



LISTING REPORT/INSPECTION PROCEDURE

GoodWe Technologies Co., Ltd
PROJECT NUMBER: GZ-CERT220802012

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Issued: 2022-08-02
Revised: N/A

620 Old Peachtree Road NW, Suite 100, Suwanee, GA 30024 USA (770) 570-1800

Report Number: GZES220400693061

A representative sample of the product covered by this report has been evaluated and found to comply with the applicable requirements of:

- Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources –UL 1741. (Third Edition, Dated September 28, 2021)
- Power conversion equipment – CSA C22.2 No. 107.1 issued on June 2016
- UL 1741 Supplement SB - Grid Support Utility Interactive Inverters and Converters Based upon IEEE 1547-2018 and IEEE 1547.1-2020. (Third Edition, Dated September 28, 2021)

Reference standard

- IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces – IEEE Std 1547:2018 (Revision of IEEE Std 1547:2003), approved 15 February 2018; IEEE Std 1547a™-2020 Approved 9 March 2020. (Refer to IEEE Std 1547.1:2020, approved 5 March 2020.)
- Hawaiian Electric Companies, IEEE 1547.1-2020 Source Requirements Document Version 2.0 (“SRD V2.0”), effective on July 1st, 2020

Issuing Laboratory	SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch	
Address	198 Kezhu Road, Science City, Economic & Technology Development Area, Guangzhou, Guangdong, China	
Applicant (Certificate Holder)	GoodWe Technologies Co., Ltd	
Address	No.90 Zijin Rd., New District, Suzhou, 215011, China	
Contact Details	Tao Zhang	
	Phone: +86 15250014510	Fax: -
	Email: tao.zhang@goodwe.com	
Manufacturer	GoodWe Technologies Co., Ltd	
Address	No.90 Zijin Rd., New District, Suzhou, 215011, China	
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Product Type :	Grid-Connected PV Inverter
Trade Mark..... :	GoodWe or GE
Product description..... :	The products covered by this report are Grid-Connected transformerless PV Inverter for use with distributed energy Resources. It converts the direct current (DC) generated by the photovoltaic (PV) module into a single-phase alternating current (AC) and feeds it into the utility grid. Unit is intended to be installed in indoor/outdoor location and not to be installed in hazardous location. The installation should accordance with the National Electrical Code, NFPA 70.
Model Number(s) :	GoodWe: GW5000-MS-US30;GW6000-MS-US30; GW7600-MS-US30;GW9600-MS-US30; GW11K4-MS-US30. GE: GEP5.0-1-US30; GEP6.0-1-US30; GEP7.6-1-US30; GEP9.6-1-US30; GEP11.4-1-US30. Note: The differences between GoodWe's and GE's models are the trademark and model names. They are all the same in other places.
Model Differences..... :	All models have identical mechanical and electrical construction except some parameter configuration of the software architecture in order to control the max output power and some alternate components (refer to critical component list for details).

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Electrical Ratings..... :	GW5000-MS-US30 and GEP5.0-1-US30 PV input side: 65~550VMPPT(600Vmax), 16A+16A Maximum; AC output side: 5000W@240Vac, 4333W@208Vac; Single phase, 60Hz, 20.8A maximum, 0.8 leading to 0.8 lagging, -30 °C ~ +60 °C (>45 °C derating)
	GW6000-MS-US30 and GEP6.0-1-US30 PV input side: 65~550VMPPT(600Vmax), 16A+16A Maximum; AC output side: 6000W@240Vac, 5200W@208Vac; Single phase, 60Hz, 25.0A maximum, 0.8 leading to 0.8 lagging, -30 °C ~ +60 °C (>45 °C derating)
	GW7600-MS-US30 and GEP7.6-1-US30 PV input side: 65~550VMPPT(600Vmax), 16A+16A Maximum; AC output side: 7600W@240Vac, 6580W@208Vac; Single phase, 60Hz, 31.7A maximum, 0.8 leading to 0.8 lagging, -30 °C ~ +60 °C (>45 °C derating)
	GW9600-MS-US30 and GEP9.6-1-US30 PV input side: 65~550VMPPT(600Vmax), 16A+16A+16A Maximum; AC output side: 9600W@240Vac, 8320W@208Vac; Single phase, 60Hz, 40.0A maximum, 0.8 leading to 0.8 lagging, -30 °C ~ +60 °C (>45 °C derating)
	GW11K4-MS-US30 and GEP11.4-1-US30 PV input side: 65~550VMPPT(600Vmax), 16A+16A+16A Maximum; AC output side: 11400W@240Vac, 9880W@208Vac; Single phase, 60Hz, 47.5A maximum, 0.8 leading to 0.8 lagging, -30 °C ~ +60 °C (>45 °C derating)

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Other Ratings	Normal operating performance Category B Abnormal operating performance Category III Type 3R, transformer less, Grid Support Utility Interactive Inverter
Accessories	N/A

Testing Laboratory	Dongguan BALUN Testing Technology Co., Ltd.
Address	Room 104, 204, 205, Building 1, No. 6, Industrial South Road, Songshan Lake District, Dongguan, Guangdong, China
Date of receipt of test item	2022-03-22
Date(s) of performance of tests	2022-06-04 to 2022-08-01
Conditions of Acceptability	N/A

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CO-LISTING PAGE

CO-LISTING APPLICANT I

Applicant's Name: N/A _____

Address: _____

Primary Contact: _____

Phone: _____

Fax: _____

Email: _____

Product Correlation:

Basic Models	Co-Listed Models	Note any differences between Basic and Co-Listed models

CO-LISTING APPLICANT II

Applicant's Name: N/A _____

Address: _____

Primary Contact: _____

Phone: _____

Fax: _____

Email: _____

Product Correlation:

Basic Models	Co-Listed Models	Note any differences between Basic and Co-Listed models

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GENERAL INFORMATION

Components

Components used in the covered products must be those outlined in the latest edition of the Listing Report.

Listing Marking

This report along with a valid certificate authorizes the certificate holder to use the Listing Marking of SGS North America only on products covered by this report and in accordance with the Product Certification Program Policy Handbook.

Production Line Tests

Manufacturing and Production Tests shall be performed as required by this Report.

Responsibility of the Manufacturer and Factory

- 1) It is the manufacturer and factory's responsibility to restrict the use of markings which reference SGS to those products which are found by the manufacturers own inspection to comply with the product description in this report. This includes reference to SGS directly and/or indirectly.
- 2) During hours in which the factory is in operation, the SGS inspector shall be given unlimited access to any portion of the premises where the product and/or parts are being produced, assembled, inspected and labeled; and to the test area designated for routine tests. The SGS inspector shall be permitted to inspect and subject the products to prescribed tests prior to shipment any product bearing or intended to bear marking referencing SGS.
- 3) The factory shall provide all required testing equipment and facilities including trained personnel for conducting all routine tests that are to be performed at the factory. These shall be available when needed so that the inspection work can proceed without delays.

Follow up Inspections

As part of the SGS Follow-Up inspection, it is required that an inspector periodically visit the factory location(s) and select for examination and/or testing, the most recent production sample of the product covered in the Listing Report.

SGS Inspector

- 1) A product which is found by the SGS inspector to have features which make it unacceptable to bear marking referencing SGS shall be corrected if the listing marking is to be used. The inspector shall carefully check additional production for such features until conditions are considered normal.
- 2) A product which does not comply with the provisions of the listing report shall have all reference to SGS removed. If the rejection of the product is questioned by the factory representative, it may be put on hold in separate area of location pending appeal. The factory shall satisfy the inspector that all marks referencing SGS are removed from the rejected material or finished product. Factory shall destroy product and or turn over to inspector for destruction.
- 3) All discrepancies between the product and the listing report shall be immediately stated to the attention of the factory representative. This shall be noted in the follow-up inspection report as a discrepancy.

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GENERAL CONSTRUCTIONAL REQUIREMENTS TO BE VERIFIED

Construction Details - This section specifies construction and component details in addition to the critical components table which are to be verified during factory follow-up inspections.

1. Mechanical Assembly – A wiring device shall be prevented from any turning that can apply tension to conductor connections, result in damage to the conductor, or otherwise adversely affect the assembly. Friction alone between the mating parts of the assembly shall not be acceptable to prevent turning.
2. Corrosion – All bare metal parts are protected against corrosion by coating, painting, plating or other means specifically identified in the specific construction details unless these metal parts inherently possess such properties to resist corrosion.
3. Accessibility of Live Parts – All uninsulated live parts in primary circuitry are housed within a metallic enclosure constructed without openings unless otherwise described in the construction details.
4. Grounding – All dead-metal parts external or within the enclosure that are exposed to contact during normal or any servicing operation are connected to the equipment grounding terminal.
5. Conductor Protection - Conductors that pass over edges or through openings in metal shall be secured from contacting the edges or be protected from cutting and abrasion. For sheet metal less than 1.1 mm thick, protection shall be provided by one of the following methods:
 - (a) rolling the edge of the metal not less than 120 degree;
 - (b) a bushing or grommet of a material other than rubber at least 1.2 mm thick; or
 - (c) glass sleeving at least 0.25 mm thick.
6. Internal Wiring – UL/CUL listed, all wires in primary circuitry shall be 600V, 105°C, UL94 V-0 unless otherwise described in this report.
7. Wire Terminals – Metal Terminals, Tin Plated OT 4-6mm², M4, 105°C, Copper.
8. Insulating Materials – Breakdown voltage larger than 10KV, VTM-0, -40°C~120°C, 0.25mm thickness.
9. Heat Shrinkable Tubing – Rated 600 V, 125 °C. Covered on wire connectors.
10. Marking and Labeling Systems – Pressure-sensitive labels and nameplates of the permanent type (Type P) that are secured by adhesive shall be in accordance with CSA C22.2 No. 0.15 or UL 969, suitable for damp locations and rated min. 60 °C when applied on Canopy.
11. Installation, Operating and Safety Instructions - Instructions for installation and use of this product are provided by the manufacturer as required by the standards.

ROUTINE TESTS FOR MANUFACTURING AND PRODUCTION

The manufacturer shall perform the following Manufacturing and Production Tests.

Test records

Test records shall be retained for a period of at least six months, and shall include test quantity, test dates, catalog or model numbers, test results, and disposition of any non-complying products.

Required Tests

- Dielectric Voltage Withstand Test
- Utility Voltage and Frequency Variation Test
- Grounding Continuity Test

Dielectric Voltage Withstand Test

Method

Each unit shall withstand without breakdown, as a routine production-line test, the application of a potential from Table 67.1A for AC rated circuits and from Table 67.1B for DC rated circuits:

- a) From input and output wiring, including connected components, to accessible dead metal parts that are able to become energized, and
- b) From input and output wiring to accessible low-voltage, limited-energy metal parts, including terminals.

Other than as noted in 67.3, the potential for the production-line test shall be in accordance with Condition A or Condition B of Table 67.1A or Table 67.1B at a frequency within the range of 40 – 70 Hertz.

**Table 67.1A
Production-line test conditions AC rated circuits**

Circuit rating, Vac	Condition A		Condition B		Condition C		Condition D	
	Potential, volts ac	Time, seconds	Potential, volts ac	Time, seconds	Potential, volts dc	Time, seconds	Potential, volts dc	Time, seconds
250 or less	1000	60	1200	1	1400	60	1700	1
More than 250	1000+2 V ^a	60	1200+ 2.4 V ^a	1	1400+ 2.8 V ^a	60	1700+3.4 V ^a	1

^a Maximum marked voltage.

Note: The multipliers in the table are chosen with the following background:

2.4 – A 20% adder on the multiplier 2 to account for reduced test time.

2.8 – A √2, truncated after the first decimal (=1.4) multiplier on "2" from condition A to account for the peak value of an AC rms voltage to calculate the DC test potential of AC circuits.

3.4 – A combination of the two above: 2*1.2*1.4, rounded to the next decimal.

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Table 67.1B
Production-line test conditions for DC rated circuits

only permitted for use by

Circuit rating, Vdc	Condition A		Condition B		Condition C		Condition D	
	Potential, volts ac	Time, seconds	Potential, volts ac	Time, seconds	Potential, volts dc	Time, seconds	Potential, volts dc	Time, seconds
250 or less	1000	60	1200	1	1400	60	1700	1
More than 250	1000+1.4 V ^a	60	1200+ 1.7 V ^a	1	1400+ 2 V ^a	60	1700+2.4 V ^a	1

^a Maximum marked voltage.

A unit employing circuitry that is able to be damaged by an ac potential is able to be tested using a dc potential in accordance with Condition C or Condition D of Table 67.1A or Table 67.1B.

Testing of a unit in a heated or unheated condition meets the intent of the requirement for manufacturing and production tests.

The test is to be performed on a complete, fully assembled unit. It is not intended that the unit be unwired, modified, or disassembled for the test.

A unit employing a solid-state component that is not relied upon to reduce a risk of electric shock and that is susceptible to damage by the dielectric potential, is able to be tested before the component is electrically connected or after the component is electrically disconnected. The circuitry is able to be rearranged for the purpose of the test to minimize the potential of solid-state-component damage while retaining representative dielectric stress of the circuit.

Where the output rating of the test equipment transformer is less than 500 VA, the equipment is to include a voltmeter in the output circuit to directly indicate the test potential

Where the output rating of the test equipment transformer is 500 VA or more, the test potential is to be indicated:

- a) By a voltmeter in the primary circuit or in a tertiary-winding circuit,
- b) By a selector switch marked to indicate the test potential, or
- c) In the case of equipment having a single test-potential output, by a marking in a readily visible location to indicate the test potential. When marking is used without an indicating voltmeter, the equipment shall include a positive means, such as an indicator lamp, to indicate that the manually reset switch has been reset following a dielectric breakdown.

Test equipment, other than that described in 67.7 – 67.9, is usable when found to accomplish the intended factory control.

During the test, the unit switches are to be in the on position, both sides of the input and output circuits of the unit are to be connected together and to one terminal of the test equipment, and the second test-equipment terminal is to be connected to the accessible dead metal.

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The results are acceptable if there is no dielectric breakdown.

<u>Test Locations:</u>	<u>Test Voltage</u>	<u>Test Time</u>
L and metal enclosure	2597 Vdc for Dielectric Voltage withstand test	1 s
DC+/- and metal enclosure	3140 Vdc for Dielectric Voltage withstand test	1 s
Live part and communication port	3140 Vdc for Dielectric Voltage withstand test	1 s

Utility Voltage and Frequency Variation Test

Method

As a routine production line test, each inverter shall be subjected to the Utility Voltage and Frequency Variation Test as per SB6 of UL Standard 1741 - 3st Edition refer to IEEE 1547.1-2020, Section 7 (Production Tests).

Production tests shall include the following as applicable:

- Response to abnormal voltage (see 7.2)
- Response to abnormal frequency (see 7.3)

As a routine production line test, each utility-interactive inverter initially exporting power within its normal operating range shall cease to export power to the simulated utility source after the output voltage and frequency of the simulated utility source are adjusted to each condition specified below within the time as noted in the Table 13 and Table 18 (extracted from IEEE 1547-2018). The inverter is to be tested to at each default condition once to verify compliance.

Table 13—DER response (shall trip) to abnormal voltages for DER of abnormal operating performance Category III (see Figure H.9)

Shall trip function	Shall trip—Category III			
	Default settings ^a		Ranges of allowable settings ^b	
	Voltage (p.u. of nominal voltage)	Clearing time (s)	Voltage (p.u. of nominal voltage)	Clearing time (s)
OV2	1.20	0.16	fixed at 1.20	fixed at 0.16
OV1	1.10	13.0	1.10–1.20	1.0–13.0
UV1	0.88	21.0	0.0–0.88	21.0–50.0
UV2	0.50	2.0	0.0–0.50	2.0–21.0

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Table 18—DER response (shall trip) to abnormal frequencies for DER of abnormal operating performance Category I, Category II, and Category III (see Figure H.10)

Shall trip function	Default settings ^a		Ranges of allowable settings ^b	
	Frequency ^c (Hz)	Clearing time (s)	Frequency (Hz)	Clearing time (s)
OF2	62.0	0.16	61.8–66.0	0.16–1 000.0
OF1	61.2	300.0	61.0–66.0	180.0–1 000.0
UF1	58.5	300.0 ^c	50.0–59.0	180.0–1 000
UF2	56.5	0.16	50.0–57.0	0.16–1 000

Each inverter with field adjustable trip points shall have the trip factory set points confirmed in accordance with the manufacturer's installation instructions.

The inverter is not required to be tested at full output power and Signal injection methods shall be permitted to be used for production testing.

WARNING: The factory test(s) specified may present a hazard of injury to personnel and/or property and should only be performed by persons knowledgeable of such hazards and under conditions designed to minimise the possibility of injury.

Grounding Continuity Test

Method

The impedance at 60 hertz between the point of connection of the equipment-grounding means and any other metal part that is required to be grounded shall not be more than 0.1 ohm, the voltage when a current of 25 amperes derived from a 60-hertz source with a no-load voltage not exceeding 6 volts is passed between the grounding connection and the metal part in question.

A visual or audible device (ohmmeter, buzzer, etc.) may be used to indicate grounding continuity.

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PHOTOGRAPHS

Photo 1: Front view of enclosure:

Goodwe:



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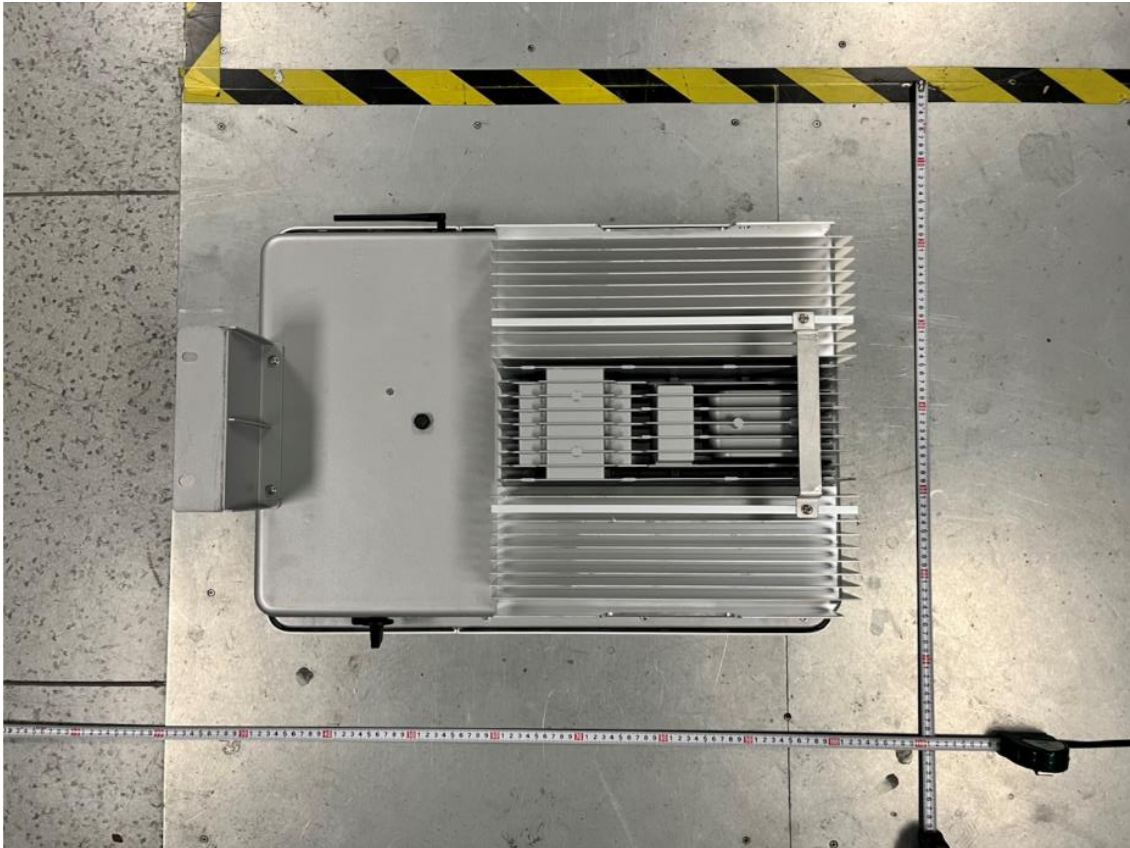


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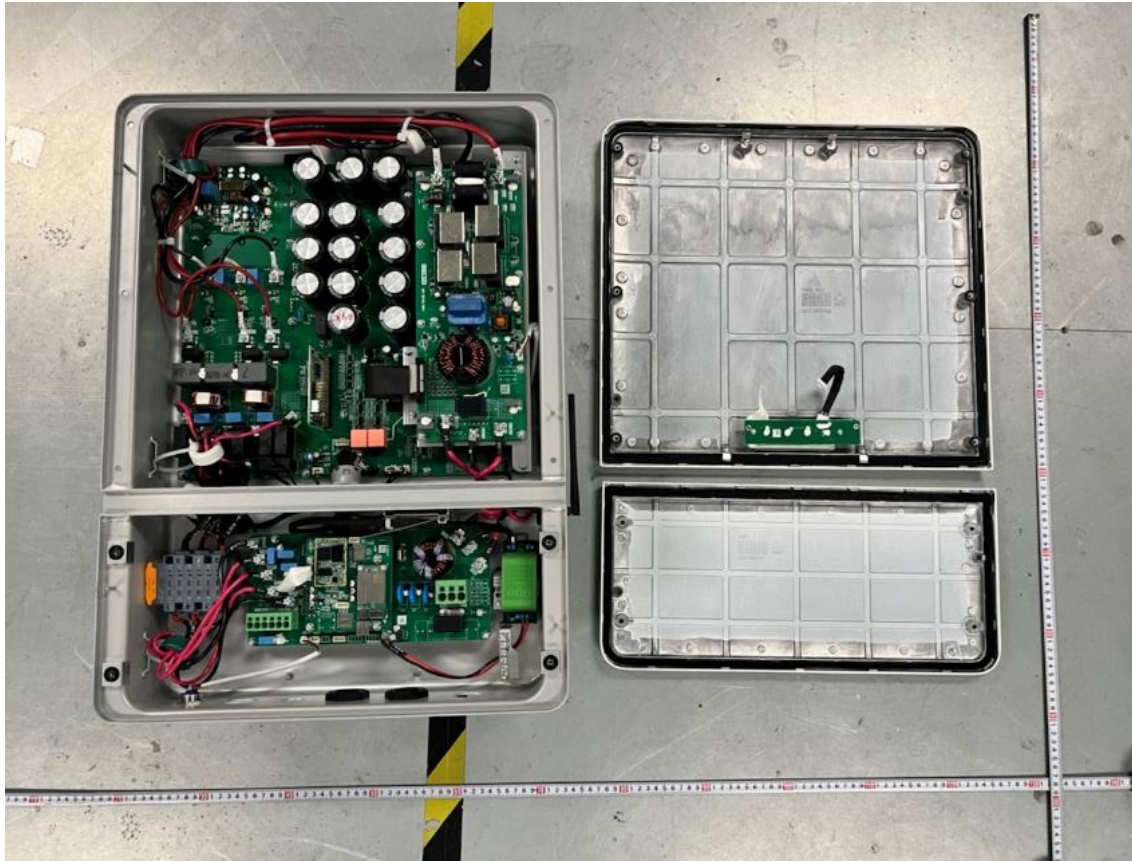
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Photo 2: Rear view of enclosure:



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Photo 3: Internal view of enclosure:



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Photo 4: Right side view of enclosure:



Photo 5: Left view of unit:

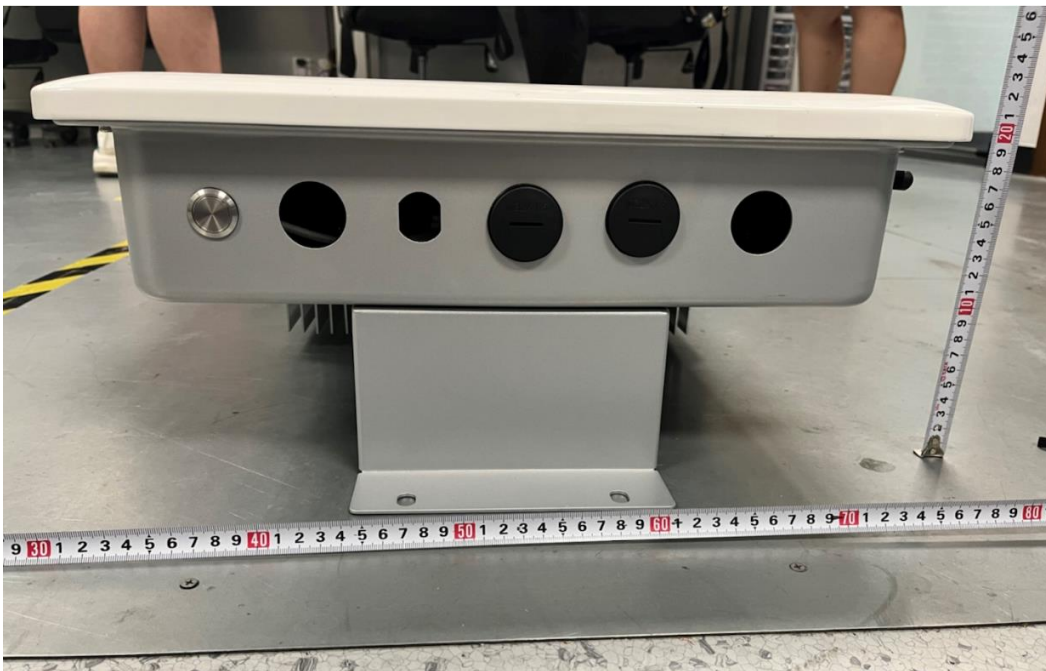


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Photo 6: Top view of unit



Photo 7: Bottom view of unit:



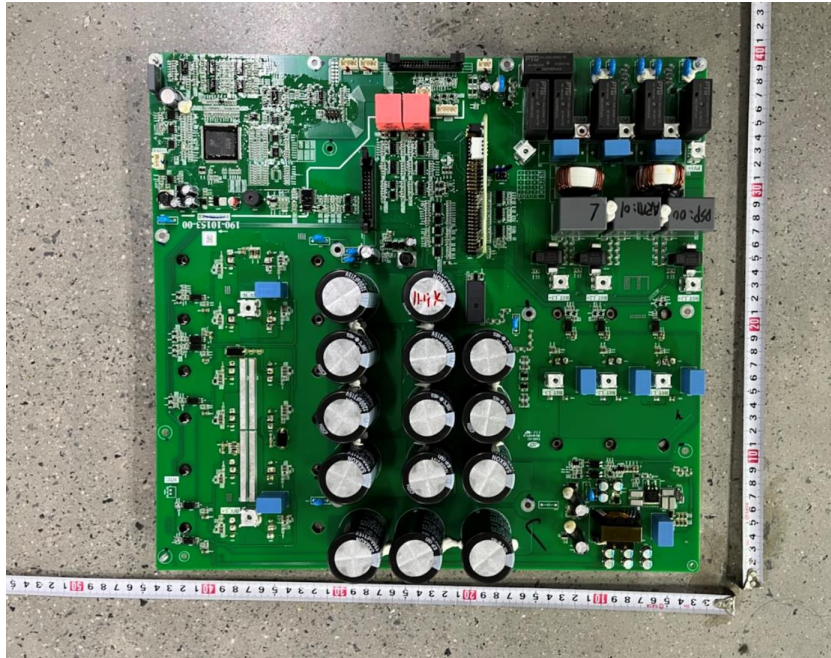
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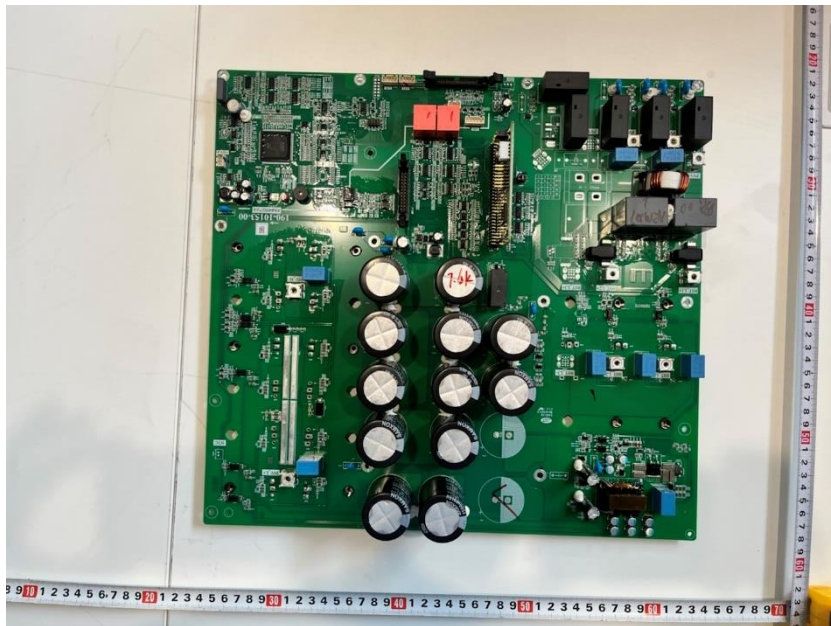
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Photo 8: Front view of Power Board:

GW9600-MS-US30; GW11K4-MS-US30; GEP7.6-1-US30; GEP9.6-1-US30; GEP11.4-1-US30



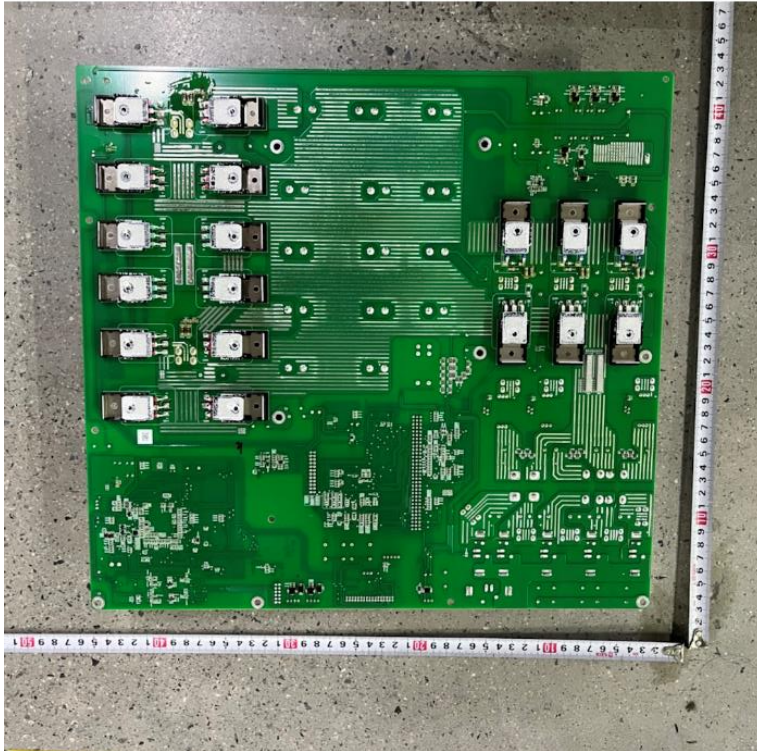
GW5000-MS-US30;GW6000-MS-US30;GW7600-MS-US30; GEP5.0-1-US30; GEP6.0-1-US30; GEP7.6-1-US30



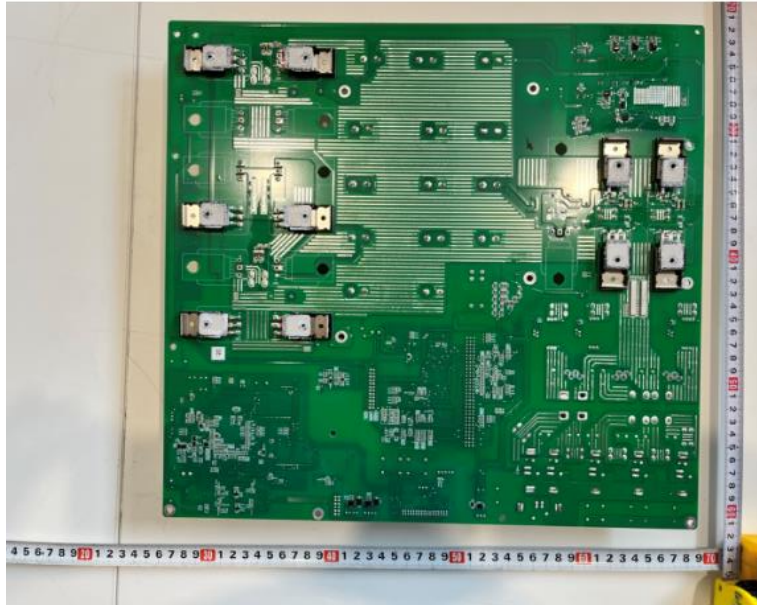
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Photo 9: Back view of Power Board:

GW9600-MS-US30; GW11K4-MS-US30; GEP7.6-1-US30; GEP9.6-1-US30; GEP11.4-1-US30



GW5000-MS-US30;GW6000-MS-US30;GW7600-MS-US30; GEP5.0-1-US30; GEP6.0-1-US30; GEP7.6-1-US30

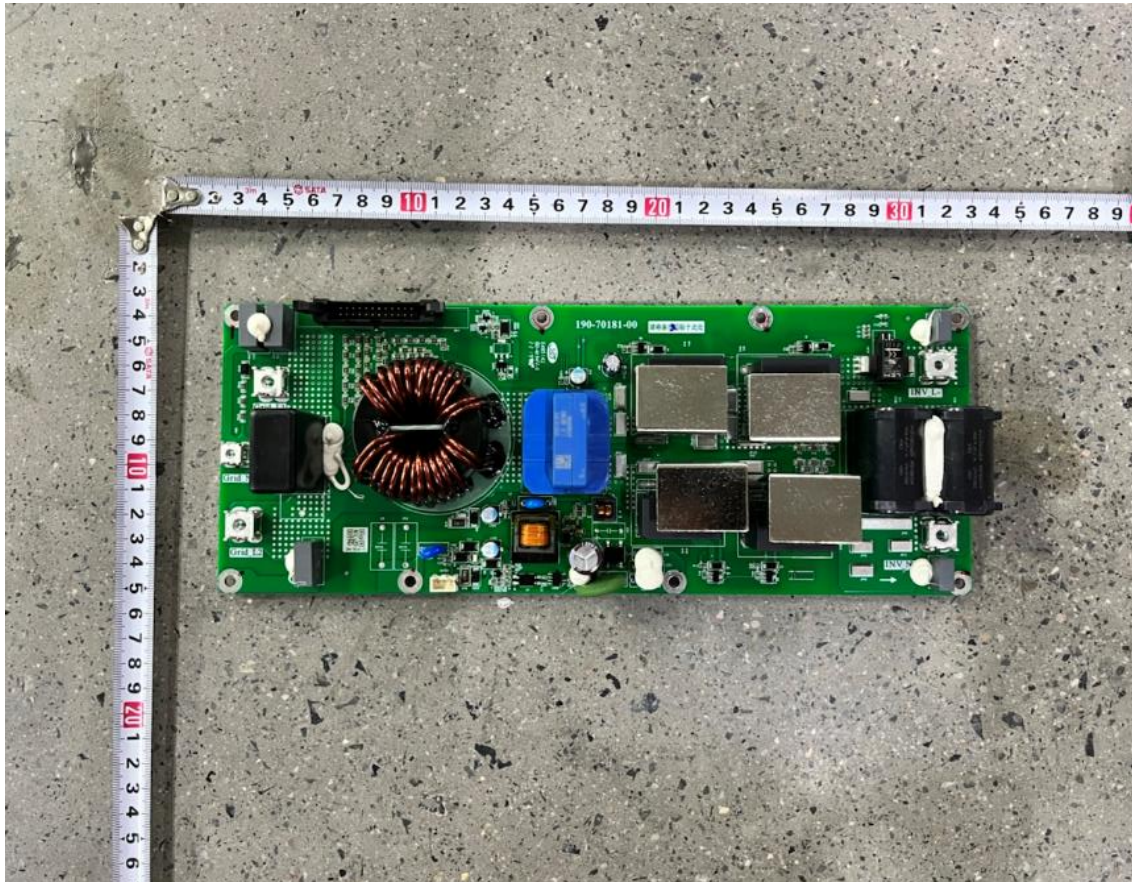


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Photo 10: Front view of Output Board:

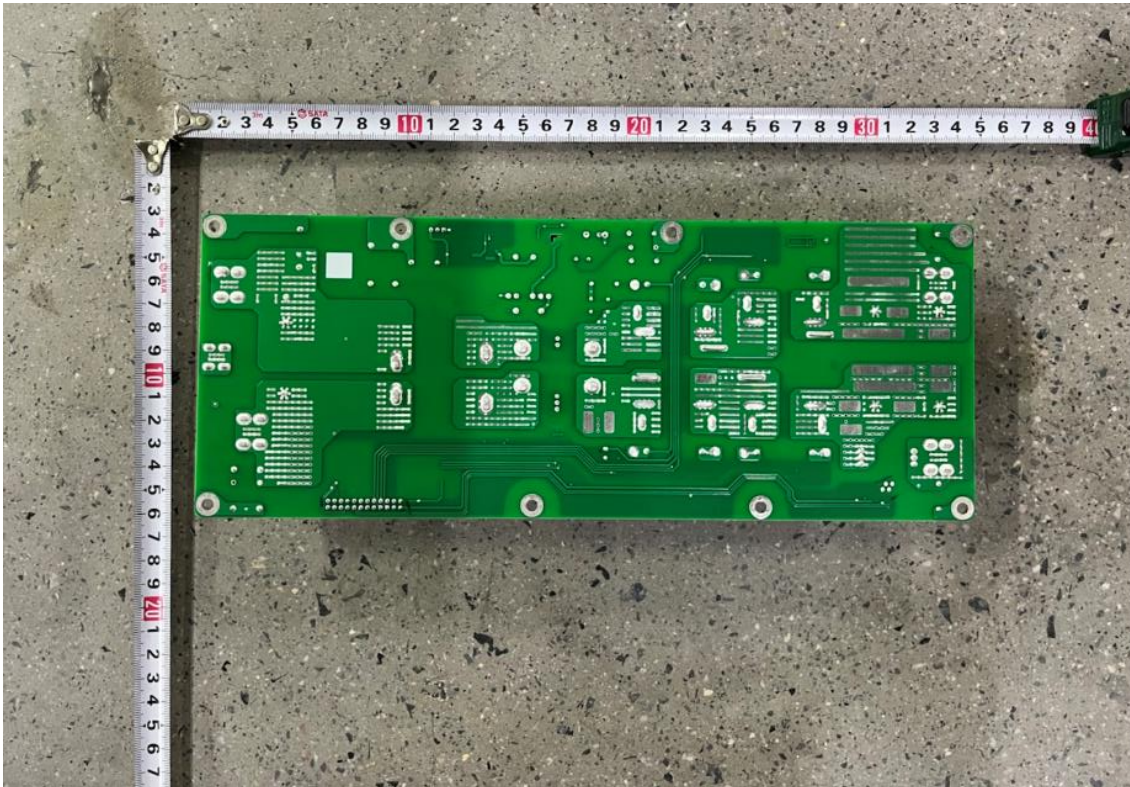


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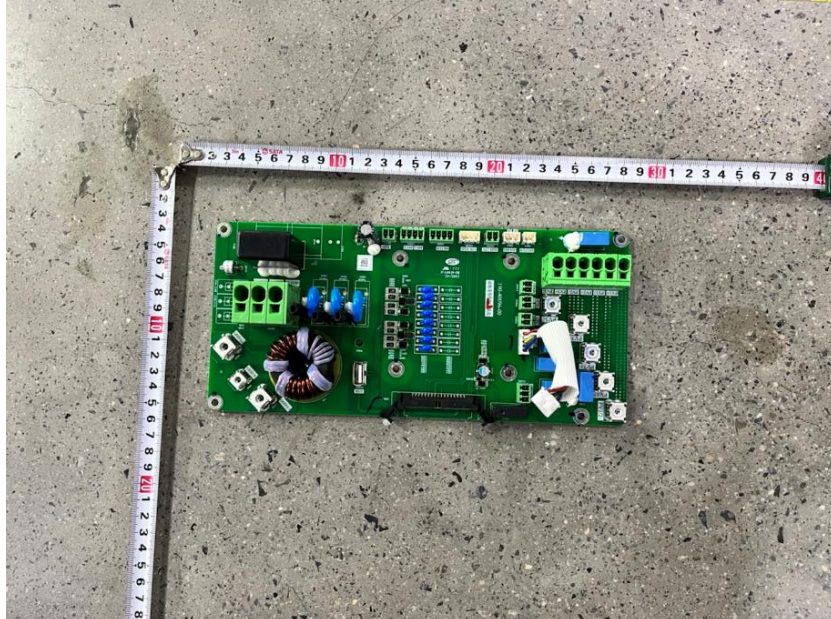
Photo 11: Back view of Output Board:



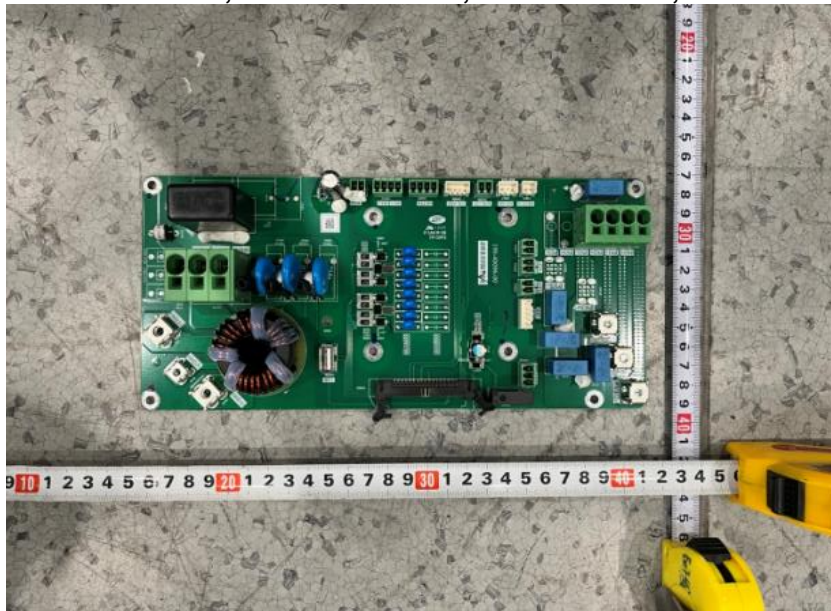
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Photo 12: Front view of Communication Board:

GW9600-MS-US30; GW11K4-MS-US30; GEP7.6-1-US30; GEP9.6-1-US30; GEP11.4-1-US30



GW5000-MS-US30;GW6000-MS-US30;GW7600-MS-US30; GEP5.0-1-US30; GEP6.0-1-US30; GEP7.6-1-US30



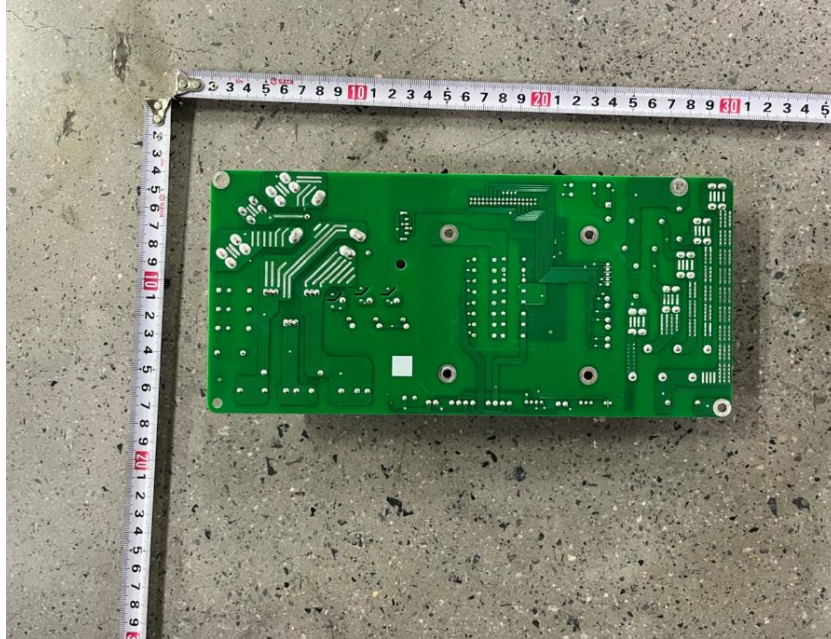
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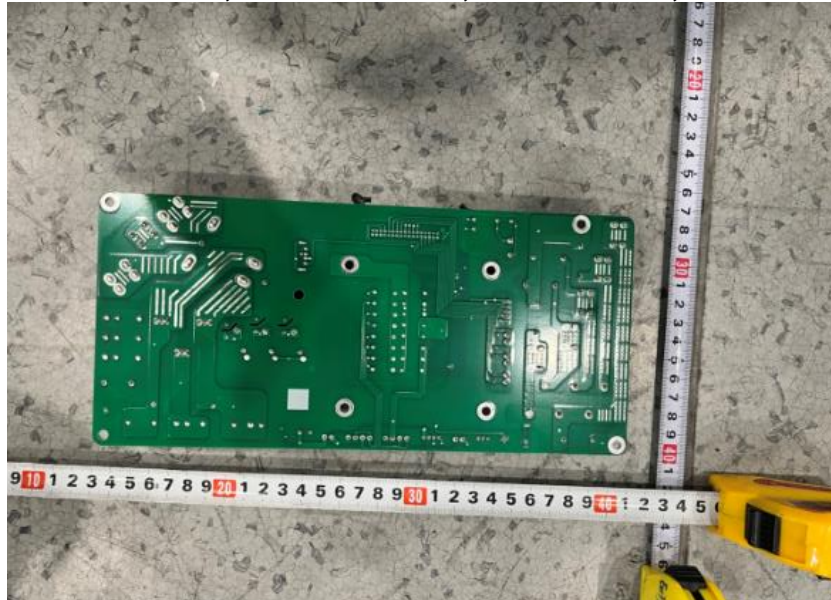
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Photo 13: Back view of Communication Board:

GW9600-MS-US30; GW11K4-MS-US30; GEP7.6-1-US30; GEP9.6-1-US30; GEP11.4-1-US30



GW5000-MS-US30;GW6000-MS-US30;GW7600-MS-US30; GEP5.0-1-US30; GEP6.0-1-US30; GEP7.6-1-US30



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Photo 14: Front view of Cloud board:



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Photo 15: Back view of Cloud board:



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Photo 16: Front view of Lighting board:



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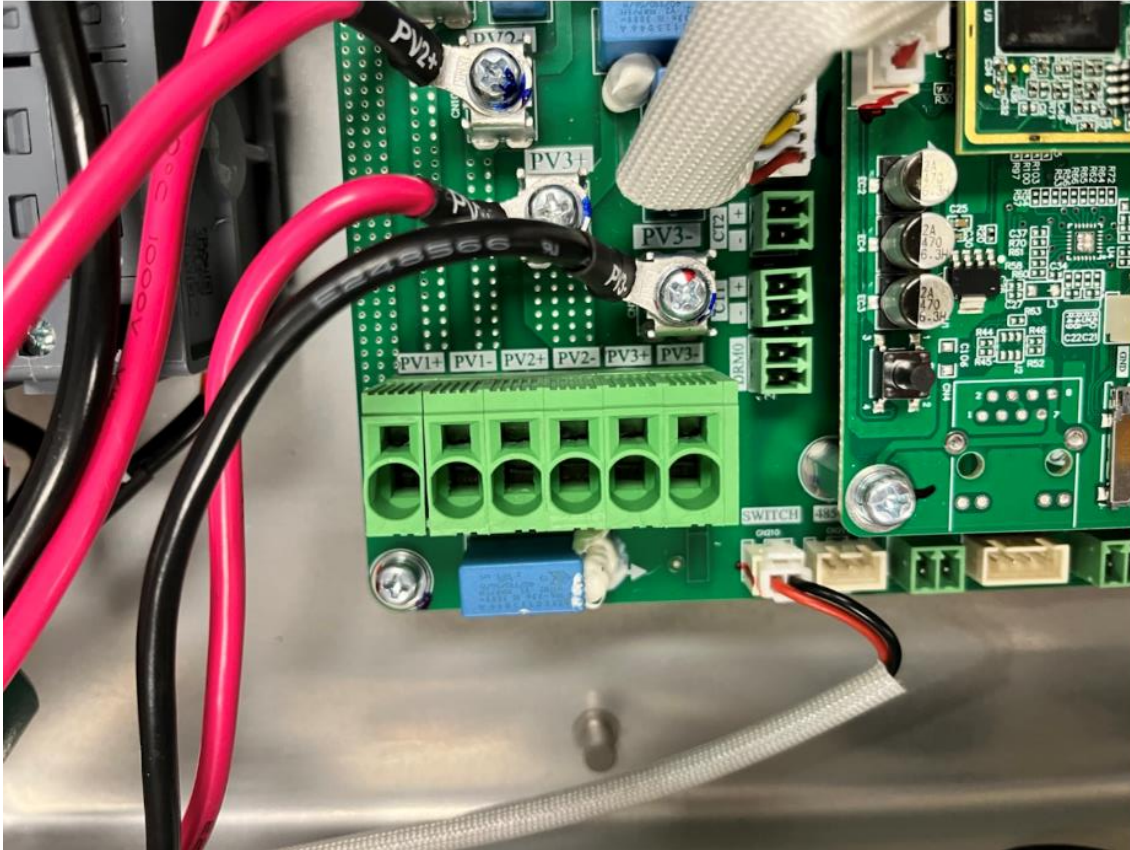
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Photo 17: Back view of Lighting board:



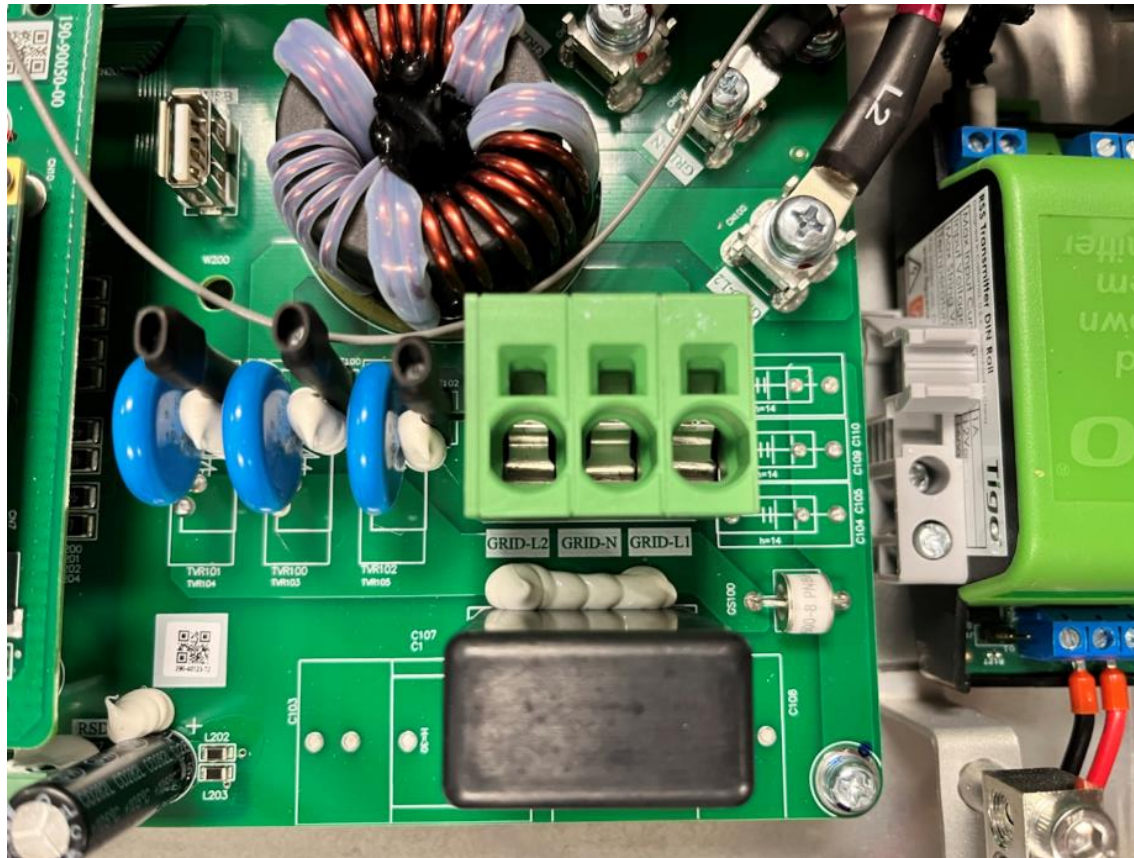
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Photo 18: Front view of PV Terminals:



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Photo 19: Front view of AC Terminals:

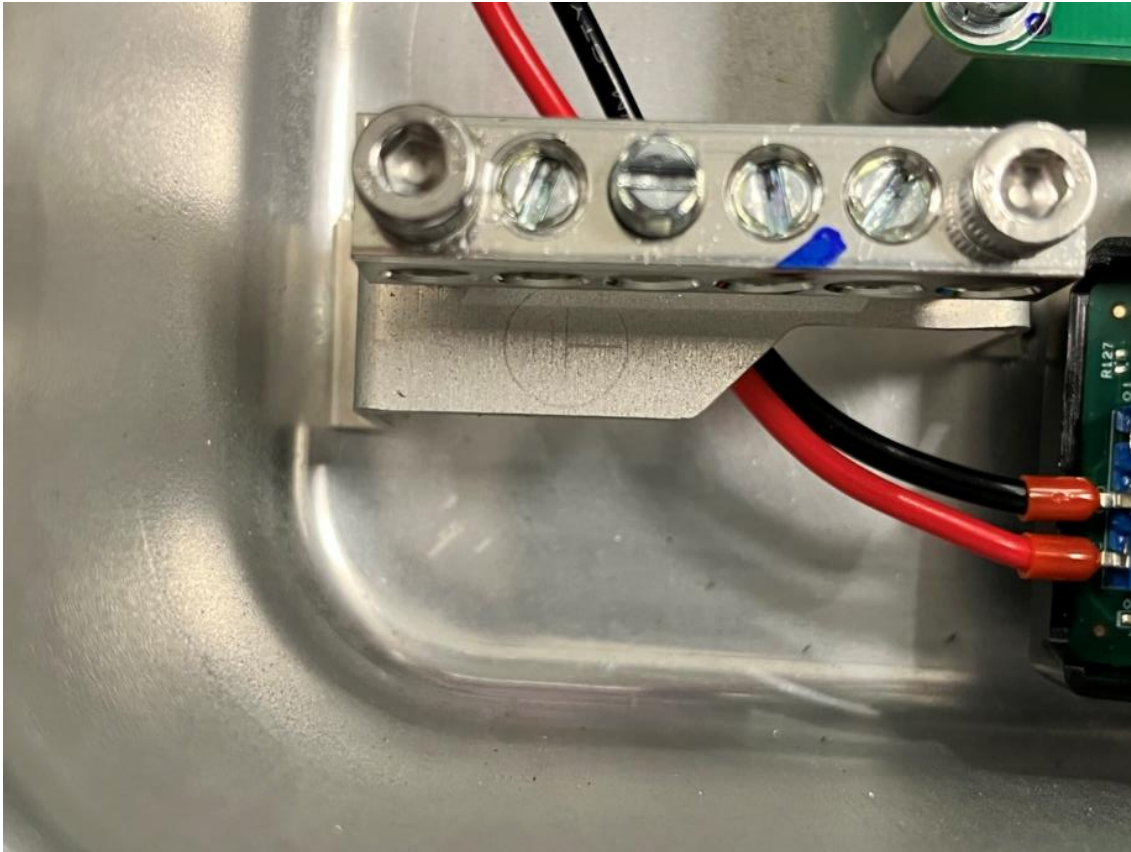


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Photo 20: Grounding Terminals:



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Photo 21: Photo for Critical Components:



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Photo 22: Photo for Critical Components:

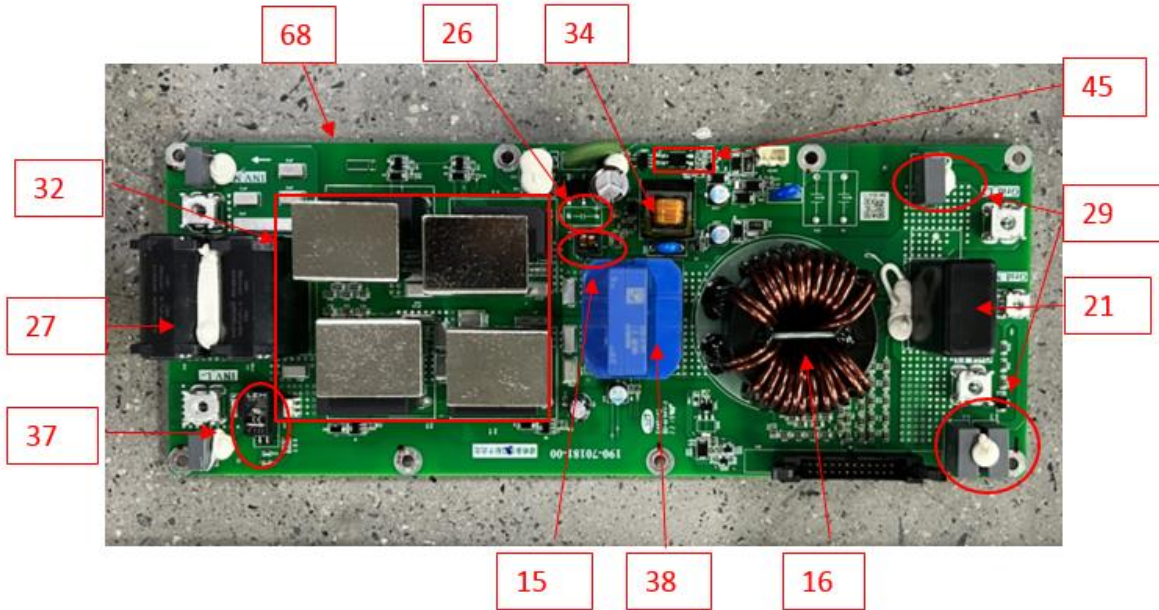
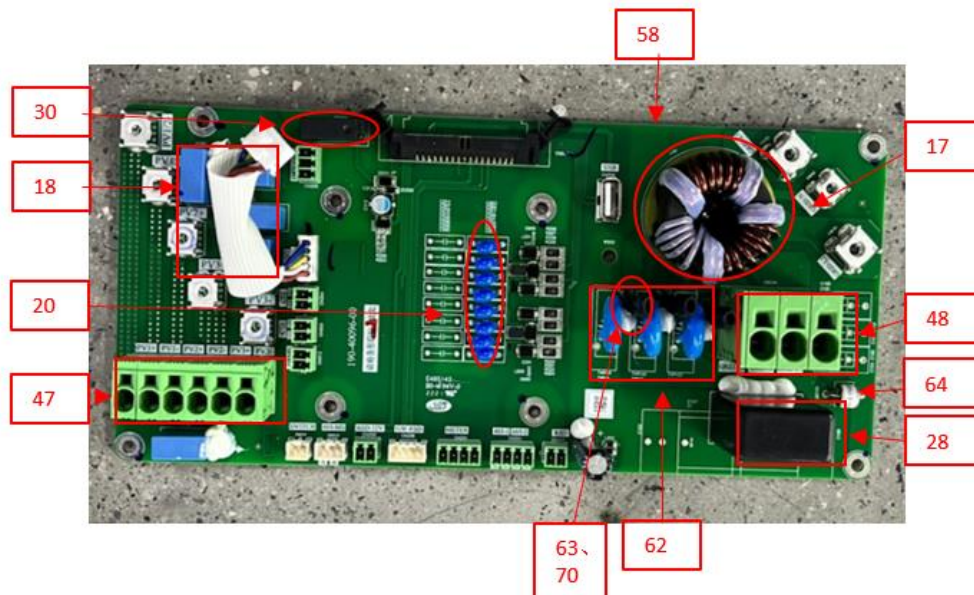


Photo 23: Photo for Critical Components



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Photo 24: Photo for Critical Components

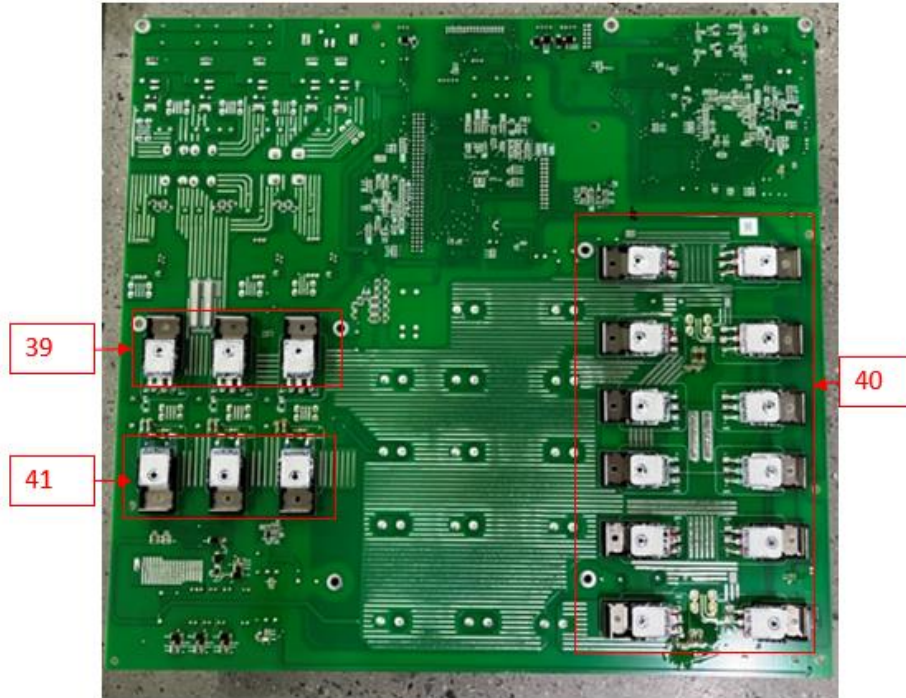
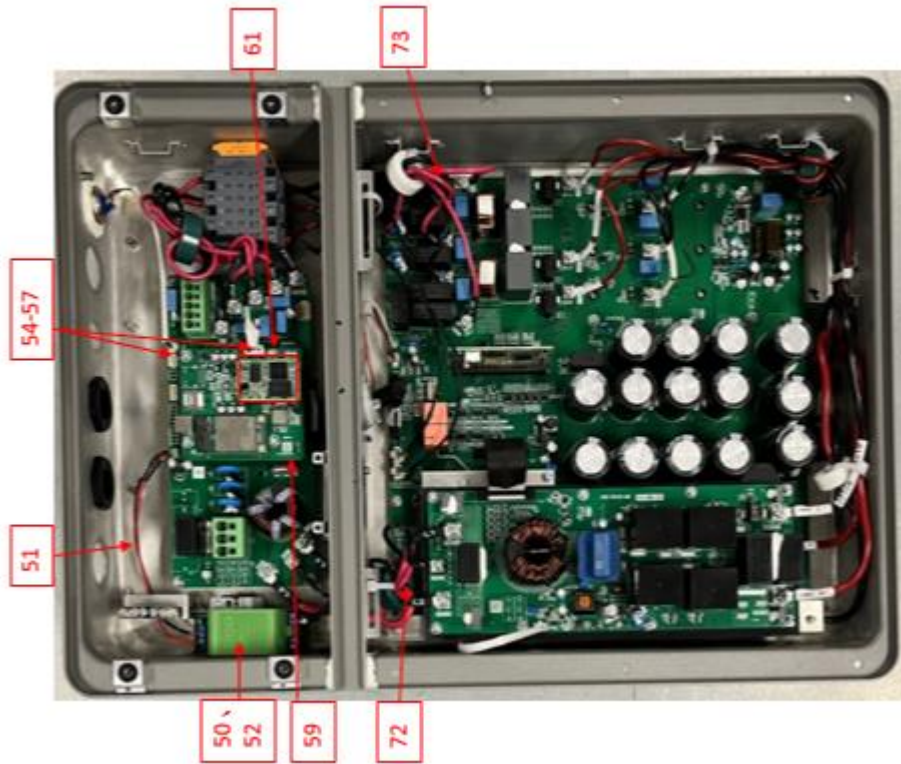


Photo 25: Photo for Critical Components



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Photo 26: Photo for Critical Components



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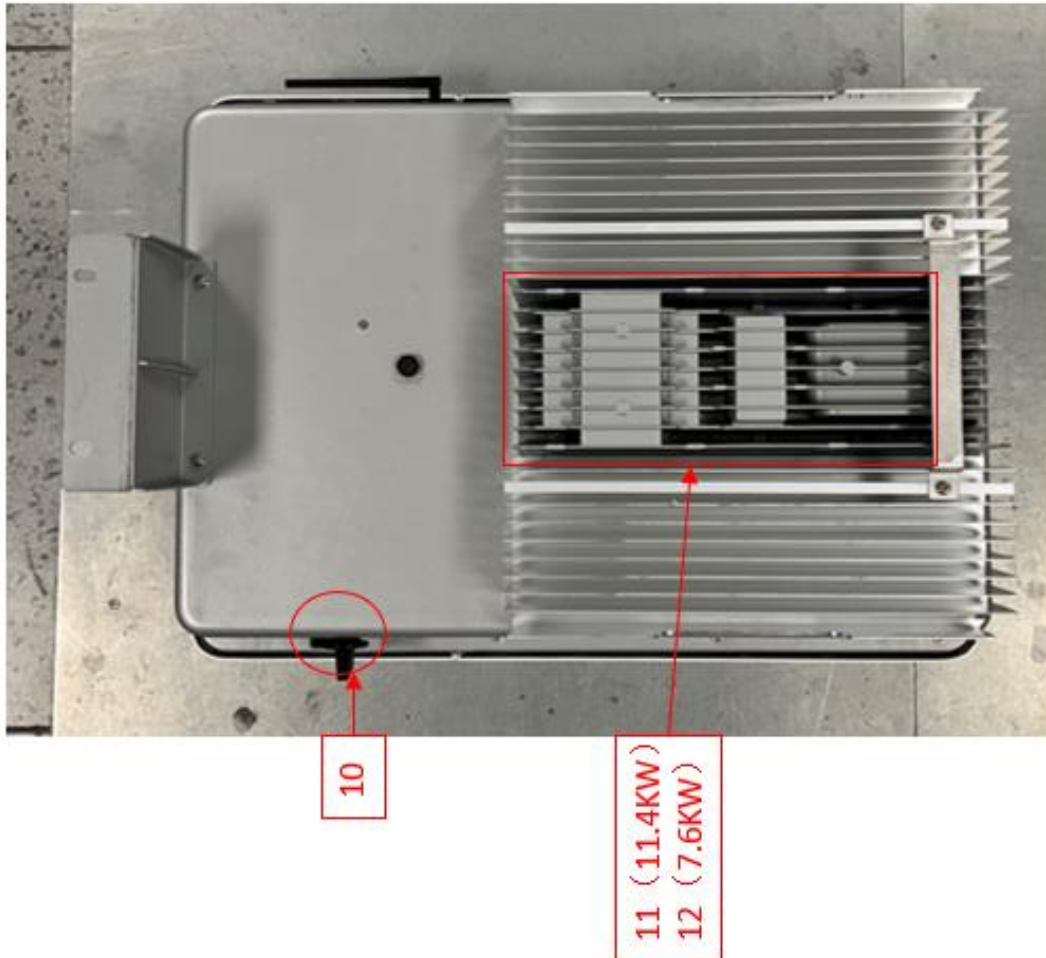
GoodWe Technologies Co., Ltd
PROJECT NUMBER: GZ-CERT220802012

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Revised: N/A

Photo 27: Photo for Critical Components



Photo 28: Photo for Critical Components



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Photo 29: Photo for Critical Components



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CRITICAL COMPONENTS

The following components are considered “critical” in terms of this certification and must be verified during factory inspections. No substitutions or alternate components are allowed unless specifically as stated in this report. The following components are applicable to all models except specifically described.

Photo No.	Item No.	Component name	Manufacturer/ trademark	Type/ Model	Technical data	Standard	Mark(s) of conformity
1	1	Box	SUZHOU REV FLY METAL PRODUCTS CO.,LTD	AL1060-O	655*472*102mm	UL1741; CSA No.107.1	Tested with appliance
1	2	Cover	Keymate Mechatronics (Suzhou) Co., Ltd	ADC12	487*442.6mm	UL1741; CSA No.107.1	Tested with appliance
3	3	Lower Lid	Keymate Mechatronics (Suzhou) Co., Ltd	ADC12	487*226.6mm	UL1741; CSA No.107.1	Tested with appliance
3	4	Material information for light panel sealing	SUZHOU WANGRONG PLASTIC CO.,LTD	Makrolon_6557	93*30*8.8mm, UL94V-0	UL 94	cURus (UL E41613)
4	5	Sealing Strip	SuZhou jin teng Electronics Co.,Ltd	/	Silicone rubber, 478*432mm	UL 157	UR (UL MH65658)
7	6	Waterproof Plug	Jiangxi Huntec Electric Technology CO.,LTD	RPK-M32-BL-P-PA66	PA66, M32, UL94-V0	UL 94	UR (UL E484742)
				RPK-M22-10-BL-PM-PA66	PA66, M22, UL94-V0	UL 94	cURus (UL E44716)
--	7	Thermal Casing	SUZHOU HUIHUA ELECTRICS TECH CO.,LTD	RSFR-H	600V, 125°C Ø9.0, VW-1	UL 224	cURus (UL E203950)
--	8	Internal Insulating Material	Kunshan FRD Electronic Materials Co.,Ltd	/	PP 340*165*0.25mm UL94 VTM-0	UL 746C	SGS (No. SHAEC21187 28901)
--	9	Potting Glue	Guangzhou Huitian New Material CO.,LTD	5297	1.5W/(m·K)	UL 746C	SGS (No. CANEC21069 08601)

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26	10	DC Switch (6P)	Beijing People's Electric Plant CO.,LTD	GHX5-32P	DC600V, 32A	UL 508I	RU (UL E513631-20200227)	
		11.4KW INDUCTOR	GOODWE	141-10558	500uH&565.2uH &580uH±10%@1 KHz, -40°C to +130°C,CLASS B	UL1741; CSA No.107.1	Tested with appliance	
		Core	POCO	NPF-75 25*30*45	--	--	--	
			KDM	NPH-75 75*30*25	--	--	--	
			POCO	NPH-75 Φ21*30	--	--	--	
			KDM	NPH-75 59*37*8.5	--	--	--	
			DMEGC	DMR47 37*15*47	--	--	--	
			POCO	NPH2260 60	--	--	--	
	KDM		KS226-060A-HF	--	--	--		
	PUSH	PHS5710 60	--	--	--			
	11	Wire	PACIFIC ELECTRIC WIRE&CABLE CO LTD	MW30-C	180°C	ANSI/UL14 46	UR (UL E201757)	
			TAI-I ELECTRIC WIRE&CABLE CO LTD				UR (UL E85640)	
			TONGLING JINGDA SPECIAL MAGNET WIRE CO LTD				UR (UL E223994)	
			GUANZHOU TIANSHUN ELECTRIC EQUIPMENT CO LTD	MW36-C			220°C	UR (UL E210986)
			TONGLING JINGDA SPECIAL MAGNET WIRE CO LTD					UR (UL E223994)

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26	11	Wire	JIANGSU BAOJIE;ONGMA GNET WIRE CO LTD	MW36-C	220°C	ANSI/UL14 46	UR (UL E326176)
			WELL ASCENT ELECTRONIC (GANZHOU)CO LTD				UR (UL E318511)
		Tube	CHANGYUAN ELECTRONICS(SHENZHEN) CO LTD	CB-HFT	600V, 125°C	UL224	cURus (UL E180908)
			SHENZHEN WOER HEAT- SHRINKABLE MATERAL CO LTD	RSFR	600V, 125°C	UL224	cURus (UL E203950)
			SHENZHEN WAHCHANGWE T INDUSTRIAL CO LTD	SRG-40	600V, 200°C	UL1441	cURus (UL E233804)
		Terminal	GUOSAI	RNB5.5- 4L-105D	--	--	--
			TIANLICHANG	RNB8-5S- 105D	--	--	--
		Margin tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO.,LTD	WF	--	CAN/UL 510A	UR (UL E165111)
			JINGJIANG JINGYI ANHESIVE PRODUCT CO LTD	WE310(a)	130°C	CAN/UL 510A	UR (UL E246950)
		Varnish	GUANGDONG JIANXIN TECHNOLOGY CO LTD	JS-813	155°C	UL 1446	UR (UL E339578)
			YUEYANG GREEN TECHNOLOGY CO LTD	JX-1150*	130°C	UL 1446	UR (UL E303754)
			ELANTAS ZHUHAI CO LTD	5183SW	130°C/155°C	UL 1446	UR (UL E314793)

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26	11	Varnish	SUZHOU TAIHU ELECTRIC ADVANCED MATERIAL CO LTD	T-4260(a)	130°C/155°C	UL 1446	UR (UL E228349)
		Insulation Paper	DUPONT SPECIALTY PRODUCTS US,LLC	NOMEX 410	220°C	ANSI/UL74 6	UR (UL E34739)
			FU WEI INSULATION TECHNOLOGN CO LTD	GUBANG-NMN	180°C	UL 1446	UR (UL E469673)
		Silicone molding resin	GUANGZHOU HUITIAN NEW MATERIAL CO LTD	HT-5297A/B 1.5	150°C	ANSI/UL74 6	UR (UL E306078)
		Epoxy	SHNAGHAI HUITIAN NEW MATERIAL CO LTD	6065	150°C	UL1741; CSA No.107.1	Tested with appliance
			HENKEL	G-500	-40~180°C	UL1741; CSA No.107.1	Tested with appliance
		Epoxy Board	KINGBOARD LAMINATES HOLDINGS LTD	FR-4 UL94V-0	130°C	UL 94、UL746A/B/E/F	UR (UL E123995)
			SHENGYI TECHNOLOGY CO LTD		130°C	UL 94、UL746A/B/E/F	UR (UL E109769)
			NAN YA PLASTICS CORP CCL DEPT ELECTRONIC MATERIAL DIV		130°C	UL 94、UL746A/B/E/F	UR (UL E98983)
		26	12	7.6KW INDUCTOR	GOODWE	141-10559	500uH&750uH±1 0%@1KHz 130°C, CLASS B
Core	POCO			NPF-60 20*30*45	--	--	--
	KDM			NPH-60 64*30*20	--	--	--
	POCO			NPH-75 Φ21*30	--	--	--

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26	12	Core	KDM	NPH-75 59*37*8.5	--	--	--
			DMEGC	DMR47 37*15*47	--	--	--
		Wire	PACIFIC ELECTRIC WIRE&CABLE CO LTD	MW30-C	180°C	ANSI/UL14 46	UR (UL E201757)
			TAI-I ELECTRIC WIRE&CABLE CO LTD				UR (UL E85640)
			TONGLING JINGDA SPECIAL MAGNET WIRE CO LTD				UR (UL E223994)
			GUANZHOU TIANSHUN ELECTRIC EQUIPMENT CO LTD	MW36-C	220°C	ANSI/UL14 46	UR (UL E210986)
			TONGLING JINGDA SPECIAL MAGNET WIRE CO LTD				UR (UL E223994)
			JIANGSU BAOJIE;ONGMA GNET WIRE CO LTD				UR (UL E326176)
			WELL ASCENT ELECTRONIC (GANZHOU)CO LTD				UR (UL E318511)

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26	12	Tube	CHANGYUAN ELECTRONICS(SHENZHEN) CO LTD	CB-HFT	600V, 125°C	UL 224	cURus (UL E180908)
			SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO LTD	RSFR	600V, 125°C	UL 224	cURus (UL E203950)
			SHENZHEN WAHCHANGWE T INDUSTRIAL CO LTD	SRG-40	200°C	UL 1441	UR (UL E233804)
		Terminal	GUOSAI	RNB5.5-4L-105D	--	--	--
			TIANLICHANG	RNB8-5S-105D	--	--	--
		Margin Tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO.,LTD	WF	130°C	CAN/UL 510A	UR (UL E165111)
			JINGJIANG JINGYI ANHESIVE PRODUCT CO LTD	WE310(a)	130°C	CAN/UL 510A	UR (UL E246950)
		Varnish	GUANGDONG JIANXIN TECHNOLOGY CO LTD	JS-813	155°C	UL 1446	UR (UL E339578)
			YUEYANG GREEN TECHNOLOGY CO LTD	JX-1150*	130°C	UL 1446	UR (UL E303754)
			ELANTAS ZHUHAI CO LTD	5183SW	130°C/155°C	UL 1446	UR (UL E314793)
			SUZHOU TAIHU ELECTRIC MATERIAL CO LTD	T-4260(a)	130°C/155°C	UL 1446	UR (UL E228349)

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26	12	Insulation Paper	DUPONT SPECIALTY PRODUCTS US,LLC	NOMEX 410	220°C	ANSI/UL74 6	UR (UL E34739)
			FU WEI INSULATION TECHNOLOGN CO LTD	GUBANG-NMN	180°C	UL 1446	UR (UL E469673)
		Silicone molding resin	GUANGZHOU HUITIAN NEW MATERIAL CO LTD	HT-5297A/B 1.5	150°C	ANSI/UL74 6	UR (UL E306078)
		Epoxy	SHNAGHAI HUITIAN NEW MATERIAL CO LTD	6065	150°C	UL1741; CSA No.107.1	Tested with appliance
			HENKEL	G-500	-40 to 180°C	UL1741; CSA No.107.1	Tested with appliance
		Epoxy Board	KINGBOARD LAMINATES HOLDINGS LTD	FR-4 UL94V-0	130°C	UL 94、UL746A/B/E/F	cURus (UL E123995)
21	13	X INDUCTOR 1	GOODWE	141-11054	-40~+130°C Class B 0.5mH@10KHz	UL1741; CSA No.107.1	Tested with appliance
		Core	CATECH	NC-0088-L-W-03	--	--	--
		Wire	DONG GUAN YIDA INDUSTRIAL CO LTD	EIW/180 EI/AIW/200	180/200°C	ANSI/UL14 46	UR (UL E344055)
			Guangdong jingda Rea Special Enamelled Wire Co.,Ltd.	QZY-2/180 QZY/XY-2/200	180/200°C	ANSI/UL14 46	UR (UL E223994)
		Solder	GUANGDONG ZHONGSHI METALS CO.,LTD	Sn99.3/cu0 .7	--	--	--
		Glue	DONGGUAN EATTO ELECTRONIC MATERIAL CO LTD	3300A/B-1	130°C	UL 746A/C/D	UR (UL E218090)
		Insulation	KINGBOARD LAMINATES	94V-0	130°C	UL 94、	UR (UL E123995)

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		Board	(MACAO COMMERCIAL	FR-4 KB-6150 CEM-1 KB-5150		UL746A/B/E/F	
			OFFSHORE) LTD				
		Base	SHENZHEN WOER	WF(PTFE)	--	UL 224	UR (UL E203950)
			HEAT-SHRINKABLE MATERIAL CO.,LTD				
21	14	X INDUCTOR 2	GOODWE	141-10010	CHOKe 0.52mH MIN@1kHz - 40 °C--+130 °C CLASS B	UL1741; CSA No.107.1	Tested with appliance
		Core	CATECH	NC-0088-L-W-03	--	--	--
		Wire	DONG GUAN YIDA INDUSTRIAL CO LTD	EIW/180	180/200°C	ANSI/UL14 46	UR (UL E344055)
				EI/AIW/200			
		Wire	Guangdong jingda Rea Special Enamelled Wire Co.,Ltd.	QZY-2/180	180/200°C	ANSI/UL14 46	UR (UL E223994)
				QZY/XY-2/200			
		Solder	GUANGDONG ZHONGSHI METALS CO.,LTD	Sn99.3/cu0.7	SC07	--	--
		Glue	DONGGUAN EATTO ELECTRONIC MATERIAL CO LTD	3300A/B-1	130°C	UL 746A/C/D	UR (UL E218090)
				E-500	130°C	UL 746A/C/D	UR (UL E218090)
		Insulation Board	KINGBOARD LAMINATES (MACAO COMMERCIAL OFFSHORE) LTD	FR-4 KB-6150	94V-0; 130°C	UL 94、UL746A/B/E/F	cURus (UL E123995)
CEM-1 KB-5150							
Base	SUZHOU TAIHU ELECTRIC	T-4260(a)	130°C	UL 1446	UR (UL E228349)		

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			ADVANCED				
			MATERIAL CO LTD				
22	15	AC SPS INDUCTOR	GOODWE	141-11021	15mH -25 to +130°C CLASS B	UL1741; CSA No.107.1	Tested with appliance
		Core	TDG CO.,LTD	EE8.3 TL15	--	--	--
		Bobbin	CHANG CHUN PLASTICS CO LTD	T375HF	180°C	ANSI/UL 746A/C/D	UR (UL E59481)
		Wire	PACIFIC ELECTRIC WIRE&CABLE(SHEN ZHEN)CO LTD	MW77-C	180°C	ANSI/UL14 46	UR (UL E201757)
			TA YA ELECTRIC WIRE&CABLE CO LTD	T375HF	180°C	ANSI/UL14 46	UR (UL E84201)
			FENG CHING METAL CORP	MW77-C	180°C	UL 1446	UR (UL E83702)
			ROSHOW TECHNOLOGY CO LTD	TVB2180T *(A)	180°C	ANSI/UL14 46	UR (UL E215691)
			TAI-I ELECTRIC WIRE&CABLE CO LTD	PF	180°C	ANSI/UL14 46	UR (UL E85640)
		Varnish	KYOCERA CHEMICAL CORP	--	155°C	UL 1446	UR (UL E83702)
		Pet Film Tapes	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD		180°C	CAN/UL 510A	UR (UL E165111)
			JINGJIANG JINGYI ADHESIVE PRODUCT CO LTD	J16	180°C	CAN/UL 510A	UR (UL E246950)

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22	16	OUTPUT INDUCTOR	GOODWE	141-11052	-40°C to +130°C /6mH; CLASS B	UL1741; CSA No.107.1	Tested with appliance
		Core	CATECH	NC-0078-L-B	--	--	--
		Wire	DONG GUAN YIDA INDUSTRIAL CO LTD	EIW/180	180°C/200°C	ANSI/UL14 46	UR (UL E344055)
				EI/AIW/200 /2.4mm			
		Wire	Guangdong jingda Rea Special Enamelled Wire Co.,Ltd.	QZY-2/180	180°C/200°C	ANSI/UL14 46	UR (UL E223994)
				QZY/XY-2/200/2.4m m			
		Solder	GUANGDONG ZHONGSHI METALS CO.,LTD	SC07/Sn9 9.3/cu0.7	--	--	--
		Glue	DONGGUAN EATTO ELECTRONIC MATERIAL CO LTD	3300A/B-1	130°C	UL 746A/C/D	UR (UL E218090)
			DONGGUAN EATTO ELECTRONIC MATERIAL CO LTD	E-500	130°C	UL 746A/C/D	UR (UL E218090)
		Base	KINGBOARD LAMINATES (MACAO COMMERCIAL OFFSHORE) LTD	FR-4 KB-6150	130°C, UL94V-0	UL 94、UL746A/B/E/F	UR (UL E123995)
CEM-1 KB-5150							
Varnish	SUZHOU TAIHU ELECTRIC ADVANCED MATERIAL CO LTD	T-4260(a)	130°C	UL 1446	UR (UL E228349)		

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Revised: N/A

23	17	COMMON INDUCTOR	GOODWE	141-19051	1.2mH/5Ts;-40 to +130°C CLASS B	UL1741; CSA No.107.1	Tested with appliance	
		Core	CATCH	33*23*15	--	--	--	
		Wire	HENG YA ELECTRIC (DONGGUAN) LTD	*EIW/180	180°C	UL 1446	UR (UL E197768)	
				QZY-*/180				
			GUANGDONG JINYAN ELECTROTECHNICS JOINT STOCK CO.,LTD	Guangdong Jingda Rea Special Enamelled Wire Co.,Ltd.	QZY -*/180	180°C	ANSI/UL14 46	UR (UL E223994)
				xEIW	180°C	ANSI/UL14 46	UR (UL E238500)	
		QZY-x/180						
		Base	KINGBOARD LAMINATES HOLDINGS LTD	FR-4 1.5mm	130°C	UL 94、UL746A/B/E/F	cURus (UL E123995)	
Glue	DONGGUAN TOPKEY ELECTRONIC CO.,LTD	BG610A/B	130°C	UL 746A/C/D	cURus (UL E356931)			
Tube	ShenzhenWoer Heat-Shrinkable Material Co., Ltd	TFL	200°C	UL 224	cURus (UL E203950)			
23	18	Y2 CAP	TDK	B32022A3 333M	+110 °C;1500 V, UL 94 V-0	UL94;UL14 14, UL1283;	cURus (UL E97863 / E157153)	
21	19	Y1 CAP	DONGGUAN WAL SIN TECHNOLOGY ELECTRONICS CO., LTD.	YU1AH472 M130D3E A0H	400V/+20°C to +85°C		cURus (UL E146544)	
			SHANTOU HIGH-NEW ZONE SONGTIAN ENTERPRISE CO., LTD	Y1-400VAC-Y5U-472M	4.7nF 400VAC M -25°C to +125°C	UL60384	cURus (UL E208107)	

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21	20	Y CAP	DONGGUAN WALSIN TECHNOLOGY ELECTRONICS CO., LTD.	YP1AH471 K070L20C 0H	400V/+20°C to +85°C	UL 60384- 14	cURus (UL E146544)
			SHANTOU HIGH-NEW ZONE SONGTIAN ENTERPRISE CO., LTD	Q09B8D47 1KB0B0S0 N0	C-DISC RAD 470pF 400VAC K -25°C to +125°C	UL60384	cURus (UL E208107)
22	21	AC OUTPUT CAP	XIAMEN FARATRONIC CO.,LTD	C4BR2335 KBWC380	350Vac;3.3UF;- 40°C to +110°C;X2 ;	UL60384- 14:2014	cURus (UL E186600)
			XIAMEN FARATRONIC CO.,LTD	C4BR2335 MB4C380	350Vac;3.3UF;- 40°C to +110°C;X2 ;	UL60384- 14:2014	cURus (UL E186600)
			XIAMEN FARATRONIC CO.,LTD	C6AR2475 KFW0382	-40°C to +105°C;350Vac; 4.7uF;	UL810	cURus (UL E256238)
21	22	X CAP	TDK	B32652A6 394K189	UL 94 V-0/-55°C to +110°C/630V		
			XIAMEN FARATRONIC CO.,LTD	C3D1M205 KB00C00	2.0uF 1100Vdc K RAD 27.5 - 40°C to 105°C 80V/us	UL 810	cURus (UL E256238)
21	23	BUS CAP	SAMXON BRAND ALUMINUM ELECTROLYTIC CAPACITORS	EET12862 FQ50SZS HE	-25°C to 105°C	UL1741; CSA No.107.1	Tested with appliance
			Nantong Jianghai Capacitor Co.,Ltd	ECS2FBB 122 MLA35005 0E	C AL 1200uF 315V M RAD 35*50mm 10mm 105°C	UL810	UR (UL E355297)
21	24	PV CAP	XIAMEN FARATRONIC CO.,LTD	C3D2K106 JB10C00	-40°C to +105°C / 800Vdc/10uF	UL810	cURus (UL E256238)
			KEMET Electronics Italia S.r.l.	C4AEIBU5 100A22JL3 8G	10uF 800V - 40°C to +105°C	UL1741; CSA No.107.1	Tested with appliance

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21	25	Y1 CAP	XIAMEN FARATRONIC CO.,LTD	C47S1471 K60C450	-40°C+110°C	UL60348-14:2014	cURus (UL E186600)
22	26	Y CAP (optional)	XIAMEN FARATRONIC CO.,LTD	MKT61	85°C/305Vac 68nF	UL60348-14:2014	cURus (UL E186600)
22	27	X CAP	XIAMEN FARATRONIC CO.,LTD	C6AR2475 KFW0382	350Vac 4.7uF /-40°C to +105°C	UL810	cURus (UL E256238)
				C4BR2475 KFWC450	4.7uF 350VAC K RAD 37.5mm -40°C to +110°C 100V/us	UL60384-14:2014	cURus (UL E186600)
23	28	X CAP	XIAMEN FARATRONIC CO.,LTD	C4BR2335 KBWC380	-40 °C to +110 °C /X2/350Vac 3.3uF	UL810	cURus (UL E186600)
				C4BR2335 MB4C380	3.3uF 350Vac/-40°C to +110 °C	UL60348-14:2014	cURus (UL E186600)
				C4BR2475 KBWC380	4.7uF 350Vac K RAD 27.5mm -40°C to +110°C	UL60384-14:2014	cURus (UL E186600)
			NISTRONICS (JIANGXI)CO.,LTD	MPRC 0350M335 WSPB003 8	3.3uF 350Vac/-40°C to +110 °C	UL60384-14:2014	cURus (UL E338685)
MPRC 0350K475 WSPF003 8	4.7uF 350Vac/-40°C to +110 °C	UL 60384-14		cURus (UL E338685)			
22	29	Y2 CAP	TDK	B32021A3 103M189	10nF 300VAC M LS=10mm 110°C Y2	UL 60384-14	cURus (UL E97863 / E157153)
			XIAMEN FARATRONIC CO.,LTD	C43Q1103 M40C380	0.010uF 300Vac M RAD 10mm -40°C to +110°C	UL60384-14:2014,	cURus (UL E186600)
23	30	OUT RELAY	XIAMEN HONGFA ELECTROACOUSTIC CO.,LTD	HF46F	30Vdc/5A;-40°C to +85°C;	UL 60384-14	cURus (UL E134517)
21	31	ISO RELAY	OMRON	G2RG-2A4	-40 to +70°C	UL 60947-1	cURus (UL E41643)
			XIAMEN HONGFA ELECTROACOUSTIC Co.,Ltd	HF140FF/0 12-2HSWT	HONGFA/HF140 FF/012-2HSWT 12VDC 30VDC/8A 2NO 1.5mm	UL 60947-1	cURus (UL E134517)

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22	32	AC RELAY	ZETTLER RELAY (XIAMEN) CO., LTD.	AZSR143-1AE-12D	-40°C to 85°C /50A	UL 508, UL 60947-1	cURus (UL E365652)	
			XIAMEN HONGFA ELECTROACOUSTIC Co.,Ltd	HF176F/12-H3F	-40°C to 85°C	UL 508, UL 60947-1, UL 61810-1	cURus (UL E133481)	
21	33	DC SPS TRANSFORMER	HAININGLIANFENG NGDONGJIN ELECTRONICS CO.,LTD	LF-GD2804	0.5mH/600mΩ/-40 to +130°C /CLASS B	UL1741; CSA No.107.1	Tested with appliance	
		Core	DMEGC	DMR40	--	--	--	
			TDG	TP4	--	--	--	
			LFG	NH2B	--	--	--	
		Wire	SHANDONG SAINT ELECTRIC CO	MW75-C/*UEW/130,	QA-*/130	130°C	ANSI/UL1446	UR (UL E194410)
				WUXI JUFENG COMPOUND LINE CO LTD				
			SHENZHEN KAIZHONG HEDONG NEW MATERIALS CO LTD	TIW-B	130°C	UL 2353	UR (UL E357240)	
			KBI COSMOLINK CO.,LTD	TIW-M	130°C	UL 2353	UR (UL E213764)	
		Bobbin	CHANG CHUN PLASTICS CO LTD	T375HF	150°C	ANSI/UL 746A/C/D	UR (UL E59481)	
			SUMITOMO BAKELITE CO LTD	PM-9630	150°C	UL 94	cURus (UL E41429)	
		PM-9823						
		Tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PF	150°C	CAN/UL 510A	UR (UL E165111)	
			JINGJIANG YAHUA PRESSURE SENSITIVE	WF	130°C	CAN/UL 510A	UR (UL E165111)	

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22	34		GLUE CO LTD				
		Tube	GREAT HOLDING INDUSTRIAL CO LTD	TFL/TEFLON	200°C	UL 224	UR (UL E156256)
		Epoxy	DONG GUAN SHI PAI HUA CHUANG MATERIAL FTY	H907-HF	130°C	ANSI/UL 746A/C/D	UR (UL E304477)
		Varnish	SUZHOU TAIHU ELECTRIC ADVANCED MATERIAL CO LTD	T-4260(a)	130°C	UL 1446	UR (UL E228349)
		Solder	HAINING HUIPU SOLDERING	Sn99.3 Cu0.7	--	--	--
		AC SPS TRANSFORMER	HAININGLIANFENG DONGJIN ELECTRONICS CO.,LTD	LF-GD1608	2.7mH/-40 to +130°C	UL1741; CSA No.107.1	Tested with appliance
		Core	DMEGC	DMR40	EE16	--	--
			TDG	TP4	EE16	--	--
			LFG	NH2B	EE16	--	--
		Wire	SHANDONG SAINT ELECTRIC CO	MW79-C/*UEW/155	155°C	ANSI/UL1446	UR (UL E194410)
	WUXI JUFENG COMPOUND LINE CO LTD		MW79-C/xUEW155*,	155°C	ANSI/UL1446	UR (UL E206882)	
			QA-x/155F				
	SHENZHEN KAIZHONG HEDONG NEW MATERIALS CO LTD		TIW-B	130°C	UL 2353	UR (UL E357240)	
		KBI COSMOLINK CO.,LTD	TIW-M	130°C	UL 2353	UR (UL E213764)	
	Bobbin	CHANG CHUN PLASTICS CO LTD	T375HF	150°C	ANSI/UL 746A/C/D	UR (UL E59481)	
	Tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PF	180°C	CAN/UL 510A	UR (UL E165111)	

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			JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	WF*(C)(h)	130°C	CAN/UL 510A	UR (UL E165111)
		Tube	GREAT HOLDING INDUSTRIAL CO LTD	TFL	200°C	UL224	UR (UL E156256)
		Varnish	SUZHOU TAIHU ELECTRIC ADVANCED MATERIAL CO LTD	T-4260(a)	155°C	UL 1446	UR (UL E228349)
		Epoxy	DONG GUAN SHI PAI HUA CHUANG MATERIAL FTY	H907-HF	130°C	ANSI/UL 746A/C/D	UR (UL E304477)
		Solder	HAINING HUIPU SOLDERING	Sn99.3	--	--	--
				Cu0.7	--	--	--
21	35	CT for AFCI	FUJIAN TRANSFAR ELECTRONIC CO.LTD	TA1015-3	-55°C to +85°C	UL1741; CSA No.107.1	Tested with appliance
21	36	PV CURRENT SENSOR	Sinomags Technology Co., Ltd	STK- 20PL/A	-40°C to +105°C ; 20A	UL508	cURus (UL E507664)
			LEM	HLSR 20-P	-40°C to +105°C ; 20A	UL508	cURus (UL E189713)
22	37	AC CURRENT SENSOR	NINGBO ZHONGCHE	NACA.50T -P6/VN	5V 50A ±0.5% - 40°C to +105°C	UL508	cURus (UL E317702)
			LEM	HLSR 50-P	-40°C to +105°C	UL508	cURus (UL E189713)
			BYD SEMICONDUCT OR CO., LTD	BSX7- 50IOV1HA	5V 50A ±1% - 40°C to +105°C	UL508	UR (UL E342583)
22	38	GFCI SENSOR	Sinomags Technology Co., Ltd	STK - 1.0P/P1	-40°C to +105°C	UL 508 and CAN/CSA C22.2 No. 14-18	cURus (UL E507664)
			Sinomags Technology Co., Ltd	STK- 1.0P/Mx-1	-40°C to +105°C	UL 508 and CAN/CSA C22.2 No. 14-18	cURus (UL E507664)

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			MAGTRONWORLD ELECTRONICS CORPORATION	RCMU101 SM3-6AI	-40°C to +105°C	UL508	cURus (UL E492115)
24	39	Boost IGBT	TRINNO TECHNOLOGY CO.,LTD	TGAN40N65F2DS	40A 650V -55~+175°C	UL1741; CSA No.107.1	Tested with appliance
			INFINEON TECHNOLOGIES CO.,LTD	IKW40N65H5	40A 650V TO-247	UL1741; CSA No.107.1	Tested with appliance
			Fairchild Semiconductor Corporation	FGA40N65SMD	650V/40A/-55 to +175°C	UL1741; CSA No.107.1	Tested with appliance
			ST	SCTWA35N65G2V-4	45A 650V 175°C	UL1741; CSA No.107.1	Tested with appliance
			Wolfspeed	C3M0045065K	49A 650V 175°C	UL1741; CSA No.107.1	Tested with appliance
			Infineon	IPW60R060P7	48A 650V 175°C	UL1741; CSA No.107.1	Tested with appliance
			Silan	SGTP40V65SDB1P7	40A 650V 175°C	UL1741; CSA No.107.1	Tested with appliance
			NCEPOWER	NCE40TD65BT	40A 650V 175°C	UL1741; CSA No.107.1	Tested with appliance
			TRINNO	TGAN40N65F2DS	40A 650V 175°C	UL1741; CSA No.107.1	Tested with appliance
			ON	FGHL40T65MQD	40A 650V 175°C	UL1741; CSA No.107.1	Tested with appliance
24	40	INV IGBT	STMicroelectronics N.V.	STGWA80H65DFB	80A 650V NPN TUBE TO-247	UL1741; CSA No.107.1	Tested with appliance
			Infineon	IKW75N65EL5	75A 650V 175°C	UL1741; CSA No.107.1	Tested with appliance
			Fairchild Semiconductor Corporation	IKW75N65EL5	75A 650V 175°C	UL1741; CSA No.107.1	Tested with appliance
			TRINNO	TGAN60N65F2DS	60A 650V 175°C	UL1741; CSA No.107.1	Tested with appliance
			STMicroelectronics N.V.	STGWT60H65DFB	650V/60A/-55°C	UL1741; CSA	Tested with appliance

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					to+175°C	No.107.1	
24	41	DIODE	Vishay Semiconductors	VS-E5PX3006 L-N3	30A 600V -55°C to +175°C	UL1741; CSA No.107.1	Tested with appliance
			Microsemi Corporate Headquarters	APT30DQ 60BG	30A 600V -55°C to +175°C	UL1741; CSA No.107.1	Tested with appliance
			Microsemi Corporate Headquarters	APT60DQ 60BG	60A 600V -55°C to +175°C	UL1741; CSA No.107.1	Tested with appliance
			Vishay Semiconductors	VS-EPX3007L -N3	30A 600V -55°C to +175°C	UL1741; CSA No.107.1	Tested with appliance
21	42	ARM	STMicroelectronics N.V.	STMicroelectronics N.V.	125°C	UL1741; CSA No.107.1	Tested with appliance
25	43	MAIN DSP	TI	TMS320F280049CPZS	-40°C to +125°C	UL1741; CSA No.107.1	Tested with appliance
			TI	TMS320F280039CSPZ	-40°C to +125°C	UL1741; CSA No.107.1	Tested with appliance
25	44	VICE DSP	STMicroelectronics N.V.	STM32G071KBT3	-40 to 125°C	UL1741; CSA No.107.1	Tested with appliance
22	45	COUPLING	VISHAY SEMICONDUCTORS Technology Co., Ltd	SFH615A-3X009T	-55 to +150°C	UL1577	cURus (UL E52744)
21	46	COUPLING	FAIRCHILD SEMICONDUCTOR CORPORATION	FOD8342T	-55 to +150°C	UL1577	cURus (UL E90700)
23	47	PV CONNECTOR	phoenix contact co., ltd.	SPT 5/6-V-7,5-ZB-1719354	1000V/41A; 6pin; -40 °C ~ 105 °C	UL 60947	cURus (UL E60425)
			phoenix contact co., ltd.	SPT 5/4-V-7,5-ZB-1719338	1000V/41A; 4pin; -40 °C ~ 105 °C	UL 60947	cURus (UL E60425)
			NINGBO DEGSON ELECTRICAL CO.,LTD	DG271V-7.5-DA-04P-1Y-100A(H)	UL94V-0; 600V/40A; -40°C to 105°C	UL1059	cURus (UL E228872)
			NINGBO DEGSON ELECTRICAL CO.,LTD	DG271V-7.5-DA-06P-1Y-100A(H)	UL94V-0; 600V/40A; -40°C to 105°C	UL1059	cURus (UL E228872)

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23	48	AC CONNECTOR	phoenix contact co., ltd.	SPT 16/3-V-10,0-ZB	1000V/76A;3pin; -40°C to 105 °C	UL 60947	cURus (UL E60425)
			NINGBO DEGSON ELECTRICAL CO.,LTD	DG271V-10.0-DA-3P-14-100A(H)	1000V/76A;3pin; -40°C to 105°C	UL1059	cURus (UL E228872)
3	49	FANS	MinebeaMitsumi Inc	06025VE-12R-BT-D1	12V/0.5A;-10°C to +80°C	UL 507	cURus (UL E89936)
			XINWEI International Trading(shenzhen)Co.Ltd	06025VE-12Q-CU-01	12V /0.5A	UL 507	cURus (UL E89936)
			PROTECHNIC	MGT6012Z B-O25	12V 2.4W	UL 507	cURus (UL E187236)
26	50	RSD transmitter (optional) (tigo)	Tigo Energy Inc	TS4-A-F	-40°C to 85°C	UL1741	cURus (UL E469960)
26	51	RSD transmitter WIRE	WUXI XINHONGYE WIRE&CABLE CO LTD	104T18A-01-001	tinned copper ; PVC ; 2.8mm	UL758,UL1581	cURus (UL E469960)
			WUXI XINHONGYE WIRE&CABLE CO LTD	104T18A-03-001	tinned copper ; PVC ; 2.8mm	UL758,UL1581	
			3Q WIRE & CABLE CO.,LTD	UL1015 AWG18	tinned copper ; PVC ; 2.8mm	UL758,UL1581	
			3Q WIRE & CABLE CO.,LTD	UL1015 AWG18	tinned copper ; PVC ; 2.8mm	UL758,UL1581	
26	52	RSD transmitter (optional) (APS)	ZHEJIANG APSMART Electronic Technology Co., Ltd	4302915212	-40°C to+100°C;12V/0.5A;	UL1741;UL746A;UL94	cCSAus (CSA:70218632)
			ZHEJIANG APSMART Electronic Technology Co., Ltd	54170201200	-40°C to+100°C;12V/0.5A;	UL1741;UL746A;UL94	
			ZHEJIANG APSMART Electronic Technology Co., Ltd	406000	-40°C to+100°C;12V/0.8A;	UL1741;UL746A;UL94	
			ZHEJIANG APSMART	406007	-40°C	UL1741;UL746A;UL94	

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			Electronic Technology Co., Ltd		to+100°C;12V/0.8A;		
27	53	Lighting PCB	Interchangeable	Interchangeable	UL94-V0; CTI : PLC3(175V-249V);TG130°C	UL510	cURus (UL E318580; E465142; E488128; E495184)
26	54	WIRE	HUIZHOU LYCN Electronic Technology Co., Ltd	2XHS5051 4300165R SGTX	165mm;UL1430 22AWG;2.5XHS-5P;UL94V-0	UL1430;	cURus (UL E201164)
26	55	WIRE	HUIZHOU LYCN Electronic Technology Co., Ltd	2XHQBQ5 021430015 0BXG	UL1430#22AW G;150mm;UL94 V-0	UL1430;	cURus (UL E364067)
26	56	USB PCB (optional)	Interchangeable	Interchangeable	UL94-V0; CTI : PLC3(175V-249V);TG130°C	UL510	cURus (UL E318580; E465142; E488128; E495184)
26	57	USB WIRE (optional)	HUIZHOU LYCN Electronic Technology Co., Ltd	2XHSH5 051430012 0BXG	UL1430#22AW G;120mm; UL94V-0	UL94	cURus (UL E364067)
			HUIZHOU LYCN Electronic Technology Co., Ltd	2XHSPH4 503143000 60BXG	UL1430#22AW G;60mm; UL94V-0	UL94	cURus (UL E364067)
23	58	Communication PCB	Interchangeable	Interchangeable	UL94-V0; CTI : PLC3(175V-249V);TG130°C	UL510	cURus (UL E318580; E465142; E488128; E495184)
26	59	Cloud PCB	Interchangeable	Interchangeable	UL94-V0; CTI : PLC3(175V-249V);TG130°C	UL510	cURus (UL E318580; E465142; E488128; E495184)

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29	60	Cloud ANT	SUZHOU WUTONG ANT CO.,LTD	WTTX1607 95B-1	-30°C ~ +65°C;	UL1741; CSA No.107.1	Tested with appliance
			SUZHOU WUTONG ANT CO.,LTD	WTXJ-SMAIPEX1 13250-210199B	-20°C~75°C;1.13	UL1741; CSA No.107.1	Tested with appliance
26	61	Cloud CORE PCB	Interchangeable	Interchangeable	UL94-V0; CTI : PLC3(175V-249V);TG130°C	UL510	cURus (UL E318580; E465142; E488128; E495184)
23	62	AC TVR	SHANTOU HIGH-NEW ZONE SONGTIAN ENTERPRISE CO.,LTD	STE20D47 1K1DN0F QB0RD	470Vac/3KA	UL1449	cURus (UL E330837)
			SHANTOU HIGH-NEW ZONE SONGTIAN ENTERPRISE CO.,LTD	D66Z0V51 1HC	510Vac/10KA	UL1449	cURus (UL E321173)
23	63	FUSE	SHANGHAI HUAPAI ELECTRONIC CO.,LTD	A5-5A-F	250Vac/5A	UL60691	cURus (UL E140847)
23	64	GAS	TDK China Co., Ltd	B88069X2 880S102	600V/20KA	UL1741; CSA No.107.1	Tested with appliance
--	65	TUBE	ShenzhenWoer Heat-Shrinkable Material Co., Ltd	TFL	200°C	UL1741; CSA No.107.1	Tested with appliance
21	66	Power PCB	Interchangeable	Interchangeable	UL94-V0; CTI : PLC3(175V-249V);TG130°C	UL510	cURus (UL E318580; E465142; E488128; E495184)

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21	67	PV TVR	SHENZHEN HAIPEGXIN ELECTRONICS CO.,LTD.	PV20K-500	230Vac/10KA; PA6634*14*26;-40℃~+85℃	UL1741; CSA No.107.1	Tested with appliance
			PTG CORPORATION	TEC-V500-20M2-10-01A	385V/10KA	UL1449	cURus (UL E501870)
			ANHUI JINLI ELECTRONICS CO.,LTD.	GTSP-MAV385/2 0/A	UL94 V-0; 385V/10KA	UL1741; CSA No.107.1	Tested with appliance
22	68	OUTPUT PCB	Interchangeable	Interchangeable	UL94-V0; CTI : PLC3(175V-249V);TG130℃	UL510	cURus (UL E318580; E465142; E488128; E495184)
25	69	CORE PCB	Interchangeable	Interchangeable	UL94-V0; CTI : PLC3(175V-249V);TG130℃	UL510	cURus (UL E318580; E465142; E488128; E495184)
23	70	TUBE	SUZHOU HUIHUA ELECTRICS TECH CO., LTD	φ7.0	125℃ 600V	UL 224	UR (UL E203950)
--	71	Conformal coating	PETERS	SL1301	CTI>600	UL94、UL746E	UR (UL E80315)
26	72	AC Wire	GOODWE	12AWG	UL1032 PVC BLACK 1000V 90℃	UL758,UL1 581 & CSA22.2	cURus (UL E341104)
26	73	DC Wire	GOODWE	8AWG	Power Line 90℃ 1000V UL1032 PVC TD / RED	UL758,UL1 581 & CSA22.2	cURus (UL E341104)

Note: For each circuit board, the certification standard information is only applicable to PCB board materials.

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ANNUAL RE-TESTING OF UNLISTED COMPONENTS

The unlisted components on this page are uncontrolled (not falling under a third party certification program) and require periodic retesting and/or evaluation.

Note to SGS Follow Up Inspector: The inspection office will notify you in writing when these components must be selected and sent to the Lab indicated below for re-evaluation.

Ship the samples to: SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch
198 Kezhu Road, Science City, Economic & Technology Development Area, Guangzhou,
Guangdong, China

The unlisted components covered by this report and are required to be re-tested/evaluated are shown in the following table:

PHOTO #	ITEM #	DESCRIPTION	MFR	TYPE/ MODEL	RATING
N/A	N/A	N/A	N/A	N/A	N/A
VERIFICATION PROCESS					
Test Standard:		N/A			
Frequency of Testing:		N/A	No. of Test Samples:		N/A
Clause No.	TEST		PARAMETERS		
N/A	N/A		N/A		

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MARKINGS

The following markings are required:

Marking A: Nameplate

Product: Grid-Tied PV Inverter Model : GW5000-MS-US30	
Vmax PV: 600Vd.c. MPPT voltage range: 65...550Vd.c. Max. PV current: 16/16Ad.c. Isc PV: 23.4/23.4Ad.c.	
Rated grid voltage: 240/208Va.c. Output voltage range: 211~264/183~229Va.c. AC-grid frequency: 60Hz AC-grid frequency range: 58.5~61.2Hz Max. current: 20.8Aa.c., Max. backfeed: 0Aa.c. Rated active power: 5000W@240Va.c, 4333W@208Va.c. Rated apparent power: 5000VA@240Va.c, 4333VA@208Va.c. Max apparent power: 5000VA@240Va.c, 4333VA@208Va.c.	
Power factor range: ~1,0.8cap...0.8ind Operating temperature range: -13~140°F (-25°C~60°C) Derating temperature: 113°F (45°C) Grid Support Utility Interactive Inverter Transformerless Type 4X, PV DC AFCI: Type 1	
S/N:	
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Marking A: Nameplate (Continued)

Product: Grid-Tied PV Inverter Model : GW6000-MS-US30	
Vmax PV: 600Vd.c. MPPT voltage range: 65...550Vd.c. Max. PV current: 16/16Ad.c. Isc PV: 23.4/23.4Ad.c.	
Rated grid voltage: 240/208Va.c. Output voltage range: 211~264/183~229Va.c. AC-grid frequency: 60Hz AC-grid frequency range: 58.5~61.2Hz Max. current: 25Aa.c., Max. backfeed: 0Aa.c. Rated active power: 6000W@240Va.c, 5200W@208Va.c. Rated apparent power: 6000VA@240Va.c, 5200VA@208Va.c. Max apparent power: 6000VA@240Va.c, 5200VA@208Va.c.	
Power factor range: ~1,0.8cap...0.8ind Operating temperature range: -13~140°F (-25°C~60°C) Derating temperature: 113°F(45°C) Grid Support Utility Interactive Inverter Transformerless Type 4X, PV DC AFCI: Type 1	
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Marking A: Nameplate (Continued)

Product: Grid-Tied PV Inverter Model : GW7600-MS-US30	
Vmax PV: 600Vd.c. MPPT voltage range: 65..550Vd.c. Max. PV current: 16/16Ad.c. Isc PV: 23.4/23.4Ad.c.	
Rated grid voltage: 240/208Va.c. Output voltage range: 211~264/183~229Va.c. AC-grid frequency: 60Hz AC-grid frequency range: 58.5~61.2Hz Max. current: 31.7Aa.c., Max. backfeed: 0Aa.c. Rated active power: 7600W@240Va.c, 6580W@208Va.c. Rated apparent power: 7600VA@240Va.c, 6580VA@208Va.c. Max apparent power: 7600VA@240Va.c, 6580VA@208Va.c.	
Power factor range: ~1,0.8cap...0.8ind Operating temperature range: -13~140°F (-25°C~60°C) Derating temperature: 113°F (45°C) Grid Support Utility Interactive Inverter Transformerless Type 4X, PV DC AFCI: Type 1	
	
	
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Marking A: Nameplate (Continued)

Product: Grid-Tied PV Inverter Model : GW9600-MS-US30	
Vmax PV: 600Vd.c. MPPT voltage range: 65...550Vd.c. Max. PV current: 16/16/16Ad.c. Isc PV: 23.4/23.4/23.4Ad.c.	
Rated grid voltage: 240/208Va.c. Output voltage range: 211~264/183~229Va.c. AC-grid frequency: 60Hz AC-grid frequency range: 58.5~61.2Hz Max. current: 40Aa.c., Max. backfeed: 0Aa.c.. Rated active power: 9600W@240Va.c, 8320W@208Va.c. Rated apparent power: 9600VA@240Va.c, 8320VA@208Va.c. Max apparent power: 9600VA@240Va.c, 8320VA@208Va.c.	
Power factor range: ~1,0.8cap...0.8ind Operating temperature range: -13~140°F (-25°C~60°C) Derating temperature: 113°F (45°C) Grid Support Utility Interactive Inverter Transformerless Type 4X, PV DC AFCI: Type 1	
	
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Marking A: Nameplate (Continued)

Product: Grid-Tied PV Inverter Model : GW11K4-MS-US30	
Vmax PV: 600Vd.c. MPPT voltage range: 65...550Vd.c. Max. PV current: 16/16/16Ad.c. Isc PV: 23.4/23.4/23.4Ad.c.	
Rated grid voltage: 240/208Va.c. Output voltage range: 211~264/183~229Va.c. AC-grid frequency: 60Hz AC-grid frequency range: 58.5~61.2Hz Max. current: 47.5Aa.c., Max. backfeed: 0Aa.c.. Rated active power: 11400W@240Va.c, 9880W@208Va.c. Rated apparent power: 11400VA@240Va.c, 9880VA@208Va.c. Max apparent power: 11400VA@240Va.c, 9880VA@208Va.c.	
Power factor range: ~1,0.8cap...0.8ind Operating temperature range: -13~140°F (-25°C~60°C) Derating temperature: 113°F(45°C) Grid Support Utility Interactive Inverter Transformerless Type 4X, PV DC AFCI: Type 1	
	
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Marking A: Nameplate (Continued)

Product: Grid-Tied PV Inverter Model : GEP5.0-1-US30 	
Vmax PV: 600Vd.c. MPPT voltage range: 65...550Vd.c. Max. PV current: 16/16Ad.c. Isc PV: 23.4/23.4Ad.c.	
Rated grid voltage: 240/208Va.c. Output voltage range: 211~264/183~229Va.c. AC-grid frequency: 60Hz AC-grid frequency range: 58.5~61.2Hz Max. current: 20.8Aa.c., Max. backfeed: 0Aa.c. Rated active power: 5000W@240Va.c, 4333W@208Va.c. Rated apparent power: 5000VA@240Va.c, 4333VA@208Va.c. Max. apparent power: 5000VA@240Va.c, 4333VA@208Va.c.	
Power factor range: ~1,0.8cap...0.8ind Operating temperature range: -13~140°F (-25°C~60°C) Derating temperature: 113°F (45°C) Grid Support Utility Interactive Inverter Transformerless Type 4X, PV DC AFCI: Type 1	
	
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Marking A: Nameplate (Continued)


Product: Grid-Tied PV Inverter Model : GEP6.0-1-US30 	
Vmax PV: 600Vd.c. MPPT voltage range: 65...550Vd.c. Max. PV current: 16/16Ad.c. Isc PV: 23.4/23.4Ad.c.	
Rated grid voltage: 240/208Va.c. Output voltage range: 211~264/183~229Va.c. AC-grid frequency: 60Hz AC-grid frequency range: 58.5~61.2Hz Max. current: 25Aa.c., Max. backfeed: 0Aa.c. Rated active power: 6000W@240Va.c, 5200W@208Va.c. Rated apparent power: 6000VA@240Va.c, 5200VA@208Va.c. Max apparent power: 6000VA@240Va.c, 5200VA@208Va.c.	
Power factor range: ~1,0.8cap...0.8ind Operating temperature range: -13~140°F (-25°C~60°C) Derating temperature: 113°F (45°C) Grid Support Utility Interactive Inverter Transformerless Type 4X, PV DC AFCI: Type 1	
 	
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Marking A: Nameplate (Continued)


Product: Grid-Tied PV Inverter
Model : GEP7.6-1-US30




Vmax PV: 600Vd.c.
MPPT voltage range: 65...550Vd.c.
Max. PV current: 16/16Ad.c.
Isc PV: 23.4/23.4Ad.c.

Rated grid voltage: 240/208Va.c.
Output voltage range: 211~264/183~229Va.c.
AC-grid frequency: 60Hz
AC-grid frequency range: 58.5~61.2Hz
Max current: 31.7Aa.c., Max. backfeed: 0Aa.c.
Rated active power: 7600W@240Va.c, 6580W@208Va.c.
Rated apparent power: 7600VA@240Va.c, 6580VA@208Va.c.
Max apparent power: 7600VA@240Va.c, 6580VA@208Va.c.

Power factor range: ~1,0.8cap...0.8ind
Operating temperature range: -13~140°F (-25°C~60°C)
Derating temperature: 113°F (45°C)
Grid Support Utility Interactive Inverter Transformerless
Type 4X, PV DC AFCI: Type 1





➔

S/N:

Made in China




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GoodWe Technologies Co., Ltd.
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No.90 Zijin Rd., New District, Suzhou, 215011, China

S/N



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Marking A: Nameplate (Continued)

Product: Grid-Tied PV Inverter Model : GEP9.6-1-US30 	
Vmax PV: 600Vd.c. MPPT voltage range: 65...550Vd.c. Max. PV current: 16/16/16Ad.c. Isc PV: 23.4/23.4/23.4Ad.c.	
Rated grid voltage: 240/208Va.c. Output voltage range: 211~264/183~229Va.c. AC-grid frequency: 60Hz AC-grid frequency range: 58.5~61.2Hz Max. current: 40Aa.c., Max. backfeed: 0Aa.c. Rated active power: 9600W@240Va.c, 8320W@208Va.c. Rated apparent power: 9600VA@240Va.c, 8320VA@208Va.c. Max apparent power: 9600VA@240Va.c, 8320VA@208Va.c.	
Power factor range: ~1,0.8cap...0.8ind Operating temperature range: -13~140°F (-25°C~60°C) Derating temperature: 113°F (45°C) Grid Support Utility Interactive Inverter Transformerless Type 4X, PV DC AFCI: Type 1	
 	
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Marking A: Nameplate (Continued)

Product: Grid-Tied PV Inverter Model : GEP11.4-1-US30 	
Vmax PV: 600Vd.c. MPPT voltage range: 65...550Vd.c. Max. PV current: 16/16/16Ad.c. Isc PV: 23.4/23.4/23.4Ad.c.	
Rated grid voltage: 240/208Va.c. Output voltage range: 211~264/183~229Va.c. AC-grid frequency: 60Hz AC-grid frequency range: 58.5~61.2Hz Max current: 47.5Aa.c., Max. backfeed: 0Aa.c. Rated active power: 11400W@240Va.c, 9880W@208Va.c. Rated apparent power: 11400VA@240Va.c, 9880VA@208Va.c. Max apparent power: 11400VA@240Va.c, 9880VA@208Va.c.	
Power factor range: ~1,0.8cap...0.8ind Operating temperature range: -13~140°F (-25°C~60°C) Derating temperature: 113°F (45°C) Grid Support Utility Interactive Inverter Transformerless Type 4X, PV DC AFCI: Type 1	
 	
S/N:	
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Marking B: Cautionary

<p>1. Turn off the AC switch. 2. Turn off the DC switch. 3. Wait for 5min.</p>		or
<p>WARNING</p>	<p>DANGER</p>	<p>CAUTION</p>

The maximum operating current of this system may be controlled electronically. Refer to manufacturer's instructions for more information.

CAUTION

Risk of Electric Shock, Do Not Remove Cover. No User Serviceable Parts Inside. Refer Servicing To Qualified Service Personnel.

CAUTION

Risk Of Electric Shock
a) Both ac and dc voltage sources are terminated inside this equipment. Each circuit must be individually disconnected before servicing
b) "When the photovoltaic array is exposed to light, it supplies a dc voltage to this equipment."

WARNING

Electric Shock Hazard. The DC conductors of this photovoltaic system are normally ungrounded but will become intermittently grounded without indication when the inverter measures the PV array isolation.

Note:

1. Marking A shall be permanent. SGS NA Listed Mark shall be at least 5 mm high. Other letters shall be at least 2.4 mm high.
2. Marking B shall be permanent, and A cautionary marking shall be prefixed by the word "CAUTION", "WARNING", or "DANGER" in letters not less than 3.2 mm (1/8 inch) high. The remaining letters shall not be less than 1.6 mm (1/16 inch) high.
3. Permanent methods include Molded, Die-stamped, Paint-stenciled, Stamped, etched metal or pressure-sensitive label recognized by NRTL.
4. Both English and French marking and instructions shall be provided for Canada market.

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INSTRUCTIONS

Both English and French instructions shall be provided. Instruction shall include below information:

1. Proper installation method.
2. Wiring instructions that specify the proper method of connecting the grounding means and maintaining polarity shall be included.
3. Other information should not lead to misuse.
4. Electrical Ratings and Descriptions.

Technical Data	GW5000-MS-US30	GW6000-MS-US30	GW7600-MS-US30	GW9600-MS-US30	GW11K4-MS-US30
Input					
Max.Input Power (W)	8000	9600	12160	15360	18240
Max.Input Voltage (V)	600	600	600	600	600
MPPT Operating Voltage Range (V)	65~550	65~550	65~550	65~550	65~550
Start-up Voltage (V)	80	80	80	80	80
Nominal Input Voltage (V)	330@208Vac 380@240Vac	330@208Vac 380@240Vac	330@208Vac 380@240Vac	330@208Vac 380@240Vac	330@208Vac 380@240Vac
Max. Input Current per MPPT (A)	16	16	16	16	16
Max. Short Circuit Current per MPPT (A)	23.4	23.4	23.4	23.4	23.4
Number of MPPT	2	2	2	3	3
Number of Strings per MPPT	1	1	1	1	1
Output					
Nominal Output Power (W)	5000@240Vac 4333@208Vac	6000@240Vac 5200@208Vac	7600@240Vac 6580@208Vac	9600@240Vac 8320@208Vac	11400@240Vac 9880@208Vac
Max. AC Apparent Power (VA)	5000@240Vac 4333@208Vac	6000@240Vac 5200@208Vac	7600@240Vac 6580@208Vac	9600@240Vac 8320@208Vac	11400@240Vac 9880@208Vac
Nominal Output Voltage (V)	240/208				
Nominal AC Grid Frequency (Hz)	60				
Max. Output Current (A)	20.8	25.0	31.7	40.0	47.5
Operating Temperature Range	-30 °C ~ +60 °C (>45 °C derating)				
Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)				

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Technical Data	GEP5.0-1- US30	GEP6.0-1- US30	GEP7.6-1- US30	GEP9.6-1- US30	GEP11.4-1- US30
Input					
Max.Input Power (W)	8000	9600	12160	15360	18240
Max.Input Voltage (V)	600	600	600	600	600
MPPT Operating Voltage Range (V)	65~550	65~550	65~550	65~550	65~550
Start-up Voltage (V)	80	80	80	80	80
Nominal Input Voltage (V)	330@208Vac 380@240Vac	330@208Vac 380@240Vac	330@208Vac 380@240Vac	330@208Vac 380@240Vac	330@208Vac 380@240Vac
Max. Input Current per MPPT (A)	16	16	16	16	16
Max. Short Circuit Current per MPPT (A)	23.4	23.4	23.4	23.4	23.4
Number of MPPT	2	2	2	3	3
Number of Strings per MPPT	1	1	1	1	1
Output					
Nominal Output Power (W)	5000@240Vac 4333@208Vac	6000@240Vac 5200@208Vac	7600@240Vac 6580@208Vac	9600@240Vac 8320@208Vac	11400@240Vac 9880@208Vac
Max. AC Apparent Power (VA)	5000@240Vac 4333@208Vac	6000@240Vac 5200@208Vac	7600@240Vac 6580@208Vac	9600@240Vac 8320@208Vac	11400@240Vac 9880@208Vac
Nominal Output Voltage (V)	240/208				
Nominal AC Grid Frequency (Hz)	60				
Max. Output Current (A)	20.8	25.0	31.7	40.0	47.5
Operating Temperature Range	-30 °C ~ +60 °C (>45 °C derating)				
Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)				

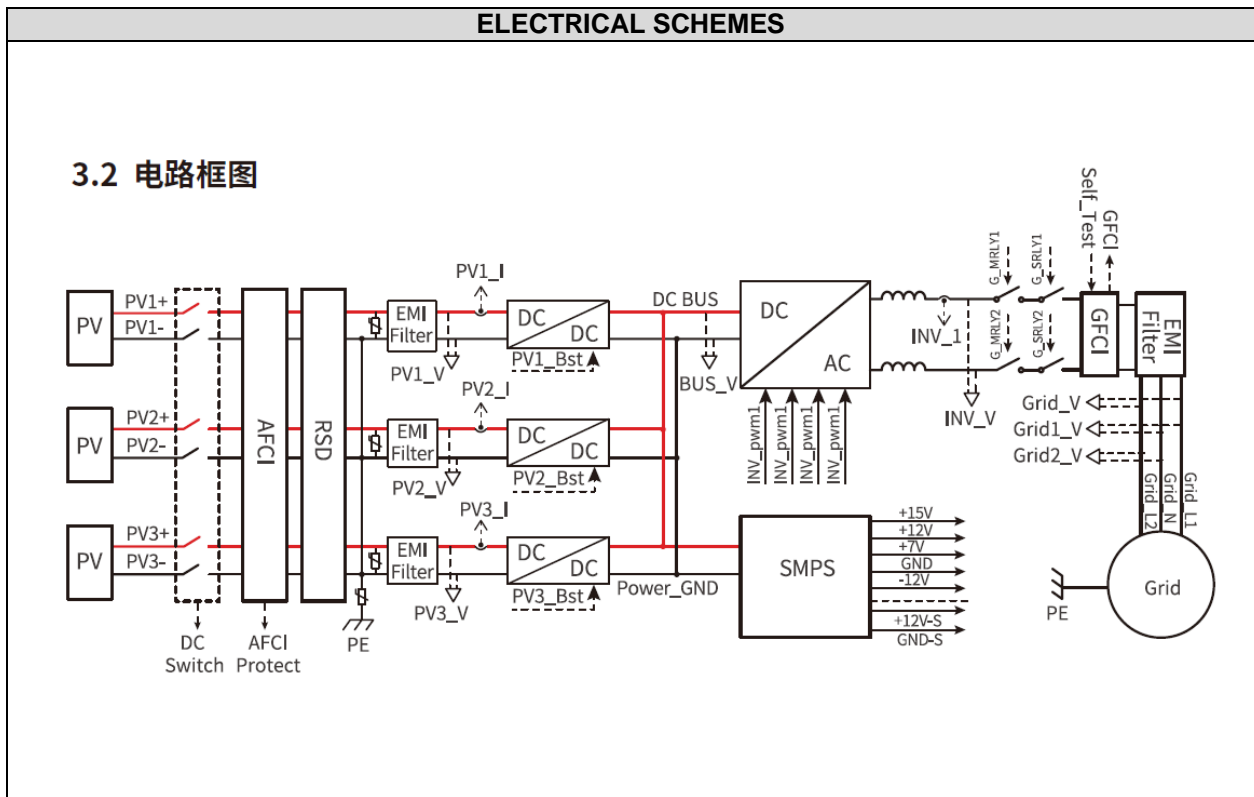
According to Table 3 of IEEE 1547-2018			
Time Frame	Steady-state measurements		
Parameter	Minimum measurement accuracy	Measurement window	Range
Voltage, RMS	± 1% Vnom	10 cycles	0.5 p.u. to 1.2 p.u.
Frequency	0.01 Hz	60 cycles	50 Hz to 66 Hz
Active Power	± 5% Srated	10 cycles	-1.0 p.u. to 1.0 p.u.
Reactive Power	± 5% Srated	10 cycles	-1.0 p.u. to 1.0 p.u.
Time	1). 1% of measured duration (>= 5 s) 2). 30 ms (< 5 s)	N/A	0~ 1000 s

Note: Maximum reactive power level (injection and absorb) is 44%Sn for function Voltage-reactive power mode (Q(U)) and Active power-reactive power mode (P-Q), while 100%Sn for Constant power factor mode (PF) and Constant reactive power mode.

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

According to IEEE 1547-2018				
Shall trip—Category III				
Shall trip function	Default settings		Ranges of allowable settings	
	Voltage (p.u.)	Clearing time (s)	Voltage (p.u.)	Clearing time (s)
OV2	1.20	0.16	fixed at 1.20	fixed at 0.16
OV1	1.10	13.0	1.10 ~ 1.20	1.0 ~ 13.0
UV1	0.88	21.0	0.0 ~ 0.88	2.0 ~ 50.0
UV2	0.50	2.0	0.0~0.50	0.16 ~ 21.0
OF2	62.0	0.16	61.8~66.0	0.16~1000.0
OF1	61.2	300.0	61.0~66.0	180.0~1000.0
UF1	58.5	300.0	50.0~59.0	180.0~1000.0
UF2	56.5	0.16	50.0~57.0	0.16~1000.0



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SUMMARY OF TEST RESULTS

The following tests were performed:

UL 1741 (Third Edition, Dated September 28, 2021)

Section	Test Description
26	Spacings
27	Alternate Spacings – Clearances and Creepage Distances
45	Maximum - Voltage Measurements
46	Temperature
47	Dielectric Voltage-Withstand Test
48.2	Output Power Characteristics – Output ratings
48.3	Output Power Characteristics – DC input range
48.4	Harmonic distortion
50.2	Abnormal Tests – Output overload test
50.3	Abnormal Tests – Short Circuit test
50.4	Abnormal Tests – DC input miswiring test
50.5	Abnormal Tests – Ventilation test
50.6	Abnormal Tests – Component Short and open circuit
50.8	Loss of control circuit
51	Grounding Impedance test
60	Capacitor Voltage Determination Test
61	Stability
63	Compression test
64	Rain and Sprinkler Tests

UL 50E

Section	Test Description
8.6	Hose down Test

UL 1741 CRD - Additional Requirements for Non-Isolated EPS Interactive PV Inverters Rated Less Than 30 Kva.

Section	Test Description
94	Continuous Isolation Monitor Interrupter Fault Current Limit Test
95	Sudden Change Isolation Monitor Current
96	Isolation Monitor Interrupter Component Short/Open Circuit Test
97	Array Insulation Resistance Measurement

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SUMMARY OF TEST RESULTS(Continuing)

CSA C22.2. No.107.1-16 issued on June 2016

Section	Test Description
6.2	Ratings
6.3	Temperature
6.5	Dielectric strength
6.6	Abnormal operation
6.9	Compression
10.5.1	AC output voltage for stand-alone inverters
10.5.2	Harmonic distortion for stand-alone inverters
10.5.3	DC injection
10.5.4	Frequency
10.5.5	Stand-alone inverter dc output short-circuit current contribution
14.3.2	Output ratings
14.3.3	Harmonic current distortion
14.3.4	Utility voltage and frequency variation test
14.3.5	Anti-islanding test
14.3.6	Loss of control circuit power
14.3.7	Maximum back feed current into the PCE input circuit
14.3.8	Testing of automatic disconnecting mean for non-isolated inverters
14.3.9	AC output short circuit current contribution test

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SUMMARY OF TEST RESULTS(Continuing)

UL 1741SB (Third Edition, Dated September 28, 2021) Based upon IEEE 1547-2018 and IEEE 1547.1-2020			
UL1741SB (Ed.3)	IEEE1547: 2018		IEEE Std 1547.1:2020
SB4.3.5.3	4.4	5.3	Temperature stability
SB4.3.5.4	6.4	5.4	Test for response to voltage disturbances
SB4.3.5.4.2	6.4.1	5.4.2	Test for overvoltage trip
SB4.3.5.4.3		5.4.3	Test for undervoltage trip
SB4.3.5.4.4	6.4.2.1	5.4.4	Low-voltage ride-through tests
	6.4.2.3		
	6.4.2.2	5.4.5	Test for voltage disturbances within continuous operating region
SB4.3.5.4.7	6.4.2.1	5.4.7	High-voltage ride-through tests
	6.4.2.4		
SB4.3.5.5	6.5	5.5	Test for response to frequency disturbances
SB4.3.5.5.1	6.5.1	5.5.1	Test for overfrequency trip
SB4.3.5.5.2		5.5.2	Test for underfrequency trip
SB4.3.5.5.3	6.5.2.1	5.5.3	Test for low-frequency ride-through
	6.5.2.3		
SB4.3.5.5.4	6.5.2.1	5.5.4	Test for high-frequency ride-through
	6.5.2.4		
	6.5.2.5	5.5.5	Test for rate of change of frequency (ROCOF)
SB4.3.5.5.6	6.5.2.6	5.5.6	Test for voltage phase-angle change ride-through
	4.10.2	5.6	Enter service
	4.10.3		
	6.6		
	4.10.4	5.7.4	Synchronization control function test for equipment with no synchronizing disable capability (variation 3)
	4.11	5.8	Interconnection integrity
SB4.3.5.8.1	4.11.1	5.8.1	Protection from electromagnetic interference (EMI) test
SB4.3.5.8.2	4.11.2	5.8.2	Surge withstand performance test
	4.11.3	5.8.3	Paralleling device tests
	7.1	5.9	Limitation of dc injection for inverters
SB4.3.5.10	8.1	5.10	Unintentional islanding
SB4.3.5.10.2	8.1.1	5.10.2	Balanced generation to load unintentional islanding test
	6.2.2	5.11	Open phase
	7.3	5.12	Current distortion
		5.12.2	Current distortion test for DER not capable of operation isolated from external source
	4.6.2	5.13	Limit active power
	5.3	5.14	Voltage regulation
SB4.3.5.14.3	5.3.2	5.14.3	Test for constant power factor (p.f.) mode
SB4.3.5.14.4	5.3.3	5.14.4	Test for voltage-reactive power (volt-var) mode
SB4.3.5.14.5		5.14.5	Test for voltage-reactive power (volt-var) mode (VRef test)

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UL 1741SB (Third Edition, Dated September 28, 2021) Based upon IEEE 1547-2018 and IEEE 1547.1-2020			
UL1741SB (Ed.3)	IEEE1547: 2018	IEEE Std 1547.1:2020	
SB4.3.5.14.6		5.14.6	Test for voltage - reactive power (volt-var) mode with an imbalanced grid
SB4.3.5.14.7	5.3.4	5.14.7	Test for active power-reactive power mode (watt-var)
SB4.3.5.14.8	5.3.5	5.14.8	Test for constant reactive power (var) mode
SB4.3.5.14.9	5.4.2	5.14.9	Test for voltage-active power (volt-watt) mode
		5.14.10	Test for voltage-active power (volt-watt) mode with an imbalanced grid
SB4.3.5.15		5.15	Frequency support
SB4.3.5.15.2	6.5.2.7	5.15.2	Test for frequency-droop (frequency-power or frequency-watt) capability—above nominal frequency
SB4.3.5.15.3		5.15.3	Test for frequency-droop (frequency-power or frequency-watt) capability—below nominal frequency
SB4.3.5.16	4.7	5.16	Test for prioritization of DER responses
		5.16.2	Test for voltage and frequency regulation priority
SB4.3.5.17	7.4	5.17	Limitation of overvoltage contribution
SB4.3.5.17.2	7.4.2	5.17.2	Load rejection overvoltage (LROV) test
	11.4	5.18	Fault current tests
	11.4.2	5.18.1	Fault current tests for inverters
SB4.3.6	10 ⁽⁴⁾	5.19	Persistence of DER parameter settings
SB4.3.6.8.2		6	Interoperability tests (IEEE2030.5 Protocol used)
		6.8.2	
		6.4	Nameplate data test
		6.8.2.1	
SB4.3.6.6		6.6	Monitoring information test
		6.8.2.3	
SB4.3.6.7		6.7	Management information test
		6.8.2.4	
UL1741SB (Ed.3)	IEEE1547a: 2020	IEEE Std 1547.1:2020	
	6.4.1	5.4.3	Test for undervoltage trip
UL1741SB (Ed.3)	SRD 2.0	IEEE Std 1547.1:2020	
	PART II.A	5.6	Enter service
	PART II.A	5.5.3	Test for low-frequency ride-through
		5.5.4	Test for high-frequency ride-through
	PART II.C	5.15.2	Test for frequency-droop (frequency-power or frequency-watt) capability - abovenominal frequency
		5.15.3	Test for frequency-droop (frequency-power or frequency-watt) capability - below nominal frequency

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LISTING REPORT/INSPECTION PROCEDURE

GoodWe Technologies Co., Ltd
PROJECT NUMBER: GZ-CERT220802012

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REVISION TABLE

The following changes have been made to this Report:

<u>Date</u>	<u>Project #</u>	<u>Revision prepared by</u>	<u>Page</u>	<u>Description of Change</u>
2022-08-02	GZES2204 006930PV	Michael Tong	None	First issuance.

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CONCLUSION

Samples of the products covered by this Report have been found to comply with the applicable requirements of Standard:

- Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources –UL 1741. (Third Edition, Dated September 28, 2021)
- Power conversion equipment – CSA C22.2 No. 107.1 issued on June 2016
- UL 1741 Supplement SB - Grid Support Utility Interactive Inverters and Converters Based upon IEEE 1547-2018 and IEEE 1547.1-2020. (Third Edition, Dated September 28, 2021)

Reference standard

- IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces – IEEE Std 1547:2018 (Revision of IEEE Std 1547:2003), approved 15 February 2018; IEEE Std 1547a™-2020 Approved 9 March 2020. (Refer to IEEE Std 1547.1:2020, approved 5 March 2020.)
- Hawaiian Electric Companies, IEEE 1547.1-2020 Source Requirements Document Version 2.0 (“SRD V2.0”), effective on July 1st, 2020

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