



Certificate of Compliance

Certificate: 70184750

Master Contract: 259077

Project: 80035082

Date Issued: 2020-04-03

Issued to: Altenergy Power System Inc.
No.1 Yatai Road
Jiaxing, Zhejiang, 314050
CHINA
Attention: Kevin Lu

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: Rohana Yang
Rohana Yang

PRODUCTS

CLASS - C531109 - POWER SUPPLIES - Distributed Generation Power Systems Equipment

CLASS - C531189 - POWER SUPPLIES - Distributed Generation-Power Systems Equipment - Certified to U.S. Standards

Grid Support Utility Interactive Microinverter, Model QS1200 and QS1, Rack mounted.
Utility Interactive Microinverter, Model QS1A, Rack mounted.

For details related to rating, size, configuration, etc., reference should be made to the CSA Certification Record, Certificate of Compliance Annex A, or the Descriptive Report.

APPLICABLE REQUIREMENTS

CSA-C22.2 No. 107.1-16 - Power conversion equipment

*UL1741 - Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources (Second Edition, Revision dated February 15, 2018)

UL1741 CRD - Grid Support Utility Interactive Interoperability Optional Functions: Prevent Enter Service and Limit Active Power (CA Rule 21, Phase 3, functions 2 and 3) (Dated October 22, 2019)



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*Note: Conformity to UL 1741 (Second Edition, Revision dated February 15, 2018) includes compliance with applicable requirements of IEEE 1547-2003 (R2008), IEEE 1547.1-2005(R2011), California Rule 21 and Supplement SA8-SA18.

*Note: This product is PV Rapid Shut Down Equipment and conforms with NEC-2014 and NEC-2017 Article 690.12 and CEC-2018 Sec 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according manufacturer's instructions.



March 18, 2020

Kevin Lu
Altenergy Power System Inc.
No. 1 Yatai Road, Jiaxing
ZheJiang, China, 314050

Subject: Evidence of inverter support for IEEE 2030.5/Rule 21 CSIP Phase 2 and Phase 3 Function 1 and 8 Functionality

Dear Kevin Lu,

This letter confirms that CSA Group witnessed the Appendix C testing listed in Resolution E-5000 from the California Public Utilities Commission Draft dated July 11, 2019 (as modified by Resolution E5036) under the CSA project 80037979. The Resolution requires the verification of five test cases for inverters that do not directly implement IEEE 2030.5 client functionality. During the tests, the inverter is to be connected to a SunSpec Certified IEEE 2030.5/CSIP gateway. The five tests are listed below and specified in the SunSpec IEEE 2030.5/CSIP test procedures:

- Inverter Status (BASIC-028)
- Inverter Meter Reading (BASIC-029)
- Basic Inverter Control – Volt/Var (BASIC-006)
- Basic Inverter Control – Fixed Power Factor (BASIC-008)
- Basic Inverter Control – Volt-Watt (BASIC-011)

The tests were performed on the Grid Support Utility Interactive Microinverter on 3/14/2020 with the ECU (<https://sunspec.org/wp-content/uploads/2020/01/SunSpec-APSystems-certificate-CS-000012.pdf>) model number ECU-R to connected to Grid Support Utility Interactive Microinverter Inverter model number QS1/QS1200 bearing the serial number 801002160022 which is used to represent the inverter models below:

APsystems Model Numbers

- QS1/QS1200



The inverter under test was subjected to testing conditions as follows:

- The inverter was operating during test harness verification procedure
- The ECU was given stimuli in the form of IEEE 2030.5 commands (Inverter Status, Inverter Meter Reading, Volt/VAR, Fixed Power Factor, and Volt/Watt) sent from an IEEE 2030.5 server that were subsequently translated to signals understood by the inverter.
- The inverter parameters were verified: a) to change during the test cases for Volt-VAR, Fixed Power Factor, and Volt-Watt and b) report monitored data during the test cases for Inverter Status and Inverter Meter Reading. Based on this procedure, the requirements from Appendix C of the resolution were verified.

Very truly yours,

Tested By,

Test Engineer Name: *Xueji Dong*
Test Engineer Title: Certifier
SunSpec ATL name: CSA Group



萬泰認證

CERTIFICATE OF REGISTRATION

This is to certify that the Management System established by

ALTENERGY POWER SYSTEM INC.

3F, Building 1, NO.1 Yatai Road, Jiaying Science Park, Nanhu District, Jiaying, Zhejiang, P.R.China
Rm. B403, No.188 Zhangyang Road, Pudong, Shanghai, P.R.China

Unified Social Credit Code: 91330400551779794Q

Has been assessed to comply with the requirements of the international standard

GB/T19001-2016 idt ISO9001:2015

Scope of certification

Design, manufacture, sales of alternative energy power generation equipments

NO:15/20Q5187R30 DATE OF ISSUE:Feb,15,2020 VALID UNTIL: Feb,14,2023
The Certificate Information Can be Obtained by Visiting <http://www.cnca.gov.cn>.



中国认可
国际互认
管理体系
MANAGEMENT SYSTEM
CNAS C015-M

First Surveillance	Second Surveillance	Third Surveillance
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Wangxiaodong
General Manager, WangXiaoDong

The surveillance audit shall be conducted at least once each year within the validity of registration certificate, and the interval between two surveillance audits shall not exceed 12 months.
The certification organization must conduct surveillance audit regularly and the registration certificate continues effective after the eligible surveillance audit.
The compliance label will be attached to this registration certificate after the eligible surveillance audit.
Every certificate, which the certification scope within the required of administrative license or national mandatory certification requirements will become invalid when the license or mandatory certification lose effectiveness



Hangzhou WIT Assessment Co.,Ltd.
13/14Floor, International Sunyard,
No.1750 Jianghong Avenue, Binjiang
District, Hangzhou • China

ISO9001



Certificate of Compliance

Certificate: 70218632

Master Contract: 259077

Project: 70218632

Date Issued: 2019-06-13

Issued to: Altenergy Power System Inc.
No.1 Yatai Road
Jiaxing, Zhejiang, 314050
CHINA
Attention: Kevin Lu

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: *Allen Yao*
Allen Yao

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

Photovoltaic Rapid Shutdown System Equipment, Model No. RSD-S-PLC-A and RSD-S-PLC-B, used to cut off the DC connection of PV modules after the Transmitter power supply circuit breaker is off. Rack mounted or mounted to the PV module with adhesive. PLC communication used.

Initiation device, Model No. Transmitter-PLC, contain two installation models: 1) Transmitter - PLC -PCBA, 2) Transmitter – PLC

Note:

1. For details related to rating, size, configuration, etc., reference should be made to the CSA Certification Record, Certificate of Compliance Annex A, or the Descriptive Report.
2. Photovoltaic Rapid Shutdown Function has also been evaluated according to NEC-2017 Section 690.12 applicable requirement.



Certificate: 70218632

Project: 70218632

Master Contract: 259077

Date Issued: 2019-06-13

APPLICABLE REQUIREMENTS

UL Std. No. 1741-Second Edition - Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources (February 15, 2018)

CSA C22.2 No. 330-17 - Photovoltaic rapid shutdown systems

Note:

1. CSA C22.2 No. 330-17 is used in conjunction with CSA C22.2 No.107.1-16 - General Use Power Supplies.
2. Compliance with UL 1741-Second Edition (February 15, 2018) include compliance with applicable requirement of UL 991, Edition 3, Tests for Safety-related controls employing solid-state devices.
3. Compliance with CSA C22.2 No. 330-17 include compliance with applicable requirement of CSA C22.2 No. 0.8 -12 Safety functions incorporating electronic technology.



Certificate of Compliance

Certificate: 70218631

Master Contract: 259077

Project: 70218631

Date Issued: 2019-06-13

Issued to: Altenergy Power System Inc.
No.1 Yatai Road
Jiaxing, Zhejiang, 314050
CHINA
Attention: Kevin Lu

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Issued by: *Allen Yao*
Allen Yao

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

Photovoltaic Rapid Shutdown System:

- APsmart Rapid shutdown System Type-A, include: RSD-S-PLC-A and Initiation device Transmitter-PLC, System voltage 1000Vdc, 15A max.
- APsmart Rapid shutdown System Type-B, include: RSD-S-PLC-B and Initiation device Transmitter-PLC, System voltage 1500Vdc, 15A max.
- APsmart Rapid shutdown System Type-C, include: RSD-S-PLC-A and Initiation device Transmitter-PLC-PCBA, System voltage 1000Vdc, 15A max.
- APsmart Rapid shutdown System Type-D, include: RSD-S-PLC-B and Initiation device Transmitter-PLC-PCBA, System voltage 1500Vdc, 15A max.

Note:

1. For details related to rating, size, configuration, etc., reference should be made to the CSA Certification Record, Certificate of Compliance Annex A, or the Descriptive Report.
2. Photovoltaic Rapid Shutdown Function has also been evaluated according to NEC-2017 Section 690.12 applicable requirement.



Certificate of Compliance

Certificate: 70184750

Master Contract: 259077

Project: 70184750

Date Issued: 2018-05-17

Issued to: Altenergy Power System Inc.
No.1 Yatai Road,
Jiaxing, Zhejiang, 314050
CHINA
Attention: Guofeng Jiang

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: *Michael Tong*
Michael Tong

PRODUCTS

CLASS - C531109 - POWER SUPPLIES - Distributed Generation Power Systems Equipment

CLASS - C531189 - POWER SUPPLIES - Distributed Generation-Power Systems Equipment - Certified to U.S. Standards

Utility Interactive Microinverter, Model QS1200 and QS1, Rack mounted.

For details related to rating, size, configuration, etc., reference should be made to the CSA Certification Record, Certificate of Compliance Annex A, or the Descriptive Report.

APPLICABLE REQUIREMENTS

CSA C22.2 No. 107.1-16 - General Use Power Supplies

*UL Std. No. 1741 - Second Edition - Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources (February 15, 2018)

*Note: Conformity to UL 1741-Second Edition (February 15, 2018) includes compliance with applicable requirements of IEEE 1547 (R2008) and IEEE 1547.1 (R2011).



Letter of Attestation

Document: 70203119

Master Contract: 259077

Project: 70203119

Date Issued: November 12, 2018

**Issued to: Altenergy Power System Inc.
No.1 Yatai Road,
Jiaxing, Zhejiang, 314050
China
Attention: Guofeng Jiang**

*CSA Group, Certification and Testing hereby confirms that it has completed an evaluation of:
Utility Interactive Microinverter (at 240Vac output)*

Model: QS1 and QS1200

*CSA Group, Certification and Testing hereby attests that the products identified above and described
in test report 70203119 dated November 12, 2018
complies with the following standards/tests, to the extent applicable:*

The testing of the subject inverters were completed according to the following sections of the test protocol entitled "Performance Test Protocol for Evaluating Inverters Used in Grid-Connected Photovoltaic Systems" prepared by "Sandia National Laboratories, Endecon Engineering, BEW Engineering, and Institute for Sustainable Technology", dated October 14, 2004 as modified by the "Guidelines for the use of the Performance Test Protocol for Evaluating Inverters Used in Grid-Connected Photovoltaic Systems" prepared by KEMA-Xenergy, and BEW Engineering, dated March 1, 2005 with deviations according to the requirements of the California Energy Commission New Solar Homes Partnership Guidebook Sixth Edition (CEC-300-2016-008-CMF), Appendix III section C – "Inverters".

- *Maximum Continuous Power*
- *Conversion Efficiency*
- *Tare Losses*

Notes:

1. Units verified against CSA report 70203119, dated November 12, 2018.
2. Refer to TIS report and Testdata for test results and setup details.

Allen Yao
Issued by: _____
Name of CSA Staff



Document: 70203119

Master Contract: 259077

Project: 70203119

Date: November 12, 2018

THIS LETTER OF ATTESTATION DOES NOT AUTHORIZE THE USE OF THE CSA MARK ON THE SUBJECT PRODUCTS.

QUOTATIONS FROM THE TEST REPORT OR THE USE OF THE NAME OF THE CANADIAN STANDARDS ASSOCIATION AND CSA GROUP OR ITS REGISTERED TRADEMARK, IN ANY WAY, IS NOT PERMITTED WITHOUT PRIOR WRITTEN CONSENT OF THE CANADIAN STANDARDS ASSOCIATION OPERATING AS CSA GROUP, CERTIFICATION AND TESTING DIVISION.