Certificate of Compliance

Certificate: 2682832 **Master Contract:** 259813

Project: 2682832 **Date Issued:** December 3, 2013

Issued to: **ABB, Inc.**
16250 W. Glendale Drive
New Berlin, WI 53151
USA

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only

C US

Issued by: Jocelyn Jens
Product Group Coordinator

Authorized by: Lindsay Clark
Operations Manager

PRODUCTS

CLASS 5311 09 - POWER SUPPLIES - Distributed Generation Power Systems Equipment
CLASS 5311 89 - POWER SUPPLIES - Distributed Generation - Power Systems Equipment (Certified to U.S. Standards)

Utility Interactive Inverter, Models MICRO-0.3-I-OUTD-US-208/240, MICRO-0.3HV-I-OUTD-US-208/240, and MICRO-0.25-I-OUTD-US-208/240.

For details related to ratings, reference should be made to the CSA Certification Record, or the Certificate of Compliance Annex 1.

APPLICABLE REQUIREMENTS

C22.2 No. 107.1-01 (R2011)	-	General Use Power Supplies
UL 1741 Second Edition	-	Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources

Note: Compliance with UL 1741 includes applicable requirements of IEEE 1547 and IEEE 1547.1

Supplement to Certificate of Compliance

Certificate: 2682832 **Master Contract:** 259813

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
2682832	December 3, 2013	Multiple Listing for Models MICRO-0.3-I-OUTD-US-208/240, MICRO-0.3HV-I-OUTD-US-208/240, and MICRO-0.25-I-OUTD-US-208/240. (Alt. File 259813, Form A)

Multiple Listing Project No	Listee Models	Submittor Models	Submittor Project No
2682832	MICRO-0.3-I-OUTD-US-208	MICRO-0.3-I-OUTD-US-208	2478710 (2642596)
2682832	MICRO-0.3-I-OUTD-US-240	MICRO-0.3-I-OUTD-US-240	2478710 (2642596)
2682832	MICRO-0.3HV-I-OUTD-US-208	MICRO-0.3HV-I-OUTD-US-208	2478710 (2642596)
2682832	MICRO-0.3HV-I-OUTD-US-240	MICRO-0.3HV-I-OUTD-US-240	2478710 (2642596)
2682832	MICRO-0.25-I-OUTD-US-208	MICRO-0.25-I-OUTD-US-208	2478710 (2642596)
2682832	MICRO-0.25-I-OUTD-US-240	MICRO-0.25-I-OUTD-US-240	2478710 (2642596)

ANNEX 1 - Ratings and Markings for Certificate of Compliance

Utility Interactive Inverter, Model MICRO-0.3-I-OUTD-US-208/240, MICRO-0.3HV-I-OUTD-US-208/240, and MICRO-0.25-I-OUTD-US-208/240, system ratings as follows:

Model MICRO-0.3-I-OUTD-US-208/240:

Model: MICRO-0.3-I-OUTD-US-208/240		240Vac	208Vac
INPUT RATINGS:			
Maximum input voltage		65 V dc	65 V dc
Range of input operating voltage		12-60 Vdc	12-60 Vdc
Range of input operating voltage at full power		30-50 V dc	30-50 V dc
Maximum input current (dc)		10.5 A	10.5 A
Maximum input short circuit current		12.5 A	12.5 A
Maximum input source backfeed current to input source		0 A	0 A
OUTPUT RATINGS:			
Output power factor rating		0.95 min (0.99 typical)	0.95 min (0.99 typical)
Operating voltage range (ac) (L-L)[1]		211-264 V ac	183-228 V ac
Operating frequency range or single frequency[1]		57 to 59.8 (adjustable) – 60.5 Hz	57 to 59.8 (adjustable) – 60.5 Hz
Number of phases		1 (3W - SPØ)	1 (2W - 1Ø)
Nominal output voltage (ac)		240 V ac	208 V ac
Normal output frequency		60 Hz	60 Hz
Maximum continuous output current (ac)		1.25 A (at nominal)	1.44 A (at nominal)
Maximum continuous output power (ac)		300 W	300 W
Maximum output fault current (ac) and duration		12.4 Arms, over 1 cycle; 7.1 Arms, over 3 cycles; 5.6 Arms, over 5 cycles; 343.6 Apeak	14.3 Arms, over 1 cycle; 8.3 Arms, over 3 cycles; 6.4 Arms, over 5 cycles; 335.4 Apeak
Maximum output overcurrent protection		20 A	20 A
Utility interconnection voltage and frequency trip limits and trip times			
Trip limit and trip time accuracy	Voltage:	+/- 2.0% of Nominal	
	Frequency:	+/-0.1 Hz	
	Trip Time	+/- 5 %	
Normal operation temperature range @ full power		-40ºC - +65ºC	
Maximum operating ambient (derates)		+75 ºC	
Enclosure Rating Type		4X	

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Model MICRO-0.3HV-I-OUTD-US-208/240:

Model: MICRO-0.3HV-I-OUTD-US-208/240		240Vac	208Vac
INPUT RATINGS:			
Maximum input voltage		79 V dc	79 V dc
Range of input operating voltage		19-75 V dc	19-75 V dc
Range of input operating voltage at full power		30-75 V dc	30-75 V dc
Maximum input current (dc)		10.5 A	10.5 A
Maximum input short circuit current		12.5 A	12.5 A
Maximum input source backfeed current to input source		0 A	0 A
OUTPUT RATINGS:			
Output power factor rating		0.95 min (0.99 typical)	0.95 min (0.99 typical)
Operating voltage range (ac) (L-L)[1]		211-264 V ac	183-228 V ac
Operating frequency range or single frequency[1]		57 to 59.8 (adjustable) - 60.5 Hz	57 to 59.8 (adjustable) - 60.5 Hz
Number of phases		1 (3W - SPØ)	1 (2W - 1Ø)
Nominal output voltage (ac)		240 V ac	208 V ac
Normal output frequency		60 Hz	60 Hz
Maximum continuous output current (ac)		1.25 A (at nominal)	1.44 A (at nominal)
Maximum continuous output power (ac)		300 W	300 W
Maximum output fault current (ac) and duration		12.4 Arms, over 1 cycle; 7.1 Arms, over 3 cycles; 5.6 Arms, over 5 cycles; 343.6 Apeak	14.3 Arms, over 1 cycle; 8.3 Arms, over 3 cycles; 6.4 Arms, over 5 cycles; 335.4 Apeak
Maximum output overcurrent protection		20 A	20 A
Utility interconnection voltage and frequency trip limits and trip times			
Trip limit and trip time accuracy	Voltage:	+/- 2.0% of Nominal	
	Frequency:	+/-0.1 Hz	
	Trip Time	+/- 5 %	
Normal operation temperature range @ full power		-40ºC - +65ºC	
Maximum operating ambient (derates)		+75 ºC	
Enclosure Rating Type		4X	

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Model MICRO-0.25-I-OUTD-US-208/240:

Model: MICRO-0.25-I-OUTD-US-208/240		240Vac	208Vac
INPUT RATINGS:			
Maximum input voltage		65 V dc	65 V dc
Range of input operating voltage		12-60 Vdc	12-60 Vdc
Range of input operating voltage at full power		30-50 V dc	30-50 V dc
Maximum input current (dc)		10.5 A	10.5 A
Maximum input short circuit current		12.5 A	12.5 A
Maximum input source backfeed current to input source		0 A	0 A
OUTPUT RATINGS:			
Output power factor rating		0.95 min (0.99 typical)	0.95 min (0.99 typical)
Operating voltage range (ac) (L-L)[1]		211-264 V ac	183-228 V ac
Operating frequency range or single frequency[1]		57 to 59.8 (adjustable) – 60.5 Hz	57 to 59.8 (adjustable) – 60.5 Hz
Number of phases		1 (3W - SPØ)	1 (2W - 1Ø)
Nominal output voltage (ac)		240 Vac	208 V ac
Normal output frequency		60 Hz	60 Hz
Maximum continuous output current (ac)		1.04 A (at nominal)	1.2 A (at nominal)
Maximum continuous output power (ac)		250 W	250 W
Maximum output fault current (ac) and duration		12.4 Arms, over 1 cycle; 7.1 Arms, over 3 cycles; 5.6 Arms, over 5 cycles; 343.6 Apeak	14.3 Arms, over 1 cycle; 8.3 Arms, over 3 cycles; 6.4 Arms, over 5 cycles; 335.4 Apeak
Maximum output overcurrent protection		20 A	20 A
Utility interconnection voltage and frequency trip limits and trip times			
Trip limit and trip time accuracy	Voltage:	+/- 2.0% of Nominal	
	Frequency:	+/-0.1 Hz	
	Trip Time	+/- 5 %	
Normal operation temperature range @ full power		-40ºC - +65ºC	
Maximum operating ambient (derates)		+75ºC	
Enclosure Rating Type		4X	

ANNEX 1 - Ratings and Markings for Certificate of Compliance

Notes:

1. Utility Interconnection Voltage and Frequency Trip Limits and Trip Times:

Condition	Simulated utility source		Maximum time (sec) at 60 Hz before cessation of current to the simulated utility
	Voltage (V)	Frequency (Hz)	
A	$V < 50\% V_{nor}$ (Not Adjustable)	Rated	0.16 sec (Not Adjustable)
B	$50\% V_{nor} \leq V < 88\% V_{nor}$ (Adjustable Set Points 55% to 88%)	Rated	2 sec (Default) (Adj. Set Points 0.16 s to 5 s)
C	$110\% V_{nor} \leq V < 120\% V_{nor}$ (Adjustable Set Points 110% to 118%)	Rated	1 sec (Default) (Adj. Set Points 0.16 s to 5 s)
D	V≥120% Vnor (Not Adjustable)	Rated	0.16 sec (Not Adjustable)
E	Rated	f > 60.5 (Not Adjustable)	0.16 sec (Not Adjustable)
F	Rated	f < 59.3 (Default) (Adj. Set Points 59.8 Hz to 57.2 Hz)	0.16 sec (Default) (Adj. Set Points 0.16 s to 5 s)
G	Rated	f < 57.0 (Not Adjustable)	0.16 sec (Not Adjustable)

2. Utility interactive evaluations were conducted with the following Software:
Firmware version: (DSP) B1.58; (MICRO) C1.11
Checksum: (DSP) 0x468E; (MICRO) 0x1755

Model MICRO-0.3HV-I-OUTD-US-208/240 utility interactive evaluations were conducted with the following Software:
Firmware version:

DSP: B100
Checksum: 0x16573A6F

Supervisor: C010
Checksum: 0x6ABD

3. Surge Testing for Combination Wave (1.2/50us) was performed at 6 kV/3 kA, 2 ohms effective impedance and Ringwave (0.5us-100kHz) was performed at 6 kV/0.5 kA, 12 ohms effective impedance. Tests were performed using both polarities, for common mode and differential mode coupling, 20 pulses each test. After surge testing the unit was operational with control functionally verified by frequency and voltage disconnect tests.

4. Models MICRO-0.3-I-OUTD-US-208/240 and MICRO-0.25-I-OUTD-US-208/240 are identical in construction except for firmware settings.

ANNEX 1 - Ratings and Markings for Certificate of Compliance

MARKINGS

The manufacturer is required to apply the following markings:

- Products shall be marked with the markings specified by the particular product standard.
- Products certified for Canada shall have all Caution and Warning markings in both English and French.

Additional bilingual markings not covered by the product standard(s) may be required by the Authorities Having Jurisdiction. It is the responsibility of the manufacturer to provide and apply these additional markings, where applicable, in accordance with the requirements of those authorities.

The following markings appear on the enclosure and are readily visible after installation, by silk-screening, permanent ink stamping, on adhesive labels that appear on the CSA List of Accepted Adhesive Nameplates, standard for Marking and/or Labeling Systems UL969, or by other permanent method:

1. Submittor's name and/or CSA Master Contract number "259813";

2. Model designation;

3. Date code or date-traceable serial number;

4. The CSA Monogram with the "C" and "US" indicators (the products listed are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US, or with adjacent indicator 'US' for US only, or without either indicator for Canada only), and optionally marked with "UL 1741" and/or "CSA C22.2 No 107.1-01";

5. "Utility-Interactive", "Interconnection System Equipment", or the equivalent;

6. The electrical ratings (specified for Utility Interactive) other than items a, d, e, m, n, q, r, s, t and u specified in the following table:

Rating type	Utility interactive	Stand-alone	Utility interactive with charge control[d]	Stand-alone with charge control[d]	ISE	Charge controllers [d]
a) Maximum input voltage[a]	X[b]	X	X	X	X	X
b) Range of input operating voltage	X[b]	X	X	X	X	X
c) Maximum input current (ac or dc)	X[b]	X	X	X		X
d) Maximum input short circuit current	X[b]	X	X	X	X	X
e) Maximum input source backfeed current to input source [see 47.6.2]	X		X			
f) Output power factor rating	X	X	X	X		
g) Operating voltage range (ac)	X	X	X	X	X	X
h) Operating frequency range or single frequency	X	X	X	X		X
i) Nominal output voltage (ac)	X	X	X	X		
j) Normal output frequency	X	X	X	X		

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Rating type	Utility interactive	Stand-alone	Utility interactive with charge control[d]	Stand-alone with charge control[d]	ISE	Charge controllers[d]
k) Maximum continuous output current (ac)	X	X	X	X		
l) Maximum continuous output power (ac)	X	X	X	X		
m) Maximum output fault current (ac) and duration [see 47.3.3]	X	X	X	X		
n) Maximum output overcurrent protection	X	X	X	X		
o) Nominal output voltage (dc)			X	X		
p) Charging output voltage operation range (dc)			X	X		X
q) Utility interconnection voltage and frequency trip limits and trip times	X				X	
r) Synchronization in-rush current	X					
s) Trip limit and trip time accuracy	X		X		X	
t) Normal operation temperature range	X	X	X	X	X	X
u) Output power temperature derating and maximum full power operating ambient[e]	X	X	X	X		X

Note - A nationally accepted conventional abbreviation may be used for the rating type.

[a] The maximum input voltage determined in accordance with Section 690.7(a) of the National Electrical Code, NFPA 70, may be used for photovoltaic inverters and charge controllers.

[b] Not required for ac modules.

[c] Normally the branch-circuit overcurrent protection.

[d] Charging of batteries is able to originate from dc or ac sources. The rating types for either ac or dc are to be applied accordingly.

[e] Only for units that derate with output temperature.

7. A unit or separate device provided with integral dc ground-fault detector/interrupter protection in accordance with DC Ground-Fault Detector/Interrupter, Section 31 of UL 1741, is marked to indicate its presence. The inverter is provided with a marking "Integral DC Ground Fault Detector/Interrupter" or equivalent.

8. Each unit that may be produced or assembled at more than one factory is provided with a distinctive marking - which is able to be in code - to identify the product of a particular factory.

9. The input DC positive and negative plugs are identified by the symbols "PV+" and "PV-", or color coding - red for positive and black for negative or the equivalent wording.

10. The DC inputs and AC outputs connectors are marked "DO NOT DISCONNECT UNDER LOAD"'

11. The enclosure shall be marked "TYPE 4X";

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12. CAUTIONARY MARKINGS: A cautionary marking shall be prefixed by the word "CAUTION", "WARNING", or "DANGER" in letters not less than 3.2 mm (1/8 in.) high. The remaining letters shall not be less than 1.6 mm (1/16 in.) high. A cautionary marking shall be:

(a) Located on a part that cannot be removed without impairing the operation of the inverter, (such as the product front cover); and

(b) Visible and legible to the operator during the normal operation of the inverter.

Exception: Cautionary markings pertaining to internal parts that are applicable only to service personnel are to be located internally in an appropriate location with respect to the parts of concern.

(i) The unit shall be marked with the following warning or equivalent, "CAUTION - Risk of Electric Shock, Do Not Remove Cover. No User Serviceable Parts Inside. Refer Servicing To Qualified Service Personnel."

(ii) The inverter shall be marked with the word "CAUTION" and the following words, "Risk Of Electric Shock" - and the following or the equivalent. The marking shall be either located on the outside of the unit or shall be prominently visible with any cover or panel opened or removed:

(a) "When the photovoltaic array is exposed to light, it supplies a dc voltage to this equipment."

(iii) There shall be legible and durable marking indicating the ampere, voltage and "ac" or "dc" rating of each fuse provided in the inverter system and inverter module. The marking shall be located so that it is obvious as to which fuse or fuseholder the marking applies. This marking is able to consist of a pictorial identifying the rating of one or more fuses.

13. OPERATING AND INSTALLATION INSTRUCTIONS: The operating and installation instructions shall:

(a) Describe the equipment installation, including specifically:
  (1) Assembly, and mounting instructions including mounting orientation, securement.
  (2) Grounding means.
  (3) Ventilation consideration.

(b) Explain equipment markings, including specifically:
  (1) Symbols.
  (2) Controls.
  (3) All applicable ratings as described in the table in item 6 above.

(c) Identify and describe interconnections with:
  (1) The photovoltaic array.
  (2) The utility.
  (3) Auxiliary and accessory equipment.

(d) Explain the operation of the equipment, including derating information for operation in elevated ambients.

(e) Indicate that the ac output (neutral) is (is not) bonded to ground.

(f) An inverter provided with a fixed AC output shall inform the installer that the input and output circuits are isolated from the enclosure and that system grounding, if required by Sections 690-40 and 690-42 of the National Electric Code, ANSI/NFPA 70, is the responsibility of the installer.

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(g) Field adjustable trip limits for voltage and frequency shall be described and include the adjustment range for voltage, frequency and trip time. The "as shipped" default settings shall be specified.

(h) Integral dc ground-fault detector/interrupter protection describes the proper method for connecting and grounding the photovoltaic system.

(i) The installation instructions should indicate that the National Electrical Code, ANSI/NFPA 70 wiring methods to be used.

(j) Enclosures marked Type 4, 4X, 6 or 6P is provided with instructions for installation of a watertight conduit connection when the connection is not mounted on the enclosure.

(k) Installation instructions are provided with an enclosure intended for field assembly of the bonding means that identifies the parts for bonding and specifies the method of installation.

(l) When a hub or fitting that is not provided or installed on a Type 4 or 4X enclosure, instructions identifying the specific hub or fitting and installation instructions are provided with the enclosure.

(m) SERVICING INSTRUCTIONS: The servicing instructions shall be preceded by a warning worded as follows "Warning - These servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that specified in the operating instructions".

The headings for the instruction manual, and the opening statements of the instructions specified in Important Safety Instructions, Section 66 - "IMPORTANT SAFETY INSTRUCTIONS" and "SAVE THESE INSTRUCTIONS", shall be entirely in upper case letters not less than 4.8 mm (3/16 in.) high or emphasized to distinguish them from the rest of the text. Upper case letters in the instructions shall not be less than 2.0 mm (5/64 in.) high, and lower case letters shall not be less than 1.6 mm (1/16 in.) high.

There shall be no substitute for the words "CAUTION", "WARNING", or "DANGER" in the text of the instructions.

Exception: The words "WARNING" or "DANGER" may be used in lieu of the "CAUTION".

14. IMPORTANT SAFETY INSTRUCTIONS: The important safety instructions shall include Items a - h. The statement "IMPORTANT SAFETY INSTRUCTIONS" and the statement "SAVE THESE INSTRUCTIONS" shall precede the list. The word "CAUTION" shall be entirely in upper case letters.

The information described in Items A - H, as appropriate, shall be provided. The information contained in Items B - G may be marked on the unit in lieu of providing it in the instruction manual.

(a) SAVE THESE INSTRUCTIONS - This manual contains important instructions for Models (model as indicated in front of Report) that shall be followed during installation and maintenance of the inverter.
Exception: When the instructions are exactly the same for all models, specific model numbers are not required.

(b) When a symbol is used for compliance with marking requirements the instruction manual shall identify the symbol.

(c) The instruction manual for a unit that exceeds the surface temperature limits shall specify that the unit is to be installed so that it is not expected to be contacted by persons.

(d) The instruction manual for the inverter shall indicate the maximum ambient temperature rating.

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(e) The instruction manual for a unit shall include the word "CAUTION" and the following or the equivalent: "To reduce the risk of fire, connect only to a circuit provided with 20 amperes maximum branch circuit overcurrent protection in accordance with the National Electrical Code, ANSI/NFPA 70".

(f) The instruction manual shall include a statement indicating that overcurrent protection for the ac output circuit shall be provided in the end installation.

(g) The instruction manual shall include a statement indicating that a disconnect switch shall be provided by others for the ac output circuit. (May be required by local code or AHJ)

(h) The inverter shall be connected only to a dedicated branch circuit.