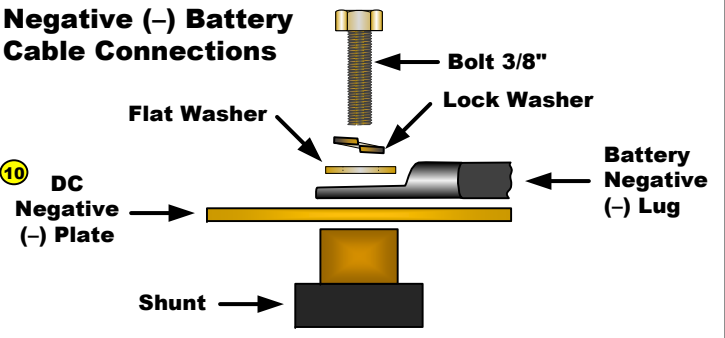
Minimum DC Cable based on the DC Circuit Breaker

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

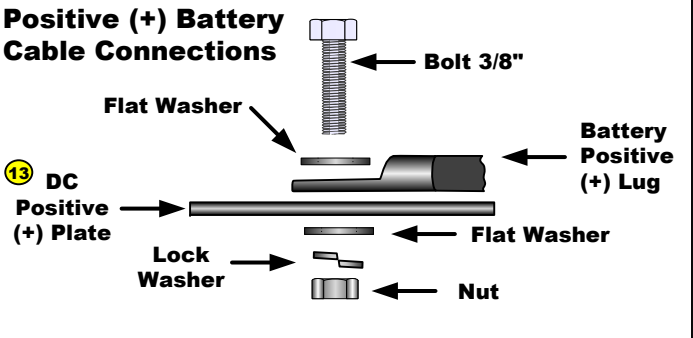
Control Wiring Terminal Block:
The INVERTER ON/OFF terminals are used to connect an external ON/OFF switch. To use this feature, the jumper must be removed. (See installation manual for details.)
The Aux terminals provide a 12 Vdc signal. The Aux terminals can be used to start a generator or to control 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.

Negative (-) Battery Cable Connections



Positive (+) Battery Cable Connections



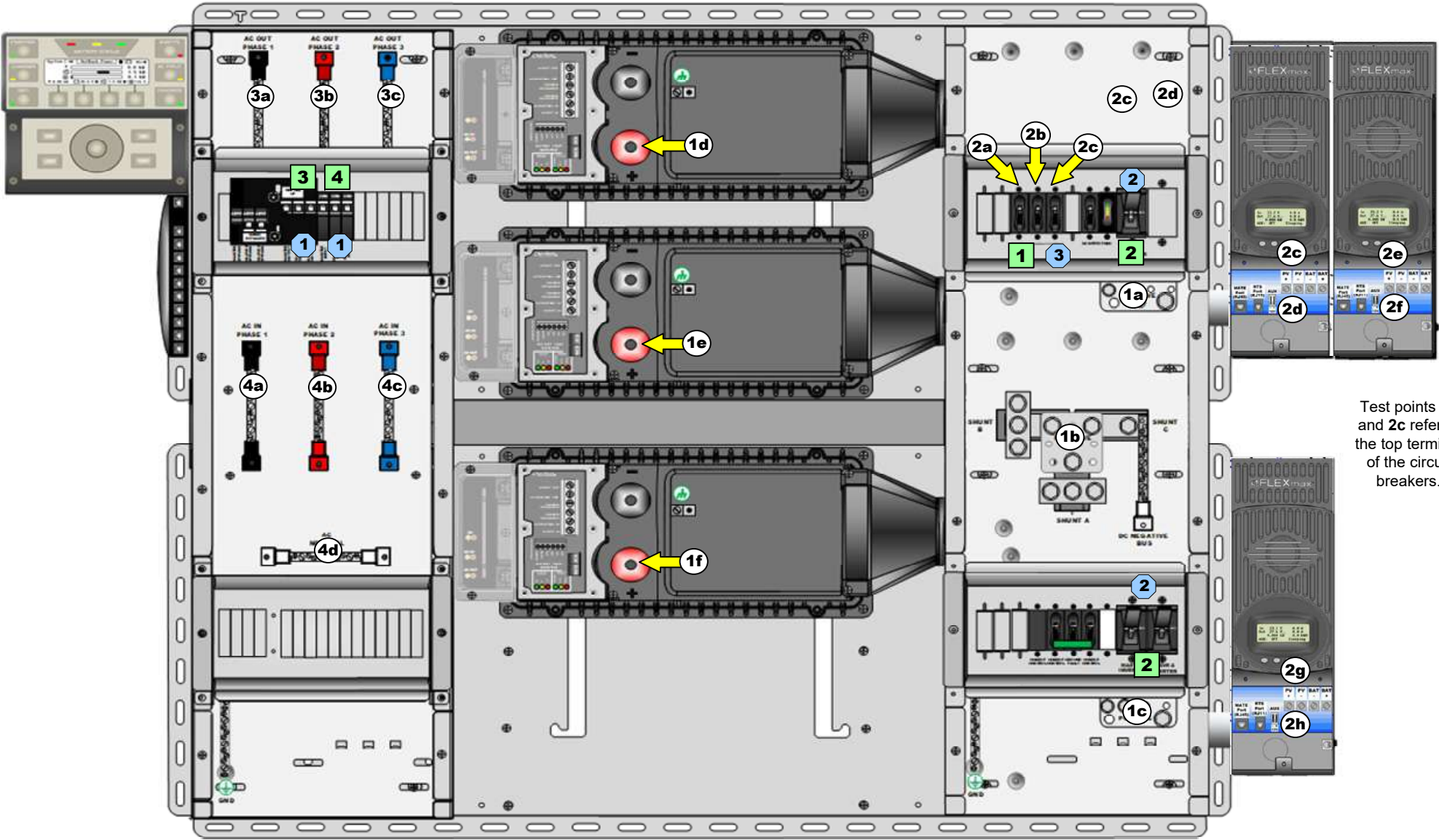
Pre-startup Procedures

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

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



Test points 2a and 2c refer to the top terminal of the circuit breakers.



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.

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 then 1c 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), and
c) placing the DVM leads on 2c and 1b (if a third charge controller is present).
3. Verify 120/208 Vac on the terminals of the AC source and connect the source.
4. Verify 120 Vac on the AC INPUT P1 TBB by placing the DVM leads on 4a and 4d.
5. Verify 120 Vac on the AC INPUT P2 TBB 4b and 4d.
6. Verify 120 Vac on the AC INPUT P3 TBB 4c and 4d.
7. Verify 208 Vac between the AC INPUT TBBs by placing the DVM leads on 4a and 4b, then on 4a and 4c, and finally on 4b and 4c. See **IMPORTANT** note to right.

8. Turn on the GFDI circuit breaker if present. Turn on (close) the PV input circuit breakers. 1
 9. Turn on (close) the DC circuit breakers from the battery bank to the inverter. 2
- NOTE:** The labeling on these circuit breakers may not be correct.
10. Check the system display or LED indicators. Ensure the inverter is in the ON state. The factory default state for FXR inverters is OFF.
 11. Turn on (close) the FN-DC circuit breaker.
 12. Turn on (close) the AC output circuit breakers. 3
 13. Verify 120 Vac on the AC OUTPUT P1 TBB by placing the DVM leads on 3a and 4d.
 14. Verify 120 Vac on the AC OUTPUT P2 TBB 3b and 4d.
 15. Verify 120 Vac on the AC OUTPUT P3 TBB 3c and 4d.
 15. Verify 208 Vac between the AC OUTPUT TBBs by placing the DVM leads on 3a and 3b, then on 3a and 3c, finally on 3b and 3c.
- NOTE:** Assumes correct stacking programming (see "Important" note on opposite page).
16. Replace the covers on the AC and DC enclosures.
 17. Turn on (close) the AC input circuit breakers. 4
 18. Turn on the AC disconnects at the load panel and test the loads.

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 THREE.

4. Verify 0 Vdc on the DC input terminal of the P1 inverter by placing the voltmeter leads on 1d and 1c.
5. Verify 0 Vdc on the DC input terminal of the P2 inverter by placing the voltmeter leads on 1e and 1c.
6. Verify 0 Vdc on the DC input terminal of the P3 inverter by placing the voltmeter leads on 1f and 1c.
7. Verify 0 Vdc on the PV terminals of each charge controller by placing the voltmeter leads on 6a and 6b. **NOTE:** 6b is not wired from the factory, but is still electrically common with other negative (-) terminals.
8. Verify 0 Vac on the AC output circuit breakers by placing the voltmeter leads on 3a and 4d, 3b and 4d, and finally 3c and 4d.



CAUTION: Equipment Damage

Incorrect battery polarity will damage the equipment.



IMPORTANT

To work correctly in 3-Phase mode, inverter stacking must be correctly configured in the MATE3s.

- ❖ Set **Stack Mode** to **Master** on Port 1
- ❖ Set **Stack Mode** to **B Phase Master** on Port 4
- ❖ Set **Stack Mode** to **C Phase Master** on Port 7
- ❖ If the system gives a **Stacking Error**, the input has been connected out of phase. This can usually be corrected by swapping any two input wires (inputs 1, 2, or 3)

General Wiring (for three charge controllers)

