Configuration Wizard

The MATE3 Configuration Wizard allows quick setup of parameters that apply to all systems. The Configuration Wizard is reached from the MATE3 Main Menu as shown below.
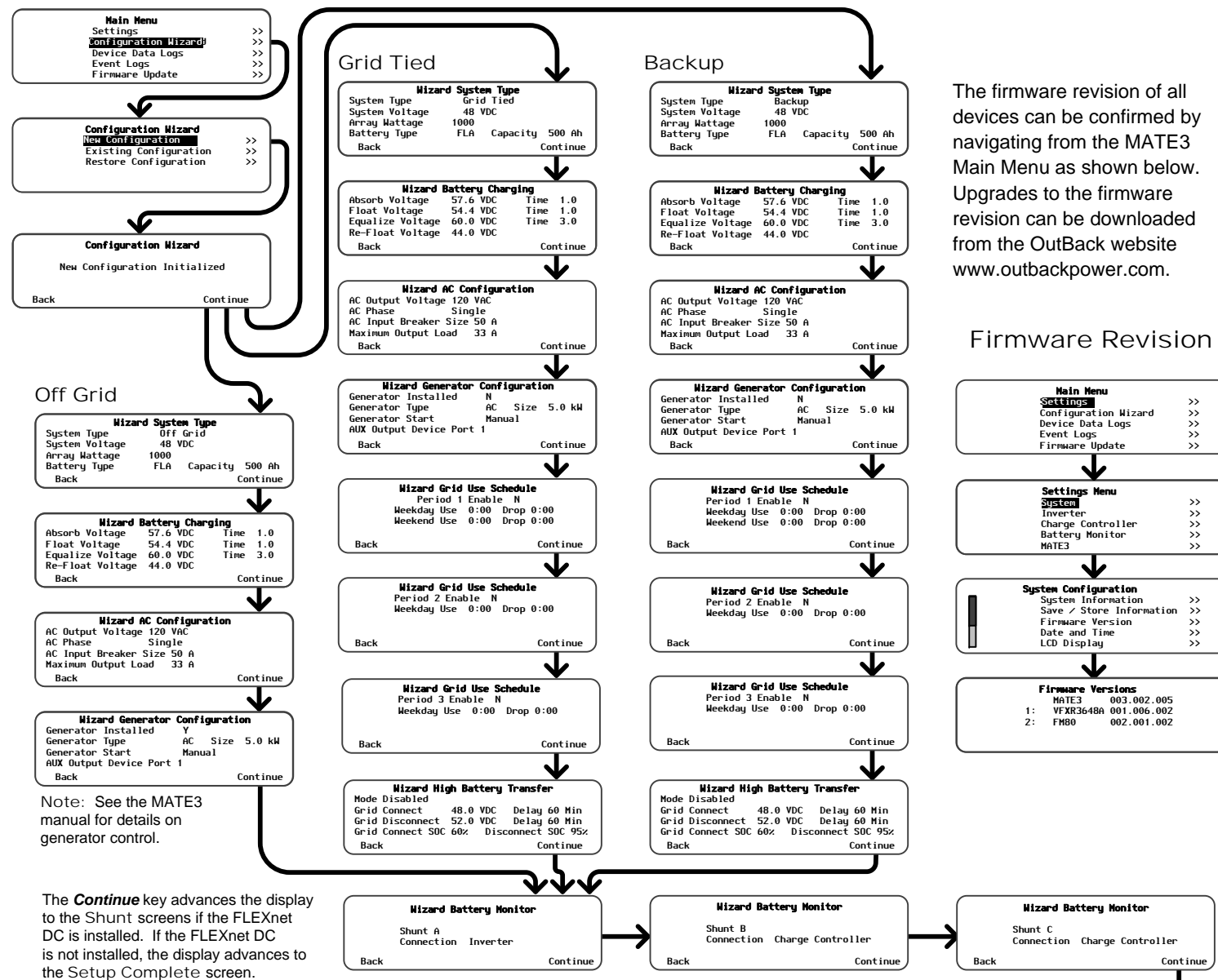
⚠️ **CAUTION: Equipment Damage**

These procedures should be done by a qualified installer who is trained on programming inverter power systems. Failure to set 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.
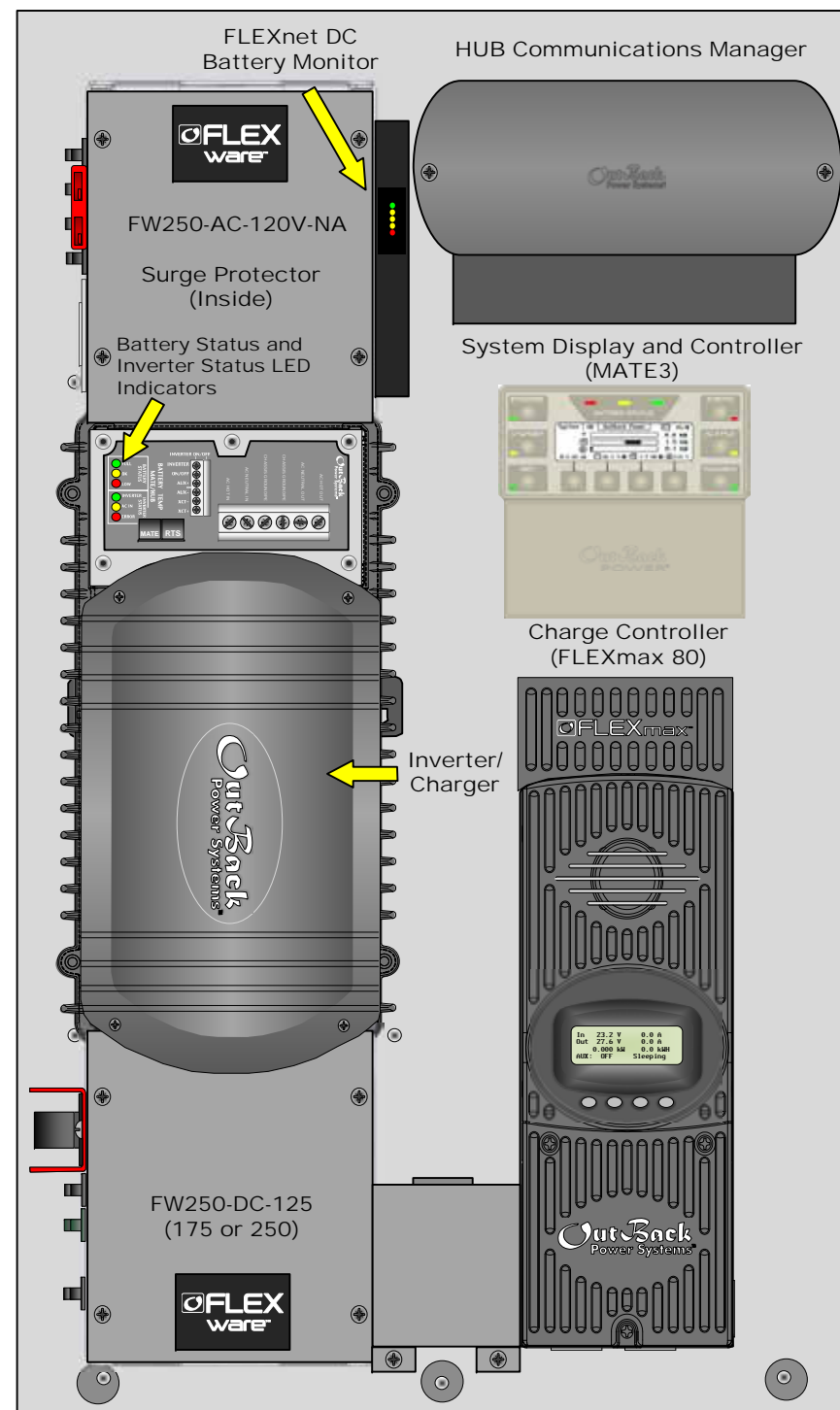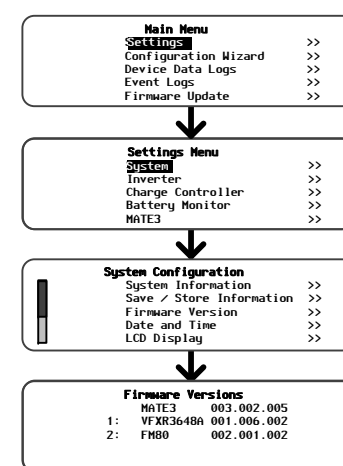
👆 **IMPORTANT**

Check the firmware revision of all OutBack devices before use. The MATE3 system display must be revision 003.002.xxx or higher. If the revision is lower, the MATE3 and inverter may not communicate or operate correctly.

Main Menu
```
Settings              >>
Configuration Wizard  >>
Device Data Logs      >>
Event Logs            >>
Firmware Update       >>
```

Configuration Wizard
```
New Configuration       >>
Existing Configuration  >>
Restore Configuration   >>
```

Configuration Wizard
```
New Configuration Initialized

Back                Continue
```

Grid Tied

Wizard System Type
```
System Type       Grid Tied
System Voltage    48 VDC
Array Wattage     1000
Battery Type   FLA  Capacity 500 Ah
Back                Continue
```

Wizard Battery Charging
```
Absorb Voltage    57.6 VDC   Time 1.0
Float Voltage     54.4 VDC   Time 1.0
Equalize Voltage  60.0 VDC   Time 3.0
Re-Float Voltage  44.0 VDC
Back                Continue
```

Wizard AC Configuration
```
AC Output Voltage 120 VAC
AC Phase          Single
AC Input Breaker Size 50 A
Maximum Output Load   33 A
Back                Continue
```

Wizard Generator Configuration
```
Generator Installed   N
Generator Type        AC  Size 5.0 kW
Generator Start       Manual
AUX Output Device Port 1
Back                Continue
```

Wizard Grid Use Schedule
```
Period 1 Enable  N
Weekday Use  0:00 Drop 0:00
Weekend Use  0:00 Drop 0:00

Back                Continue
```

Wizard Grid Use Schedule
```
Period 2 Enable  N
Weekday Use  0:00 Drop 0:00

Back                Continue
```

Wizard Grid Use Schedule
```
Period 3 Enable  N
Weekday Use  0:00 Drop 0:00

Back                Continue
```

Wizard High Battery Transfer
```
Mode Disabled
Grid Connect       48.0 VDC  Delay 60 Min
Grid Disconnect    52.0 VDC  Delay 60 Min
Grid Connect SOC 60%  Disconnect SOC 95%
Back                Continue
```

Backup

Wizard System Type
```
System Type       Backup
System Voltage    48 VDC
Array Wattage     1000
Battery Type   FLA  Capacity 500 Ah
Back                Continue
```

Wizard Battery Charging
```
Absorb Voltage    57.6 VDC   Time 1.0
Float Voltage     54.4 VDC   Time 1.0
Equalize Voltage  60.0 VDC   Time 3.0
Re-Float Voltage  44.0 VDC
Back                Continue
```

Wizard AC Configuration
```
AC Output Voltage 120 VAC
AC Phase          Single
AC Input Breaker Size 50 A
Maximum Output Load   33 A
Back                Continue
```

Wizard Generator Configuration
```
Generator Installed   N
Generator Type        AC  Size 5.0 kW
Generator Start       Manual
AUX Output Device Port 1
Back                Continue
```

Wizard Grid Use Schedule
```
Period 1 Enable  N
Weekday Use  0:00 Drop 0:00
Weekend Use  0:00 Drop 0:00

Back                Continue
```

Wizard Grid Use Schedule
```
Period 2 Enable  N
Weekday Use  0:00 Drop 0:00

Back                Continue
```

Wizard Grid Use Schedule
```
Period 3 Enable  N
Weekday Use  0:00 Drop 0:00

Back                Continue
```

Wizard High Battery Transfer
```
Mode Disabled
Grid Connect       48.0 VDC  Delay 60 Min
Grid Disconnect    52.0 VDC  Delay 60 Min
Grid Connect SOC 60%  Disconnect SOC 95%
Back                Continue
```

The firmware revision of all devices can be confirmed by navigating from the MATE3 Main Menu as shown below. Upgrades to the firmware revision can be downloaded from the OutBack website www.outbackpower.com.

Firmware Revision

Main Menu
```
Settings              >>
Configuration Wizard  >>
Device Data Logs      >>
Event Logs            >>
Firmware Update       >>
```

Settings Menu
```
System            >>
Inverter          >>
Charge Controller >>
Battery Monitor   >>
MATE3             >>
```

System Configuration
```
System Information   >>
Save / Store Information >>
Firmware Version     >>
Date and Time        >>
LCD Display          >>
```

Firmware Versions:
```
   MATE3       003.002.005
1: VFXR3648A 001.006.002
2: FM80        002.001.002
```

Off Grid

Wizard System Type
```
System Type       Off Grid
System Voltage    48 VDC
Array Wattage     1000
Battery Type   FLA  Capacity 500 Ah
Back                Continue
```

Wizard Battery Charging
```
Absorb Voltage    57.6 VDC   Time 1.0
Float Voltage     54.4 VDC   Time 1.0
Equalize Voltage  60.0 VDC   Time 3.0
Re-Float Voltage  44.0 VDC
Back                Continue
```

Wizard AC Configuration
```
AC Output Voltage 120 VAC
AC Phase          Single
AC Input Breaker Size 50 A
Maximum Output Load   33 A
Back                Continue
```

Wizard Generator Configuration
```
Generator Installed   Y
Generator Type        AC  Size 5.0 kW
Generator Start       Manual
AUX Output Device Port 1
Back                Continue
```

Note: See the MATE3 manual for details on generator control.

Wizard Battery Monitor
```
Shunt A
Connection  Inverter

Back                Continue
```

Wizard Battery Monitor
```
Shunt B
Connection  Charge Controller

Back                Continue
```

Wizard Battery Monitor
```
Shunt C
Connection  Charge Controller

Back                Continue
```

The **Continue** key advances the display to the **Shunt** screens if the FLEXnet DC is installed. If the FLEXnet DC is not installed, the display advances to the **Setup Complete** screen.

The **Continue** key advances between shunt screens as appropriate. After the last shunt screen, it advances the display to the **Setup Complete** screen.

Supports the OPTICS RE™ online tool for a cloud-based remote monitoring and control application. Please refer to the OPTICS RE setup instructions, or visit www.outbackpower.com to download.

FLEXnet DC Battery Monitor

HUB Communications Manager

FW250-AC-120V-NA

Surge Protector (Inside)

Battery Status and Inverter Status LED Indicators

System Display and Controller (MATE3)

Inverter/Charger

Charge Controller (FLEXmax 80)

FW250-DC-125 (175 or 250)

Major Components

FLEXpower System Products

Inverter/Charger
AC Conduit Box (with Bypass Assembly)
DC Conduit Box (with Inverter Disconnect
System Display and Controller
PV Charge Controller
Communications Manager
FLEXnet DC Monitor (FN-DC)
Remote Temperature Sensor (RTS)
Surge Protector

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)	

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

Surge Protector LEDs

Active	Error	Phase
🟡 Yellow	🔴 Red	DC
🟡 Yellow	🔴 Red	AC IN
🟡 Yellow	🔴 Red	AC OUT

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)

IMPORTANT: Not intended for use with life support equipment.

OPTICS RE Compatible

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

OutBack POWER member of The Alpha Group™

⚡ 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.

(1) Mounting the bracket to the wall studs 16" apart.

Mounting the bracket to the wall studs 24" apart.

Mounting the bracket to plywood

(2)

Wall Stud
Wall Board
Plywood (if used)
FP1 Mounting Panel
(3)
Mounting Bracket
FP1 Mounting Plate
(4)
Mounting Bracket

(5) Secure the mounting plate to the wall at the three locations. See (6).

AC Conduit Box
Side View
AC Circuit Breakers
Mechanical Interlock (Bypass)
AC Terminals
GFCI Outlet
Control Wiring Terminals
Battery Terminals
DC Circuit Breakers
Battery Bank
Battery Status Monitor
GFDI
Charge Controller
PV Array
DC Terminals
DC Conduit Box

AC Wire Sizes and Torque Values

Wire Size		Torque	
AWG	mm²	In-lb	Nm
#14 - 10	2.5 – 6	20	2.3
#8	10	25	2.8
#6 - 4	16 – 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.

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
¼ - 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 mm²)	50	5.6
175	2/0 (70 mm²)	225	25.4
250	4/0 (120 mm²)	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.

Battery Cable Connections without the FN-DC
Nut
Lock Washer
Surge Protector Cable Lug
GFDI Cable Lug
Nut
Lock Washer
Flat Washer
Charge Controller Battery (–) Lug
Inverter Battery (–) Lug
Mounting Surface
Bolt M8 x 1.25
Isolator
Inverter Battery (–) Terminal Post

Battery Cable Connections with the FN-DC
Bolt M8 x 1.25
Flat Washer
Lock Washer
Charge Controller Battery (–) Lug
Inverter Battery (–) Lug
Shunt
*must install upside-down on units with both Shunt A and Turbo Kit.
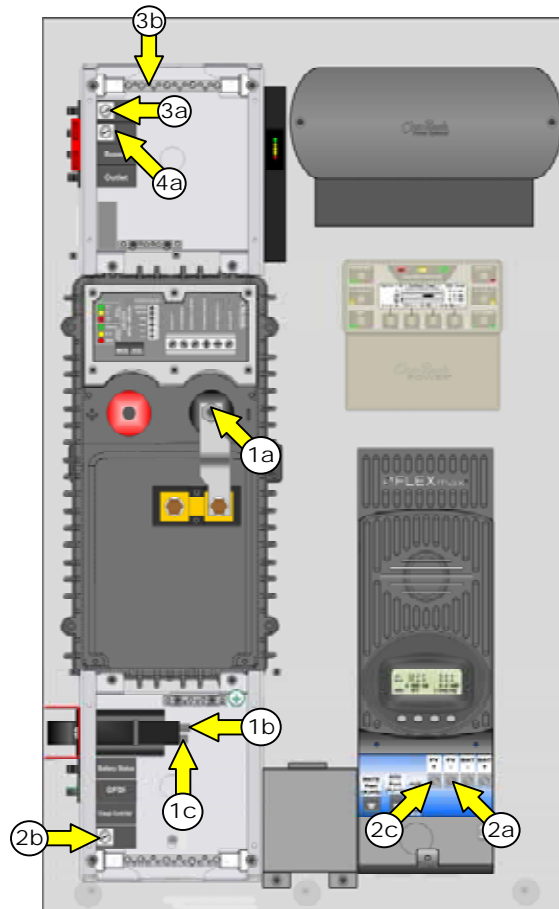
Pre-startup Procedures

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.

Side View

AC Conduit Box

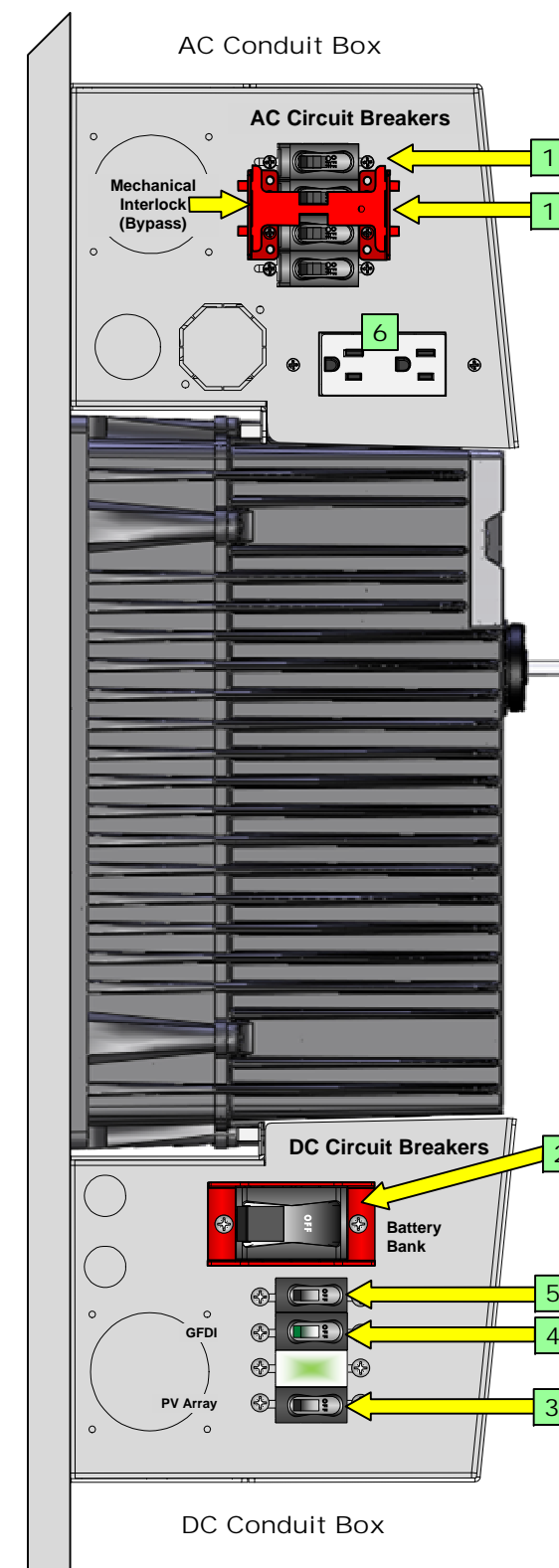Mechanical Interlock (Bypass)

AC Circuit Breakers

DC Conduit Box
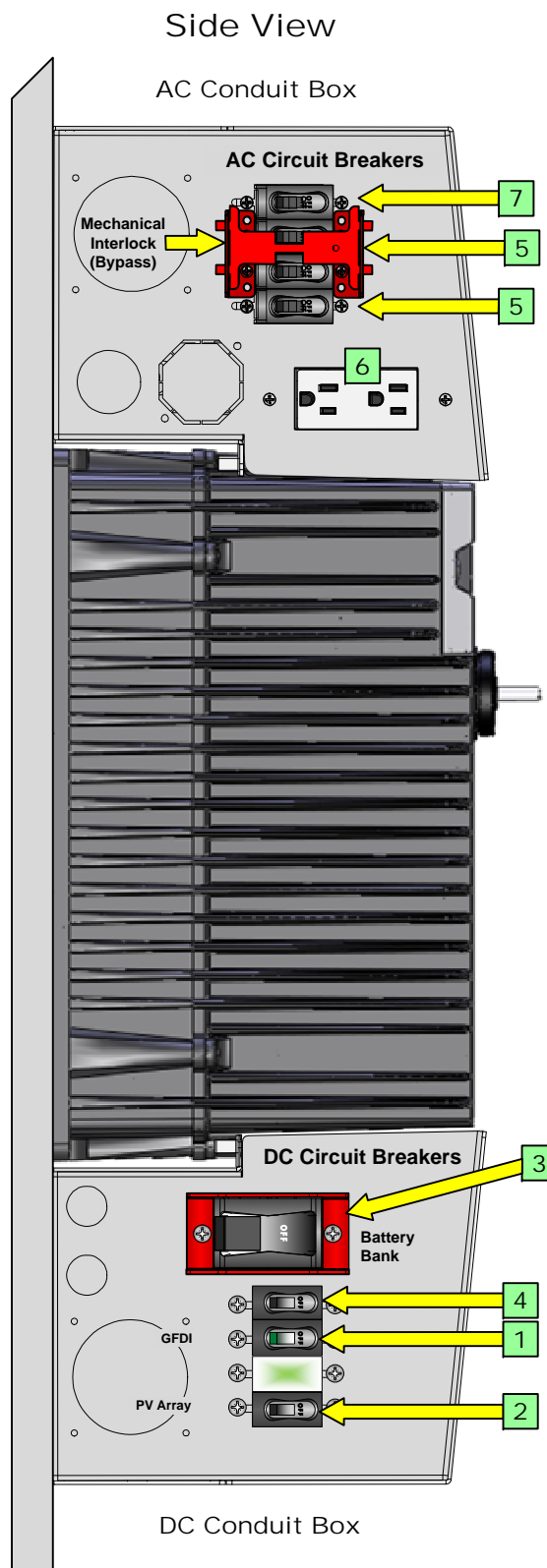
3. Disconnect all AC loads at the backup (or critical) load panel.
4. Disconnect the AC input feed to the FLEXpower ONE at the source.
5. Place the mechanical interlock in the normal (non-bypass) position.

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**.

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

2. 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**.
3. Connect the AC source. Verify 120 Vac on the AC input circuit breakers by placing the DVM leads on (3a) and (3b).
4. Replace the covers on the AC and DC enclosures.
5. Turn on (close) the GFDI circuit breaker. **1**
6. Turn on (close) the PV input circuit breakers. **2**
7. Turn on (close) the DC circuit breaker from the battery bank to the inverter. **3**
8. Turn on (close) the FN-DC circuit breaker. **4**
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 AC output and AC outlet circuit breakers. **5**
11. Verify 120 Vac on the AC output by placing the DVM leads in the slots of the electrical outlet. **6**
12. Turn on (close) the AC input circuit breakers. **7**
13. Turn on the AC disconnects at the load panel and test the loads.

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 IN Voltage Test Points

(3a) (3b)

AC OUT Voltage Test Points

(4a) (3b)

Side View

AC Conduit Box

Mechanical Interlock (Bypass)

AC Circuit Breakers

DC Conduit Box

DC Circuit Breakers

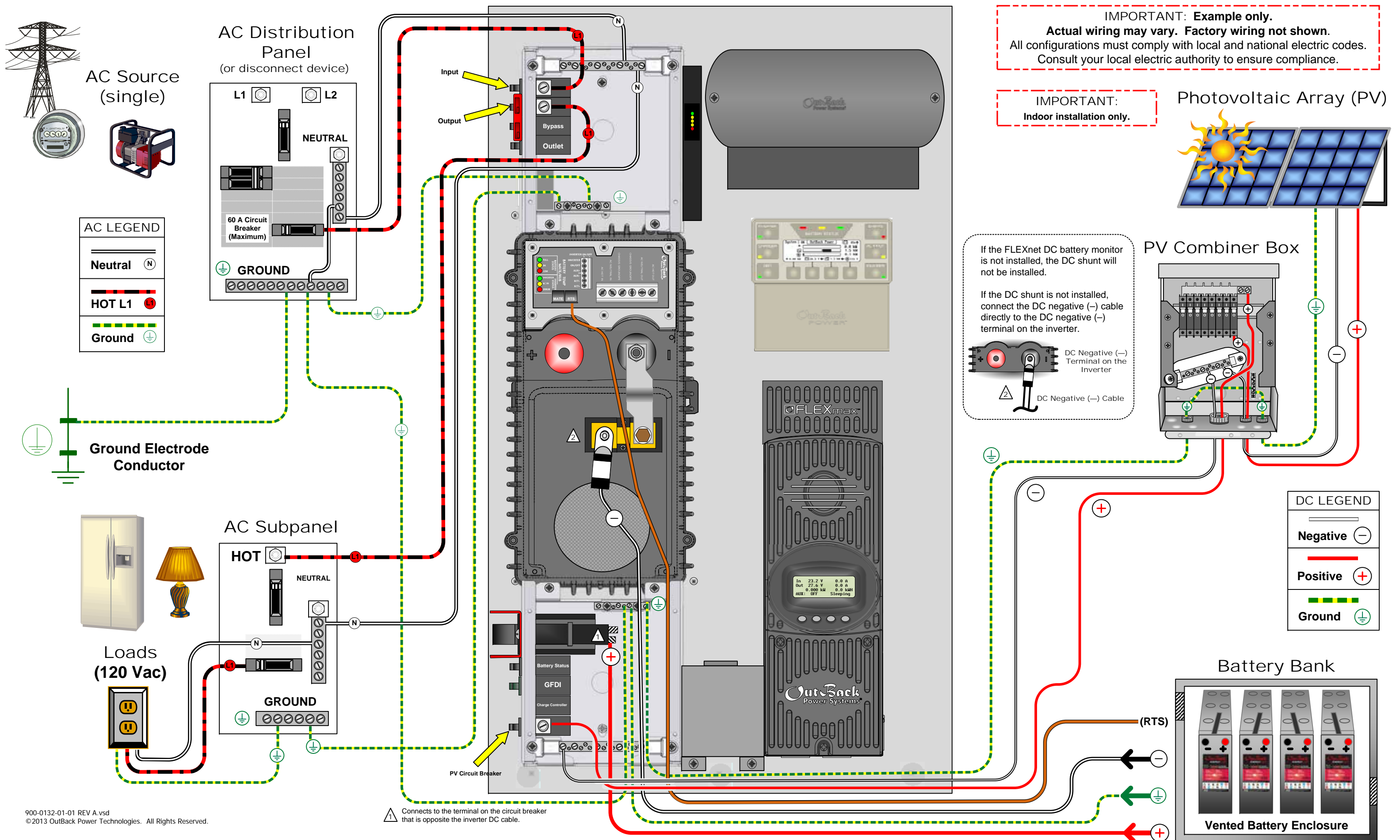Battery Bank

GFDI

PV Array

> ⚡ **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. Turn off (open) the FN-DC circuit breaker. **5**
6. *Verify 0 Vdc on the DC input terminals of the inverter by placing the voltmeter leads on (1a) and (1c).
7. *Verify 0 Vdc on the PV terminal by placing the voltmeter leads on (2a) and (2c).
8. *Verify 0 Vac on the AC output circuit breakers by placing the voltmeter leads in the slots of the AC outlet. **6**

   This can also be tested by placing the leads on (4a) and (4b).

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

FLEXpower™ONE

AC Distribution Panel
(or disconnect device)

AC Source (single)

AC LEGEND

Neutral	N
HOT L1	L1
Ground	⏚

L1   L2

NEUTRAL

60 A Circuit Breaker (Maximum)

GROUND

Input

Output

Bypass

Outlet

IMPORTANT: Example only.
Actual wiring may vary. Factory wiring not shown.
All configurations must comply with local and national electric codes.
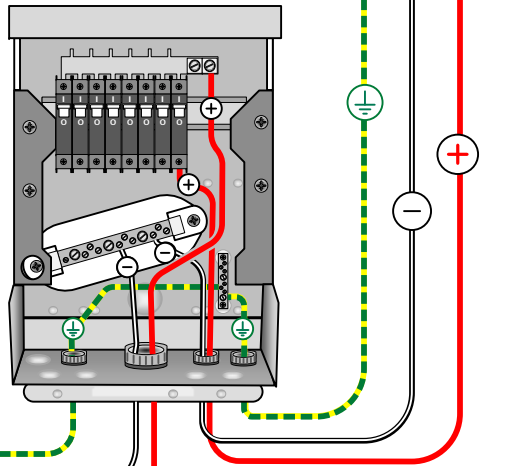Consult your local electric authority to ensure compliance.

IMPORTANT:
Indoor installation only.

Photovoltaic Array (PV)

Ground Electrode Conductor
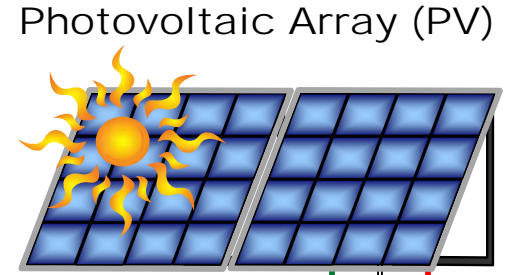
If the FLEXnet DC battery monitor is not installed, the DC shunt will not be installed.

If the DC shunt is not installed, connect the DC negative (–) cable directly to the DC negative (–) terminal on the inverter.

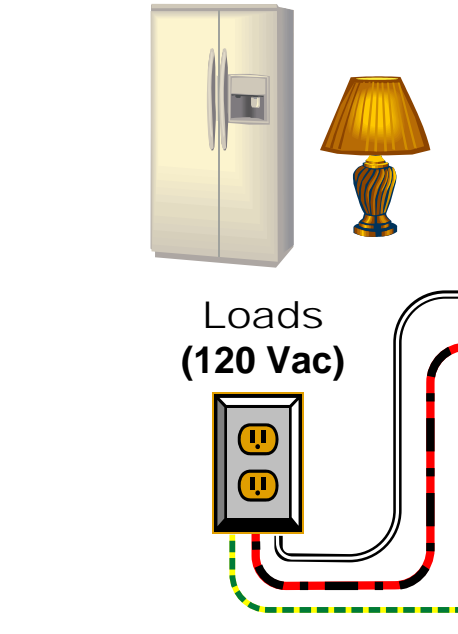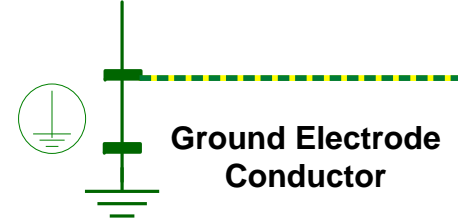DC Negative (—) Terminal on the Inverter

⚠2 DC Negative (—) Cable

PV Combiner Box

AC Subpanel

HOT

NEUTRAL

N

N

GROUND

Loads (120 Vac)

⚠2

INVERTER ON/OFF

FLEXmax

In   23.2 V   0.0 A
Out   27.6 V   0.0 A
      0.000 kW   0.0 kWh
AUX: OFF   Sleeping

OutBack Power Systems

DC LEGEND

Negative	–
Positive	+
Ground	⏚

Battery Status

GFDI

Charge Controller

⚠1

PV Circuit Breaker

Battery Bank

(RTS)

Vented Battery Enclosure

⚠1 Connects to the terminal on the circuit breaker that is opposite the inverter DC cable.