OutBack Power Systems™

FLEXware Integration Guide

Welcome

OutBack Power Systems is proud to begin another year of designing and manufacturing solutions with you, the customer, in mind. OutBack maintains the philosophy that listening to our customers and innovating to meet their needs is paramount to our success.

This past year OutBack's engineering, marketing and operations teams have been focusing on taking the suggestions provided by our customers to develop a new line of products called FLEXware. FLEXware is an evolution in balance of system components which are simple to order, easy to assemble and fast to install. In conjunction with this product development, we have made efforts to further enhance our industry-leading level of customer service by building our team of qualified technical and order service personnel.

OutBack is excited about what the future will bring. We will continue to listen to and learn from our customers, and continue to innovate. The power electronics and communications technologies we have developed over the past several years will allow OutBack to continue to provide the cutting edge solutions our customers are looking for as we move ahead.

We are confident that OutBack will continue to lead the way in bringing the solutions and services that people have come to depend on.

Thank you for your support as we continue ***Powering the Planet***.

History

2001 OutBack Power started by a passionate group of engineers whom wanted to bring power conversion electronics technology into the 21st century.

This small startup quickly grew by offering innovative and well designed solutions to renewable energy problems. OutBack listened to their customers and made many of the changes that were suggested, creating a truly customer focused company in the power conversion electronics industry.

2002 OutBack introduces its first sealed sinewave inverter/charger, the FX2024 - with resounding success.

This single model changed the way people looked at system design by offering unprecedented flexibility in system design and expansion while the sealed construction allowed for uses which previously would have been considered too "extreme" for other inverter/chargers.

OutBack releases the MX60 solar MPPT charge controller redefining performance and value.

This revolutionary product changed the way solar systems were being installed and quickly gained a reputation for getting the most power possible from a PV array - often making it more expensive to not use one.

2003 OutBack launches the first of the vented versions of the FX series inverter/chargers.

These VFX models were introduced in direct response to our customer's requests providing higher power at a similar price as the sealed counterpart.

OutBack launches the PS2, value priced system integration accessories.

This line of accessories addressed the needs of our customers for competitively priced system integration accessories for smaller systems.

2004 OutBack releases the world's most efficient grid-interactive inverter/charger.

These models raise the bar for performance and value for battery-connected grid-interactive inverter/charger systems. OutBack introduces the PS1 fully integrated grid-interactive power system.

This unique system sets a new standard for system integration, performance and ease of installation in grid-interactive applications.

2005 OutBack reaches milestones in product deliveries and product recognition.

MX60 and FX inverters production lines each ship 10,000 unit.

OutBack Power equipped teams sweep the top three places in the 2005 Solar Decathlon, a competition between International universities to develop and build the most energy efficient home.

Introducing the FLEXware System

FLEXware is the latest example of OutBack's continuous efforts to bring you the most value packed and technologically advanced products available.

Our integrating partners, dealers, installers, and system owners spoke–and we listened. The resulting FLEXware is the most integrated, modular, and spacious installation system OutBack has ever designed. Its components are more versatile, the wiring space is larger, and the all-aluminum, powder-coated construction not only resists corrosion longer, but is lighter and easier to handle than our previous steel construction. OutBack's new FLEXware makes for a great looking installation that will look great for years and years to come.

Designed to work as a modular "building block" architecture, FLEXware offers more versatility than before. From single inverter back-up systems to a multiple inverter village power system – FLEXware is the solution.

The FLEXware 250 offers the lowest cost solution for single inverter/charger installations when space and budget are primary concerns.

The FLEXware 500 supports up to two inverter/chargers and two charge controllers in an attractive, versatile and code-compliant package when more power is needed.

The FLEXware 1000 accommodates up to four inverter/chargers and four charge controllers. It can also be used for large systems with multiple power panels for systems up to 36 kW.

Both the FLEXware 500 and FLEXware 1000 systems provide ample locations for additional breakers, DC current shunts, an autotransformer and other items required in higher kW systems.

The new FLEXware MP mounting plate shows the versatility of the FLEXware system with its compatibility with both the FLEXware 500 and FLEXware 1000 systems.

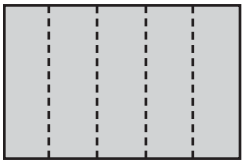
All of the FLEXware options have also been simplified, making the design, ordering and installation of power system easier than ever.

FLEXware 250

For applications with modest power requirements such as cabins, remote communication sites and back-up power systems. The all aluminum FLEXware 250 accommodates all of the essential protective devices in the smallest possible space at the lowest installed cost. Utilizing an extremely compact design and unique mounting features, up to two FLEXware 250 can be mounted on either side of a single FX series inverter/charger. The ETL listed powder coated enclosure provides breaker spaces for battery, PV array or PV GFP breakers and mounting locations for AC GFCI outlet and AC breakers. In keeping with the philosophy of FLEXware, FLEXware 250 flexibility is evident in the generous number of knock-outs allowing the connection of conduit, cable glands and other installation accessories.

Breaker Configuration Diagram

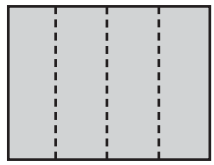
AC



Holds up to five small 0.75″ (19 mm) AC rated panel mount breakers (not included). The small sizes are rated for 1-60 amps of AC current.

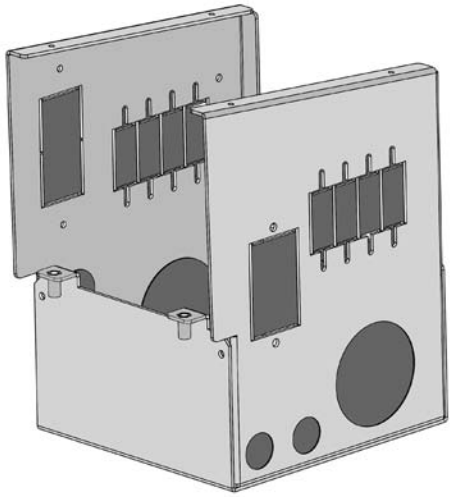
DC

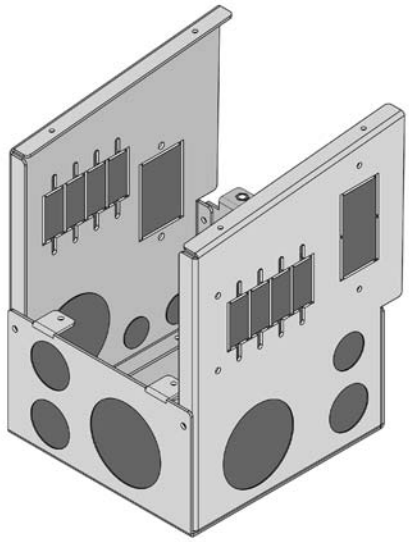
Holds one large 1.5″ (39 mm) wide 175 or 250 amp breaker.



Holds one large 1.5″ (39 mm) wide 175 or 250 amp breaker. Includes large DC breaker guard. Holds up to four small 0.75″ (19 mm) DC rated panel mount breakers (not included). The small sizes are rated for 1-80 amps of DC current.

Knockout Location Diagram





FLEXware 250 Specifications

Model: FX250

Description: DC and/or AC breaker enclosure

Includes: Ground bus bar, DC breaker handle guard and breaker mounting screws (DC current shunt not included)

Unit Dimensions (H x W x L)	Shipping Dimensions (H x W x L)	Shipping Weight
7.5 x 6.5 x 8.6" (19.1 x 16.5 x 21.8 cm)	9.75 x 8.4 x 11.6" (24.8 x 21.3 x 29.5 cm)	5 lbs. (2.3 kg)

Holds up to eight 1 to 80 amp, one 175 or 250 amp panel mount breaker and a GFCI AC outlet (not included).
*Does not use the DCA for connection to an FX inverter/charger.
*DC current shunt not included

FLEXware 250 Compatible AC Input-Output-Bypass Assemblies

Field installable kit with wire and all required ring terminals

Model: FW-IOB-S-120VAC

Includes: Includes three 50A 120VAC single pole PANEL mount breakers and sliding bypass interlock plate

System Rating	Bypass Breaker	Input Breaker	Output Breaker
Single Phase 120VAC 60 amp 7.2 kW	One Pole @ 60 amps 7.2 kW	One Pole @ 60 amps 7.2 kW	One Pole @ 60 amps 7.2 kW

Model: FW-IOB-S-230VAC

Includes: Includes three 30A 120VAC single pole PANEL mount breakers and sliding bypass interlock plate

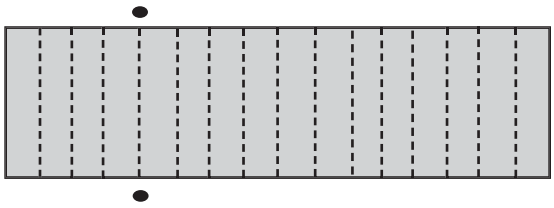
System Rating	Bypass Breaker	Input Breaker	Output Breaker
Single Phase 230VAC 30 amp 6.9 kW	One Pole @ 30 amps 6.9 kW	One Pole @ 30 amps 6.9 kW	One Pole @ 30 amps 6.9 kW

FLEXware 500

For applications with medium power requirements such as homes, light commercial or larger back-up power systems. FLEXware 500 system architecture is capable of supporting up to two OutBack FX series inverter/chargers, up to two MX60 charge controllers and all the associated AC and DC components. Thanks to a very compact design, FLEXware 500 AC and DC enclosures mount with FLEXware MP in either a horizontal or vertical orientation to allow installation in more space limited locations for a fast and professional looking wall-mounted installation. FLEXware 500 accommodates all of the essential protective devices in two enclosures.

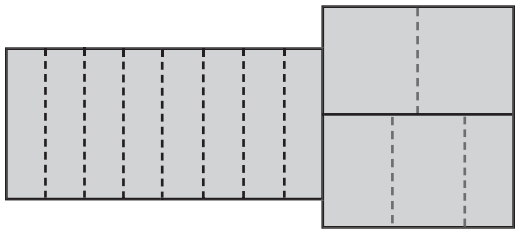
Breaker Configuration Diagram

AC



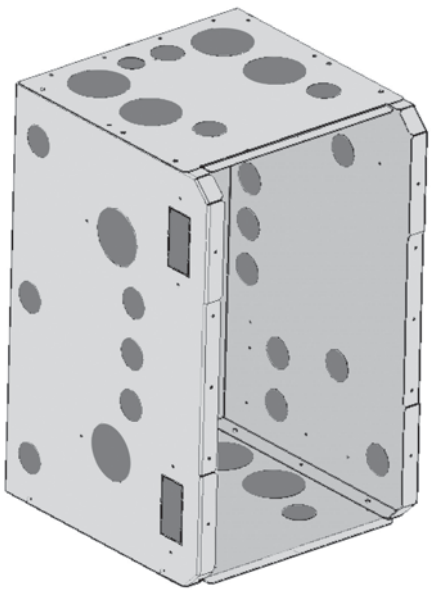
Holds up to sixteen DIN type (not included).

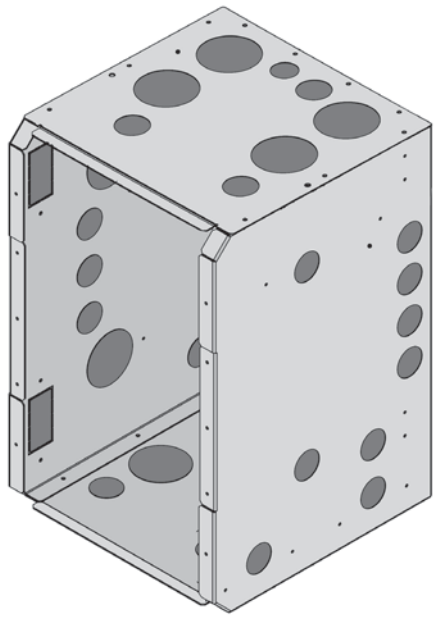
DC



Holds up to eight small 0.75" (19 mm), three breakers medium 1" (26 mm) or two large 1.5" (32 mm) DC rated breakers. The small are rated 1-80 amps, medium 100 or 125 amps and the large are 175 or 250 amps of DC current.

Knockout Location Diagram





FLEXware 500 Specifications

Model: FW500-DC

Description: fits at the DC side of one or two FX series inverter/chargers

Includes: Ground bus bar, 500 amp DC shunt assembly and breaker mounting screws

Unit Dimensions (H x W x L)	Shipping Dimensions (H x W x L)	Shipping Weight
18.2 x 11.4 x 12.1" (46.2 x 29 x 30.7 cm)	14.5 x 13.4 x 20.3" (36.8 x 34.1 x 51.6 cm)	15 lbs. (6.8 kg)

Model: FW500-AC

Description: fits at the AC side of one or two FX series inverter/chargers

Includes: Ground bus bar, DIN mounting bracket and wireway

Unit Dimensions (H x W x L)	Shipping Dimensions (H x W x L)	Shipping Weight
18.2 x 11.4 x 12.1" (46.2 x 29 x 30.7 cm)	14.5 x 13.4 x 20.3" (36.8 x 34.1 x 51.6 cm)	15 lbs. (6.8 kg)

*The FW500 system utilizes one FW-MP mounting plate and a set of the DCA and ACA conduit adapters for each Inverter/Charger.
*DC and AC breakers, input-output-bypass kits and all other additional components sold separately.

FLEXware 500 Compatible AC Input-Output-Bypass Assemblies

Field installable kit with wire and all required ring terminals

Model: FW-IOB-D-120/240VAC

Includes: six 60A 120VAC single pole DIN mount breakers and sliding bypass interlock plate

System Rating	Bypass Breaker	Input Breaker	Output Breaker
Split Phase 120/240 VAC 60 amps 14.4 kW	Two Poles @ 60 amps 14.4 kW	Two Poles @ 60 amps 14.4 kW	Two Poles @ 60 amps 14.4 kW

Model: FW-IOB-D-120VAC

Includes: six 60A 120VAC single pole DIN mount breakers and sliding bypass interlock plate

System Rating	Bypass Breaker	Input Breaker	Output Breaker
Single Phase 120 VAC 120 amps 14.4 kW	Two Poles @ 60 amps 14.4 kW	Two Poles @ 60 amps 14.4 kW	Two Poles @ 60 amps 14.4 kW

Model: FW-IOB-D-230VAC

Includes: six 30A 230VAC single pole DIN mount breakers and sliding bypass interlock plate

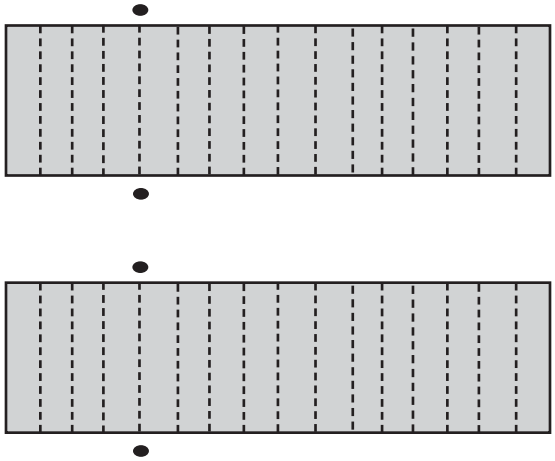
System Rating	Bypass Breaker	Input Breaker	Output Breaker
Single Phase 230 VAC 60 amps 13.8 kW	Two Poles @ 30 amps 13.8 kW	Two Poles @ 30 amps 13.8 kW	Two Poles @ 30 amps 13.8 kW

FLEXware 1000

For applications with large power requirements such as large residential, commercial or village power systems. FLEXware 1000 system architecture is capable of supporting up to four OutBack FX series inverter/chargers, four MX60 charge controllers, and all the required AC and DC components and wiring. Utilizing a compact design, FLEXware 1000 AC and DC enclosures accommodate all of the essential protective devices with lots of room for additional breakers and large cable connections.

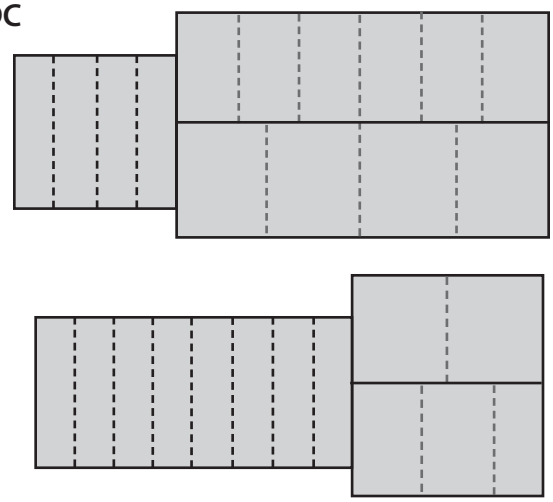
Breaker Configuration Diagram

AC



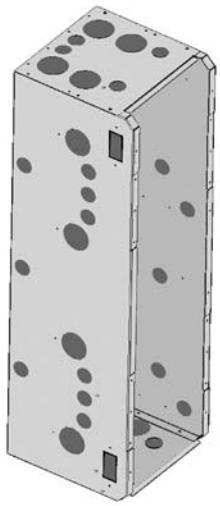
Holds up to thirty-two DIN type breakers (not included)

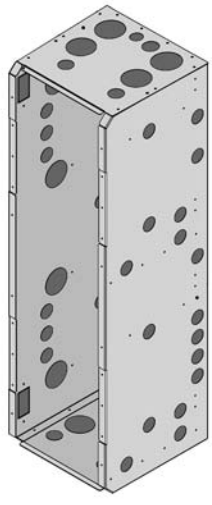
DC



Holds up to eleven small 0.75" (19 mm), nine medium 1" (26 mm) or six large 1.5" (32 mm) DC rated breakers. The small are rated 1-80 amps, medium 100 or 125 amps and the large are 175 or 250 amps of DC current.

Knockout Location Diagram





FLEXware 1000 Specifications

Model: FW1000-DC

Description: fits at the DC side of three or four FX inverter/chargers

Includes: Ground bus bar, 1000 amp DC shunt assembly and breaker mounting screws

Unit Dimensions (H x W x L)	Shipping Dimensions (H x W x L)	Shipping Weight
38.5 x 11.4 x 12.1" (97.8 x 29.0 x 30.7 cm)	14.5 x 13.6 x 40.6" (36.8 x 34.5 x 103.1 cm)	21 lbs. (9.5 kg)

Model: FW1000-AC

Description: fits at the AC side of three or four FX inverter/chargers

Includes: Ground bus bar, two DIN mounting brackets and wireway

Unit Dimensions (H x W x L)	Shipping Dimensions (H x W x L)	Shipping Weight
38.5 x 11.4 x 12.1" (97.8 x 29.0 x 30.7 cm)	14.5 x 13.6 x 40.6" (36.8 x 34.5 x 103.1 cm)	21 lbs. (9.5 kg)

*The FW1000 system utilizes two FW-MP mounting plate and two sets of the DCA and ACA conduit adapters for each Inverter/Charger.
*DC and AC breakers, input-output-bypass kits and all other additional components sold separately.

FLEXware 500 Compatible AC Input-Output-Bypass Assemblies

Field installable kit with wire and all required ring terminals

Model: FW-IOB-T-120/208VAC

Includes: nine 60A 120VAC single pole DIN mount breakers and sliding bypass interlock plate

System Rating	Bypass Breaker	Input Breaker	Output Breaker
Three Phase 120/208VAC 60 amps 21.6 kW	Three Poles@ 60 amps 21.6 kW	Three Poles@ 60 amps 21.6 kW	Three Poles@ 60 amps 21.6 kW

Model: FW-IOB-T-230/400VAC

Includes: nine 30A 230VAC single pole DIN mount breakers and sliding bypass interlock plate

System Rating	Bypass Breaker	Input Breaker	Output Breaker
Three Phase 230/400 VAC 30 amps 20.7 kW	Three Poles @ 60 amps 20.7 kW	Three Poles @ 60 amps 20.7 kW	Three Poles @ 60 amps 20.7 kW

Model: FW-IOB-Q-120/240VAC

Includes: twelve 60A 120VAC single pole DIN mount breakers and sliding bypass interlock plate

System Rating	Bypass Breaker	Input Breaker	Output Breaker
Split Phase 120/240 VAC 120 amps 28.8 kW	Four Poles @ 60 amps 28.8 kW	Four Poles @ 60 amps 28.8 kW	Four Poles @ 60 amps 28.8 kW

Model: FW-IOB-Q-120VAC

Includes: twelve 60A 120VAC single pole DIN mount breakers and sliding bypass interlock plate

System Rating	Bypass Breaker	Input Breaker	Output Breaker
Single Phase 120 VAC 240 amps 28.8kW	Four Poles @ 60 amps 28.8 kW	Four Poles @ 60 amps 28.8 kW	Four Poles @ 60 amps 28.8 kW

Model: FW-IOB-Q-230VAC

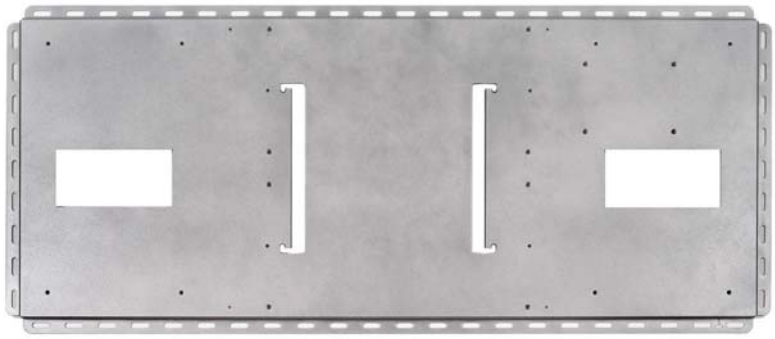
Includes: twelve 30A 230VAC single pole DIN mount breakers and sliding bypass interlock plate

System Rating	Bypass Breaker	Input Breaker	Output Breaker
Single Phase 230 VAC 120 amps 27.6 kW	Four Poles @ 60 amps 27.6 kW	Four Poles @ 60 amps 27.6 kW	Four Poles @ 60 amps 27.6 kW

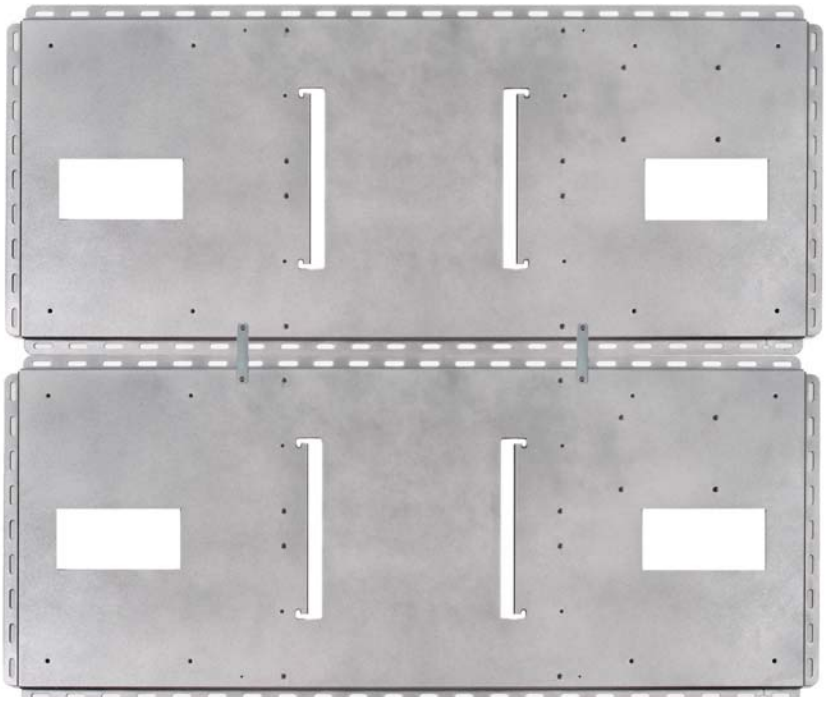
FLEXware MP

FLEXware MP is a one piece, powder coated aluminum mounting plate for FLEXware 500 and FLEXware 1000. Utilizing stainless steel mounting hardware, the integrated locating bolts make installation quick and easy by providing guides to line up enclosures and inverter/chargers. A single FLEXware MP is designed to accommodate FLEXware 500 while two FLEXware MP utilized in a FLEXware 1000 configuration.

Single MP Configuration for FLEXware 500



Dual MP Configuration for FLEXware 1000



Model: FW-MP

Description: FLEXware system mounting plate

Unit Dimensions (H x W x L)	Shipping Dimensions (H x W x L)	Shipping Weight
20.3 x 46.3 x .8" (51.6 x 117.6 x 2.1 cm)	1.15 x 22.9 x 48.4" (2.9 x 58.2 x 123 cm)	14 lbs. (6.4 kg)

Components

OutBack DIN Mountable Breakers

DIN rail "snap-in" mountable Hydraulic-Magnetic type breakers that can be used for input, output or load circuits.

Model	Current Rating	Voltage Rating	Branch Circuit	Variation	Terminals	Width
OBB-15-120VAC-DIN	15 amp	120VAC 50/60Hz	10k AIC	Single pole	#14 to 2 AWG clamp	0.50" (13 mm
OBB-15D-240VAC-DIN	15 amp	120/240VAC 50/60Hz	10k AIC	dual pole	#14 to 2 AWG clamp	1.0" (26 mm)
OBB-20-120VAC-DIN	20 amp	120VAC 50/60Hz	10k AIC	single pole	#14 to 2 AWG clamp	0.50" (13 mm)
OBB-20D-240VAC-DIN	20 amp	120/240VAC 50/60Hz	10k AIC	dual pole	#14 to 2 AWG clamp	1.0" (26 mm)
OBB-25D-240VAC-DIN	25 amp	120/240VAC 50/60Hz	10k AIC	dual pole	#14 to 2 AWG clamp	1.0" (26 mm)
OBB-10-277VAC-DIN	10 amp	277VAC 50/60Hz	N/A	single pole	#14 to 2 AWG clamp	0.5" (13 mm)
OBB-15-277VAC-DIN	15 amp	277VAC 50/60HZ	N/A	single pole	#14 to 2 AWG clamp	0.5" (13 mm)
OBB-30-277VAC-DIN	30 amp	277VAC 50/60Hz	N/A	single pole	#14 to 2 AWG clamp	0.5" (13 mm)
OBB-30D-480VAC-DIN	30 amp	277/480VAC 50/60Hz	N/A	dual pole	#14 to 2 AWG clamp	1.0" (26 mm)
OBB-30T-480VAC-DIN	30 amp	277/480VAC 50/60Hz	N/A	three pole	#14 to 2 AWG clamp	1.5" (39 mm)
OBB-50-277VAC-DIN	50 amp	277VAC 50/60Hz	N/A	single pole	#14 to 2 AWG clamp	0.5" (13 mm)
OBB-50D-480VAC-DIN	50 amp	277/480VAC 50/60Hz	N/A	dual pole	#14 to 2 AWG clamp	1.0" (26 mm)
OBB-50T-480VAC-DIN	50 amp	277/480VAC 50/60Hz	N/A	three pole	#14 to 2 AWG clamp	1.5" (39 mm)
OBB-60-277VAC-DIN	60 amp	277VAC 50/60Hz	N/A	single pole	#14 to 2 AWG clamp	0.5" (13 mm)

OutBack Panel Mounted Breakers

Panel mounted Hydraulic-Magnetic type breaker switch can be used for DC sources, inverters or load circuits.

Model	Current Rating	Voltage Rating	Terminals	Width
OBB-1-125VDC120VAC-PNL	1 amp	125VDC 120VAC	1/4" stud	0.75" (19 mm)
OBB-5-125VDC120VAC-PNL	5 amp	125VDC 120VAC	1/4" stud	0.75" (19 mm)
OBB-10-125VDC120VAC-PNL	10 amp	125VDC 120VAC	1/4" stud	0.75" (19 mm)
OBB-15-125VDC120VAC-PNL	15 am	125VDC 120VAC	1/4" stud	0.75" (19 mm)
OBB-20-125VDC120VAC-PNL	20 am	125VDC 120VAC	1/4" stud	0.75" (19 mm)
OBB-30-125VDC120VAC-PNL	30 amp	125VDC 120VAC	1/4" stud	0.75" (19 mm)
OBB-40-125VDC120VAC-PNL	40 amp	125VDC 120VAC	1/4" stud	0.75" (19 mm)
OBB-50-125VDC120VAC-PNL	50 amp	125VDC 120VAC	1/4" stud	0.75" (19 mm)
OBB-60-125VDC120VAC-PNL	60 amp	125VDC 120VAC	1/4" stud	0.75" (19 mm)
OBB-80-125VDC-PNL	80 am	125VDC	1/4" stud	0.75" (19 mm)
OBB-100-125VDC-PNL	100 amp	125VDC	5/16" stud	1.0" (26 mm)
OBB-125-125VDC-PNL	125 amp	125VDC	5/16" stud	1.0" (26 mm)
OBB-175-125VDC-PNL	175 am	125VDC	3/8" stud	1.5" (39 mm)
OBB-250-125VDC-PNL	250 amp	125VDC	3/8" stud	1.5" (39 mm)

Components

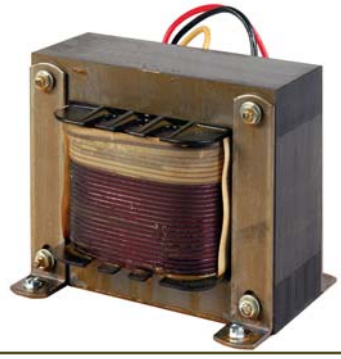
OutBack PV Ground Fault Protection System

Ground fault protection is required by the NEC for PV arrays mounted on or within a specified vicinity of residential dwelling roofs as a safety precaution. Utilizing its panel mount functionality, the OutBack PV Ground Fault Protection System can be installed in FLEXware 250, FLEXware 500 or FLEXware 1000.

Model	Description	Terminals	Width
OBB-GFP-80D-125VDC-PNL	OutBack PV Ground Fault Protection 80amp 125VDC dual pole Panel mount	1/4" stud	2.25" (57 mm)

*protects wiring and system components for one or two PV arrays

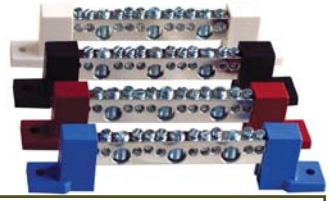
X-240 Auto-transformer



Designed to be housed within the FW500-AC or FW1000-AC. The FW-X240 auto transformer with a 120 volt/30 amp primary and secondary side can be used for step-up, step-down, generator and split phase output balancing or as a series stacked inverter to load balancing auto-former. It can also transfer up to 2kW from one side of the total power rating of the generator or the total power rating of an OutBack stacked series/parallel 120/240 VAC inverter/charger configuration.

Model	Description	Includes
FW-X240	Auto-transformer 4 kVA 120/240VAC 60Hz with 25 amp dual pole breaker for mounting inside of FW500-AC or FW1000-AC	Auto-transformer

Terminal Bus Bars



Used for adding more wire terminations or for isolating multiple positive / negative circuits. All TBB models have three #1/0 to 14 AWG and eight #6 to 14 AWG screw type compression terminals, which means no ring lugs required. Available with black, white, red, blue and brown insulators.

Model	Description	Terminals
TBB-GROUND	Ground/Neutral terminal bus bar with mounting screws (no insulators)	Three #1/0 to 14 AWG and Eight #6 to 14 AWG screw type compression
TBB-BLACK	Bus bar with black insulators with mounting screws - use as L1 hot or DC negative	Three #1/0 to 14 AWG and Eight #6 to 14 AWG screw type compression terminals
TBB-BLUE	Bus bar with blue insulators with mounting screws - use as Phase C on three phase systems	Three #1/0 to 14 AWG and Eight #6 to 14 AWG screw type compression terminals
TBB-RED	Bus bar with red insulators with mounting screws - use as L2 hot or DC positive	Three #1/0 to 14 AWG and Eight #6 to 14 AWG screw type compression terminals
TBB-WHITE	Bus bar with white insulators with mounting screws - use as AC neutral or DC negative	Three #1/0 to 14 AWG and Eight #6 to 14 AWG screw type compression terminals
TBB-BROWN	Bus bar with brown insulators with mounting screws -use as AC hot in European systems	Three #1/0 to 14 AWG and Eight #6 to 14 AWG screw type compression terminals

Components

DC Bus Bars

OutBack Power Systems DC bus bars are designed to enable the most complex of code compliant DC cable connections.

Model	Description
FW-BBUS	Breaker Bus allows connection of two 175-250A, three 100-125A, four 1-80A DC breakers or three 500 amp DC current shunts - plated copper plate rated for 500 amps
FW-CBUS	Combiner Bus connects up to eight DIN mounted breakers or four DIN mounted fuse holders - includes one 1/0 set screw lug - plated copper rated for 200 amps
FW-SBUS	Shunt Bus allows up to four high current cable connections on same side of DC shunt - includes two 3/8 inch bolts and mounting screws - solid brass rated for 1000 amps

DC Current Shunts

OutBack Power Systems DC current shunt kits when used with an amp hour meter can provide valuable insight into the status of your batteries or DC power source.

Model	Description	Includes
FW-SHUNT250	500 amp DC current shunt with attached terminal bus bar for mounting on top of a FX series inverter/charger	Shunt, mounting screws and bus bar for connection to FX inverter's DC negative terminal
FW-SHUNT500	500 amp DC current shunt with terminal bus bar	Shunt, terminal bus bar and one white insulator and mounting screws

Conduit Adapters

Allows connection of the FX and VFX inverter/chargers to FLEXware 500 and FLEXware 1000 breaker panels, conduit or cable strain glands

Model	Description	Includes
ACA	Adapter for AC end of FX inverter/charger	ACA and mounting hardware
DCA	Adapter for DC end of FX inverter/charger	DCA and mounting hardware

Charge Controller Mounting Brackets

FW-CCB and FW-CCB2 mounting brackets allow OutBack Power Systems charge controllers to be mounted on the side of FW500-DC or FW1000-DC enclosures. FW-CCB2-T mounting bracket allows OutBack Power Systems charge controllers to be mounted on the top of FW500-DC or FW1000-DC enclosures.

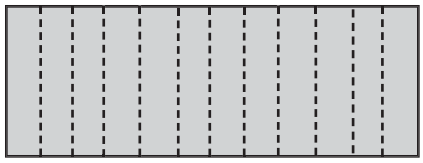
Model	Description	Includes
FW-CCB	Bracket for mounting a single MX60 charge controller	Brackets, bushings and mounting hardware
FW-CCB2	Bracket for mounting two MX60 charge controllers	Bracket, bushings and mounting hardware
FW-CCB2-T	Bracket for mounting two MX60 charge controllers	Bracket, bushings and mounting hardware

PSPV

The rainproof PSPV is an aluminum solar array combiner which can be used with a wide variety of system configurations and solar module types. Approved for installation on both vertical and angled surfaces with a slope as little as 3-in-12 pitch - also can be pole mounted (Brackets not included)The PSPV is designed to provide NEC code compliant series over-current protection of the wiring of multiple PV modules or sub arrays for connection to charge controllers, inverters or other systems components. For negative or positive ground PV systems PSPV is easily field configured to match your PV system design and amperage requirements.

Dual combining bus bars which can be installed to provide one or two separate PV output circuits from a single PSPV enclosure

Breaker Configuration Diagram



Holds up to twelve OutBack DIN mounted breakers for PV array configurations of 12 to 72 VDC systems maximum open circuit voltage of 150 VDC or use OutBack Power Systems OBF "touch safe" type fuse holders for high voltage systems with a maximum open circuit voltage of 600 VDC

Model: PSPV

Description: Powder coated aluminum PV array combiner box

Includes: PSPV, Dual combining bus bars, one terminal bus bar, two #1/0 AWG set-screw compression type box lug terminals, one #1/0 AWG ground lug

Enclosure Rating: Type 3R (IP44)

Unit Dimensions (H x W x L)	Shipping Dimensions (H x W x L)	Shipping Weight
13.1 x 8.8 x 3.4" (34.1 x 22.4 x 8.6 cm)	16 x 12 x 7" (40.6 x 30.5 x 17.8 cm)	5 lbs (2.3 kg)

PSPV

OutBack DC DIN Mount Breakers

DIN rail "snap-in" mount breakers are Hydraulic-Magnetic type and are not affected by high ambient temperatures.

Model	Current Rating	Voltage Rating	Terminals	Width
OBB-1-125VDC-DIN	1 amp	125VDC	#14 to 2 AWG clamp terminals	0.5" (13 mm)
OBB-2-125VDC-DIN	2 amp	125VDC	#14 to 2 AWG clamp terminals	0.5" (13 mm)
OBB-3-125VDC-DIN	3 amp	125VDC	#14 to 2 AWG clamp terminals	0.5" (13 mm)
OBB-4-125VDC-DIN	4 amp	125VDC	#14 to 2 AWG clamp terminals	0.5" (13 mm)
OBB-5-125VDC-DIN	5 amp	125VDC	#14 to 2 AWG clamp terminals	0.5" (13 mm)
OBB-6-125VDC-DIN	6 amp	125VDC	#14 to 2 AWG clamp terminals	0.5" (13 mm)
OBB-8-125VDC-DIN	8 amp	125VDC	#14 to 2 AWG clamp terminals	0.5" (13 mm)
OBB-9-125VDC-DIN	9 amp	125VDC	#14 to 2 AWG clamp terminals	0.5" (13 mm)
OBB-10-125VDC-DIN	10 amp	125VDC	#14 to 2 AWG clamp terminals	0.5" (13 mm)
OBB-15-125VDC-DIN	15 amp	125VDC	#14 to 2 AWG clamp terminals	0.5" (13 mm)
OBB-20-125VDC-DIN	20 amp	125VDC	#14 to 2 AWG clamp terminals	0.5" (13 mm)
OBB-30-125VDC-DIN	30 amp	125VDC	#14 to 2 AWG clamp terminals	0.5" (13 mm)
OBB-50-125VDC-DIN	50 amp	125VDC	#14 to 2 AWG clamp terminals	0.5" (13 mm)
OBB-60-125VDC-DIN	60 amp	125VDC	#14 to 2 AWG clamp terminals	0.5" (13 mm)

OutBack High Voltage DIN Mount Fuse Holders and Fuses

Fuse holders are DIN rail "snap-in" mount with #8 AWG setscrew type compression terminals. Touch-safe design and not rated for load make or load break usage.

Model	Description	Current Rating	Voltage Rating	Width
OBF-6-600VDC	Fuse	6 amp	600VDC	N/A
OBF-10-600VDC	Fuse	10 amp	600VDC	N/A
OBF-15-600VDC	Fuse	15 amp	600VDC	N/A
OBFH-30-600VDC-DIN	Fuse Holder	30 amp	600VDC	0.7 " (18 mm)

Terminal Bus Bars

Used for adding more wire terminations or for isolating multiple positive / negative circuits. All TBB models have three #1/0 to 14 AWG and eight #6 to 14 AWG screw type compression terminals, which means no ring lugs required. Available with black, white, red, blue and brown insulators.

Model	Description	Terminals
TBB-GROUND	Ground/Neutral terminal bus bar with mounting screws (no insulators)	Three #1/0 to 14 AWG and Eight #6 to 14 AWG screw type compression
TBB-BLACK	Bus bar with black insulators with mounting screws - use as L1 hot or DC negative	Three #1/0 to 14 AWG and Eight #6 to 14 AWG screw type compression terminals
TBB-BLUE	Bus bar with blue insulators with mounting screws - use as Phase C on three phase systems	Three #1/0 to 14 AWG and Eight #6 to 14 AWG screw type compression terminals
TBB-RED	Bus bar with red insulators with mounting screws - use as L2 hot or DC positive	Three #1/0 to 14 AWG and Eight #6 to 14 AWG screw type compression terminals
TBB-WHITE	Bus bar with white insulators with mounting screws - use as AC neutral or DC negative	Three #1/0 to 14 AWG and Eight #6 to 14 AWG screw type compression terminals
TBB-BROWN	Bus bar with brown insulators with mounting screws -use as AC hot in European systems	Three #1/0 to 14 AWG and Eight #6 to 14 AWG screw type compression terminals

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