



 **FLEXware™ 250**

## User's Guide

Includes Mounting, Installation, and  
Product Registration





## **About OutBack Power Systems**

OutBack Power Systems is a leader in advanced energy conversion technology. Our products include true sine wave inverter/chargers, maximum power point charge controllers, system communication components, as well as breaker panels, breakers, accessories, and assembled systems.

## **Notice of Copyright**

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## **Disclaimer**

UNLESS SPECIFICALLY AGREED TO IN WRITING, OUTBACK POWER SYSTEMS:

(a) MAKES NO WARRANTY AS TO THE ACCURACY, SUFFICIENCY OR SUITABILITY OF ANY TECHNICAL OR OTHER INFORMATION PROVIDED IN ITS MANUALS OR OTHER DOCUMENTATION.

(b) ASSUMES NO RESPONSIBILITY OR LIABILITY FOR LOSS OR DAMAGE, WHETHER DIRECT, INDIRECT, CONSEQUENTIAL OR INCIDENTAL, WHICH MIGHT ARISE OUT OF THE USE OF SUCH INFORMATION. THE USE OF ANY SUCH INFORMATION WILL BE ENTIRELY AT THE USER'S RISK.

## **Date and Revision**

April, 2008 REV A

## **Contact Information**

OutBack Power Systems  
19009 62nd Ave. NE, Arlington, WA 98223  
Phone (360)435-6030  
Fax (360)435-6019  
[www.outbackpower.com](http://www.outbackpower.com)

## Warranty Introduction

Dear OutBack Customer,

Thank you for your purchase of OutBack products. We make every effort to assure our power conversion products will give you long and reliable service for your renewable energy system.

As with any manufactured device, repairs might be needed due to damage, inappropriate use, or unintentional defect. Please note the following guidelines regarding warranty service of OutBack products:

- Any and all warranty repairs must conform to the terms of the warranty.
- All OutBack equipment must be installed according to their accompanying instructions and manuals with specified over-current protection in order to maintain their warranties.
- The customer must return the component(s) to OutBack, securely packaged, properly addressed, and shipping paid. We recommend insuring your package when shipping. Packages that are not securely packaged can sustain additional damage not covered by the warranty or can void warranty repairs.
- There is no allowance or reimbursement for an installer's or user's labor or travel time required to disconnect, service, or reinstall the damaged component(s).
- OutBack will ship the repaired or replacement component(s) prepaid to addresses in the continental United States, where applicable. Shipments outside the U.S. will be sent freight collect.
- In the event of a product malfunction, OutBack cannot bear any responsibility for consequential losses, expenses, or damage to other components.

Please read the full warranty at the end of this manual for more information.

## IMPORTANT SAFETY INSTRUCTIONS

This manual contains important instructions for the FLEXware 250 that must be followed during its installation and future maintenance for your safety and the integrity of the product.

*SAVE THESE INSTRUCTIONS!*

### Requirements and Warnings

The OutBack Power Systems FLEXware 250 is listed by ETL as an accessory enclosure for OutBack FX, GTFX, GVFX, and VFX Series Inverter/Chargers to UL standard UL 1741.

This enclosure is intended for battery circuits configured for 12 to 48 volts nominal.

Grounding Instructions – The frame of this enclosure should be connected to a grounded, permanent wiring system. The AC and DC circuits are not bonded to the FLEXware 250 chassis. System grounding, when required by sections 690.41, 690.42, and 690.43 of the National Electric Code, ANSI/NFPA 70, is the responsibility of the installer. For most installations, the negative battery conductor should be bonded to the grounding system at one (and only one) point in the DC system. All installations should comply with all national and local codes and ordinances.

The equipment ground on FLEXware 250 is marked with this symbol:



FLEXware is designed for indoor mounting only with appropriate fasteners and a secure mounting surface that can handle the full weight of an assembled system.

**USE ONLY WITH COPPER  
CONDUCTORS RATED  
75° C MINIMUM**

TORQUE DATA FOR SCREWDRIVER LUGS			
WIRE SIZE		TORQUE	
AWG	mm <sup>2</sup>	In Lbs	Nm
14 - 10	2.1 - 5.3	20	2.3
8	8.4	25	2.8
6 - 4	13.3 - 21.2	35	4.0
3	26.7	35	4.0
2	33.6	40	4.5
1	42.4	50	5.7
1 / 0	53.5	50	5.7

TORQUE DATA FOR BREAKER LUGS		
BREAKER STUD	TORQUE	
	In Lbs	Nm
M8	20	2.3
1/4 - 20	35	4.0
5/16 - 18	50	5.7
3/8 - 16	225	25.5

DIN RAIL MOUNTED BREAKER TERMINALS - 22 In Lbs

## Welcome to OutBack Power Systems' FLEXware 250

FLEXware is a convenient all-aluminum power system offering simple, code-compliant installation of OutBack power electronics components. Three versions of FLEXware are available:

- FLEXware 250 for single FX Series Inverter/Charger installations along with the desired AC and DC disconnects
- FLEXware 500, which supports up to two FXs and two OutBack Series Charge Controllers, accommodating both split-phase and/or higher power output as needed
- FLEXware 1000 accommodates up to four FXs and four OutBack Series Charge Controllers

**Note:** Both the FLEXware 500 and the FLEXware 1000 power systems provide locations for FW-X240 Auto-Transformers, multiple DC shunts and other essential components required in higher kW systems.

### FLEXware 250 Parts List

The FLEXware 250 consists of an aluminum enclosure which can be used for either the AC or DC side of an FX Series Inverter/Charger. Each FLEXware 250 includes:

- Installed ground bus bar
- Breaker Guard (for DC installations)
- Hardware Kits for mounting to an FX and for securing AC and DC breakers (refer to the hardware bag label for a complete listing of parts)
- Cover Plate
- Breaker Label Kit

The chassis itself features conduit knockouts (see Figures 2-5) and knockouts for AC breakers and DC breakers.

- DC installations include a slot for either a 175 or 250 amp OBDC breaker and slots for four load breakers.
- AC installations allow for the optional 120/230 VAC Input/Output/Bypass Assembly (IOB) kit.

#### Optional Parts:

- FW-IOB (Input/Output/Bypass Assembly) Kit for 120/230 VAC.

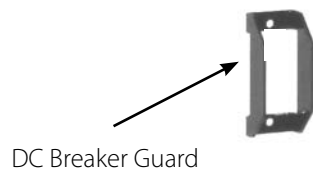
## Getting to Know FLEXware 250

When mounting the FLEXware 250, the various breaker slots **must** be in a vertical (forward facing) position and cannot face downward or upward. Otherwise, the breakers can malfunction.

FLEXware 250 mounted as an AC enclosure



The FLEXware 250 also accommodates a shelf or flat surface mounting as long as no breaker slots are facing downward or upward.



*Figure 1:* FLEXware 250

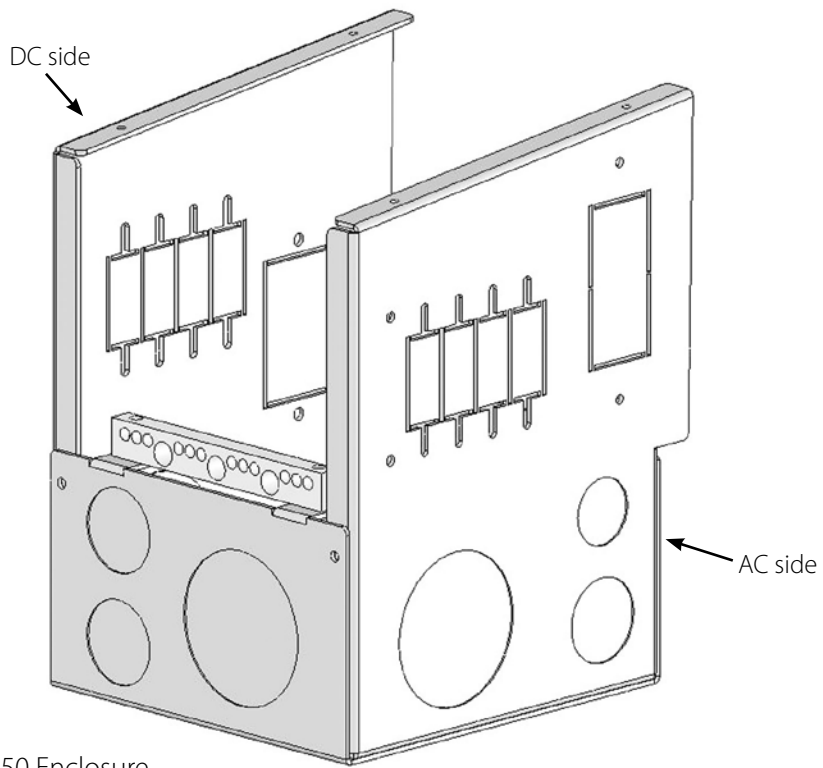


Figure 2: FW250 Enclosure

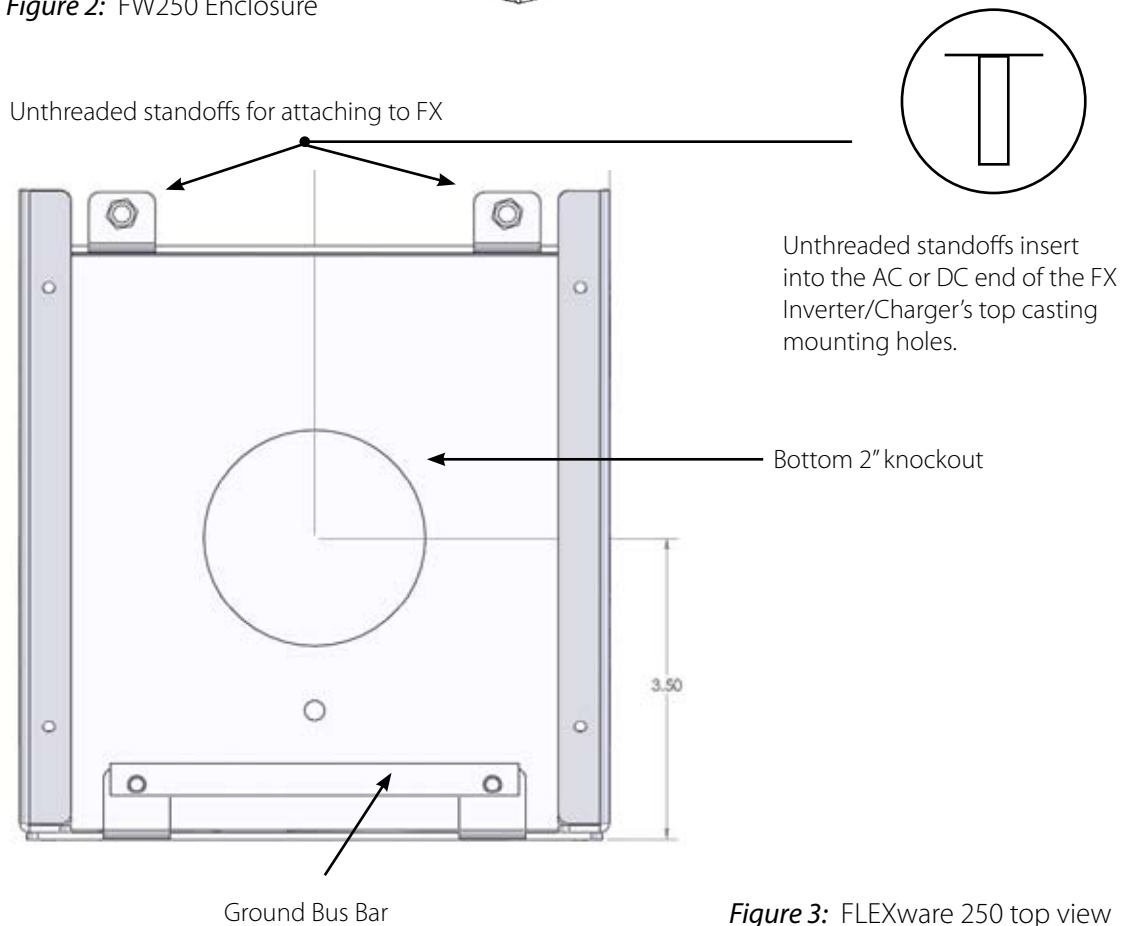


Figure 3: FLEXware 250 top view



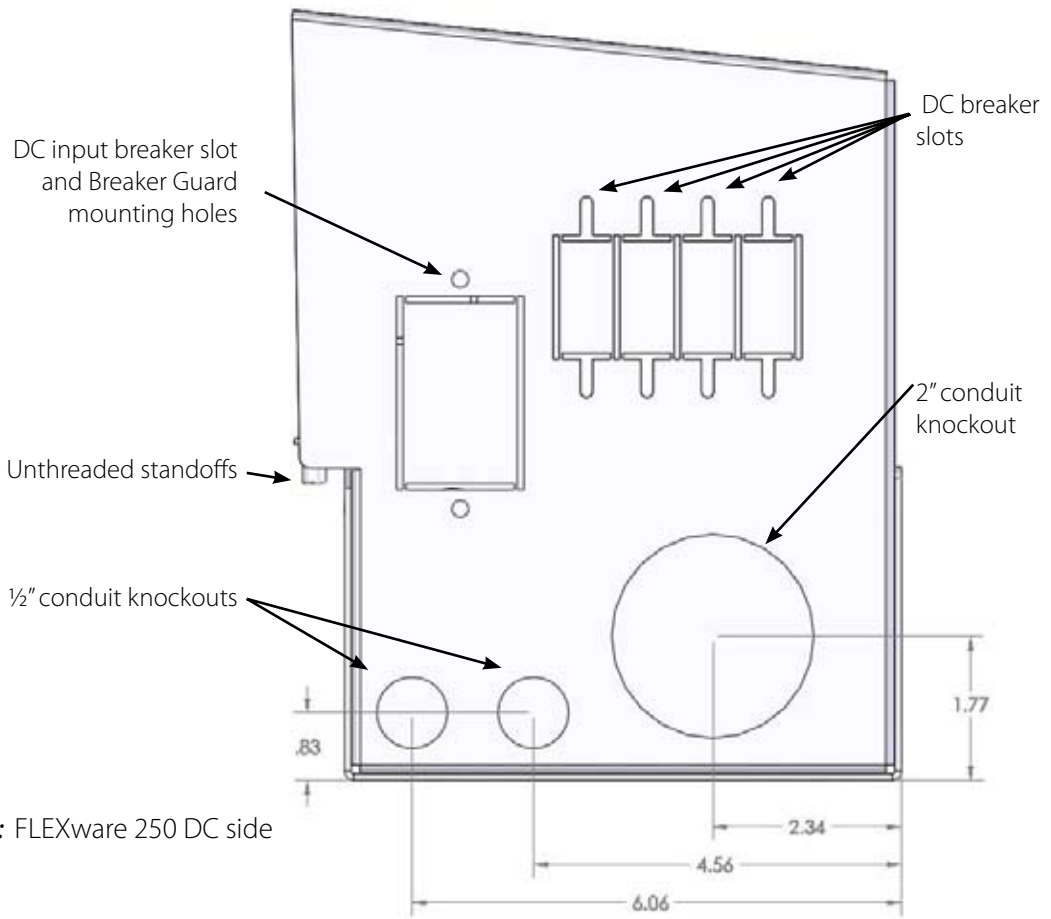


Figure 4: FLEXware 250 DC side

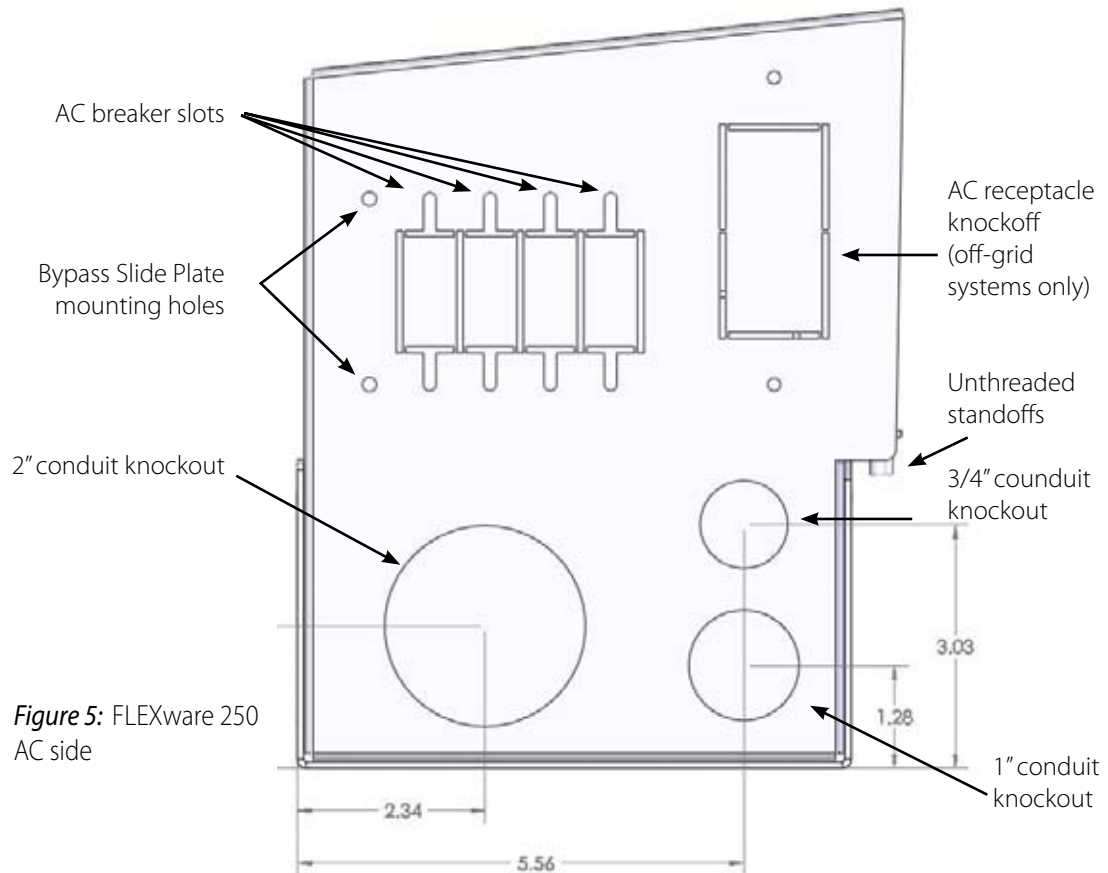
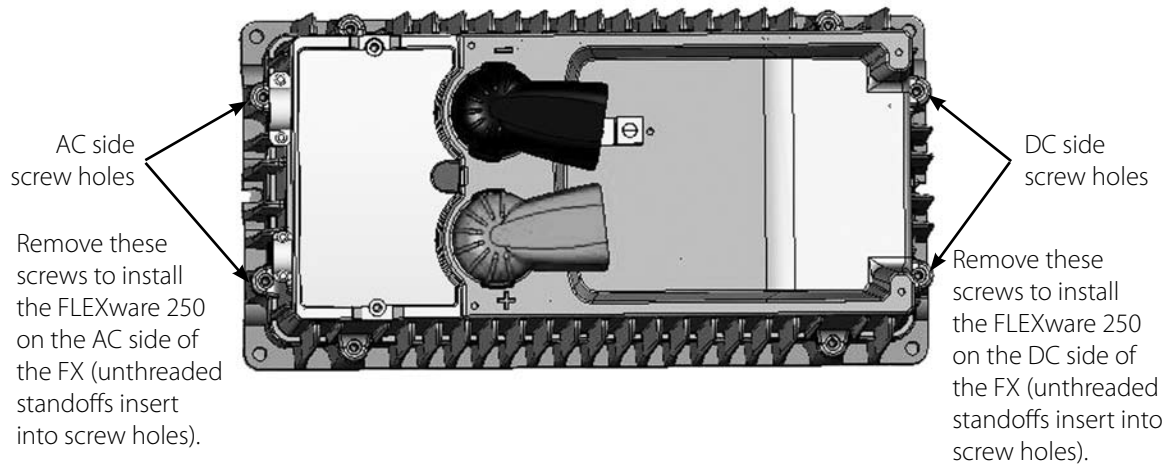
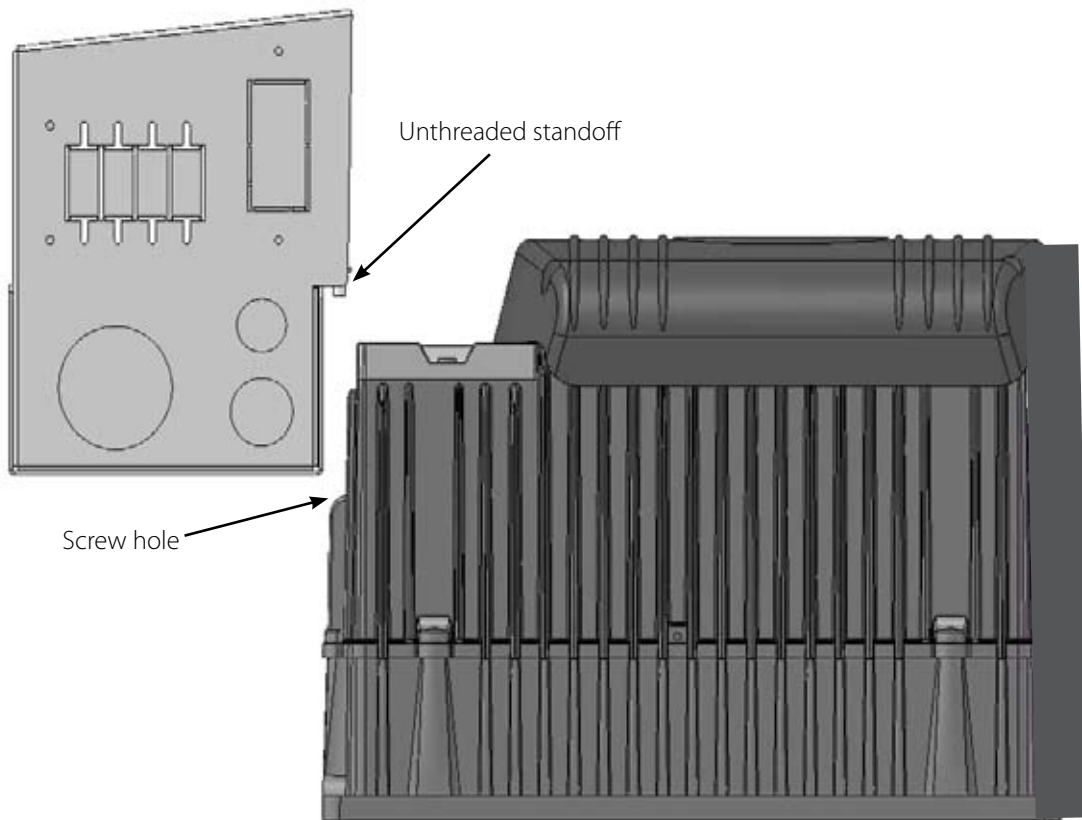


Figure 5: FLEXware 250 AC side



**Figure 6:** FLEXware 250 AC and DC chassis mounting locations



**Figure 7:** Side view of FLEXware 250 fitting onto AC side of an FX Series Inverter/Charger

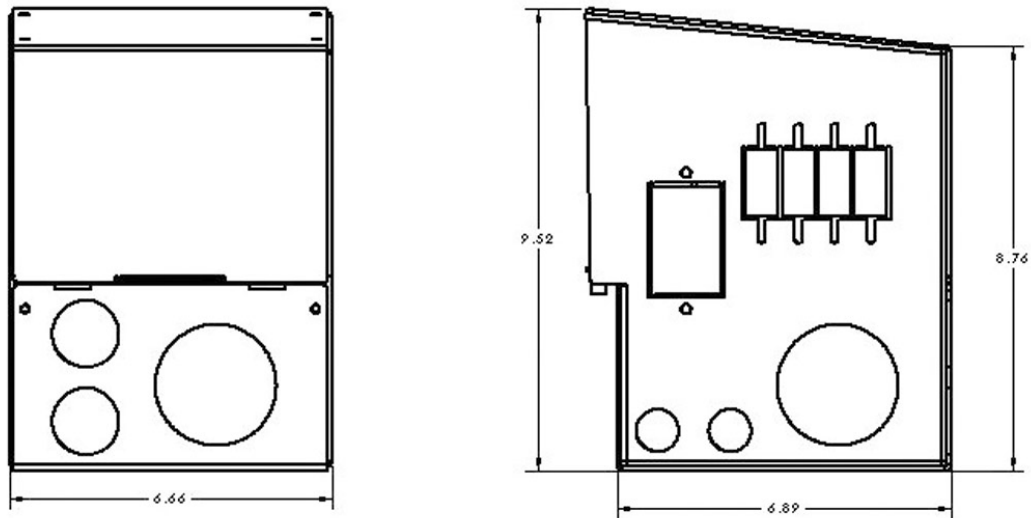
## Installing the FLEXware 250

With the FX secured to a surface (see *FX Series Inverter/Charger Installation Manual* for details), the FLEXware 250 installs on either the DC or the AC side of the FX.

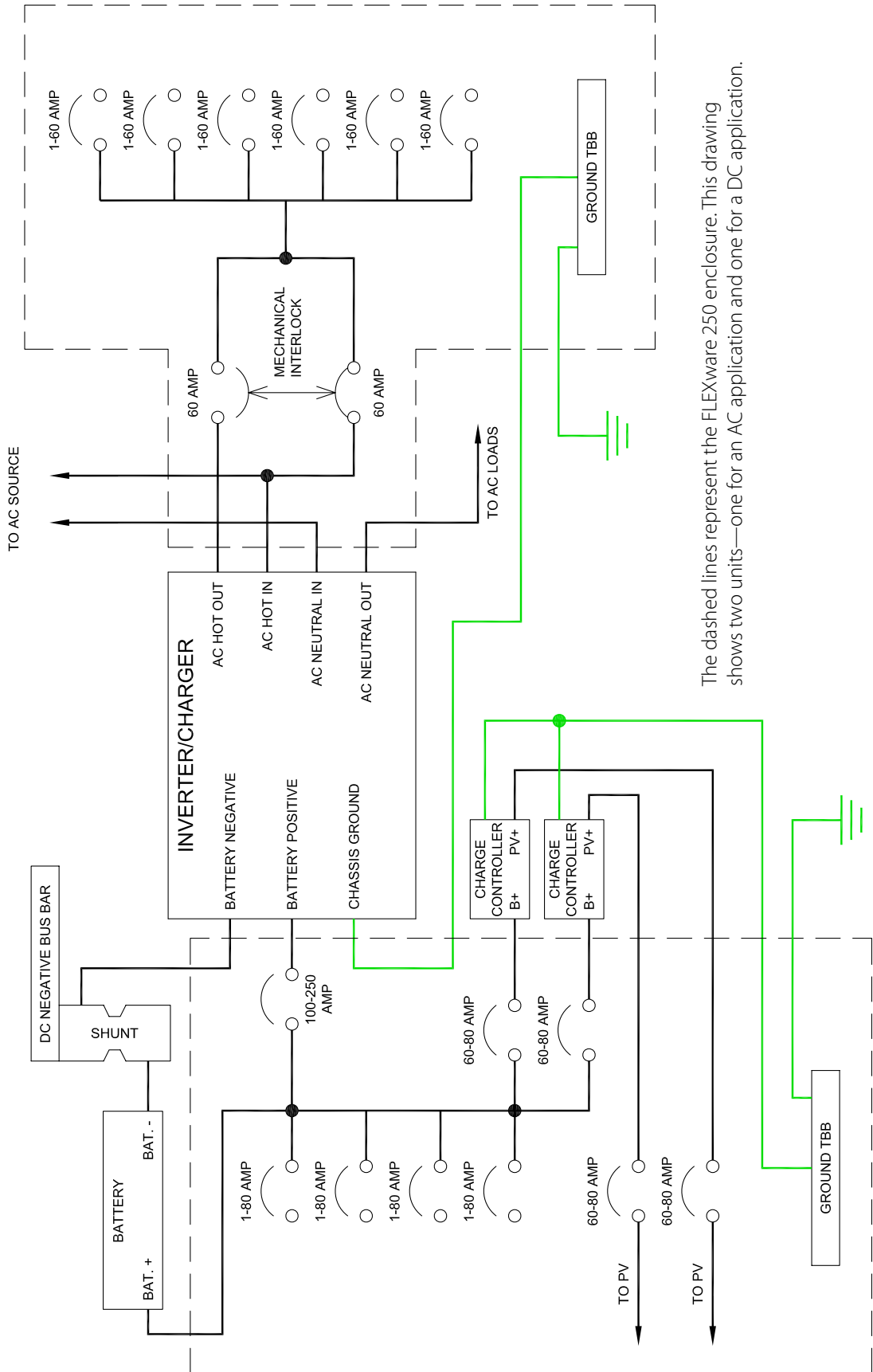
### To install the FLEXware 250:

- Remove the cover plate screws and cover plate.
- Verify which knockouts will be removed for the installation and remove those knockouts.
- Remove only the two M5 X 12mm screws that secure the FX's upper and lower casing halves on whichever side (AC or DC) you first install the FLEXware 250.
- Insert the unthreaded standoffs into the holes on the FX and then insert two M5 X 25mm screws, included with the FLEXware 250, into the standoffs and tighten.
- After all wiring has been completed, install the DCC and securing with four M5 X 12mm screws (included with the DCC).
- Install each FLEXware 250 top cover plate and secure the #10 X 3/8" sheet metal screws.

For AC wiring instructions for the FLEXware 250, please see the schematics in the individual AC Input/Output/Bypass Assembly (IOB) kits.



*Figure 8:* FLEXware 250 Dimensions



The dashed lines represent the FLEXware 250 enclosure. This drawing shows two units—one for an AC application and one for a DC application.

Figure 9: FLEXware 250-DC Wiring Diagram





## FLEXware 250 Product Registration

Please take a moment to register and provide us with some important information in order to improve our products.

**Complete this form and return it to:**

Outback Power Systems Inc.  
19009 62nd Avenue NE  
Arlington, WA 98223

**Note:** Complete one form for all installed FLEXware products.

### FLEXware 250 Product Registration

#### System Owner

Name: \_\_\_\_\_ Address: \_\_\_\_\_  
City, State, Zip Code: \_\_\_\_\_ Country: \_\_\_\_\_  
Telephone Number: \_\_\_\_\_ E-mail: \_\_\_\_\_

#### Installer

Company: \_\_\_\_\_ Contractor Number: \_\_\_\_\_  
Installer Address: \_\_\_\_\_ Installer City, State, Zip: \_\_\_\_\_  
Installer E-mail: \_\_\_\_\_

#### System

System Install/Commission Date: \_\_\_\_\_

Please circle type of application:

Off-Grid      Grid-Interactive      AC Coupled      Backup      Mobile

Enclosure Model Number(s): \_\_\_\_\_ OB Kit Model Number: \_\_\_\_\_  
Sold by: \_\_\_\_\_ Purchase Date: \_\_\_\_\_

The system is equipped with (circle one):

FW-X240      PSX-240      PSX-240-Relay

Please circle the three most important factors affecting your purchase decision:

Price      Product Reputation      Product Features      Reputation of OutBack Power Systems      Value

I am interested in receiving information concerning OutBack Power Systems products and events (circle one):

Yes      No





Corporate Office  
19009 62nd Avenue NE  
Arlington, WA 98223 USA  
360-435-6030

[www.outbackpower.com](http://www.outbackpower.com)

European Sales Office  
C/ Castelló, 17  
08830 - Sant Boi de Llobregat  
BARCELONA, España  
+34.93.654.9568

900-0088-01-00 REV A