



Certificate of Compliance

Certificate: 2708406

Master Contract: 259813

Project: 2722409

Date Issued: April 24, 2014

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.



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 PVI-4.2-OUTD-US, PVI-3.8-OUTD-US, PVI-3.6-OUTD-US, PVI-3.0-OUTD-US, PVI-4.2-OUTD-S-US, PVI-3.8-OUTD-S-US, PVI-3.6-OUTD-S-US, PVI-3.0-OUTD-S-US, PVI-4.2-OUTD-S-US-A, PVI-3.8-OUTD-S-US-A, PVI-3.6-OUTD-S-US-A, PVI-3.0-OUTD-S-US-A, PVI-4.2-OUTD-US-W, PVI-3.8-OUTD-US-W, PVI-3.6-OUTD-US-W and PVI-3.0-OUTD-US-W; provided with two DC input channels, permanently connected, system ratings as follows:

Notes:

1. All above models in this series may include expansion board with wireless antennae option and will be identified with model designation including “-Z” suffix.
2. For details related to rating, size, configuration, etc. reference should be made to the CSA Certification Record or the Certificate of Compliance Annex A.



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APPLICABLE REQUIREMENTS

- CSA-C22.2 No.107.1-01 - General Use Power Supplies
- *UL Std No. 1741-Second Edition - Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources (January 28, 2010)
- UL 1699B - Outline of Investigation for Photovoltaic (PV) DC Arc-Fault Circuit Protection (Issue Number 2, January 14, 2013)
- CSA TIL M-07 Interim Certification Requirements for Photovoltaic (PV) DC Arc Fault Protection (Issue Number 1, March 11, 2013)

*Note: Conformity to UL 1741-Second Edition (January 28, 2010) includes compliance with applicable requirements of IEEE 1547 and IEEE 1547.1



Supplement to Certificate of Compliance

Certificate: 2708406 (Project 2722409)

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
2708406	March 12, 2014	Multiple Listing for Power-One / ABB, Models PVI-4.2-OUTD-US, PVI-3.8-OUTD-US, PVI-3.6-OUTD-US, PVI-3.0-OUTD-US, PVI-4.2-OUTD-S-US, PVI-3.8-OUTD-S-US, PVI-3.6-OUTD-S-US, PVI-3.0-OUTD-S-US, PVI-4.2-OUTD-S-US-A, PVI-3.8-OUTD-S-US-A, PVI-3.6-OUTD-S-US-A, PVI-3.0-OUTD-S-US-A, PVI-4.2-OUTD-US-W, PVI-3.8-OUTD-US-W, PVI-3.6-OUTD-US-W, PVI-3.0-OUTD-US-W (Alt. File No. 259813, Form A)
2722409	April 24, 2014	Update ML Certificate to include firmware changes.

Multiple Listing Project No	Listee Models	Submittor Models	Submittor Project No
2708406	PVI-4.2-OUTD-US	PVI-4.2-OUTD-US	2096477 (2682842)
2708406	PVI-3.8-OUTD-US	PVI-3.8-OUTD-US	2096477 (2682842)
2708406	PVI-3.6-OUTD-US	PVI-3.6-OUTD-US	2096477 (2682842)
2708406	PVI-3.0-OUTD-US	PVI-3.0-OUTD-US	2096477 (2682842)
2708406	PVI-4.2-OUTD-S-US	PVI-4.2-OUTD-S-US	2096477 (2682842)
2708406	PVI-3.8-OUTD-S-US	PVI-3.8-OUTD-S-US	2096477 (2682842)
2708406	PVI-3.6-OUTD-S-US	PVI-3.6-OUTD-S-US	2096477 (2682842)
2708406	PVI-3.0-OUTD-S-US	PVI-3.0-OUTD-S-US	2096477 (2682842)
2708406	PVI-4.2-OUTD-S-US-A	PVI-4.2-OUTD-S-US-A	2096477 (2682842)
2708406	PVI-3.8-OUTD-S-US-A	PVI-3.8-OUTD-S-US-A	2096477 (2682842)
2708406	PVI-3.6-OUTD-S-US-A	PVI-3.6-OUTD-S-US-A	2096477 (2682842)
2708406	PVI-3.0-OUTD-S-US-A	PVI-3.0-OUTD-S-US-A	2096477 (2682842)
2708406	PVI-4.2-OUTD-US-W	PVI-4.2-OUTD-US-W	2096477 (2682842)
2708406	PVI-3.8-OUTD-US-W	PVI-3.8-OUTD-US-W	2096477 (2682842)
2708406	PVI-3.6-OUTD-US-W	PVI-3.6-OUTD-US-W	2096477 (2682842)
2708406	PVI-3.0-OUTD-US-W	PVI-3.0-OUTD-US-W	2096477 (2682842)

Certificate of Compliance Annex A
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Utility Interactive Inverter, Models PVI-4.2-OUTD-US, PVI-3.8-OUTD-US, PVI-3.6-OUTD-US, PVI-3.0-OUTD-US, PVI-4.2-OUTD-S-US, PVI-3.8-OUTD-S-US, PVI-3.6-OUTD-S-US, PVI-3.0-OUTD-S-US, PVI-4.2-OUTD-S-US-A, PVI-3.8-OUTD-S-US-A, PVI-3.6-OUTD-S-US-A, PVI-3.0-OUTD-S-US-A, PVI-4.2-OUTD-US-W, PVI-3.8-OUTD-US-W, PVI-3.6-OUTD-US-W and PVI-3.0-OUTD-US-W; provided with two DC input channels, permanently connected, system ratings as follows:

PART A: Utility Interactive Inverter, Models PVI-4.2-OUTD-US, PVI-4.2-OUTD-S-US, PVI-4.2-OUTD-S-US-A, and PVI-4.2-OUTD-US-W:

Model	PVI-4.2-OUTD-US	PVI-4.2-OUTD-S-US & PVI-4.2-OUTD-S-US-A	PVI-4.2-OUTD-US-W
Maximum Input Voltage (DC)	600 V dc	600 V dc	600 V dc
Range of Input Operating Voltage (DC)	90-580 V dc, 360 V dc nominal	90-580 V dc, 360 V dc nominal	50-580 V dc, 360 V dc nominal
Maximum Input Current (DC)	16 A (Each Input - 2 provided)	16 A (Each Input - 2 provided)	32 A
Maximum Input Short Circuit Current (DC)	20 A (Each Input - 2 provided)	20 A (Each Input - 2 provided)	40 A
Maximum Utility Backfeed Current (AC)	0 A	0 A	0 A
Output Power Factor Rating	>0.995	>0.995	>0.995
Operating Voltage Range (AC) (See Note 2)	244-304 V ac for 277 V ac configuration 211-264 V ac for 240 V ac configuration 183-228 V ac for 208 V ac configuration	244-304 V ac for 277 V ac configuration 211-264 V ac for 240 V ac configuration 183-228 V ac for 208 V ac configuration	244-304 V ac for 277 V ac configuration 211-264 V ac for 240 V ac configuration 183-228 V ac for 208 V ac configuration
Operating Frequency Range (HZ)	59.3-60.5 Hz (Default)	59.3-60.5 Hz (Default)	59.3-60.5 Hz (Default)
Field Adjustable Operating Frequency Range (HZ)	57.0-59.8 Hz, 60.2-63.0 Hz	57.0-59.8 Hz, 60.2-63.0 Hz	57.0-59.8 Hz, 60.2-63.0 Hz
Number of Phases	1	1	1
Nominal Output Voltage (AC) (See Note 2)	277 V ac / 240 V ac / 208 V ac	277 V ac / 240 V ac / 208 V ac	277 V ac / 240 V ac / 208 V ac
Normal Output Frequency	60 Hz	60 Hz	60 Hz
Continuous Output Current (AC)	20 A / 20 A / 20 A	20 A / 20 A / 20 A	20 A / 20 A / 20 A
Maximum Output Power (AC) (See Note 4)	4600 W/ 4600 W / 4200 W	4600 W/ 4600 W / 4200 W	4600 W/ 4600 W / 4200 W
Maximum Continuous Output Power (AC) @ +45°C ambient (See Note 4)	4200 W	4200 W	4200 W
Maximum Output Fault Current and Duration	(See Note 6)	(See Note 6)	(See Note 6)
Maximum Output Overcurrent Protection	25 A / 25 A/ 25 A	25 A / 25 A/ 25 A	25 A / 25 A/ 25 A
Utility Interconnection and Voltage and Frequency Trip Limits and Trip Times	See Note 7	See Note 7	See Note 7

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Model	PVI-4.2-OUTD-US	PVI-4.2-OUTD-S-US & PVI-4.2-OUTD-S-US-A	PVI-4.2-OUTD-US-W
Trip Limit and Trip Time Accuracy	Voltage: +/- 2% Frequency: +/- 0.10 Hz Time: 2 grid cycles (33 ms @ 60 Hz)	Voltage: +/- 2% Frequency: +/- 0.10 Hz Time: 2 grid cycles (33 ms @ 60 Hz)	Voltage: +/- 2% Frequency: +/- 0.10 Hz Time: 2 grid cycles (33 ms @ 60 Hz)
Normal Operation Temperature Range	-25°C to +60°C (See Note 4)	-25°C to +60°C (See Note 4)	-25°C to +60°C (See Note 4)
Output Power Temperature Derating and Maximum Full Power Operating Ambient	(See Note 4)	(See Note 4)	(See Note 4)
Enclosure Rating Type	4X	4X	4X

Device	Device Version	Device Checksum
Rev. Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.5	9CD8
Rev. Number Microprocessor	C.0.2.2	2283

Alternate Device Version (referred to Alternate Microcontroller, Atmel, Type ATMEGA 256-16-AU):

Device	Device Version	Device Checksum
Rev Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.5	9CD8
Rev. Number Microprocessor	C.1.4.0	4D9A

Alternate Device Version (referred to Firmware revision for very high voltage field adjustable time setting)

Device	Device Version	Device Checksum
Rev Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.C	5DEB
Rev. Number Microprocessor	C.1.4.1	7368

For –A Model Series Only

Device	Device Version	Device Checksum
Rev Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.5	9CD8
Rev. Number Microprocessor	C.0.4.0	0B01

Alternate Device Version for –A Model Series Only

Device	Device Version	Device Checksum
Rev Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.C	5DEB
Rev. Number Microprocessor	C.0.4.1	9A14

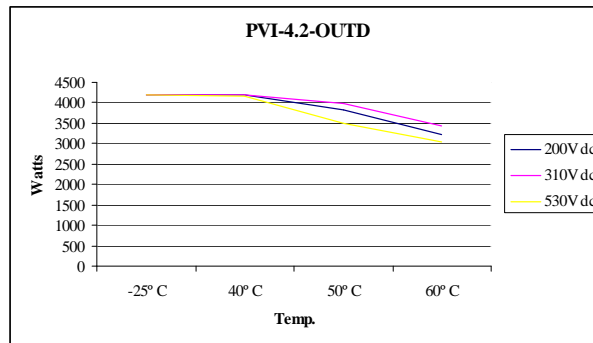
Notes:

- Inverter models PVI-4.2-OUTD-US, PVI-4.2-OUTD-S-US, PVI-4.2-OUTD-S-US-A and PVI-4.2-OUTD-US-W have been evaluated for use in utility-interactive applications.

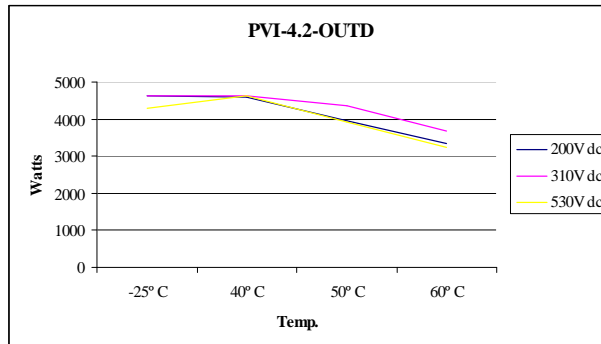
Certificate of Compliance Annex A

2. The output of Inverter, models PVI-4.2-OUTD-US, PVI-4.2-OUTD-S-US, PVI-4.2-OUTD-S-US-A, and PVI-4.2-OUTD-US-W may be 277 V ac, 240 V ac or 208 V ac which is user settable based on the utility system.
3. Inverter Model PVI-4.2-OUTD-US-W is intended for operation with an AC Generated supply (i.e. wind or hydro); this inverter is intended to receive an input supply from a certified interface module (rectifier-controller which converts AC voltage from an AC generator into a regulated DC voltage).
4. Maximum output power can be delivered only with an input voltage range of:
 - 220-530 V dc for 208 V ac configuration
 - 200-530 V dc for 240 V ac configuration
 - 200-530 V dc for 277 V ac configuration

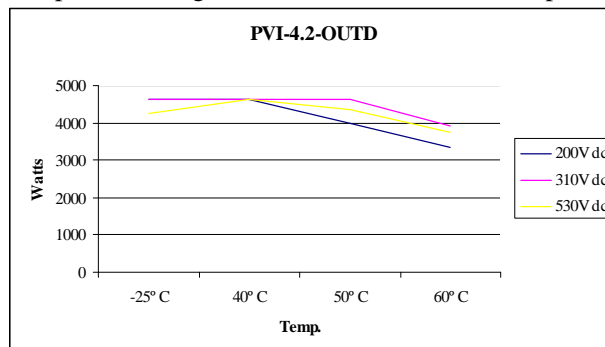
Power Derating Curves over Temperature range -25° to 60°C at 208V ac output:



Power Derating Curves over Temperature range -25° to 60°C at 240V ac output:



Power Derating Curves over Temperature range -25° to 60°C at 277V ac output:



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5. Inverter Models PVI-4.2-OUTD-US, PVI-4.2-OUTD-S-US, PVI-4.2-OUTD-S-US-A, and PVI-4.2-OUTD-US-W are intended to be used in an ungrounded power system in conjunction with the requirements specified in the National Electrical Code, ANSI/NFPA 70, 2005 Ed, section 690.35.

6. Maximum Output Fault Current and Duration:

Models	Output Voltage	Fault Current RMS (A)	Duration (mSec) 3 cycles	Fault Current PK (A)	Total Duration (mSec)
PVI-4.2-OUTD Series	208	13.5	49.92	122.4	119.0
PVI-4.2-OUTD Series	240	14.7	49.92	164.4	120.9
PVI-4.2-OUTD Series	277	12.3	49.92	165.9	123.2

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

Table 68.1
Voltage and frequency limits for utility Interaction

Condition	Simulated utility source		Maximum time (sec) at 60 Hz ^a before cessation of current to the simulated utility
	Voltage (V)	Frequency (Hz)	
A	$< 0.50 V_{nor}^b$	Rated (60 Hz)	0.16 (Fixed)
B	$0.50 V_{nor}^b \leq V < 0.88 V_{nor}$ (Adjustable)	Rated (60 Hz)	2 (Fixed)
C	$1.10 V_{nor}^b < V < 1.20 V_{nor}^{(*)}$ (Adjustable)	Rated (60 Hz)	1 (Fixed)
D	$1.20 V_{nor} \leq V^{(*)}$	Rated (60 Hz)	0.16 (Default) (Adj. 0.001 to 0.16s)
E	Rated	$f > 60.5$ Hz (Default) (Adj. 60.2 to 63.0 Hz)	0.16 (Default) (Adj. 0.16 to 300 sec)
F	Rated	$f < 59.3$ Hz (Default) (Adj. 59.8 to 57.0 Hz)	0.16 (Default) (Adj. 0.16 to 300 sec)
G	Rated	$f < 57.0$ Hz	0.16 (Fixed)
H	Rated	$f > 63.0$ Hz	0.16 (Fixed)

^a When a utility frequency other than 60 Hz is used for the test, the maximum number of cycles it takes to cease to export power to the simulated utility shall not exceed the number of cycles a utility frequency of 60 Hz takes regardless of the time the inverter takes to cease to export power to the simulated utility.

^b V is the nominal output voltage rating.

(*) Note: For model at 277V High Voltage is fixed at 110% V_{nor} and Very High Voltage is fixed at 111% V_{nor} .

8. All models meet the surge requirements of IEEE C62.41.2-2002, Location Category B (6kV). Tests were performed using ring wave and combination waveforms, both polarities, for common mode and differential mode coupling, 20 pulses each test. After surge testing the units were operational with control functionally verified by frequency and voltage disconnect tests.
9. All above models in this series may include expansion board with wireless antennae option and will be identified with model designation including “-Z” suffix.
10. Model PVI-4.2-OUTD-S-US-A is provided with PV DC ARC-Fault Circuit Protection for series arcing faults.

Certificate of Compliance Annex A
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PART B: Utility Interactive Inverter, Models PVI-3.8-OUTD-US, PVI-3.8-OUTD-S-US, PVI-3.8-OUTD-S-US-A, and PVI-3.8-OUTD-US-W:

Model	PVI-3.8-OUTD-US	PVI-3.8-OUTD-S-US PVI-3.8-OUTD-S-US-A	PVI-3.8-OUTD-US-W
Maximum Input Voltage (DC)	600 V dc	600 V dc	600 V dc
Range of Input Operating Voltage (DC)	90-580 V dc, 360 V dc nominal	90-580 V dc, 360 V dc nominal	90-580 V dc, 360 V dc nominal
Range of Input Operating Voltage (DC) @ Maximum Output Power	200-530 V dc	200-530 V dc	200-530 V dc
Maximum Input Current (DC)	16 A (Each Input – 2 provided)	16 A (Each Input – 2 provided)	32 A
Maximum Input Short Circuit Current (DC)	20 A (Each Input – 2 provided)	20 A (Each Input – 2 provided)	40 A
Maximum Utility Backfeed Current (AC)	0 A	0 A	0 A
Output Power Factor Rating	>0.995	>0.995	>0.995
Operating Voltage Range (AC) (See Note 2)	244-304 V ac for 277 V ac configuration 211-264 V ac for 240 V ac configuration 183-228 V ac for 208 V ac configuration	244-304 V ac for 277 V ac configuration 211-264 V ac for 240 V ac configuration 183-228 V ac for 208 V ac configuration	244-304 V ac for 277 V ac configuration 211-264 V ac for 240 V ac configuration 183-228 V ac for 208 V ac configuration
Operating Frequency Range (HZ)	59.3-60.5 Hz (Default)	59.3-60.5 Hz (Default)	59.3-60.5 Hz (Default)
Field Adjustable Operating Frequency Range (HZ)	57.0-59.8 Hz, 60.2-63.0 Hz	57.0-59.8 Hz, 60.2-63.0 Hz	57.0-59.8 Hz, 60.2-63.0 Hz
Number of Phases	1	1	1
Nominal Output Voltage (AC) (See Note 2)	277 V ac / 240 V ac / 208 V ac	277 V ac / 240 V ac / 208 V ac	277 V ac / 240 V ac / 208 V ac
Normal Output Frequency	60 Hz	60 Hz	60 Hz
Continuous Output Current (AC)	16 A / 16 A / 16 A	16 A / 16 A / 16 A	16 A / 16 A / 16 A
Maximum Output Power (AC) (See Note 4)	4200 W/3800 W/3300 W	4200 W/3800 W/3300 W	4200 W/3800 W/3300 W
Maximum Continuous Output Power (AC) @ +50°C ambient (See Note 4)	3800 W/3800 W/3300 W	3800 W/3800 W/3300 W	3800 W/3800 W/3300 W
Maximum Output Overcurrent Protection	20 A / 20 A/ 20 A	20 A / 20 A/ 20 A	20 A / 20 A/ 20 A
Normal Operation Temperature Range	-25°C to +60°C	-25°C to +60°C	-25°C to +60°C
Enclosure Rating Type	4X	4X	4X

Certificate of Compliance Annex A
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Device	Device Version	Device Checksum
Rev. Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.5	9CD8
Rev. Number Microprocessor	C.0.2.2	2283

Alternate Device Version (referred to Alternate Microcontroller, Atmel, Type ATMEGA 256-16-AU):

Device	Device Version	Device Checksum
Rev Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.5	9CD8
Rev. Number Microprocessor	C.1.4.0	4D9A

Alternate Device Version (referred to Firmware revision for very high voltage field adjustable time setting)

Device	Device Version	Device Checksum
Rev Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.C	5DEB
Rev. Number Microprocessor	C.1.4.1	7368

For –A Model Series Only

Device	Device Version	Device Checksum
Rev Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.5	9CD8
Rev. Number Microprocessor	C.0.4.0	0B01

Alternate Device Version for –A Model Series Only

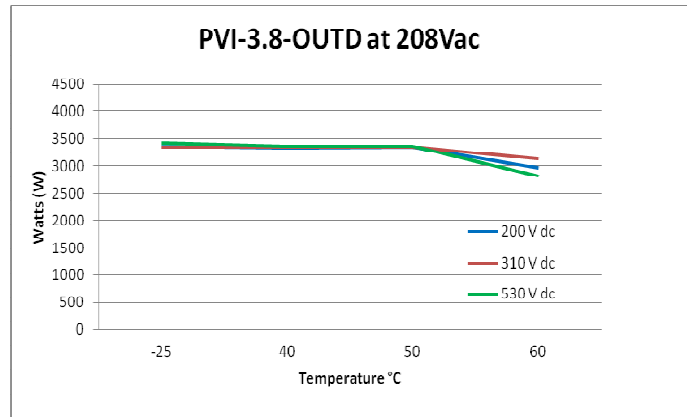
Device	Device Version	Device Checksum
Rev Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.C	5DEB
Rev. Number Microprocessor	C.0.4.1	9A14

Notes:

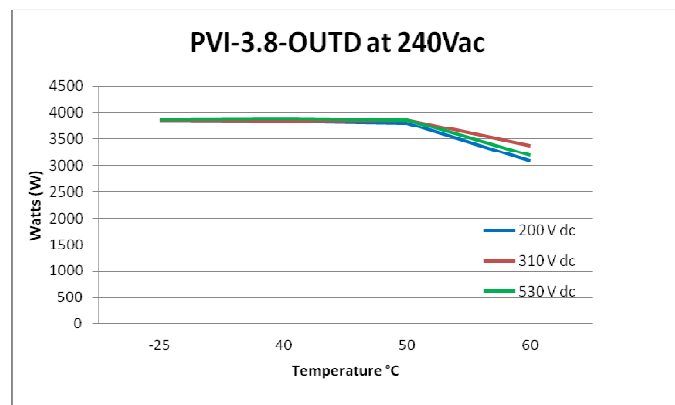
1. Inverter models PVI-3.8-OUTD-US, PVI-3.8-OUTD-S-US, PVI-3.8-OUTD-S-US-A, and PVI-3.8-OUTD-US-W have been evaluated for use in utility-interactive applications.
2. The output of Inverter, models PVI-3.8-OUTD-US, PVI-3.8-OUTD-S-US, PVI-3.8-OUTD-S-US-A, and PVI-3.8-OUTD-US-W may be 277 V ac, 240 V ac or 208 V ac which is user settable based on the utility system.
3. Inverter Model PVI-3.8-OUTD-US-W is intended for operation with an AC Generated supply (i.e. wind or hydro); this inverter is intended to receive an input supply from a certified interface module (rectifier-controller which converts AC voltage from an AC generator into a regulated DC voltage).
4. Maximum output power can be delivered only with an input voltage range of:
 - 200-530 V dc for 208 V ac configuration
 - 200-530 V dc for 240 V ac configuration
 - 200-530 V dc for 277 V ac configuration

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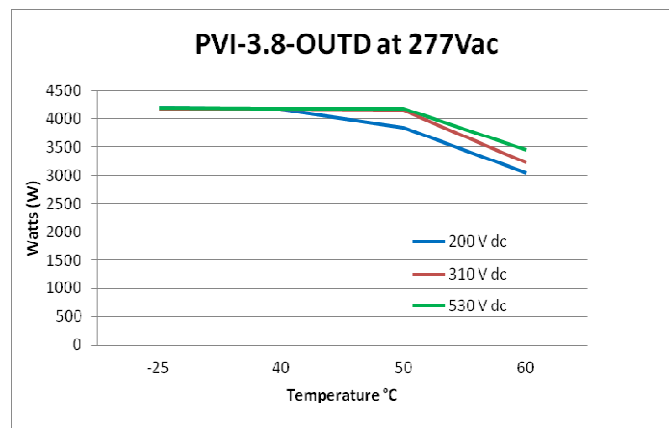
Power Derating Curves over Temperature range -25° to 60°C at 208V ac output:



Power Derating Curves over Temperature range -25° to 60°C at 240V ac output:



Power Derating Curves over Temperature range -25° to 60°C at 277V ac output:



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5. Inverter Models PVI-3.8-OUTD-US, PVI-3.8-OUTD-S-US, PVI-3.8-OUTD-S-US-A, and PVI-3.8-OUTD-US-W are intended to be used in an ungrounded power system in conjunction with the requirements specified in the National Electrical Code, ANSI/NFPA 70, 2005 Ed, section 690.35.

6. Maximum Output Fault Current and Duration:

Models	Output Voltage	Fault Current RMS (A)	Duration (mSec) 3 cycles	Fault Current PK (A)	Total Duration (mSec)
PVI-3.8-OUTD Series	208	11.6	50.0	224.0	89.0
PVI-3.8-OUTD Series	240	12.8	50.0	336.0	100.8
PVI-3.8-OUTD Series	277	13.0	50.0	276.0	96.4

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

Voltage and frequency limits for utility Interaction

Condition	Simulated utility source		Maximum time (sec) at 60 Hz ^a before cessation of current to the simulated utility
	Voltage (V)	Frequency (Hz)	
A	$< 0.50 V_{nor}^b$	Rated (60 Hz)	0.16 (Fixed)
B	$0.50 V_{nor}^b \leq V < 0.88 V_{nor}$ (Adjustable)	Rated (60 Hz)	2 (Fixed)
C	$1.10 V_{nor}^b < V < 1.20 V_{nor}^b$ (*) (Adjustable)	Rated (60 Hz)	1 (Fixed)
D	$1.20 V_{nor} \leq V$ (*)	Rated (60 Hz)	0.16 (Default) (Adj. 0.001 to 0.16s)
E	Rated	$f > 60.5$ Hz (Default) (Adj. 60.2 to 63.0 Hz)	0.16 (Default) (Adj. 0.16 to 300 sec)
F	Rated	$f < 59.3$ Hz (Default) (Adj. 59.8 to 57.0 Hz)	0.16 (Default) (Adj. 0.16 to 300 sec)
G	Rated	$f < 57.0$ Hz	0.16 (Fixed)
H	Rated	$f > 63.0$ Hz	0.16 (Fixed)

^a When a utility frequency other than 60 Hz is used for the test, the maximum number of cycles it takes to cease to export power to the simulated utility shall not exceed the number of cycles a utility frequency of 60 Hz takes regardless of the time the inverter takes to cease to export power to the simulated utility.

^b V is the nominal output voltage rating.

(*) Note: For model at 277V High Voltage is fixed at 110% V_{nor} and Very High Voltage is fixed at 111% V_{nor} .

8. All models meet the surge requirements of IEEE C62.41.2-2002, Location Category B (6kV). Tests were performed using ring wave and combination waveforms, both polarities, for common mode and differential mode coupling, 20 pulses each test. After surge testing the units were operational with control functionally verified by frequency and voltage disconnect tests.
9. All above models in this series may include expansion board with wireless antennae option and will be identified with model designation including “-Z” suffix.
10. Model PVI-3.8-OUTD-S-US-A is provided with PV DC ARC-Fault Circuit Protection for series arcing faults.

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PART C: Utility Interactive Inverter, Models PVI-3.6-OUTD-US, PVI-3.6-OUTD-S-US, PVI-3.6-OUTD-S-US-A, and PVI-3.6-OUTD-US-W:

Model	PVI-3.6-OUTD-US	PVI-3.6-OUTD-S-US & PVI-3.6-OUTD-S-US-A	PVI-3.6-OUTD-US-W
Maximum Input Voltage (DC)	600 V dc	600 V dc	600 V dc
Range of Input Operating Voltage (DC)	90-580 V dc, 360 V dc nominal	90-580 V dc, 360 V dc nominal	50-580 V dc, 360 V dc nominal
Maximum Input Current (DC)	16 A (Each Input - 2 provided)	16 A (Each Input - 2 provided)	32 A
Maximum Input Short Circuit Current (DC)	20 A (Each Input - 2 provided)	20 A (Each Input - 2 provided)	40 A
Maximum Utility Backfeed Current (AC)	0 A	0 A	0 A
Output Power Factor Rating	>0.995	>0.995	>0.995
Operating Voltage Range (AC) (See Note 2)	244-304 V ac for 277 V ac configuration 211-264 V ac for 240 V ac configuration 183-228 V ac for 208 V ac configuration	244-304 V ac for 277 V ac configuration 211-264 V ac for 240 V ac configuration 183-228 V ac for 208 V ac configuration	244-304 V ac for 277 V ac configuration 211-264 V ac for 240 V ac configuration 183-228 V ac for 208 V ac configuration
Operating Frequency Range (HZ)	59.3-60.5 Hz (Default)	59.3-60.5 Hz (Default)	59.3-60.5 Hz (Default)
Field Adjustable Operating Frequency Range (HZ)	57.0-59.8 Hz, 60.2-63.0 Hz	57.0-59.8 Hz, 60.2-63.0 Hz	57.0-59.8 Hz, 60.2-63.0 Hz
Number of Phases	1	1	1
Nominal Output Voltage (AC) (See Note 2)	277 V ac / 240 V ac / 208 V ac	277 V ac / 240 V ac / 208 V ac	277 V ac / 240 V ac / 208 V ac
Normal Output Frequency	60 Hz	60 Hz	60 Hz
Continuous Output Current (AC)	16 A / 16 A / 17.2 A	16 A / 16 A / 17.2 A	16 A / 16 A / 17.2 A
Maximum Output Power (AC) (See Note 4)	4000 W/4000W/3600 W	4000 W/4000W/3600 W	4000 W/4000W/3600 W
Maximum Continuous Output Power (AC) @ +55°C ambient (See Note 4)	3600 W	3600 W	3600 W
Maximum Output Fault Current and Duration	(See Note 6)	(See Note 6)	(See Note 6)
Maximum Output Overcurrent Protection	20 A / 20 A / 25 A	20 A / 20 A / 25 A	20 A / 20 A / 25 A
Utility Interconnection and Voltage and Frequency Trip Limits and Trip Times	See Note 7	See Note 7	See Note 7

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Model	PVI-3.6-OUTD-US	PVI-3.6-OUTD-S-US & PVI-3.6-OUTD-S-US-A	PVI-3.6-OUTD-US-W
Trip Limit and Trip Time Accuracy	Voltage: +/- 2% Frequency: +/- 0.10 Hz Time: 2 grid cycles (33 ms @ 60 Hz)	Voltage: +/- 2% Frequency: +/- 0.10 Hz Time: 2 grid cycles (33 ms @ 60 Hz)	Voltage: +/- 2% Frequency: +/- 0.10 Hz Time: 2 grid cycles (33 ms @ 60 Hz)
Normal Operation Temperature Range	-25°C to +60°C (See Note 4)	-25°C to +60°C (See Note 4)	-25°C to +60°C (See Note 4)
Output Power Temperature Derating and Maximum Full Power Operating Ambient	(See Note 4)	(See Note 4)	(See Note 4)
Enclosure Rating Type	4X	4X	4X

Device	Device Version	Device Checksum
Rev. Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.5	9CD8
Rev. Number Microprocessor	C.0.2.2	2283

Alternate Device Version (referred to Alternate Microcontroller, Atmel, Type ATMEGA 256-16-AU):

Device	Device Version	Device Checksum
Rev Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.5	9CD8
Rev. Number Microprocessor	C.1.4.0	4D9A

Alternate Device Version (referred to Firmware revision for very high voltage field adjustable time setting)

Device	Device Version	Device Checksum
Rev Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.C	5DEB
Rev. Number Microprocessor	C.1.4.1	7368

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Device	Device Version	Device Checksum
Rev Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.5	9CD8
Rev. Number Microprocessor	C.0.4.0	0B01

Alternate Device Version for –A Model Series Only

Device	Device Version	Device Checksum
Rev Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.C	5DEB
Rev. Number Microprocessor	C.0.4.1	9A14

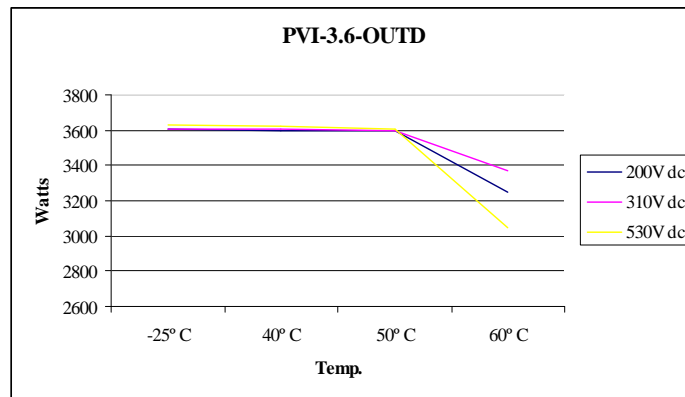
Notes:

- Inverter models PVI-3.6-OUTD-US, PVI-3.6-OUTD-S-US, PVI-3.6-OUTD-S-US-A, and PVI-3.6-OUTD-US-W have been evaluated for use in utility-interactive applications.

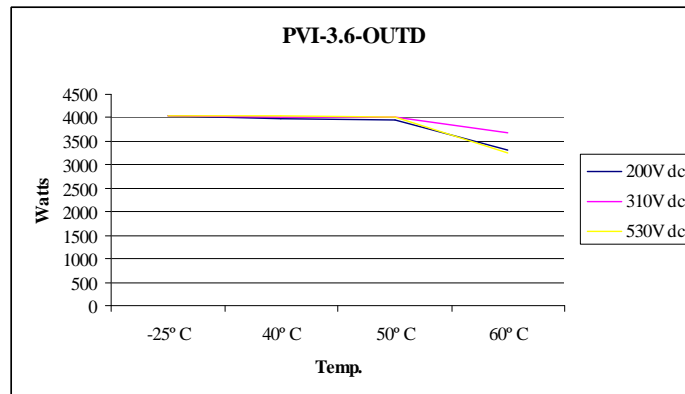
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2. The output of Inverter, models PVI-3.6-OUTD-US, PVI-3.6-OUTD-S-US, PVI-3.6-OUTD-S-US-A, and PVI-3.6-OUTD-US-W may be 277 V ac, 240 V ac or 208 V ac which is user settable based on the utility system.
3. Inverter Model PVI-3.6-OUTD-US-W is intended for operation with an AC Generated supply (i.e. wind or hydro); this inverter is intended to receive an input supply from a certified interface module (rectifier-controller which converts AC voltage from an AC generator into a regulated DC voltage).
4. Maximum output power can be delivered only with an input voltage range of:
 220-530 V dc for 208 V ac configuration
 200-530 V dc for 240 V ac configuration
 200-530 V dc for 277 V ac configuration

Power Derating Curves over Temperature range -25° to 60°C at 208V ac output:

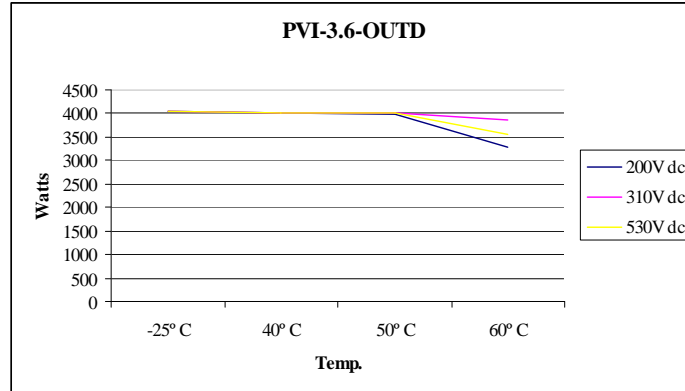


Power Derating Curves over Temperature range -25° to 60°C at 240V ac output:



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Power Derating Curves over Temperature range -25° to 60°C at 277V ac output:



5. Inverter Models PVI-3.6-OUTD-US, PVI-3.6-OUTD-S-US, PVI-3.6-OUTD-S-US-A, and PVI-3.6-OUTD-US-W are intended to be used in an ungrounded power system in conjunction with the requirements specified in the National Electrical Code, ANSI/NFPA 70, 2005 Ed, section 690.35.
6. Maximum Output Fault Current and Duration:

Models	Output Voltage	Fault Current RMS (A)	Duration (mSec) 3 cycles	Fault Current PK (A)	Total Duration (mSec)
PVI-3.6-OUTD Series	208	12.2	49.92	93.9	124.4
PVI-3.6-OUTD Series	240	12.5	49.92	136.5	120.2
PVI-3.6-OUTD Series	277	11.3	49.92	164.6	116.3

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

Table 68.1
Voltage and frequency limits for utility Interaction

Condition	Simulated utility source		Maximum time (sec) at 60 Hz ^a before cessation of current to the simulated utility
	Voltage (V)	Frequency (Hz)	
A	$< 0.50 V_{nor}^b$	Rated (60 Hz)	0.16 (Fixed)
B	$0.50 V_{nor}^b \leq V < 0.88 V_{nor}$ (Adjustable)	Rated (60 Hz)	2 (Fixed)
C	$1.10 V_{nor}^b < V < 1.20 V_{nor} (*)$ (Adjustable)	Rated (60 Hz)	1 (Fixed)
D	$1.20 V_{nor} \leq V (*)$	Rated (60 Hz)	0.16 (Default) (Adj. 0.001 to 0.16s)
E	Rated	$f > 60.5$ Hz (Default) (Adj. 60.2 to 63.0 Hz)	0.16 (Default) (Adj. 0.16 to 300 sec)
F	Rated	$f < 59.3$ Hz (Default) (Adj. 59.8 to 57.0 Hz)	0.16 (Default) (Adj. 0.16 to 300 sec)
G	Rated	$f < 57.0$ Hz	0.16 (Fixed)
H	Rated	$f > 63.0$ Hz	0.16 (Fixed)

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- ^a When a utility frequency other than 60 Hz is used for the test, the maximum number of cycles it takes to cease to export power to the simulated utility shall not exceed the number of cycles a utility frequency of 60 Hz takes regardless of the time the inverter takes to cease to export power to the simulated utility.
- ^b V is the nominal output voltage rating.
- (*) Note: For model at 277V High Voltage is fixed at 110% V_{nor} and Very High Voltage is fixed at 111% V_{nor} .

8. All models meet the surge requirements of IEEE C62.41.2-2002, Location Category B (6kV). Tests were performed using ring wave and combination waveforms, both polarities, for common mode and differential mode coupling, 20 pulses each test. After surge testing the units were operational with control functionally verified by frequency and voltage disconnect tests.
9. All above models in this series may include expansion board with wireless antennae option and will be identified with model designation including “-Z” suffix.
10. Model PVI-3.6-OUTD-S-US-A is provided with PV DC ARC-Fault Circuit Protection for series arcing faults.

PART D

Utility Interactive Inverter, Models PVI-3.0-OUTD-US, PVI-3.0-OUTD-S-US, PVI-3.0-OUTD-S-US-A, and PVI-3.0-OUTD-US-W:

Model	PVI-3.0-OUTD-US	PVI-3.0-OUTD-S-US & PVI-3.0-OUTD-S-US-A	PVI-3.0-OUTD-US-W
Maximum Input Voltage (DC)	600 V dc	600 V dc	600 V dc
Range of Input Operating Voltage (DC)	90-580 V dc, 360 V dc nominal	90-580 V dc, 360 V dc nominal	50-580 V dc, 360 V dc nominal
Maximum Input Current (DC)	10 A (Each Input - 2 provided)	10 A (Each Input - 2 provided)	20 A
Maximum Input Short Circuit Current (DC)	12.5 A (Each Input - 2 provided)	12.5 A (Each Input - 2 provided)	25 A
Maximum Utility Backfeed Current (AC)	0 A	0 A	0 A
Output Power Factor Rating	>0.995	>0.995	>0.995
Operating Voltage Range (AC) (See Note 2)	244-304 V ac for 277 V ac configuration 211-264 V ac for 240 V ac configuration 183-228 V ac for 208 V ac configuration	244-304 V ac for 277 V ac configuration 211-264 V ac for 240 V ac configuration 183-228 V ac for 208 V ac configuration	244-304 V ac for 277 V ac configuration 211-264 V ac for 240 V ac configuration 183-228 V ac for 208 V ac configuration
Operating Frequency Range (HZ)	59.3-60.5 Hz (Default)	59.3-60.5 Hz (Default)	59.3-60.5 Hz
Field Adjustable Operating Frequency Range (HZ)	57.0-59.8 Hz, 60.2-63.0 Hz	57.0-59.8 Hz, 60.2-63.0 Hz	57.0-59.8 Hz, 60.2-63.0 Hz
Number of Phases	1	1	1
Nominal Output Voltage (AC) (See Note 2)	277 V ac / 240 V ac / 208 V ac	277 V ac / 240 V ac / 208 V ac	277 V ac / 240 V ac / 208 V ac
Normal Output Frequency	60 Hz	60 Hz	60 Hz

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Model	PVI-3.0-OUTD-US	PVI-3.0-OUTD-S-US & PVI-3.0-OUTD-S-US-A	PVI-3.0-OUTD-US-W
Continuous Output Current (AC)	12 A / 14.5 A / 14.5 A	12 A / 14.5 A / 14.5 A	12 A / 14.5 A / 14.5 A
Maximum Output Power (AC) (See Note 4)	3300 W/3300W/3000 W	3300 W/3300W/3000 W	3300 W/3300W/3000 W
Maximum Continuous Output Power (AC) @ +55C (See Note 4)	3000 W	3000 W	3000 W
Maximum Output Fault Current and Duration	(See Note 6)	(See Note 6)	(See Note 6)
Maximum Output Overcurrent Protection	15 A / 20 A / 20 A	15 A / 20 A / 20 A	15 A / 20 A / 20 A
Utility Interconnection and Voltage and Frequency Trip Limits and Trip Times	See Note 7	See Note 7	See Note 7
Trip Limit and Trip Time Accuracy	Voltage: +/- 2% Frequency: +/- 0.10 Hz Time: 2 grid cycles (33 ms @ 60 Hz)	Voltage: +/- 2% Frequency: +/- 0.10 Hz Time: 2 grid cycles (33 ms @ 60 Hz)	Voltage: +/- 2% Frequency: +/- 0.10 Hz Time: 2 grid cycles (33 ms @ 60 Hz)
Normal Operation Temperature Range	-25°C to +60°C (See Note 4)	-25°C to +60°C (See Note 4)	-25°C to +60°C (See Note 4)
Output Power Temperature Derating and Maximum Full Power Operating Ambient	(See Note 4)	(See Note 4)	(See Note 4)
Enclosure Rating Type	4X	4X	4X

Device	Device Version	Device Checksum
Rev. Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.5	9CD8
Rev. Number Microprocessor	C.0.2.2	2283

Alternate Device Version (referred to Alternate Microcontroller, Atmel, Type ATMEGA 256-16-AU):

Device	Device Version	Device Checksum
Rev Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.5	9CD8
Rev. Number Microprocessor	C.1.4.0	4D9A

Alternate Device Version (referred to Firmware revision for very high voltage field adjustable time setting)

Device	Device Version	Device Checksum
Rev Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.C	5DEB
Rev. Number Microprocessor	C.1.4.1	7368

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Device	Device Version	Device Checksum
Rev Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.5	9CD8
Rev. Number Microprocessor	C.0.4.0	0B01

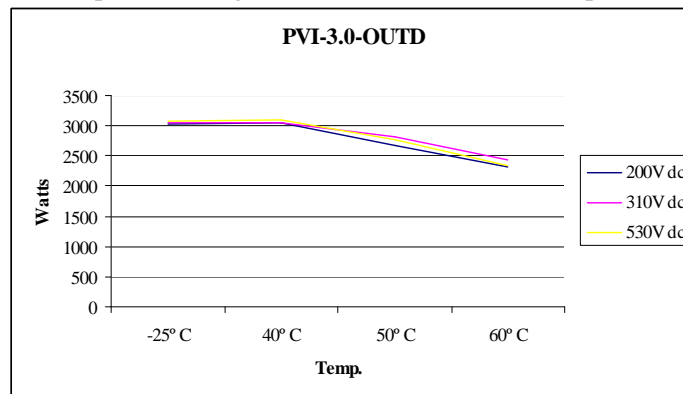
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Alternate Device Version for –A Model Series Only

Device	Device Version	Device Checksum
Rev Number DC-DC Converter	A.2.0.5	7B01
Rev. Number Inverter	B.2.0.C	5DEB
Rev. Number Microprocessor	C.0.4.1	9A14

Notes:

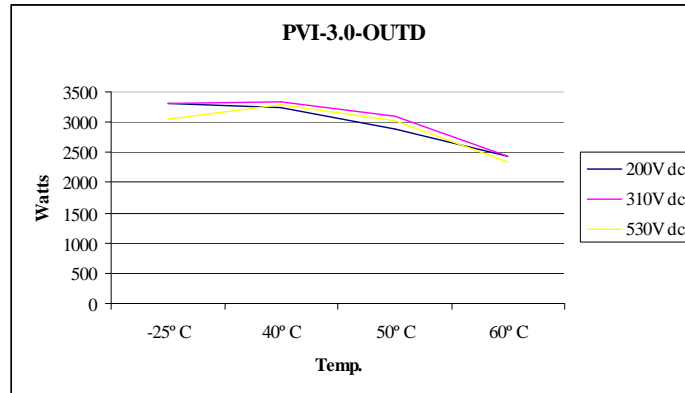
- Inverter, Models PVI-3.0-OUTD-US, PVI-3.0-OUTD-S-US, PVI-3.0-OUTD-S-US-A, and PVI-3.0-OUTD-US-W have been evaluated for use in utility-interactive applications.
- The output of Inverter, models PVI-3.0-OUTD-US, PVI-3.0-OUTD-S-US, PVI-3.0-OUTD-S-US-A, and PVI-3.0-OUTD-US-W may be 277 V ac, 240 V ac or 208 V ac which is user settable based on the utility system.
- Inverter Model PVI-3.0-OUTD-US-W is intended for operation with an AC Generated supply (i.e. wind or hydro); this inverter is intended to receive an input supply from a certified interface module (rectifier-controller which converts AC voltage from an AC generator into a regulated DC voltage).
- Maximum output power can be delivered only with an input voltage range of:
 200-530 V dc for 208 V ac configuration
 200-530 V dc for 240 V ac configuration
 200-530 V dc for 277 V ac configuration

Power Derating Curves over Temperature range -25° to 60°C at 208V ac output:

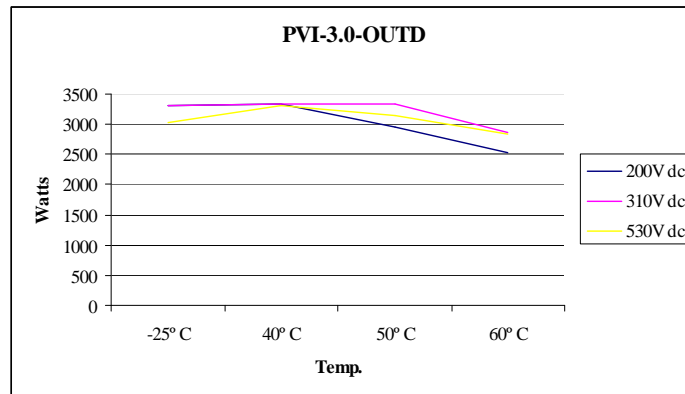


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Power Derating Curves over Temperature range -25° to 60°C at 240V ac output:



Power Derating Curves over Temperature range -25° to 60°C at 277V ac output:



5. Inverter Models PVI-3.0-OUTD-US, PVI-3.0-OUTD-S-US, PVI-3.0-OUTD-S-US-A, and PVI-3.0-OUTD-US-W are intended to be used in an ungrounded power system in conjunction with the requirements specified in the National Electrical Code, ANSI/NFPA 70, 2005 Ed, section 690.35.
6. Maximum Output Fault Current and Duration:

Models	Output Voltage	Fault Current RMS (A)	Duration (mSec) 3 cycles	Fault Current PK (A)	Duration (mSec)
PVI-3.0-OUTD Series	208	11.7	49.92	162.0	121.8
PVI-3.0-OUTD Series	240	10.6	49.92	139.7	118.9
PVI-3.0-OUTD Series	277	8.6	49.98	92.2	116.5

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

Table 68.1
Voltage and frequency limits for utility Interaction

Condition	Simulated utility source		Maximum time (sec) at 60 Hz ^a before cessation of current to the simulated utility
	Voltage (V)	Frequency (Hz)	
A	$< 0.50 V_{nor}^b$	Rated (60 Hz)	0.16 (Fixed)
B	$0.50 V_{nor}^b \leq V < 0.88 V_{nor}$ (Adjustable)	Rated (60 Hz)	2 (Fixed)
C	$1.10 V_{nor}^b < V < 1.20 V_{nor}^{(*)}$ (Adjustable)	Rated (60 Hz)	1 (Fixed)
D	$1.20 V_{nor} \leq V^{(*)}$	Rated (60 Hz)	0.16 (Default) (Adj. 0.001 to 0.16s)
E	Rated	$f > 60.5$ Hz (Default) (Adj. 60.2 to 63.0 Hz)	0.16 (Default) (Adj. 0.16 to 300 sec)
F	Rated	$f < 59.3$ Hz (Default) (Adj. 59.8 to 57.0 Hz)	0.16 (Default) (Adj. 0.16 to 300 sec)
G	Rated	$f < 57.0$ Hz	0.16 (Fixed)
H	Rated	$f > 63.0$ Hz	0.16 (Fixed)

^a When a utility frequency other than 60 Hz is used for the test, the maximum number of cycles it takes to cease to export power to the simulated utility shall not exceed the number of cycles a utility frequency of 60 Hz takes regardless of the time the inverter takes to cease to export power to the simulated utility.

^b V is the nominal output voltage rating.

(*) Note: For model at 277V High Voltage is fixed at 110% V_{nor} and Very High Voltage is fixed at 111% V_{nor} .

8. All models meet the surge requirements of IEEE C62.41.2-2002, Location Category B (6kV). Tests were performed using ring wave and combination waveforms, both polarities, for common mode and differential mode coupling, 20 pulses each test. After surge testing the units were operational with control functionally verified by frequency and voltage disconnect tests.
9. All above models in this series may include expansion board with wireless antennae option and will be identified with model designation including “-Z” suffix.
10. Model PVI-3.0-OUTD-S-US-A is provided with PV DC ARC-Fault Circuit Protection for series arcing faults.