Declaration of Conformity
for FXR™ Series Inverter/Chargers

Purpose

The intent of this document is to specify that the OutBack Power™ models listed below conform to the following standards for grid-interactive inverter/chargers intended for use in the United States and Canada.

This document supersedes any previous declarations for these OutBack Power models.

Scope

OutBack Power models covered by this Declaration of Conformity include the following.

- FXR2012A
- VFXR2812A
- FXR2524A
- VFXR3524A
- FXR3048A
- VFXR3648A

IMPORTANT:

This Declaration of Conformity covers only the models listed above. This Declaration does not cover any other models.

Listings

These products carry a listing report by ETL and are listed to the following standards (by model).

- (24- and 48-volt models only) UL 1741 — Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources (2nd Edition, 1/28/2010 with supplement SA)
- (12-volt models only) UL 1741 — Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources (2nd Edition, 1/28/2010)

Certifications

These products have been certified by ETL to meet the following standards (by model).

- (All models) UL 1778 — Uninterruptible Power Systems, Annex FF (normative): Backfeed Protection Test
- (24- and 48- volt models only) IEC 62109-1:2010 — Safety of Power Converters for use in Photovoltaic Systems

Directives

- RoHS: Directive 2011/65/EU — “The restriction of the use of certain substances in electrical and electronic equipment”

Compliance

24- and 48-volt models comply with the standards shown below and on the following pages. These standards do not apply to 12-volt models.

- Hawaiian Electric Companies (HECO) Rule 14H SRD
- California Rule 21 SRD
- IEEE 1547 — Standard for Interconnecting Distributed Resources with Electric Power Systems (July 2003)
- IEEE 1547.1 — Standard for Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems (July 2005)

CE 13

Compliance (continued)

24- and 48-volt models comply with the standards shown below and on the following pages. These standards do not apply to 12-volt models.

Inverters intended for grid-interactive use in the United States and Canada must comply with the established standards of UL 1741 and IEEE 1547 and 1547.1. These standards provide regulation for acceptable output voltage ranges, output frequency, total harmonic distortion (THD), and anti-islanding performance when the inverter is exporting power to a utility source. FXR models are tested using the procedures listed in IEEE 1547.1 to the standards listed in both UL 1741 and IEEE 1547. The following specifications have been validated through compliance testing and refer to exporting power to a simulated utility source of less than 1% voltage total harmonic distortion (THD).

- The output of the inverter exceeds the minimum power factor of 0.85 with a typical power factor of 0.96 or better.
- Individual harmonics do not exceed the limits specified in Table 3 of IEEE 1547 Section 4.3.3. The THD of the root mean square (RMS) current is less than 5%.
- The inverter ceases to export power to the simulated utility source under islanding conditions specified in IEEE 1547 Section 4.4.1.
- The inverter also ceases to export power to the simulated utility source after the output voltage or frequency of the simulated utility source are adjusted to each of the conditions specified in IEEE 1547 Section 4.2.3 Table 1 and Section 4.2.4 Table 2 within the times specified in those tables. FXR inverters are tested to comply with the table below.

Interconnection Response Times to Abnormal Voltages or Frequencies

Voltage Range (AC Volts)	Frequency (Hz)	Seconds Allowed	Cycles Allowed
V < 60.0	60.0	0.16	9.6
60.0 ≤ V < 105.6	60.0	2.0	120.0
105.6 ≤ V ≤ 132.0	60.0	no cessation	no cessation
132.0 < V < 144.0	60.0	1.0	60.0
V ≥ 144.0	60.0	0.16	9.6
120.0	< 59.3	0.16	9.6
120.0	> 60.5	0.16	9.6

Manufacturer's Stated Accuracy

OutBack Power states the following accuracies according to the requirements of UL1741 SA.

Manufacturer's Stated Accuracy

Description	VFXR3648A	FXR3048A	VFXR3524A	FXR2524A
Manufacturer's stated AC voltage accuracy (Vac)	3 Vac	3 Vac	3 Vac	3 Vac
Manufacturer's stated DC voltage accuracy (Vdc)	0.8 Vdc	0.8 Vdc	0.4 Vdc	0.4 Vdc
Manufacturer's stated AC current accuracy (Aac)	1.5 Aac	1.5 Aac	1.5 Aac	1.5 Aac
Manufacturer's stated frequency measurement accuracy (Hz)	0.06 Hz	0.06 Hz	0.06 Hz	0.06 Hz
Manufacturer's stated output power accuracy (%W)	5%	5%	5%	5%
Manufacturer's stated reactive power accuracy (%)	31.2%	31.2%	31.2%	31.2%
Manufacturer's stated power factor accuracy	0.05	0.05	0.05	0.05
Manufacturer's stated time accuracy (sec)	0.033 sec	0.033 sec	0.033 sec	0.033 sec

Grid Support Function Parameters

OutBack Power used the following parameters during the testing of the grid support functions according to UL1741 SA. The parameters that have N/A as their value are not applicable.

Normal Ramp Parameters

Description	VFXR3648A	FXR3048A	VFXR3524A	FXR2524A
Output current rating (Aac)	30 Aac	24 Aac	28 Aac	20 Aac
Minimum normal ramp-up rate (%I_{rated} / sec)	1 %/sec	1 %/sec	1 %/sec	1 %/sec
Maximum normal ramp-up rate (%I_{rated} / sec)	4.17 %/sec	4.17 %/sec	4.17 %/sec	4.17 %/sec
Output current range of function (%I_{rated})	0%, 100%	0%, 100%	0%, 100%	0%, 100%
Ramp rate accuracy (%I_{rated} / sec)[1]	N/A	N/A	N/A	N/A

Soft-Start Ramp Parameters

Description	VFXR3648A	FXR3048A	VFXR3524A	FXR2524A
Output Current Rating (Aac)	30 Aac	24 Aac	28 Aac	20 Aac
Minimum soft start ramp-up rate (%I_{rated} / sec)	0.1 %/sec	0.1 %/sec	0.1 %/sec	0.1 %/sec
Maximum soft start ramp-up rate (%I_{rated} / sec)	4.17 %/sec	4.17 %/sec	4.17 %/sec	4.17 %/sec
Output current range of function (%I_{rated})	0%, 100%	0%, 100%	0%, 100%	0%, 100%
Ramp Rate Accuracy (%I_{rated} / sec)[1]	N/A	N/A	N/A	N/A

Specified Power Factor Parameters

Description	VFXR3648A	FXR3048A	VFXR3524A	FXR2524A
Apparent power rating (VA)	3600 VA	3000 VA	3500 VA	2500 VA
Output power rating (W)	3600 W	3000 W	3500 W	2500 W
DC Input voltage range with SPF enabled (Vdc)	44 to 68 Vdc	44 to 68	44 to 68 Vdc	44 to 68
Nominal AC voltage (Vac)	120 Vac	120 Vac	120 Vac	120 Vac
AC voltage range with SPF enabled (Vac)	98 to 140 Vac	98 to 140 Vac	98 to 140 Vac	98 to 140 Vac
Manufacturer's stated AC voltage accuracy (Vac)	3 Vac	3 Vac	3 Vac	3 Vac
Manufacturer's stated DC voltage accuracy (Vdc)	0.8 Vdc	0.8 Vdc	0.4 Vdc	0.4 Vdc
Active power range of function (W)	720, 3600 W	600, 3000 W	700, 3500 W	500, 2500 W
Manufacturer's stated Power Factor accuracy	0.05	0.05	0.05	0.05
Power factor settling time (sec)	25 sec	25 sec	25 sec	25 sec
Minimum Inductive (underexcited) Power Factor	–0.80	–0.80	–0.80	–0.80
Minimum Capacitive (overexcited) Power Factor	0.80	0.80	0.80	0.80

Volt-Watt Parameters

Description	VFXR3648A	FXR3048A	VFXR3524A	FXR2524A
Output power rating (W)	3600 W	3000 W	3500 W	2500 W
AC voltage range with function enabled (Vac)	123, 132 Vac	123, 132 Vac	123, 132 Vac	123, 132 Vac
Nominal AC voltage (Vac)	120 Vac	120 Vac	120 Vac	120 Vac
Manufacturer's stated AC voltage accuracy (Vac)	3 Vac	3 Vac	3 Vac	3 Vac
Manufacturer's stated output power accuracy (%W)	5%	5%	5%	5%
Manufacturer's stated time accuracy (sec)	0.033 sec	0.033 sec	0.033 sec	0.033 sec
Settling time (sec)	4 sec	4 sec	4 sec	4 sec
Adjustment range of start of active power reduction (Vac)	123, 132 Vac	123, 132 Vac	123, 132 Vac	123, 132 Vac
Adjustment range of stop of curtailment function (Vac)	125, 132 Vac	125, 132 Vac	125, 132 Vac	125, 132 Vac
Maximum slope of active power reduction (%P_{rated} / V)	100 %/V	100 %/V	100 %/V	100 %/V
Minimum slope of active power reduction (%P_{rated} / V)	3 %/V	3 %/V	3 %/V	3 %/V
Adjustment range of delay before return to normal operation (sec)	0, 1800 sec	0, 1800 sec	0, 1800 sec	0, 1800 sec
Adjustment range of the rate of return to normal operation (%P_{rated}/sec)[2]	N/A	N/A	N/A	N/A
Use of hysteresis	No hysteresis	No hysteresis	No hysteresis	No hysteresis
Slope of the active power response to changes in voltage (%)	100%, 3%	100%, 3%	100%, 3%	100%, 3%
Active power rate of return to normal operation[2]	N/A	N/A	N/A	N/A

[1] Normal ramp and soft-start ramp rate accuracies are not applicable, as the SRD requirements specify a maximum value instead of an average value.
[2] Due to the SRD requirement to have no hysteresis curve, the rate of return to normal operation was not required to be tested.

Declaration of Conformity

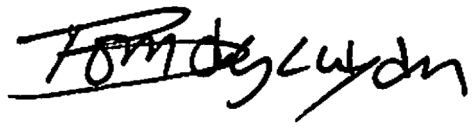
Frequency-Watt Parameters

Description	VFXR3648A	FXR3048A	VFXR3524A	FXR2524A
Output power rating (W)	3600 W	3000 W	3500 W	2500 W
AC frequency range with function enabled (Hz)	54.5, 65.5 Hz	54.5, 65.5 Hz	54.5, 65.5 Hz	54.5, 65.5 Hz
Manufacturer's stated frequency measurement accuracy (Hz)	0.06 Hz	0.06 Hz	0.06 Hz	0.06 Hz
Manufacturer's state power accuracy (%W)	5%	5%	5%	5%
Settling Time (sec)	4 sec	4 sec	4 sec	4 sec
Adjustment range of the start of frequency droop (Hz)	59.0, 61.0 Hz	59.0, 61.0 Hz	59.0, 61.0 Hz	59.0, 61.0 Hz
Maximum slope of frequency droop (%P_{rated} / Hz)	83% / Hz	83% / Hz	83% / Hz	83% / Hz
Minimum slope of frequency droop (%P_{rated} / Hz)	24% / Hz	24% / Hz	24% / Hz	24% / Hz
Slope of active power response to change in frequency (%)	83%, 24%	83%, 24%	83%, 24%	83%, 24%

Volt/VAr Parameters

Description	VFXR3648A	FXR3048A	VFXR3524A	FXR2524A
Apparent power rating (VA)	3600 VA	3000 VA	3500 VA	2500 VA
Output power rating (W)	3600 W	3000 W	3500 W	2500 W
EUT Input voltage range with Q(V) function enabled (Vdc)	44 to 68 Vdc	44 to 68 Vdc	44 to 68 Vdc	44 to 68 Vdc
Nominal AC EPS voltage (V)	120 Vac	120 Vac	120 Vac	120 Vac
AC EPS voltage range with function enabled (Vac)	98 to 140 Vac	98 to 140 Vac	98 to 140 Vac	98 to 140 Vac
Reactive Power Accuracy (%)	31.2%	31.2%	31.2%	31.2%
Maximum Ramp Rate (VAr/sec)	400 VAr/sec	400 VAr/sec	400 VAr/sec	400 VAr/sec
Max rated reactive Power (capacitive, overexcited) (VAr)	2160 VAr	1800 VAr	2100 VAr	1500 VAr
Max rated reactive Power (inductive, underexcited) (VAr)	–2160 VAr	–1800 VAr	–2100 VAr	–1500 VAr
Maximum slope (VAr/V)	1080 VAr/V	1080 VAr/V	1080 VAr/V	1080 VAr/V
Deadband Range (Vac)	0, 24 Vac	0, 24 Vac	0, 24 Vac	0, 24 Vac
Settling Time (sec)	12 sec	12 sec	12 sec	12 sec

I hereby certify that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all applicable requirements.



Bo Magluyan
Product Manager
OutBack Power
Date: August 24, 2022

Contact Information

Address: 3767 Alpha Way
Bellingham, WA 98226

Telephone: +1 360-435-6030
Website: www.outbackpower.com

Date and Revision

September 2022, Revision B

Part Number

907-0011-01-01 Rev B

World Headquarters
2366 Bernville Road
Reading, PA 19605 USA
+1 610-208-1991 / +1 800-538-3627

EnerSys EMEA
EH Europe GmbH
Baarerstrasse 18
6300 Zug Switzerland

EnerSys Asia
152 Beach Road
Gateway East Building #11-08
Singapore 189721 / +65 6508-1780

For more information visit **www.enersys.com** © 2021 EnerSys. All Rights Reserved. Trademarks and logos are the property of EnerSys and its affiliates unless otherwise noted. Subject to revisions without prior notice. E.&O.E.