Certificate of Compliance

Certificate: 80103086 **Master Contract:** 300612

Project: 80103084 **Date Issued:** 2022-07-19

Issued To: **GoodWe Technologies Co., Ltd.**
No.90, Zijin Road, New District
Suzhou, Jiangsu, 215011
China

Attention: Jing Xie

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: Henry Huan
Henry Huan

PRODUCTS

Group A
CLASS - C531109 - POWER SUPPLIES - Distributed Generation Power Systems Equipment
CLASS - C531189 - POWER SUPPLIES - Distributed Generation Power Systems Equipment - Certified to U.S. Standards

Transformerless Bi-directional Inverter with charge controller, ES series and GEH series, model GW5000-ES-US20, GW6000-ES-US20, GW7600-ES-US20, GW9600-ES-US20, GW11K4-ES-US20, GEH5.0-1U-US20, GEH6.0-1U-US20, GEH7.6-1U-US20, GEH9.6-1U-US20 and GEH11.4-1U-US20 with PV input and Battery input, Grid Support Utility Interactive, or stand-alone. Wall mounted, permanently connected.

Transformerless Bi-directional Inverter with charge controller, SBP series and GEC series, model GW5000-SBP-US20, GW6000-SBP-US20, GW7600-SBP-US20, GW9600-SBP-US20, GW11K4-SBP-US20, GEC5.0-1U-

US20, GEC6.0-1U-US20, GEC7.6-1U-US20, GEC9.6-1U-US20 and GEC11.4-1U-US20 only Battery input, Grid Support Utility Interactive, or stand-alone. Wall mounted, permanently connected.

Group B
CLASS - C531109 - POWER SUPPLIES - Distributed Generation Power Systems Equipment
CLASS - C531189 - POWER SUPPLIES - Distributed Generation Power Systems Equipment - Certified to U.S. Standards
CLASS - 5311 12 - POWER SUPPLIES - Systems Equipment for Electric Vehicles
CLASS - 5311 92 - POWER SUPPLIES - Electric Vehicle Chargers/Systems - Certified to US Standards

Transformerless Bi-directional Inverter with charge controller and EV Charger, ES series and GEH series, model GW5000-ES-US20, GW6000-ES-US20, GW7600-ES-US20, GW9600-ES-US20, GW11K4-ES-US20, GEH5.0-1U-US20, GEH6.0-1U-US20, GEH7.6-1U-US20, GEH9.6-1U-US20 and GEH11.4-1U-US20 with PV input and Battery input, Grid Support Utility Interactive, or stand-alone. Wall mounted, permanently connected.

Transformerless Bi-directional Inverter with charge controller and EV Charger, SBP series and GEC series, model GW5000-SBP-US20, GW6000-SBP-US20, GW7600-SBP-US20, GW9600-SBP-US20, GW11K4-SBP-US20, GEC5.0-1U-US20, GEC6.0-1U-US20, GEC7.6-1U-US20, GEC9.6-1U-US20 and GEC11.4-1U-US20 only Battery input, Grid Support Utility Interactive, or stand-alone. Wall mounted, permanently connected.

Notes:

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. The models listed in GEH series and GEC series may be alternatively marked with a brand name of ‘GE’, the usage of the brand name has been authorized to GoodWe Technologies Co., Ltd. by General Electric Company (“GE”) company. The GEH series are the same with the ES series only with different model name and appearance color, they both share the same hardware and software. GEC series are same with the SBP series only with different model name and appearance color and they both share the same hardware and software.

3. PV input inverter, ES series and GEH series are verified with PVRSS function according to NEC-2020 Article 690.12 and CEC-2018 Sec 64-218 with Inverter integrated transmitter and external mounted RSD as following:

Model	Attenuators	Initiation Device	Inverter	System Ratings

Goodwe PVRSS System	Altenergy Power System Inc. RSD-S-PLC-A RSD-S-PLC-B RSD-D-15-1000 RSD-D-20-1000 RSD-D-25-1000 RSD-D-15-1500 RSD-D-20-1500 RSD-D-25-1500	Altenergy Power System Inc. Single Core Transmitter-PLC (no power supply)	GoodWe Technologies Co., Ltd. GW5000-ES-US20, GW6000-ES-US20, GW7600-ES-US20, GW9600-ES-US20, GW11K4-ES-US20, GEH5.0-1U-US20, GEH6.0-1U-US20, GEH7.6-1U-US20, GEH9.6-1U-US20, GEH11.4-1U-US20	600 Vdc maximum system voltage. Rapid shutdown time limit 30s with inverter. Initiated by the DC Switch or External Switch (cut off the RSD transmitter power and the contactor (which connect between battery and inverter battery port) power together.)
	Tigo Energy Inc. TS4-A-F TS4-A-2F	Tigo Energy Inc. RSS Transmitter DIN Rail, Single RSS Core		

4. UL 1741 PCS CRD has been evaluated on the inverter and ESS. The evaluated ESS operating modes are Import Only Mode and No Exchange Mode.

Type of equipment	Model number	Additional required PCS devices
Inverter	GW5000-ES- US20, GW6000-ES-US20, GW7600-ES-US20, GW9600-ES-US20, GW11K4-ES-US20, GEH5.0-1U-US20, GEH6.0-1U-US20, GEH7.6-1U-US20, GEH9.6-1U-US20, GEH11.4-1U-US20, GW5000-SBP-US20, GW6000-SBP-US20, GW7600-SBP-US20, GW9600-SBP-US20, GW11K4-SBP- US20, GEC5.0-1U-US20, GEC6.0-1U-US20, GEC7.6-1U-US20, GEC9.6-1U-US20, GEC11.4-1U-US20	Meter: GMK120, GMK121, GMK140, or GMK141; Or Automatic backup device: ABD200-40-US10, ABD200-63-US10 ABD100-40-US10, ABD100-63-US10
ESS	GWHS5.0-US20, GWHS6.0-US20, GWHS7.6-US20, GWHS9.6-US20, GWHS11.4-US20, GEHS5.0-US20, GEHS6.0-US20, GEHS7.6-US20, GEHS9.6-US20, GEHS11.4-US20, GWCS5.0-US20, GWCS6.0-US20, GWCS7.6-US20, GWCS9.6-US20, GWCS11.4-US20, GECS5.0-US20, GECS6.0-US20, GECS7.6-US20, GECS9.6-US20, GECS11.4-US20	Meter: GMK120, GMK121, GMK140, or GMK141; Or Automatic backup device: ABD200-40-US10, ABD200-63-US10 ABD100-40-US10, ABD100-63-US10

APPLICABLE REQUIREMENTS

Part A

For model ES series and GEH series without EV Charger following standards are evaluated:

CSA-C22.2 No.107.1-16	-	Power Conversion Equipment
CSA-C22.2 No.292-18	-	DC arc fault protection for photovoltaic applications
CSA-C22.2 No.330-17	-	Photovoltaic Rapid shutdown systems
*UL Std No. 1741-Third Edition	-	Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Sources (Third Edition, Dated September 28, 2021)
**UL1741 CRD	-	Non-Isolated EPS Interactive PV Inverters Rated Less Than 30Kva (Dated April 26, 2010)
**UL 1699B	-	Outline of Investigation for Photovoltaic (PV) DC Arc-Fault Circuit Protection (Issue Number 2, January 14, 2013)
**UL 1699B	-	Photovoltaic (PV) DC Arc-Fault Circuit Protection (First Edition, Dated August 22, 2018)
**UL1741 CRD	-	Power Control Systems (PCS) (Dated March 08, 2019)

*Note: Conformity to UL 1741(Third Edition, Dated September 28, 2021) includes compliance with applicable requirements of IEEE 1547-2018, IEEE1547.1-2020, 1547a-2020, Grid support function is verified according to UL 1741 Supplement SB and IEEE 1547.1-2020 with the SRDs of IEEE 1547-2018, IEEE 1547a-2020 and California Electric Rule 21, Hawaiian Electric Co. SRD-V2.0, New York State Standardized Interconnection Requirements and Application Process (2022), Default New England Bulk System Area Settings Requirement (2021). While the grid support function evaluated according to IEEE 1547.1-2020, the interoperability is verified with IEEE 2030.5-2018 communication protocol.

**Note: The functional safety has been evaluated according to applicable requirement of CSA C22.2 No. 0.8-19, UL 991 Edition 3 and UL 1998 Edition 3 as required by the product standard.

***Note: The products have been verified with PVRSS function according to NEC-2020 Article 690.12 and CEC-2018 Sec 64-218.

****Note: The products have evaluated inverter and ESS operating modes according to UL 1741 PCS CRD are: Import Only Mode and No Exchange Mode.

Part B

For models SBP series and GEC US series without EV Charger following standards are evaluated:

CSA-C22.2 No.107.1-16	-	Power Conversion Equipment
*UL Std No. 1741-Third Edition	-	Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Sources (Third Edition, Dated September 28, 2021)
**UL1741 CRD	-	Power Control Systems (PCS) (Dated March 08, 2019)

*Note: Conformity to UL 1741(Third Edition, Dated September 28, 2021) includes compliance with applicable requirements of IEEE 1547-2018, IEEE1547.1-2020, 1547a-2020, Grid support function is verified according to UL 1741 Supplement SB and IEEE 1547.1-2020 with the SRDs of IEEE 1547-2018, IEEE 1547a-2020 and California Electric Rule 21, Hawaiian Electric Co. SRD-V2.0, New York State Standardized Interconnection Requirements and Application Process(2022), Default New England Bulk System Area Settings Requirement (2021).While the grid support function evaluated according to IEEE 1547.1-2020, the interoperability is verified with IEEE 2030.5-2018 communication protocol.

**Note: The products have evaluated inverter and ESS operating modes according to UL 1741 PCS CRD are: Import Only Mode and No Exchange Mode.

Part C

For models ES series and GEH series with EV Charger following standards are evaluated:

CSA-C22.2 No.107.1-16	-	Power Conversion Equipment
CSA-C22.2 No.292-18	-	DC arc fault protection for photovoltaic applications
CSA-C22.2 No.280-16	-	Electric Vehicle Supply Equipment
CSA-C22.2 No.330-17	-	Photovoltaic Rapid shutdown systems
*UL Std No. 1741-Third Edition	-	Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Sources (Third Edition, Dated September 28, 2021)
**UL1741 CRD	-	Non-Isolated EPS Interactive PV Inverters Rated Less Than 30Kva (Dated April 26, 2010)
**UL 1699B	-	Outline of Investigation for Photovoltaic (PV) DC Arc-Fault Circuit Protection (Issue Number 2, January 14, 2013)
**UL 1699B	-	Photovoltaic (PV) DC Arc-Fault Circuit Protection (First Edition, Dated August 22, 2018)
**UL Std No. 2594 - Second Edition	-	Electric Vehicle Supply Equipment (Second Edition, Dated December 21, 2016)
**UL1741 CRD	-	Power Control Systems (PCS) (Dated March 08, 2019)

*Note: Conformity to UL 1741(Third Edition, Dated September 28, 2021) includes compliance with applicable requirements of IEEE 1547-2018, IEEE1547.1-2020, 1547a-2020, Grid support function is verified according to UL 1741 Supplement SB and IEEE 1547.1-2020 with the SRDs of IEEE 1547-2018, IEEE 1547a-2020 and California Electric Rule 21, Hawaiian Electric Co. SRD-V2.0, New York State Standardized Interconnection Requirements and Application Process(2022), Default New England Bulk System Area Settings Requirement (2021).While the grid support function evaluated according to IEEE 1547.1-2020, the interoperability is verified with IEEE 2030.5-2018 communication protocol.

**Note: The functional safety has been evaluated according to applicable requirement of CSA C22.2 No. 0.8-19, UL 991 Edition 3 and UL 1998 Edition 3 as required by the product standard.

***Note: 1. Conformity to CSA C22.2 No. 280-16 Second Edition includes compliance with applicable requirements of CAN/CSA-C22.2 No. 281.1-12 First Edition, CAN/CSA-C22.2 No. 281.2-12 First Edition and CSA C22.2 No.0.8-19; 2. Conformity to UL 2594 Second Edition includes compliance with applicable requirements of UL 2231-1 Second Edition and UL 2231-2 Second Edition, UL 1998 Third Edition and UL 991 Third Edition.

****Note: The products have been verified with PVRSS function according to NEC-2020 Article 690.12 and CEC-2018 Sec 64-218.

*****Note: The products have evaluated inverter and ESS operating modes according to UL 1741 PCS CRD are: Import Only Mode and No Exchange Mode.

Part D

For models SBP series and GEC series with EV Charger following standards are evaluated:

CSA-C22.2 No.107.1-16	-	Power Conversion Equipment
CSA C22.2 No. 280-16	-	Electric Vehicle Supply Equipment
*UL Std No. 1741-Third Edition	-	Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Sources (Third Edition, Dated September 28, 2021)
**UL Std No. 2594 - Second Edition	-	Electric Vehicle Supply Equipment ((Second Edition, Dated December 21, 2016)
**UL1741 CRD	-	Power Control Systems (PCS) (Dated March 08, 2019)

*Note: Conformity to UL 1741(Third Edition, Dated September 28, 2021) includes compliance with applicable requirements of IEEE 1547-2018, IEEE1547.1-2020, 1547a-2020, Grid support function is verified according to UL 1741 Supplement SB and IEEE 1547.1-2020 with the SRDs of IEEE 1547-2018, IEEE 1547a-2020 and California Electric Rule 21, Hawaiian Electric Co. SRD-V2.0, New York State Standardized Interconnection Requirements and Application Process (2022), Default New England Bulk System Area Settings Requirement (2021).While the grid support function evaluated according to IEEE 1547.1-2020, the interoperability is verified

with IEEE 2030.5-2018 communication protocol.

**Note: The functional safety has been evaluated according to applicable requirement of CSA C22.2 No. 0.8-19, UL 991 Edition 3 and UL 1998 Edition 3 as required by the product standard.

***Note: 1. Conformity to CSA C22.2 No. 280-16 Second Edition includes compliance with applicable requirements of CAN/CSA-C22.2 No. 281.1-12 First Edition, CAN/CSA-C22.2 No. 281.2-12 First Edition and CSA C22.2 No.0.8-19; 2. Conformity to UL 2594 Second Edition includes compliance with applicable requirements of UL 2231-1 Second Edition and UL 2231-2 Second Edition, UL 1998 Third Edition and UL 991 Third Edition.

****Note: The products have evaluated inverter and ESS operating modes according to UL 1741 PCS CRD are: Import Only Mode and No Exchange Mode.

Notes:

Products certified under Class C531109 have been certified under CSA's ISO/IEC 17065 accreditation with the Standards Council of Canada (SCC). www.scc.ca

Supplement to Certificate of Compliance

Certificate: 80103086 **Master Contract:** 300612

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
80103084	2022-07-19	Update report 80103086 to include requirements of UL1741 CRD-Power Control Systems (PCS) (Dated March 08, 2019) for model ES series, GEH series, SBP Series and GEC series and the corresponding ESS models and Change trademark, alternative some components.
80103090	2022-07-12	Update report 80103086 to verify the PVRSS function compatibility with alternate PV rapid shut down equipment.
80103086	2022-07-01	Grid Support Utility Interactive transformerless Bi-directional Inverter with charge controller and EV Charger Function, models ES series, GEH series, SBP Series and GEC series certification. (C/US). Class 531112, Class 531192 added in project 80134175.