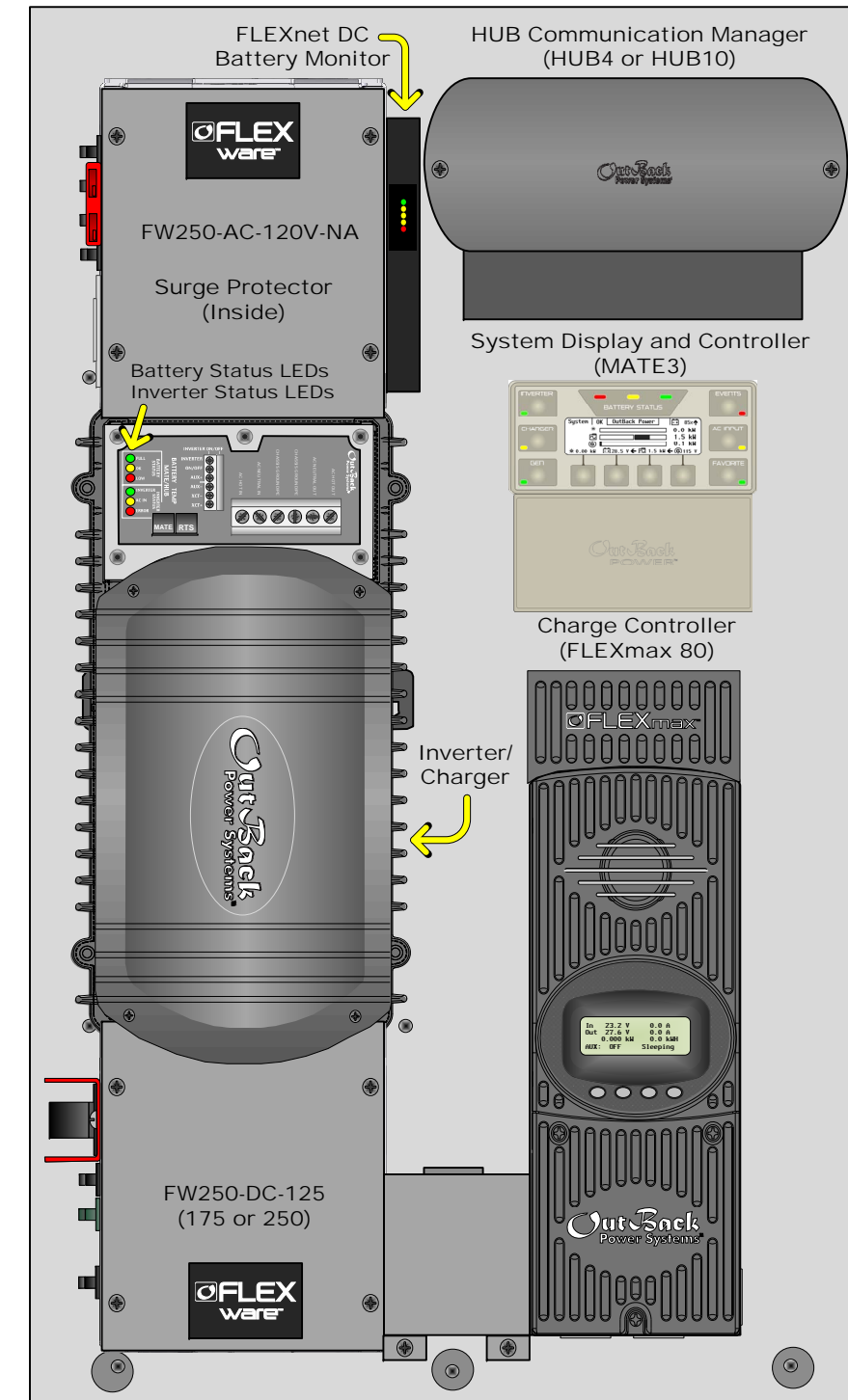
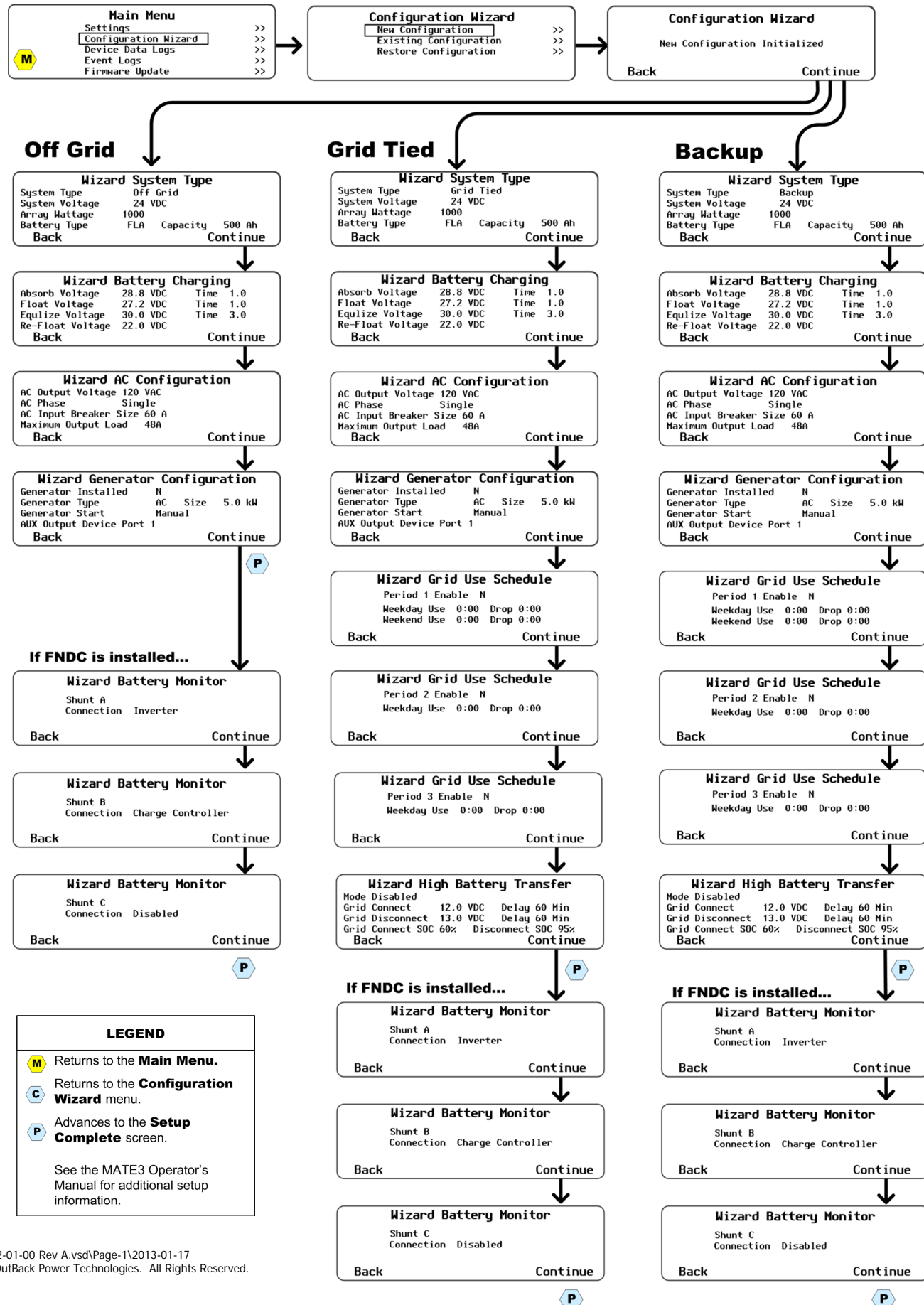


### IMPORTANT:

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



Major Components	
FLEXpower System Products	
Inverter/Charger	FX Series VFX Series GTFX Series GVFX Series GFX Series
AC Conduit Box	FW250-AC-120V-NA
DC Conduit Box	FW250-DC-125 FW250-DC-175 FW250-DC-250
System Display and Controller	MATE2 MATE3
Charge Controller	FLEXmax 60 FLEXmax 80
Communications Manager	HUB4 HUB10
Remote Temp Sensor	RTS
FLEXnet DC Monitor	FNDC
Surge Protector	FW-SP-ACA
Customer-Supplied Components	
AC Source	Utility Grid, or AC Generator
Main Electrical Panel (or overcurrent device for AC source)	
Electrical Distribution Subpanel (Load Panel)	
Battery Bank	
Photovoltaic (PV) Array (with PV Combiner Box [PV8 or PV12])	

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

FNDC 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

Contact Technical Support:  
Telephone: +1.360.618.4363  
Email: Support@outbackpower.com  
Website: www.outbackpower.com

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



**⚡ 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.

### FP1 Dimensions:

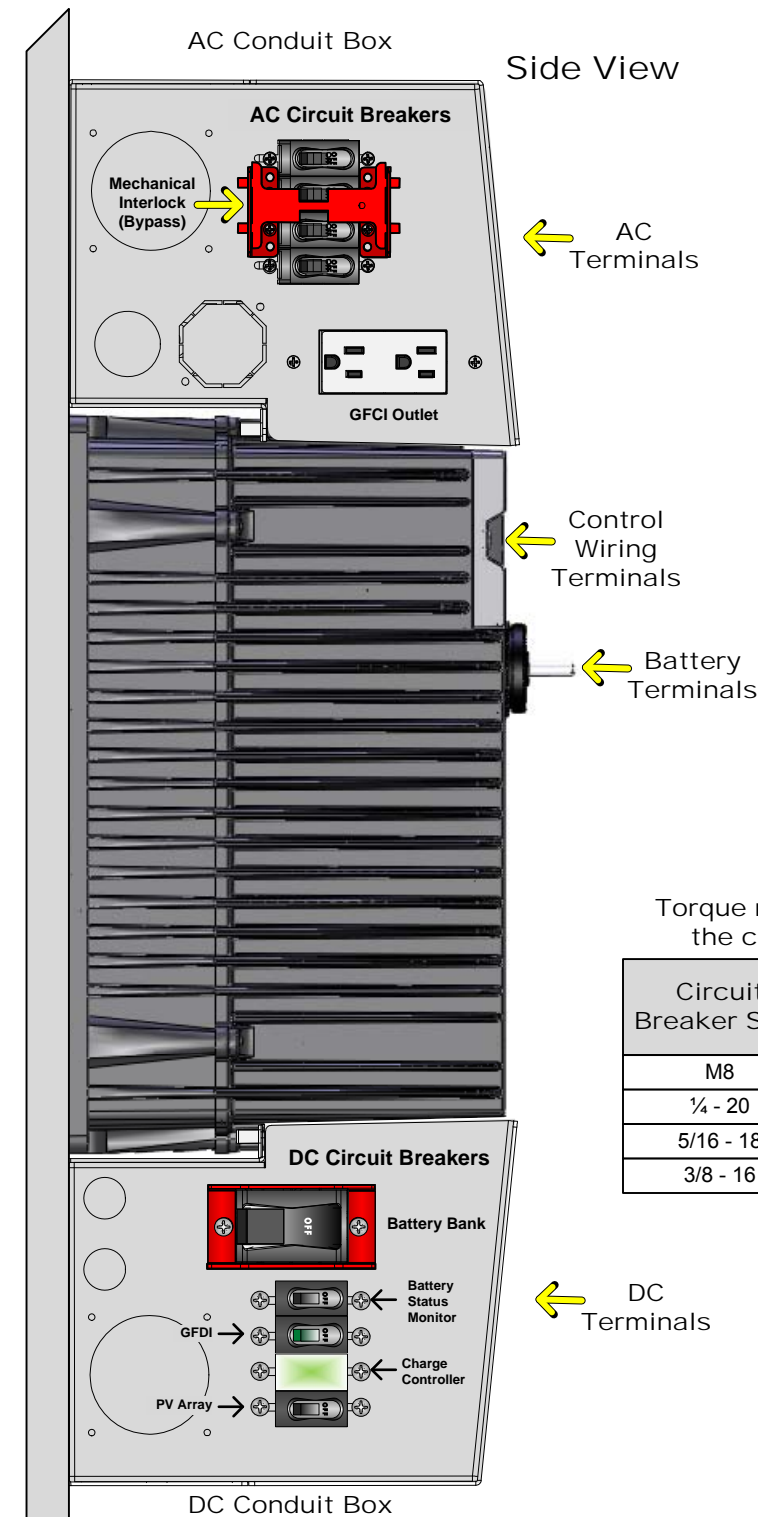
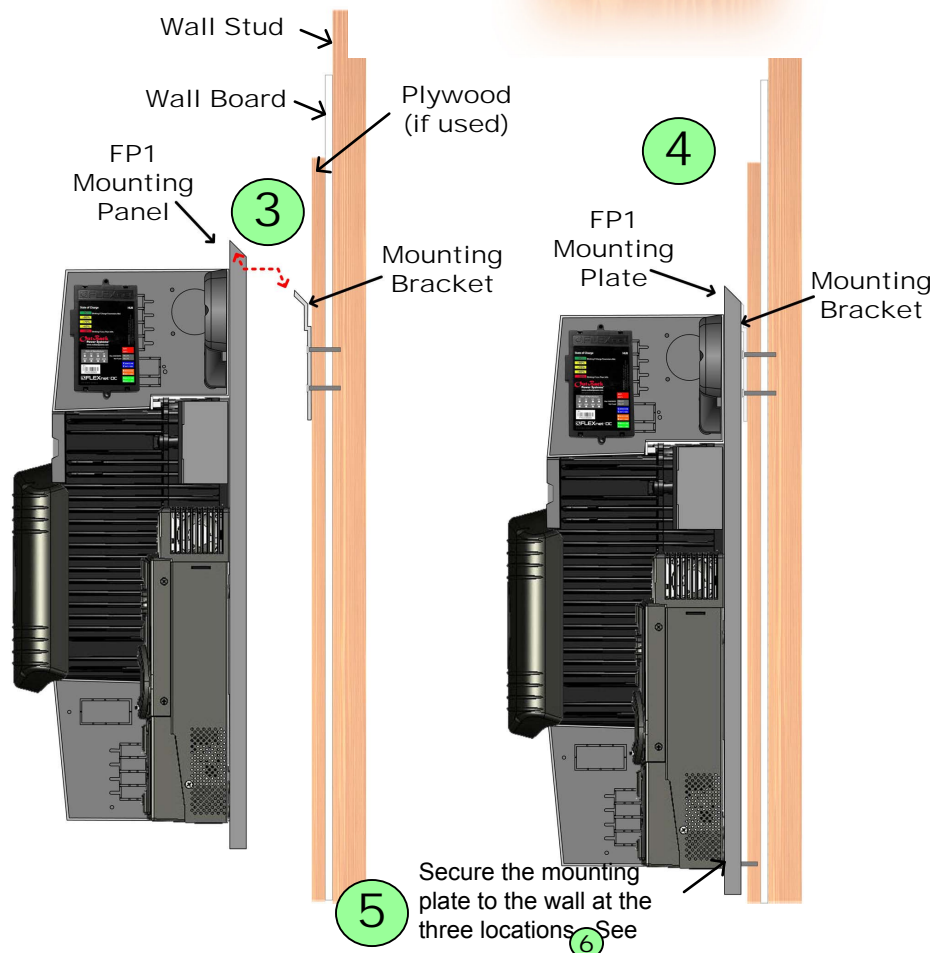
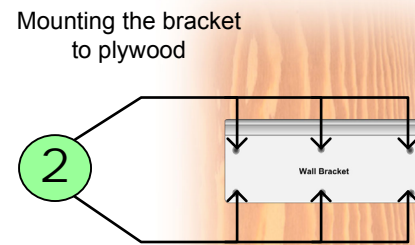
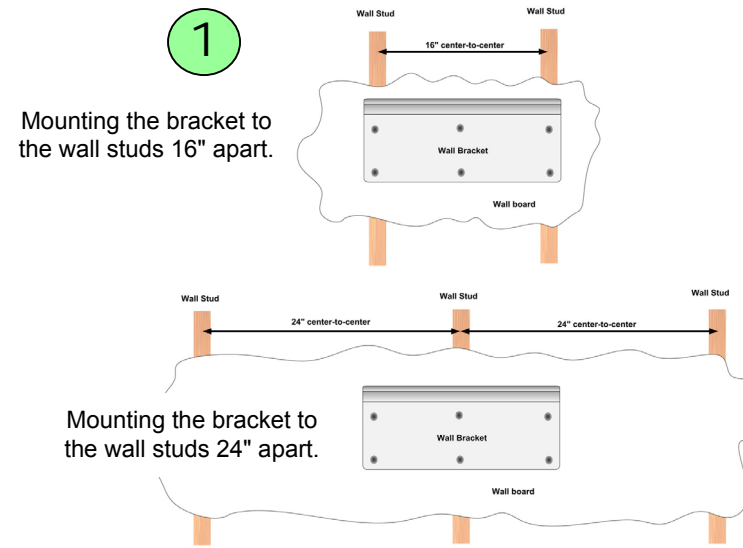
33.5" (85 cm) tall X 19.75" (50 cm) wide

To install the mounting bracket:

- 1 Place the mounting bracket at the desired height for the panel.
- 2 Secure the mounting bracket to the surface. Use all six mounting slots provided on the bracket.

To mount the FP1 panel on the bracket:

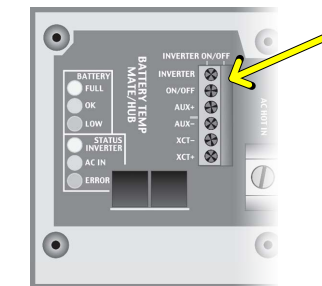
- 3 Lift the mounting plate above the wall bracket.
- 4 Slip the top of the mounting plate over the angled lip of the wall bracket.
- 5 Secure the lower back flange of the mounting plate to the wall (with appropriate hardware).
- 6 Insert all three 1-inch nylon hole plugs into the rear slot access holes.



### AC Wire Sizes and Torque Values

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

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



### Control Wiring Terminal Block:

The Inverter ON/OFF terminals are used for connecting 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 in the charge controller and FLEXnet DC. See the charge controller or FNDC manuals for details.

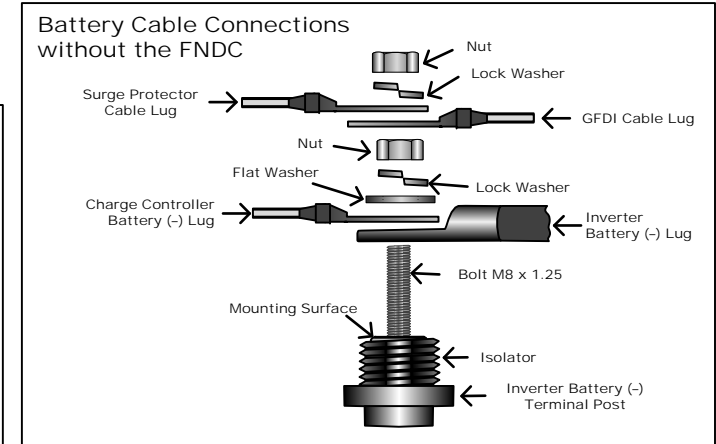
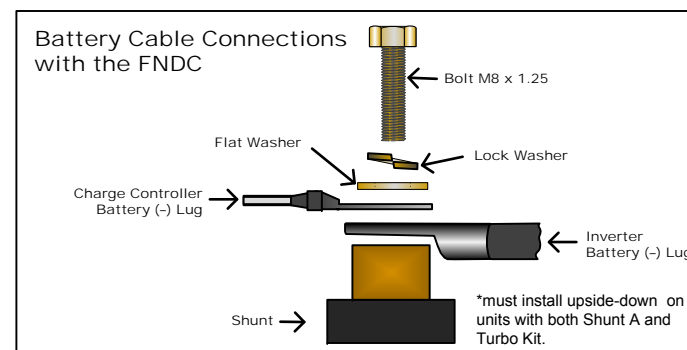
### Torque requirements for the conductor lugs

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

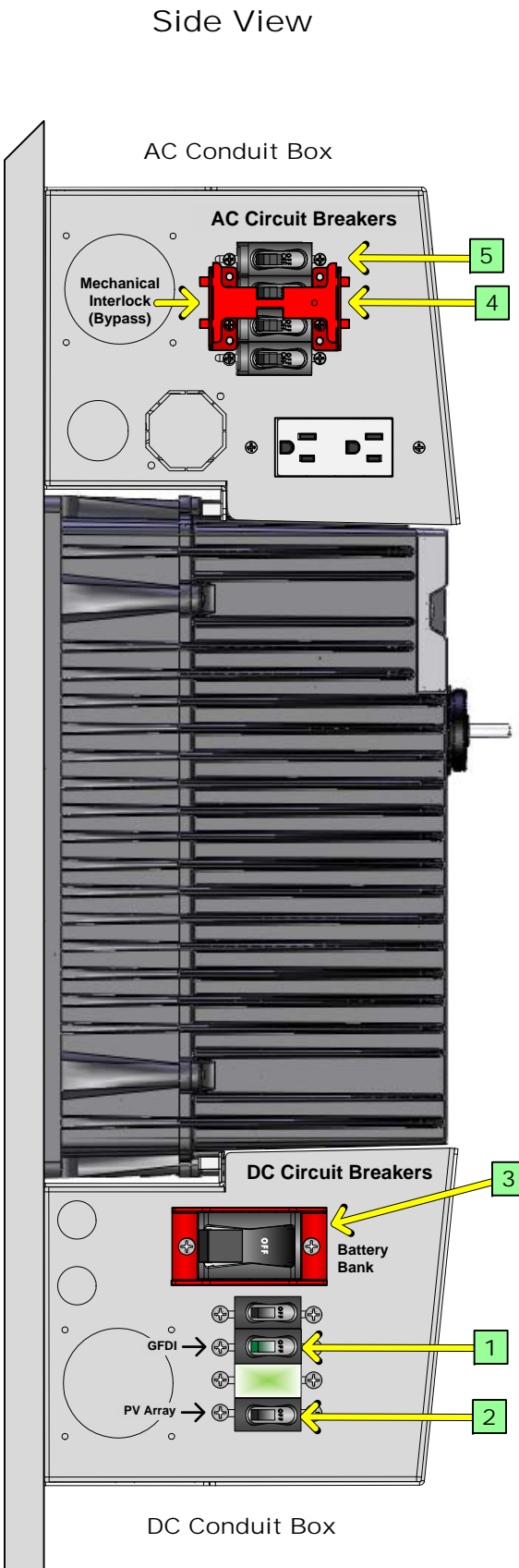
### Minimum DC Cable based on the DC Circuit Breaker

DC Circuit Breaker	Cable Size	Torque	
		In-lb	Nm
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

**⚠ 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:

1. Double-check all wiring connections.
2. Inspect the enclosure to ensure no tools or debris has been left inside.
3. Disconnect all AC loads at the backup (or critical) load panel.
4. Disconnect the AC input feed to the FLEXpower ONE at the source.

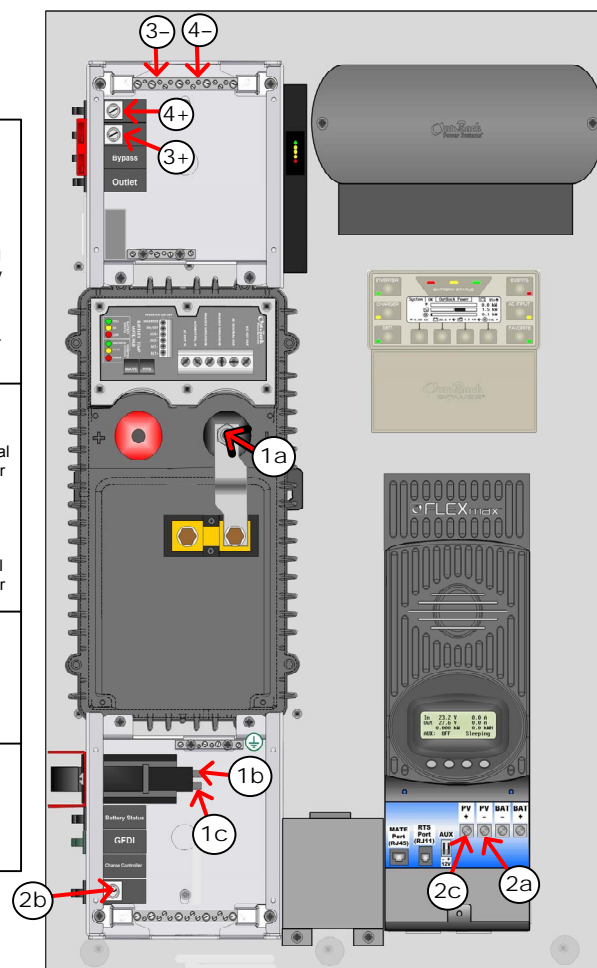
### To energize or start up the OutBack devices:

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. Turn on (close) the GFDI circuit breaker. **1**
3. Verify the voltage on the PV terminal is in the correct range of open-circuit voltage by placing the DVM leads on (2a) and (2b). **Confirm the polarity.**
4. Turn on (close) the PV input circuit breakers. **2**
5. Turn on (close) the DC circuit breaker from the battery bank to the inverter. **3**
6. Verify 120 Vac on the AC output circuit breakers by placing the DVM leads on (3+) and (3-).
7. Turn on (close) the AC output circuit breakers. **4**
8. Connect the AC source. Verify 120 Vac on the AC input circuit breakers by placing the DVM leads on (4+) and (4-).
9. Turn on (close) the AC input circuit breakers. **5**
10. Turn on the AC disconnects at the load panel and test the loads.

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

### Functional Test Points

- | Battery Voltage Test Points |  |
|-----------------------------|--|
| (1a)                        | Battery Negative (-) Terminal on the Inverter                            |
| (1b)                        | Circuit Breaker Terminal connected to the Battery Positive (+) Cable     |
| (1c)                        | Circuit Breaker Terminal connected to the Inverter DC Positive (+) Cable |
| PV Voltage Test Points      |  |
| (2a)                        | PV Negative (-) Terminal on the Charge Controller                        |
| (2b)                        | Circuit Breaker terminal for the PV                                      |
| (2c)                        | PV Positive (+) Terminal on the Charge Controller                        |
| AC OUT Voltage Test Points  |  |
| (3+)                        | (3-)   |
| AC IN Voltage Test Points   |  |
| (4+)                        | (4-)   |



**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 controller. However, sources of energy may still be present inside the GSLC and other locations. 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 them sufficient time to cool down before attempting to perform any maintenance.

### 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 breaker for the battery. **2**
3. Turn off (open) the PV circuit breaker. **3**
4. Turn off (open) the GFDI circuit breaker. **4**
5. \*Verify 0 Vdc on the DC input terminals of the inverter by placing the voltmeter leads on (1a) and (1c).
6. \*Verify 0 Vdc on the PV terminal by placing the voltmeter leads on (2a) and (2c).
7. \*Verify 0 Vac on the AC output circuit breakers by placing the voltmeter leads on (3+) and (3-).

\*See the Functional Test Points key that is included with the Startup Procedures.

