

Prüfbericht-Nr.: <i>Test report no.:</i>	CN22BUQD 002	Auftrags-Nr.: <i>Order no.:</i>	168518570	Seite 1 von 42 Page 1 of 42
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	2026754	Auftragsdatum: <i>Order date:</i>	2024-12-12	
Auftraggeber: <i>Client:</i>	Guangzhou Sanjing Electric Co., Ltd. No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong P.R. China			
Prüfgegenstand: <i>Test item:</i>	PV Grid-connected Inverter			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	C6-75K-T6, C6-100K-T9, C6-110K-T12, C6-125K-T12, C6-75K-T6-40, C6-100K-T9-40, C6-110K-T12-40, C6-125K-T12-40			
Auftrags-Inhalt: <i>Order content:</i>	AK Certificate			
Prüfgrundlage: <i>Test specification:</i>	IEC 61727: 2004, IEC 62116: 2014			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2024-12-13			
Prüfmuster-Nr.: <i>Test sample no.:</i>	A003896605-001			
Prüfzeitraum: <i>Testing period:</i>	2024-12-16 - 2024-12-19			
Ort der Prüfung: <i>Place of testing:</i>	TUV Rheinland (Shenzhen) Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TUV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von: <i>created by:</i>	genehmigt von: <i>authorized by:</i>			
Datum: <i>Date:</i>	Ausstellungsdatum: <i>Issue date:</i>			
Stellung / Position:	Stellung / Position:			
Sonstiges / <i>Other:</i>	1.This report is based on the original report CN22BUQD 001. All test data is derived from original report CN22BUQD 001.The changes have no effect on the tests of the original report. See following pages for details. 2.This report does not evidence compliance of the provided sample with the relevant standards but only with the referred tests. This test report documents the findings of examination conducted on the delivered product mentioned above only. This report does not entitle the applicant to carry any safety mark on this or similar products. Further for sales or other application purposes of the tested product, any reference to TÜV Rheinland or a test through TÜV Rheinland is only permissible with prior written consent of TÜV Rheinland.			
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>			
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet			
* Legend:	P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested			
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

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Test report no.:

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Anmerkungen
Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. <i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i>
2	Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben. Informationen zur Verifizierung der Authentizität unserer Dokumente erhalten Sie auf folgender Webseite: go.tuv.com/digital-signature <i>As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged. For information on verifying the authenticity of our documents, please visit the following website: go.tuv.com/digital-signature</i>
3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. <i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i> <i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i>
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. <i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i>

TEST REPORT IEC 61727: 2004 Photovoltaic (PV) systems– Characteristics of the utility interface IEC 62116: 2014 Utility-interconnected photovoltaic inverters-Test procedure of islanding prevention measures	
Report Reference No.: CN22BUQD 002	
Tested by (name + signature): Zerlina Liu	See cover page
Witnessed by (name + signature) ..: Zhiwei Yan	See cover page
Supervised by (name + signature) ..: N/A	
Approved by (name + signature).....: N/A	
Date of issue.....: See cover page	
Testing Laboratory.....: TÜV Rheinland (Shenzhen) Co., Ltd.	
Address: 1-5F, Block 5, No. 1100, Huanli Road, Yungu Community, Xinhua Street, Guangming District, Shenzhen, Guangdong Province	
Applicant's name: See cover page	
Address: See cover page	
Test specification:	
Standard: IEC 61727: 2004, IEC 62116: 2014	
Test procedure: AK	
Non-standard test method.....: N/A	
Test Report Form No.....: IEC 61727A	
Test Report Form(s) Originator: TÜV Rheinland Group	
Master TRF.....: 2014-02	
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Test item description : PV Grid-connected Inverter

Trade Mark :



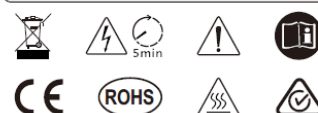
Manufacturer : Same as client

Model/Type reference : See cover page

Ratings : See model list

Testing procedure and testing location:	
☒	Testing Laboratory: TUV Rheinland (Shenzhen) Co., Ltd. 1-5F, Block 5, No. 1100, Huanli Road, Yungu Community, Xinhu Street, Guangming District, Shenzhen, Guangdong Province
☐	Associated CB Test Laboratory: Testing location/ address: Tested by (name + signature): Approved by (+ signature).....:
☐	Testing procedure: TMP Tested by (name + signature): Approved by (+ signature).....: Testing location/ address: ☐ Testing procedure: WMT Tested by (name + signature): Witnessed by (+ signature): Approved by (+ signature).....: Testing location/ address: ☐ Testing procedure: SMT Tested by (name + signature): Approved by (+ signature).....: Supervised by (+ signature): Testing location/ address: ☐ Testing procedure: RMT Tested by (name + signature): Approved by (+ signature).....: Supervised by (+ signature): Testing location/ address:

Copy of marking plate:

 Guangzhou Sanjing Electric Co., Ltd. Tel: +86(20) 69600588 Fax: +86(20) 69600589 Web: www.saj-electric.com E-mail: service@saj-electric.com PV Grid-connected Inverter Model: C6-75K-T6 <table border="1"> <tr> <th colspan="2">PV Input</th></tr> <tr> <td>Max. Input Voltage</td><td>1100V</td></tr> <tr> <td>MPPT Voltage Range</td><td>180-1000V</td></tr> <tr> <td>Max. Input Current</td><td>6*30A</td></tr> <tr> <td>Short Circuit Current</td><td>6*45A</td></tr> </table> <table border="1"> <tr> <th colspan="2">AC Output</th></tr> <tr> <td>Rated Output Voltage</td><td>3L+N+PE /3L+PE 230/400V</td></tr> <tr> <td>Rated Output Current</td><td>3*108.3A</td></tr> <tr> <td>Max. Output Current</td><td>3*119.1A</td></tr> <tr> <td>Rated Output Frequency</td><td>50/60Hz</td></tr> <tr> <td>Rated Output Power</td><td>75000W</td></tr> <tr> <td>Max. Apparent Power</td><td>82500VA</td></tr> <tr> <td>Power Factor Range</td><td>0.8 Leading...0.8 Lagging</td></tr> </table> Operating Temperature Range: -30℃~60℃ Protective Class: I Overvoltage Category: II (DC), III (AC) Ingress protection: IP66 Inverter Topology: Non-isolated EN 50549-2, IEC/EN62109-1/2, EN61000-6-2/4, PPDS, RD1669, RD413, UNE217001 IEC 62116, IEC61727, G99, CEI 0-16, C10/11   S/N P/C Importer MADE IN CHINA	PV Input		Max. Input Voltage	1100V	MPPT Voltage Range	180-1000V	Max. Input Current	6*30A	Short Circuit Current	6*45A	AC Output		Rated Output Voltage	3L+N+PE /3L+PE 230/400V	Rated Output Current	3*108.3A	Max. Output Current	3*119.1A	Rated Output Frequency	50/60Hz	Rated Output Power	75000W	Max. Apparent Power	82500VA	Power Factor Range	0.8 Leading...0.8 Lagging	 Guangzhou Sanjing Electric Co., Ltd. Tel: +86(20) 69600588 Fax: +86(20) 69600589 Web: www.saj-electric.com E-mail: service@saj-electric.com PV Grid-connected Inverter Model: C6-100K-T9 <table border="1"> <tr> <th colspan="2">PV Input</th></tr> <tr> <td>Max. Input Voltage</td><td>1100V</td></tr> <tr> <td>MPPT Voltage Range</td><td>180-1000V</td></tr> <tr> <td>Max. Input Current</td><td>9*30A</td></tr> <tr> <td>Short Circuit Current</td><td>9*45A</td></tr> </table> <table border="1"> <tr> <th colspan="2">AC Output</th></tr> <tr> <td>Rated Output Voltage</td><td>3L+N+PE /3L+PE 230/400V</td></tr> <tr> <td>Rated Output Current</td><td>3*144.3A</td></tr> <tr> <td>Max. Output Current</td><td>3*158.8A</td></tr> <tr> <td>Rated Output Frequency</td><td>50/60Hz</td></tr> <tr> <td>Rated Output Power</td><td>100000W</td></tr> <tr> <td>Max. Apparent Power</td><td>110000VA</td></tr> <tr> <td>Power Factor Range</td><td>0.8 Leading...0.8 Lagging</td></tr> </table> Operating Temperature Range: -30℃~60℃ Protective Class: I Overvoltage Category: II (DC), III (AC) Ingress protection: IP66 Inverter Topology: Non-isolated EN 50549-2, IEC/EN62109-1/2, EN61000-6-2/4, PPDS, RD1669, RD413, UNE217001 IEC 62116, IEC61727, G99, CEI 0-16, C10/11   S/N P/C Importer MADE IN CHINA	PV Input		Max. Input Voltage	1100V	MPPT Voltage Range	180-1000V	Max. Input Current	9*30A	Short Circuit Current	9*45A	AC Output		Rated Output Voltage	3L+N+PE /3L+PE 230/400V	Rated Output Current	3*144.3A	Max. Output Current	3*158.8A	Rated Output Frequency	50/60Hz	Rated Output Power	100000W	Max. Apparent Power	110000VA	Power Factor Range	0.8 Leading...0.8 Lagging
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 Guangzhou Sanjing Electric Co., Ltd. Tel: +86(0)20-66605588 Fax: +86(0)20-66605595 Web: www.saj-electric.com E-mail: service@saj-electric.com																	
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S/N																	
P/C																	
MADE IN CHINA																	

 Guangzhou Sanjing Electric Co., Ltd. Tel: +86(0)20-66605588 Fax: +86(0)20-66605595 Web: www.saj-electric.com E-mail: service@saj-electric.com																	
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List of Attachments (including a total number of pages in each attachment):

- ATTACHMENT 1 – Photo Documentation (23 pages)

Summary of testing
Tests performed (name of test and test clause):
Testing location:

The laboratory described on page 5.

☒ 4	Utility compatibility
☒ 4.1	Voltage, current and frequency
☒ 4.3	Flicker
☒ 4.4	DC injection
☒ 4.6	Harmonics and waveform distortion
☒ 4.7	Power factor
☒ 5	Personnel safety and equipment protection
☒ 5.2	Over/under voltage and frequency
☒ 5.2.1	Over/under voltage
☒ 5.2.2	Over/under frequency
☒ 5.3	Islanding protection
☒ 5.4	Response to utility recovery

☒ The product fulfils the requirements of IEC 62116: 2014.

Equipment mobility : Connection to the mains : Operating condition : Over voltage category : Mains supply tolerance (%) : Tested for IT power systems : IT testing, phase-phase voltage (V) : Class of equipment : Mass of equipment (kg)..... : Pollution degree : IP protection class :	☐ movable ☐ hand-held ☐ stationary ☒ fixed ☐ pluggable equipment ☐ direct plug-in ☒ permanent connection ☐ for building-in ☒ continuous ☐ short-time ☐ intermittent ☐ OVC I ☒ OVC II ☒ OVC III ☐ OVC IV According to specified supply range ☐ Yes ☒ No N/A ☒ Class I ☐ Class II ☐ Class III ☐ Not classified See Table 2 ☐ PD 1 ☐ PD 2 ☒ PD 3(internal reduced to PD 2) IP66
Possible test case verdicts: - test case does not apply to the test object..... : N/A - test object does meet the requirement : Pass (P) - test object does not meet the requirement : Fail (F)	
Testing: Date of receipt of test items : See cover page Date(s) of performance of tests : See cover page	
General remarks: "(see Attachment #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report. The tests results presented in this report relate only to the object tested. This report shall not be reproduced except in full without the written approval of the testing laboratory. List of test equipment must be kept on file and available for review. Additional test data and/or information provided in the attachments to this report. Throughout this report a ☐ comma / ☒ point is used as the decimal separator. Determination of the test results includes consideration of measurement uncertainty from the test equipment and methods.	
Manufacturer's Declaration per sub-clause 6.2.5 of IEC 60335-1: The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided : ☐ Yes ☒ Not applicable	

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) : **Guangzhou Sanjing Electric Co., Ltd.**
No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, GUANGDONG P.R. China

General product information:

The equipment with model names C6-75K-T6, C6-100K-T9, C6-110K-T12, C6-125K-T12, C6-75K-T6-40, C6-100K-T9-40, C6-110K-T12-40, C6-125K-T12-40 are three-phase public interactive photovoltaic inverter, which will be installed and connected to the grid after installation. It contains filters for smoothing output voltage and EMC, switching and control circuits. Electronic circuits are mounted on multiple PCBs interconnected by appropriate connectors and wires.

The power board including the electronic components is mounted on the radiator and grounded through metal screws and spring washers.

Communication ports include USB, and RS485, which are connected to a monitor to monitor the status of the inverter through proprietary software.

PV input combiner with 6, 9 or 12 MPPT tracers, and each MPPT tracer includes 4 PV input terminals (2 PV+ and 2PV-).

The AC output is directly connected to the power grid, and the protective grounding is provided by a dedicated grounding terminal.

The grid-connected protection combines the two series of relays as a redundant construction to ensure that the inverter can independently disconnect from the grid when the relay fails.

In the case of a fault defined in this standard, after the DSP receives an abnormal signal from the relevant protection detection circuit, the relay will act to automatically disconnect the active circuit of the photovoltaic inverter from the grid, when any grid fault occurs, the master DSP and the slave DSP have the ability to disconnect from the grid independently.

History of amendments and modifications:

Report No.: CN22BUQD 001, dated 2022-08-22 (original)

Report No.: CN22BUQD 002, dated 2025-01-16 (1st Modification)

Description of change(s):

The report is based on the report CN22BUQD 001 to make the following changes:

1. Added new models: C6-75K-T6-40, C6-100K-T9-40, C6-110K-T12-40, C6-125K-T12-40.

C6-75K-T6-40 is identical to the original model: C6-75K-T6,

C6-100K-T9-40 is identical to the original model: C6-100K-T9,

C6-110K-T12-40 is identical to the original model: C6-110K-T12,

C6-125K-T12-40 is identical to the original model: C6-125K-T12,

except the model number, Max. Input Current and PV Input Short Circuit Current mentioned above.

2.Changed the Max. Input Current from 30A to 40A of the new models:

C6-75K-T6-40, C6-100K-T9-40, C6-110K-T12-40, C6-125K-T12-40.

3.Changed the PV Input Short Circuit Current from 45A to 50A of the new models:

C6-75K-T6-40, C6-100K-T9-40, C6-110K-T12-40, C6-125K-T12-40.

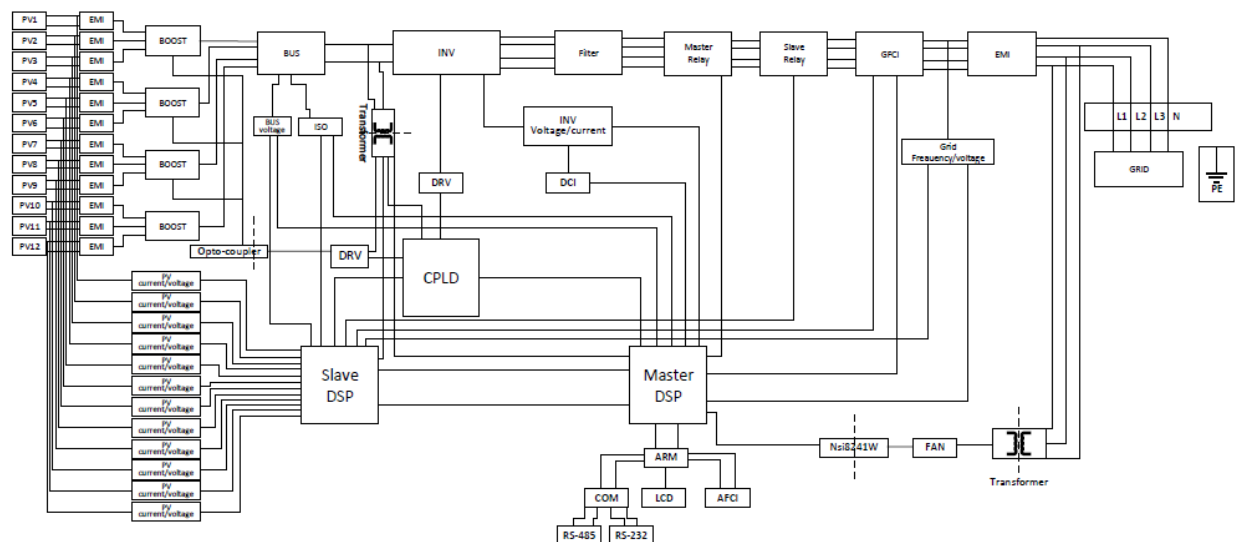
The changes have no effect on the tests of the original report.

Model difference:

The models C6-75K-T6, C6-100K-T9, C6-110K-T12, C6-125K-T12, C6-75K-T6-40, C6-100K-T9-40, C6-110K-T12-40, C6-125K-T12-40 are same as the construction and hardware excepted the different as below table and the output power are different with adjusted by software. Details can be found below:

Model	C6-75K-T6 C6-75K-T6-40	C6-100K-T9 C6-100K-T9-40	C6-110K-T12 C6-110K-T12-40	C6-125K-T12 C6-125K-T12-40
Power board version	C6.212100-212136.MPB-I1 V1.0		C6.212100-212136.MPB-V V1.0	
Number of strings	2			
MPPT Chase number of trails	6	9	12	12
INV IGBT	F3L400R07W3S5_B59		30-FT07NIA450S51-PD68F58/ NXH450N65L4Q2F2S1G	
Boost IGBT	IKW40N120H3/ IKW40N120CS7/ SGT40U120FDR1P7/ JT040K120WED/ CRG40T120AK3SD/ MBQ40T120QESTH		10-PG123BA080SH11-LN68L33T/ 10-PG123BA080SH21-LN68L18T	
Max Output Current [A]	119.1	158.8	174.6	180.4
Rated Output Power [KW]	75	100	110	125

The system diagram block is shown as below:



Block diagram

Model list

Model list		C6-75K-T6	C6-75K-T6-40	C6-100K-T9	C6-100K-T9-40	C6-110K-T12	C6-110K-T12-40	C6-125K-T12	C6-125K-T12-40
PV INPUT	VMAX PV [Vdc]	1100							
	ISC PV [A]	6*45	6*50	9*45	9*50	12*45	12*50	12*45	12*50
	MPPT Voltage Range VMPP [Vdc]	180 ~ 1000							
	Max. Input Current I _{MAX} [A] (A/B) (each MPPT if more than 1)	6*30	6*40	9*30	9*40	12*30	12*40	12*30	12*40
	MPPT Full Power Voltage Range [Vdc]	550-850							
	Number of MPPT	6		9		12		12	
	String per MPPT	2		2		2		2	
	Backfeed Current [A]	0							
	Overvoltage Category(OVC)	II							
AC Side(ON-Grid)	Rated Output Voltage Ur [Vac]	3L/N/PE, 230/400							
	Rated Output Frequency FNETZ [Hz]	50/60							
	Rated Output Power PE [kW]	75		100		110		125	
	Max. Apparent power S _E max [VA]	82.5		110		121		125	
	Rated Output Current Ir [A]	108.3		144.3		158.8		180.4	
	Max. Output Current I _{max} [A]	119.1		158.8		174.6		180.4	
	Power Factor cosφ [λ]	0.8 leading~0.8 lagging							
	Efficiency max. η _{max}	98.8%							
	Efficiency Euro	98.5%							
	THD [V / I] (100% full power)	<3%							
	Acoustic Noise [dB]	<50							
	Overvoltage Category (OVC)	III							

Model list		C6-75K-T6	C6-75K-T6-40	C6-100K-T9	C6-100K-T9-40	C6-110K-T12	C6-110K-T12-40	C6-125K-T12	C6-125K-T12-40
CONSTRUCTION	Hardware [Version]	Control board:V1.2, IO board:V1.0, Main power board:V1.0, Boost drive board:V1.0, INV drive board:V1.0 ARM board:V1.4, PV Input board:V1.2, AC output board:V1.4, Electric capacity board:V1.0, Lightning protection board:V1.0, Communication board: V1.1, Display board:V1.3							
	Firmware [Version]	V0.082							
	Array Insulation Resistance Detection [Ω]	150K							
	Type of inverter	Non-isolated							
	Separated by	Transformer less							
	Type of NS Protection	Integrated							
	Protective Class	Class I							
	Enclosure Protection (IP)	IP66							
	Operating Temperature Range [$^{\circ}\text{C}$]	-30 $^{\circ}\text{C}$ to +60 $^{\circ}\text{C}$ (45 $^{\circ}\text{C}$ to 60 $^{\circ}\text{C}$ with derating)							
	Pollution degree (PD)	PD3							
	Altitude [m]	2000							
	Size [mm]	660*1045*364							
	Weight [kg]	93				98			

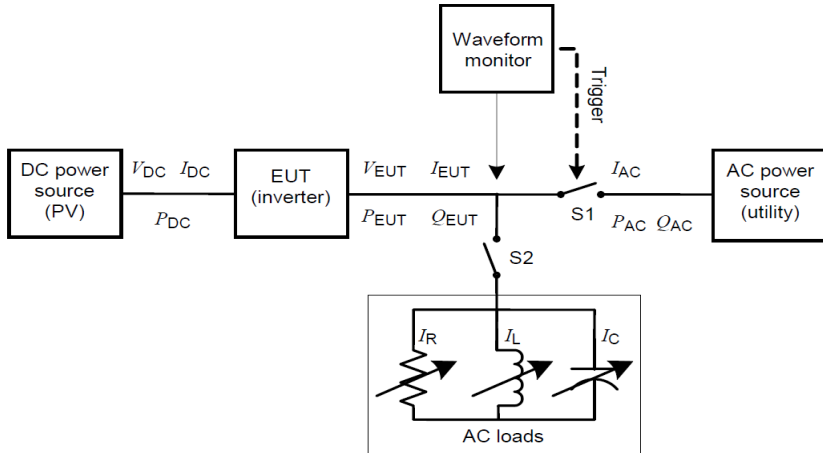
IEC 61727: 2004			
Clause	Requirement – Test	Result - Remark	Verdict
4	Utility compatibility	See below.	P
	The quality of power provided by the PV system for the on-site AC loads and for power delivered to the utility is governed by practices and standards on voltage, flicker, frequency, harmonics and power factor. Deviation from these standards represents out-of-bounds conditions and may require the PV system to sense the deviation and properly disconnect from the utility system.	Compliance.	P
	All power quality parameters (voltage, flicker, frequency, harmonics, and power factor) must be measured at the utility interface/ point of common coupling unless otherwise specified. NOTE Balancing phase currents in multiphase systems is desirable.		P
4.1	Voltage, current and frequency	See below.	P
	The PV system AC voltage, current and frequency shall be compatible with the utility system.	See appended table 4.1.	P
4.2	Normal voltage operating range	See below.	P
	Utility-interconnected PV systems do not normally regulate voltage, they inject current into the utility. Therefore, the voltage operating range for PV inverters is selected as a protection function that responds to abnormal utility conditions, not as a voltage regulation function.	Compliance.	P
4.3	Flicker	See below.	P
	The operation of the PV system should not cause voltage flicker in excess of limits stated in the relevant sections of IEC 61000-3-3 for systems less than 16 A or IEC 61000-3-5 for systems with current of 16 A and above.	See appended table 4.3.	P
4.4	DC injection	See appended table 4.4.	P
	The PV system shall not inject DC current greater than 1% of the rated inverter output current, into the utility AC interface under any operating condition.		P
4.5	Normal frequency operating range	See below.	P
	The PV system shall operate in synchronism with the utility system, and within the frequency trip limits defined in 5.2.2.	Compliance.	P
4.6	Harmonics and waveform distortion	See below.	P
	Low levels of current and voltage harmonics are desirable; the higher harmonic levels increase the potential for adverse effects on connected	Compliance.	P

IEC 61727: 2004																			
Clause	Requirement – Test	Result - Remark	Verdict																
	equipment.																		
	Acceptable levels of harmonic voltage and current depend upon distribution system characteristics, type of service, connected loads/apparatus, and established utility practice.	Compliance.	P																
	The PV system output should have low current-distortion levels to ensure that no adverse effects are caused to other equipment connected to the utility system.	Compliance.	P																
	Total harmonic current distortion shall be less than 5% at rated inverter output. Each individual harmonic shall be limited to the percentages listed in Table 1.	See appended table 4.6.	P																
	Even harmonics in these ranges shall be less than 25% of the lower odd harmonic limits listed.	See appended table 4.6.	P																
	Table 1-Current distortion limits <table><tr><th>Odd harmonics</th><th>Distortion limit</th></tr><tr><td>3rd through 9th</td><td>Less than 4.0%</td></tr><tr><td>11th through 15th</td><td>Less than 2.0%</td></tr><tr><td>17th through 21st</td><td>Less than 1.5%</td></tr><tr><td>23rd through 33rd</td><td>Less than 0.6%</td></tr><tr><th>Even harmonics</th><th>Distortion limit</th></tr><tr><td>2rd through 8th</td><td>Less than 1.0%</td></tr><tr><td>10th through 32nd</td><td>Less than 0.5%</td></tr></table> NOTE Testing harmonics is very problematic, since voltage distortion may feed to enhanced current distortion. The harmonic current injection should be exclusive of any harmonic currents due to harmonic voltage distortion present in the utility grid without the PV system connected. Type tested inverters meeting the above requirements should be deemed to comply without further testing.		Odd harmonics	Distortion limit	3 rd through 9 th	Less than 4.0%	11 th through 15 th	Less than 2.0%	17 th through 21 st	Less than 1.5%	23 rd through 33 rd	Less than 0.6%	Even harmonics	Distortion limit	2 rd through 8 th	Less than 1.0%	10 th through 32 nd	Less than 0.5%	P
Odd harmonics	Distortion limit																		
3 rd through 9 th	Less than 4.0%																		
11 th through 15 th	Less than 2.0%																		
17 th through 21 st	Less than 1.5%																		
23 rd through 33 rd	Less than 0.6%																		
Even harmonics	Distortion limit																		
2 rd through 8 th	Less than 1.0%																		
10 th through 32 nd	Less than 0.5%																		
4.7	Power factor	See below.	P																
	The PV system shall have a lagging power factor greater than 0.9 when the output is greater than 50% of the rated inverter output power. NOTE 1 Specially designed systems that provide reactive power compensation may operate outside of this limit with utility approval. NOTE 2 Most PV inverters designed for utility-interconnected service operate close to unity power factor.	See appended table 4.7.	P																
5	Personnel safety and equipment protection	See below.	P																
	This Clause provides information and considerations for the safe and proper operation of the utility-connected PV systems. NOTE 1 The protection function may be provided as an internal or external device in the system.	Installation, operation and maintain manual provided in English.	P																

IEC 61727: 2004			
Clause	Requirement – Test	Result - Remark	Verdict
	NOTE 2 IEC 60364-5-55 or national or local codes may be applicable.		
5.1	Loss of utility voltage	See below.	P
	To prevent islanding, a utility connected PV system shall cease to energize the utility system from a de-energized distribution line irrespective of connected loads or other generators within specified time limits.	See clause 5.3.	P
	A utility distribution line can become de-energized for several reasons. For example, a substation breaker opening due to fault conditions or the distribution line switched out during maintenance.		N/A
	If inverters (single or multiple) have DC SELV input and have accumulated power below 1 kw then no mechanical disconnect (relay) is required.		N/A
5.2	Over/under voltage and frequency	See below.	P
	Abnormal conditions can arise on the utility system that require a response from the connected photovoltaic system. This response is to ensure the safety of utility maintenance personnel and the general public, as well as to avoid damage to connected equipment, including the photovoltaic system. The abnormal utility conditions of concern are voltage and frequency excursions above or below the values stated in this Clause, and the complete disconnection of the utility, presenting the potential for a distributed resource island.	Compliance.	P
5.2.1	Over/under voltage	See below.	P
	When the interface voltage deviates outside the conditions specified in Table 2, the photovoltaic system shall cease to energize the utility distribution system. This applies to any phase of a multiphase system.	See appended table 5.2.1.	P
	All discussions regarding system voltage refer to the local nominal voltage.	Compliance.	P
	The system shall sense abnormal voltage and respond. The following conditions should be met, with voltages in RMS and measured at the point of utility connection.	Compliance.	P

IEC 61727: 2004															
Clause	Requirement – Test	Result - Remark	Verdict												
	Table 2 – Response to abnormal voltages <table><thead><tr><th>Voltage (at point of utility connection)</th><th>Maximum trip time*</th></tr></thead><tbody><tr><td>$V < 0,5 \times V_{\text{nominal}}$</td><td>0,1 s</td></tr><tr><td>$50 \% \leq V < 85 \%$</td><td>2,0 s</td></tr><tr><td>$85 \% \leq V \leq 110 \%$</td><td>Continuous operation</td></tr><tr><td>$110 \% < V < 135 \%$</td><td>2,0 s</td></tr><tr><td>$135 \% \leq V$</td><td>0,05 s</td></tr></tbody></table> * Trip time refers to the time between the abnormal condition occurring and the inverter ceasing to energize the utility line. The PV system control circuits shall actually remain connected to the utility to allow sensing of utility electrical conditions for use by the "reconnect" feature.	Voltage (at point of utility connection)	Maximum trip time*	$V < 0,5 \times V_{\text{nominal}}$	0,1 s	$50 \% \leq V < 85 \%$	2,0 s	$85 \% \leq V \leq 110 \%$	Continuous operation	$110 \% < V < 135 \%$	2,0 s	$135 \% \leq V$	0,05 s		
Voltage (at point of utility connection)	Maximum trip time*														
$V < 0,5 \times V_{\text{nominal}}$	0,1 s														
$50 \% \leq V < 85 \%$	2,0 s														
$85 \% \leq V \leq 110 \%$	Continuous operation														
$110 \% < V < 135 \%$	2,0 s														
$135 \% \leq V$	0,05 s														
	The purpose of the allowed time delay is to ride through short-term disturbances to avoid excessive nuisance tripping. The unit does not have to cease to energize if the voltage returns to the normal utility continuous operation condition within the specified trip time. NOTE The voltage drop between the inverter terminals and the point of connection with the utility should be taken into consideration.	Compliance.	P												
5.2.2	Over/under frequency	See below.	P												
	When the utility frequency deviates outside the specified conditions the photovoltaic system shall cease to energize the utility line. The unit does not have to cease to energize if the frequency returns to the normal utility continuous operation condition within the specified trip time.	See appended table 5.2.1.	P												
	When the utility frequency is outside the range of $\pm 1\text{Hz}$, the system shall cease to energize the utility line within 0.2 s. The purpose of the allowed range and time delay is to allow continued operation for short-term disturbances and to avoid excessive nuisance tripping in weak-utility system conditions.	Compliance.	P												
5.3	Islanding protection	See below.	P												
	The PV system must cease to energize the utility line within 2s of loss of utility. NOTE The issues of non-islanding inverter are the subject of another standard under consideration.	The test procedure fulfill IEC 62116. See appended table 6.1.	P												
5.4	Response to utility recovery	See below.	P												
	Following an out-of-range utility condition that has caused the photovoltaic system to cease energizing, the photovoltaic system shall not energize the utility line for 20s to 5min after the utility service voltage and frequency have recovered to within the specified ranges. NOTE The energizing delay is dependent on local conditions.	The recovery time has measured after voltage or frequency out of the range.	P												

IEC 61727: 2004			
Clause	Requirement – Test	Result - Remark	Verdict
5.5	Earthing		P
	The utility interface equipment shall be earthed/grounded in accordance with IEC 60364-7-712.	Compliance.	P
5.6	Short circuit protection		P
	The photovoltaic system shall have short-circuit protection in accordance with IEC 60364-7-712.	Circuit breakers are installed on both DC and AC sides to protect short circuit.	P
5.7	Isolation and switching		P
	A method of isolation and switching shall be provided in accordance with IEC 60364-7-712.		P

IEC/EN 62116: 2014			
Clause	Requirement – Test	Result - Remark	Verdict
4	Testing circuit	Compliance.	P
	 DC power source (PV) V_{DC} I_{DC} P_{DC} EUT (inverter) V_{EUT} I_{EUT} P_{EUT} Q_{EUT} Waveform monitor Trigger I_{AC} P_{AC} Q_{AC} AC power source (utility) S1 S2 AC loads I_R I_L I_C	P	
IEC 1567/08			

5	Testing equipment	See below.	P
5.1	Measuring instruments	Compliance.	P
	Waveform observation shall be measured by a device with memory function, for example, a storage or digital oscilloscope or a high speed data acquisition system. The waveform measurement/capture device shall be able to record the waveform from the beginning of the islanding test until the EUT ceases to energize the island. For multi-phase EUT, all phases shall be monitored. A waveform monitor designed to detect and calculate the run-on time may be used.		P

IEC/EN 62116: 2014			
Clause	Requirement – Test	Result - Remark	Verdict
	For multi-phase EUT, the test and measurement equipment shall record each phase current and each phase-to-neutral or phase-to-phase voltage, as appropriate, to determine fundamental frequency active and reactive power flow over the duration of the test. A sampling rate of 10 kHz or higher is recommended. The minimum measurement accuracy shall be 1 % or less of rated EUT nominal output voltage and 1 % or less of rated EUT output current. Current, active power, and reactive power measurements through switch S1 used to determine the circuit balance conditions shall report the fundamental (50 Hz or 60 Hz) component.	Compliance.	P
5.2	DC power source	See below.	P
5.2.1	General		P
	A DC power source, such as a PV array simulator, a PV array, or a current and voltage limited DC power supply with series resistance may be used. If the EUT can operate in utility-interconnected mode from a storage battery, a DC power source may be used in lieu of a battery as long as the DC power source shall not be the limiting device as far as the maximum EUT input current is concerned. The DC power source shall provide voltage and current necessary to meet the testing requirements described in Clause 6.		P
5.2.2	PV array simulator	Compliance.	P
	A unit intended to be energized directly from a photovoltaic source shall be energized from a supply that simulates the current-voltage characteristics and time response of a photovoltaic array. The tests shall be conducted at the input voltage defined in Table 2 below, and the current shall be limited to 1,5 times the rated photovoltaic input current, except when specified otherwise by the test requirements.		P
5.2.3	Current and voltage limited DC power supply with series resistance		N/A
	A DC power source used as the EUT input source shall be capable of EUT maximum input power (so as to achieve EUT maximum output power) at minimum and maximum EUT input operating voltage.		N/A
	The power source should provide adjustable current and voltage limit, set to provide the desired short circuit current and open circuit voltage when combined with the series and shunt resistance described below.		N/A
	A series resistance (and, optionally, a shunt resistance) should be selected to provide a fill		N/A

IEC/EN 62116: 2014															
Clause	Requirement – Test	Result - Remark	Verdict												
	factor within the range shown in Table 2.														
5.2.4	PV array		N/A												
	A PV array used as the EUT input source shall be capable of EUT maximum input power at minimum and maximum EUT input operating voltage (see Table 3). Testing is limited to times when the irradiance varies by no more than 2 % over the duration of the test as measured by a silicon-type pyranometer or reference device. It may be necessary to adjust the array configuration to achieve the input voltage and power levels prescribed in 6.1.		N/A												
5.3	AC power source	Compliance.	P												
	<table><tr><th>Items</th><th>Conditions</th></tr><tr><td>Voltage</td><td>Nominal ± 2,0 %</td></tr><tr><td>Voltage THD</td><td>< 2,5 %</td></tr><tr><td>Frequency</td><td>Nominal ± 0,1 Hz</td></tr><tr><td>Phase angle distance ^a</td><td>120° ± 1,5°</td></tr><tr><td colspan="2">^a Three-phase case only.</td></tr></table>	Items	Conditions	Voltage	Nominal ± 2,0 %	Voltage THD	< 2,5 %	Frequency	Nominal ± 0,1 Hz	Phase angle distance ^a	120° ± 1,5°	^a Three-phase case only.			P
Items	Conditions														
Voltage	Nominal ± 2,0 %														
Voltage THD	< 2,5 %														
Frequency	Nominal ± 0,1 Hz														
Phase angle distance ^a	120° ± 1,5°														
^a Three-phase case only.															
5.4	AC loads	See below.	P												
	On the AC side of the EUT, variable resistance, capacitance, and inductance shall be connected in parallel as loads between the EUT and the AC power source. Other sources of load, such as electronic loads, may be used if it can be shown that the source does not cause results that are different than would be obtained with passive resistors, inductors, and capacitors.	Compliance.	P												
	All AC loads shall be rated for and adjustable to all test conditions. The equations for Q_f are based upon an ideal parallel RLC circuit. For this reason, non-inductive resistors, low loss (high Q_f) inductors, and capacitors with low effective series resistance and effective series inductance shall be utilized in the test circuit. Iron core inductors, if used, shall not exceed a current THD of 2 % when operated at nominal voltage. Load components should be conservatively rated for the voltage and power levels expected. Resistor power ratings should be chosen so as to minimize thermally-induced drift in resistance values during the course of the test.	Compliance.	P												
	Active and reactive power should be calculated (using the measurements provided in Table 1) in each of the R, L and C legs of the load so that these parasitic parameters (and parasitics	Calculated. See appended table for detail.	P												

IEC/EN 62116: 2014			
Clause	Requirement – Test	Result - Remark	Verdict
	introduced by variacs or autotransformers) are properly accounted for when calculating Q_f .		

6	Test for single or multi-phase inverter	See below.	P
6.1	Test procedure	Compliance.	P
	The following test is designed for an EUT consisting of a single or multi-phase inverter ¹ . The test uses an RLC load, resonant at the EUT nominal frequency (50 Hz or 60 Hz) and matched to the EUT output power. For a multi-phase EUT, the load shall be balanced across all phases and the switch S1 as in Figure 1 shall open all phases ² . This test shall be performed with the EUT conditions as in Table 5, where power and voltage values are given as a percent of EUT full output rating.	50Hz, three phase EUT.	P
	EUT settings for voltage and frequency trip parameters (magnitude and timing) can affect the measured run-on time. Passing this test verifies that the unit will provide adequate islanding protection for the settings tested as well as for tighter settings (e.g., an EUT that passes the test with frequency trip settings of $\pm 1,5$ Hz of nominal should also trip within the maximum measured run-on time for settings of, say, $\pm 0,5$ Hz.) Conversely, when adjusted to settings outside of those tested, the EUT may experience extended run-on times. Frequency settings of $\pm 1,5$ Hz around nominal frequency and voltage settings of ± 15 % around nominal voltage, for the purposes of this test procedure, should be wide enough to address the majority of utility requirements. Note that as trip settings are widened, more aggressive active antiislanding schemes may be required that could negatively impact power quality.	Voltage and frequency trip parameters are set according to the requirements of IEC 61727: 2004.	P

IEC/EN 62116: 2014																				
Clause	Requirement – Test		Result - Remark	Verdict																
	<table><tr><th>Condition</th><th>EUT output power, P_{EUT}</th><th>EUT input voltage ^c</th><th>EUT trip settings ^d</th></tr><tr><td>A</td><td>Maximum ^a</td><td>> 75 % of rated input voltage range</td><td>Voltage and frequency trip settings according to National standards and/or local code</td></tr><tr><td>B</td><td>50 % to 66 % of maximum</td><td>50 % of rated input voltage range, ± 10 %</td><td>Voltage and frequency trip settings according to National standards and/or local code</td></tr><tr><td>C</td><td>25 % to 33 % ^b of maximum</td><td>< 20 % of rated input voltage range</td><td>Voltage and frequency trip settings according to National standards and/or local code</td></tr></table>			Condition	EUT output power, P_{EUT}	EUT input voltage ^c	EUT trip settings ^d	A	Maximum ^a	> 75 % of rated input voltage range	Voltage and frequency trip settings according to National standards and/or local code	B	50 % to 66 % of maximum	50 % of rated input voltage range, ± 10 %	Voltage and frequency trip settings according to National standards and/or local code	C	25 % to 33 % ^b of maximum	< 20 % of rated input voltage range	Voltage and frequency trip settings according to National standards and/or local code	P
	Condition	EUT output power, P_{EUT}	EUT input voltage ^c	EUT trip settings ^d																
	A	Maximum ^a	> 75 % of rated input voltage range	Voltage and frequency trip settings according to National standards and/or local code																
	B	50 % to 66 % of maximum	50 % of rated input voltage range, ± 10 %	Voltage and frequency trip settings according to National standards and/or local code																
	C	25 % to 33 % ^b of maximum	< 20 % of rated input voltage range	Voltage and frequency trip settings according to National standards and/or local code																
	^a Maximum EUT output power condition should be achieved using the maximum allowable input power. Actual output power may exceed nominal rated output.																			
	^b Or minimum allowable EUT output level if greater than 33 %.																			
	^c Based on EUT rated input operating range. For example, if range is between X volts and Y volts, 75 % of range = $X + 0.75 \times (Y - X)$. Y shall not exceed $0.8 \times$ EUT maximum system voltage (i.e., maximum allowable array open circuit voltage). In any case, the EUT should not be operated outside of its allowable input voltage range.																			
	^d The manufacturer shall specify the applicable standard, code or utility based trip settings with which the unit shall be tested. The manufacturer may also choose more stringent trip settings to demonstrate compatibility with a greater number of utility requirements. The recommended settings shown below should address the majority of utility requirements.																			
	<table><tr><th>Parameter</th><th>Magnitude</th><th>Timing s</th></tr><tr><td>Over voltage</td><td>115 % of nominal voltage</td><td>2</td></tr><tr><td>Under voltage</td><td>85 % of nominal voltage</td><td>2</td></tr><tr><td>Over frequency</td><td>1,5 Hz above nominal frequency</td><td>1</td></tr><tr><td>Under frequency</td><td>1,5 Hz below nominal frequency</td><td>1</td></tr></table>			Parameter	Magnitude	Timing s	Over voltage	115 % of nominal voltage	2	Under voltage	85 % of nominal voltage	2	Over frequency	1,5 Hz above nominal frequency	1	Under frequency	1,5 Hz below nominal frequency	1		
Parameter	Magnitude	Timing s																		
Over voltage	115 % of nominal voltage	2																		
Under voltage	85 % of nominal voltage	2																		
Over frequency	1,5 Hz above nominal frequency	1																		
Under frequency	1,5 Hz below nominal frequency	1																		
If fast over and under voltage and frequency settings are provided, similarly extended values should also be specified by the manufacturer.																				
6.2	Pass/fail criteria		See below.	P																
	An EUT is considered to comply with the requirements for islanding protection when each case of recorded run-on time is less than 2 s or meets the requirements of local codes.		Compliance.	P																

7	Documentation		P
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Annex A (informative)	Islanding as it applies to PV systems		P
A.1	General		P
A.2	Impact of distortion on islanding		P
Annex B (informative)	Test for independent islanding detection device (relay)	Test with inverter.	N/A
B.1	General		N/A
B.2	Testing circuit		N/A
B.3	Testing equipment		N/A

IEC/EN 62116: 2014			
Clause	Requirement – Test	Result - Remark	Verdict
B.3.1	General		N/A
B.3.2	AC input source		N/A
B.4	Testing procedure		N/A
B.5	Documentation		N/A
Annex C (informativ e)	Gate blocking signal		N/A
C.1	General		N/A
C.2	Gate blocking signal used in photovoltaic systems		N/A
C.3	Monitoring the gate blocking signal		N/A

4.1	TABLE: Voltage, current and frequency								P
Power conditions	I/P rated	PV / DC Input			O/P rated	Grid / AC Output			
	I [A]	U [V]	I [A]	P [kW]	I [A]	U [V]	I [A]	P [kW]	Fre. [Hz]
C6-75K-T6									
(10±5)%	--	600.7	14.42	7.84	108.3	230.2	11.43	2.53	50
						230.2	11.36	2.51	50
						230.3	11.20	2.48	50
(50±5)%	--	598.9	64.47	38.39	108.3	230.5	54.52	12.53	50
						230.6	54.66	12.56	50
						230.6	54.12	12.44	50
(100±5)%	--	599.0	128.82	77.01	108.3	231.1	108.61	25.06	50
						231.0	108.53	25.05	50
						231.2	108.04	24.94	50
C6-125K-T12									
(10±5)%	--	595.6	25.51	12.93	180.4	230.3	18.10	4.13	50
						230.2	18.29	4.18	50
						230.4	18.06	4.12	50
(50±5)%	--	599.9	107.52	64.11	180.4	231.0	90.03	20.78	50
						231.0	90.49	20.89	50
						231.1	90.27	20.84	50
(100±5)%	--	598.3	217.45	129.78	180.4	231.8	181.15	41.97	50
						231.7	181.76	42.11	50
						231.8	181.64	42.08	50
Note(s): Test on model C6-75K-T6 and C6-125K-T12 to represent all the other models.									

4.3		TABLE: Flicker				P
For Model C6-125K-T12						
PHASE A		Pst	dc(%)		dmax(%)	d(t)
	Limit	1.000	3.300		4.000	500
	1	Count 12/12 Complete Interval 00:00s/10:00s Element 1 Volt Range 300 V/50Hz Element1 Judgement Pass Un (Set) 230.000V Total Judgement Pass Freq (U1) 49.999Hz (Element1,2,3) Dmin 0.10%				
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
Plt= 0.076 , Limit=0.65						
PHASE B		Pst	dc(%)		dmax(%)	d(t)
	Limit	1.000	3.300		4.000	500
	1	Count 12/12 Complete Interval 00:00s/10:00s Element 2 Volt Range 300 V/50Hz Element2 Judgement Pass Un (Set) 230.000V Total Judgement Pass Freq (U2) 49.998Hz (Element1,2,3) Dmin 0.10%				
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
Plt= 0.048 , Limit=0.65						
PHASE C		Pst	dc(%)		dmax(%)	d(t)
	Limit	1.000	3.300		4.000	500
	1					
	2					

4

5

6

7

8

9

10

11

12

Count

Interval

12/12

00:00s/10:00s

Complete

Element

3

Volt Range

300 V/50Hz

Un (Set)

230.000V

Freq (U3)

49.999Hz

Dmin

0.10%

Element3

Total

Judgement

Pass

Judgement

Pass

	dc[%]	dmax[%]	d(t)[ms]	Pst	Plt
Limit	3.30	4.00	500	1.00	0.65
			3.30%		N:12
No. 1	0.021 Pass	0.274 Pass	0.0 Pass	0.125 Pass	
2	0.014 Pass	0.260 Pass	0.0 Pass	0.037 Pass	
3	0.019 Pass	0.264 Pass	0.0 Pass	0.036 Pass	
4	0.021 Pass	0.263 Pass	0.0 Pass	0.035 Pass	
5	0.018 Pass	0.259 Pass	0.0 Pass	0.035 Pass	
6	0.022 Pass	0.241 Pass	0.0 Pass	0.035 Pass	
7	0.016 Pass	0.255 Pass	0.0 Pass	0.036 Pass	
8	0.022 Pass	0.251 Pass	0.0 Pass	0.036 Pass	
9	0.019 Pass	0.266 Pass	0.0 Pass	0.036 Pass	
10	0.024 Pass	0.253 Pass	0.0 Pass	0.036 Pass	
11	0.020 Pass	0.265 Pass	0.0 Pass	0.036 Pass	
12	0.022 Pass	0.258 Pass	0.0 Pass	0.036 Pass	
Result	Pass	Pass	Pass	Pass	0.059 Pass

Plt= 0.059 , Limit=0.65

For Model C6-75K-T6

PHASE A

	Pst	dc(%)	dmax(%)	d(t)
Limit	1.000	3.300	4.000	500
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Count

Interval

12/12

00:00s/10:00s

Complete

Element

1

Volt Range

300 V/50Hz

Un (Set)

230.000V

Freq (U1)

49.999Hz

Dmin

0.10%

Element1

Total

Judgement

Pass

Judgement

Pass

	dc[%]	dmax[%]	d(t)[ms]	Pst	Plt
Limit	3.30	4.00	500	1.00	0.65
			3.30%		N:12
No. 1	0.006 Pass	0.105 Pass	0.0 Pass	0.464 Pass	
2	0.003 Pass	0.109 Pass	0.0 Pass	0.032 Pass	
3	0.011 Pass	0.103 Pass	0.0 Pass	0.031 Pass	
4	0.001 Pass	0.100 Pass	0.0 Pass	0.031 Pass	
5	0.001 Pass	0.100 Pass	0.0 Pass	0.031 Pass	
6	0.000 Pass	0.103 Pass	0.0 Pass	0.030 Pass	
7	0.005 Pass	0.105 Pass	0.0 Pass	0.031 Pass	
8	0.011 Pass	0.105 Pass	0.0 Pass	0.031 Pass	
9	0.007 Pass	0.101 Pass	0.0 Pass	0.032 Pass	
10	0.002 Pass	0.101 Pass	0.0 Pass	0.032 Pass	
11	0.008 Pass	0.118 Pass	0.0 Pass	0.031 Pass	
12	0.000 Pass	0.103 Pass	0.0 Pass	0.031 Pass	
Result	Pass	Pass	Pass	Pass	0.203 Pass

Plt= 0.203 , Limit=0.65

PHASE B		Pst	dc(%)	dmax(%)	d(t)
	Limit	1.000	3.300	4.000	500
	1				
	2				
	3				
	4				
	5				

6

7

8

9

10

11

12

Count

Interval

Element

Volt Range

Un (Set)

Freq (U2)

Dmin

12/12

00:00s/10:00s

Complete

Element2

Total

(Element1,2,3)

Judgement

Judgement

Pass

Pass

2

300 V/50Hz

230.000V

49.999Hz

0.10%

	dc[%]		dmax[%]		d(t)[ms]		Pst		Plt
Limit	3.30		4.00		500		1.00		0.65
					3.30%				N:12
No. 1	0.026	Pass	0.314	Pass	0.0	Pass	0.366	Pass	
2	0.024	Pass	0.324	Pass	0.0	Pass	0.038	Pass	
3	0.024	Pass	0.317	Pass	0.0	Pass	0.038	Pass	
4	0.019	Pass	0.299	Pass	0.0	Pass	0.038	Pass	
5	0.031	Pass	0.313	Pass	0.0	Pass	0.039	Pass	
6	0.020	Pass	0.318	Pass	0.0	Pass	0.038	Pass	
7	0.027	Pass	0.323	Pass	0.0	Pass	0.039	Pass	
8	0.025	Pass	0.320	Pass	0.0	Pass	0.038	Pass	
9	0.024	Pass	0.307	Pass	0.0	Pass	0.038	Pass	
10	0.020	Pass	0.293	Pass	0.0	Pass	0.039	Pass	
11	0.032	Pass	0.300	Pass	0.0	Pass	0.038	Pass	
12	0.022	Pass	0.305	Pass	0.0	Pass	0.039	Pass	
Result		Pass		Pass		Pass		Pass	0.161 Pass

Plt= 0.161 , Limit=0.65

PHASE C

		Pst	dc(%)		dmax(%)		d(t)	
Limit		1.000	3.300		4.000		500	
1								
2		Count 12/12 Complete						
3		Interval 00:00s/10:00s						
4		Element 3						
5		Volt Range 300 V/50Hz		Element3		Judgement		Pass
6		Un (Set) 230.000V		Total		Judgement		Pass
7		Freq (U3) 49.998Hz		(Element1,2,3)				
8		Dmin 0.10%						
9								
10								
11								
12								

Plt= 0.355 , Limit=0.65

Note(s):

- Maximum permissible voltage fluctuation (expressed as a percentage of nominal voltage at 100% power) and flicker. More than 16 A per phase according to IEC61000-3-11.
- Test on model C6-75K-T6 and C6-125K-T12 to represent all the other models.

4.4		TABLE: DC Injection						P
For model C6-75K-T6								
Power conditions		33%		66%		100%		
Limits		1%						
Measurement		[A]	[%]	[A]	[%]	[A]	[%]	
Test value	PHASE A	0.013	0.012	0.010	0.010	0.010	0.009	
	PHASE B	0.013	0.012	0.007	0.007	0.010	0.009	
	PHASE C	0.013	0.012	0.010	0.009	0.009	0.008	
For model C6-125K-T12								
Power conditions		33%		66%		100%		
Limits		1%						
Measurement		[A]	[%]	[A]	[%]	[A]	[%]	
Test value	PHASE A	0.255	0.142	0.196	0.109	0.337	0.187	
	PHASE B	0.334	0.185	0.355	0.197	0.285	0.158	
	PHASE C	0.239	0.132	0.338	0.188	0.288	0.160	
Note(s):								
If the inverter does not incorporate a mains frequency isolating transformer, it shall be type tested to ensure the dc output current at the ac terminals of the inverter is below the above limits at all power levels. Test on model C6-75K-T6 and C6-125K-T12 to represent all the other models.								

4.6	TABLE: Harmonics and waveform distortion (Current)				P
C6-75K-T6					
Phase A					
Harmonics	Measurements (At Rated Current) [%]			Limits [%]	Verdict
	33%	66%	100%		
THD (to the 50 th)	2.406	2.780	2.635	5	P
2 nd	0.368	0.381	0.291	1	P
3 rd	0.783	0.478	0.331	4	P
4 th	0.379	0.278	0.227	1	P
5 th	0.504	2.007	1.619	4	P
6 th	0.280	0.215	0.144	1	P
7 th	0.735	1.310	1.498	4	P
8 th	0.412	0.231	0.188	1	P
9 th	0.078	0.049	0.103	4	P
10 th	0.417	0.366	0.254	0.5	P
11 th	0.413	0.124	0.638	2	P
12 th	0.043	0.086	0.069	0.5	P

13 th	1.188	0.294	0.723	2	P
14 th	0.180	0.231	0.185	0.5	P
15 th	0.096	0.091	0.118	2	P
16 th	0.053	0.064	0.037	0.5	P
17 th	1.225	0.221	0.485	1.5	P
18 th	0.028	0.069	0.049	0.5	P
19 th	0.587	0.365	0.332	1.5	P
20 th	0.047	0.070	0.054	0.5	P
21 th	0.010	0.116	0.036	1.5	P
22 th	0.072	0.099	0.026	0.5	P
23 th	0.073	0.546	0.289	0.6	P
24 th	0.017	0.065	0.032	0.5	P
25 th	0.073	0.546	0.289	0.6	P
26 th	0.015	0.036	0.021	0.5	P
27 th	0.021	0.056	0.066	0.6	P
28 th	0.025	0.030	0.019	0.5	P
29 th	0.150	0.405	0.148	0.6	P
30 th	0.006	0.020	0.032	0.5	P
31 th	0.125	0.272	0.188	0.6	P
32 th	0.004	0.007	0.022	0.5	P
33 th	0.005	0.028	0.059	0.6	P
Phase B					
Harmonics	Measurements (At Rated Current) [100%]			Limits [%]	Verdict
	33%	66%	100%		
THD (to the 40 th)	2.553	2.603	2.537	5	P
2 nd	0.531	0.535	0.364	1	P
3 rd	0.446	0.233	0.134	4	P
4 th	0.699	0.598	0.403	1	P
5 th	0.616	1.701	1.493	4	P
6 th	0.095	0.045	0.050	1	P
7 th	0.963	1.296	1.404	4	P
8 th	0.420	0.256	0.191	1	P
9 th	0.114	0.049	0.054	4	P
10 th	0.329	0.319	0.120	0.5	P
11 th	0.411	0.194	0.603	2	P

12 th	0.084	0.100	0.043	0.5	P
13 th	1.304	0.402	0.817	2	P
14 th	0.203	0.281	0.201	0.5	P
15 th	0.049	0.037	0.017	2	P
16 th	0.061	0.050	0.105	0.5	P
17 th	1.180	0.279	0.501	1.5	P
18 th	0.043	0.050	0.060	0.5	P
19 th	0.628	0.288	0.428	1.5	P
20 th	0.057	0.107	0.054	0.5	P
21 th	0.027	0.024	0.059	1.5	P
22 th	0.098	0.028	0.037	0.5	P
23 th	0.061	0.490	0.299	0.6	P
24 th	0.020	0.022	0.025	0.5	P
25 th	0.061	0.490	0.299	0.6	P
26 th	0.032	0.030	0.036	0.5	P
27 th	0.007	0.021	0.020	0.6	P
28 th	0.030	0.022	0.026	0.5	P
29 th	0.143	0.362	0.160	0.6	P
30 th	0.006	0.012	0.020	0.5	P
31 th	0.124	0.346	0.161	0.6	P
32 th	0.014	0.011	0.041	0.5	P
33 th	0.007	0.011	0.023	0.6	P
Phase C					
Harmonics	Measurements (At Rated Current) [100%]			Limits [%]	Verdict
	33%	66%	100%		
THD (to the 40 th)	2.315	2.693	2.514	5	P
2 nd	0.532	0.483	0.354	1	P
3 rd	0.392	0.251	0.198	4	P
4 th	0.380	0.404	0.257	1	P
5 th	0.419	1.789	1.491	4	P
6 th	0.221	0.173	0.103	1	P
7 th	0.874	1.266	1.393	4	P
8 th	0.412	0.245	0.147	1	P
9 th	0.129	0.038	0.056	4	P
10 th	0.233	0.241	0.200	0.5	P

11 th	0.316	0.160	0.635	2	P
12 th	0.063	0.050	0.046	0.5	P
13 th	1.132	0.432	0.747	2	P
14 th	0.135	0.240	0.205	0.5	P
15 th	0.085	0.062	0.110	2	P
16 th	0.029	0.077	0.138	0.5	P
17 th	1.254	0.158	0.511	1.5	P
18 th	0.035	0.036	0.064	0.5	P
19 th	0.623	0.346	0.492	1.5	P
20 th	0.042	0.061	0.025	0.5	P
21 th	0.032	0.126	0.056	1.5	P
22 th	0.076	0.103	0.050	0.5	P
23 th	0.078	0.537	0.271	0.6	P
24 th	0.022	0.068	0.027	0.5	P
25 th	0.078	0.537	0.271	0.6	P
26 th	0.043	0.021	0.043	0.5	P
27 th	0.025	0.092	0.052	0.6	P
28 th	0.019	0.035	0.034	0.5	P
29 th	0.138	0.528	0.095	0.6	P
30 th	0.006	0.043	0.032	0.5	P
31 th	0.124	0.449	0.192	0.6	P
32 th	0.013	0.016	0.024	0.5	P
33 th	0.009	0.055	0.048	0.6	P
C6-125K-T12					
Phase A					
Harmonics	Measurements (At Rated Current) [%]			Limits [%]	Verdict
	33%	66%	100%		
THD (to the 40 th)	3.544	3.471	2.813	5	P
2 nd	0.470	0.307	0.225	1	P
3 rd	0.794	0.428	0.286	4	P
4 th	0.282	0.256	0.177	1	P
5 th	2.850	2.410	1.762	4	P
6 th	0.352	0.192	0.139	1	P
7 th	1.188	1.912	1.509	4	P
8 th	0.366	0.179	0.152	1	P

9 th	0.049	0.109	0.094	4	P
10 th	0.337	0.252	0.215	0.5	P
11 th	0.337	0.899	0.881	2	P
12 th	0.090	0.062	0.033	0.5	P
13 th	0.121	0.800	0.818	2	P
14 th	0.145	0.125	0.099	0.5	P
15 th	0.038	0.122	0.047	2	P
16 th	0.061	0.038	0.037	0.5	P
17 th	0.643	0.479	0.605	1.5	P
18 th	0.039	0.050	0.037	0.5	P
19 th	0.661	0.270	0.409	1.5	P
20 th	0.072	0.031	0.070	0.5	P
21 th	0.076	0.063	0.060	1.5	P
22 th	0.036	0.015	0.016	0.5	P
23 th	0.573	0.249	0.349	0.6	P
24 th	0.025	0.035	0.022	0.5	P
25 th	0.573	0.249	0.349	0.6	P
26 th	0.025	0.025	0.025	0.5	P
27 th	0.038	0.076	0.022	0.6	P
28 th	0.013	0.020	0.018	0.5	P
29 th	0.154	0.109	0.124	0.6	P
30 th	0.015	0.031	0.014	0.5	P
31 th	0.106	0.161	0.143	0.6	P
32 th	0.014	0.018	0.011	0.5	P
33 th	0.023	0.059	0.013	0.6	P
Phase B					
Harmonics	Measurements (At Rated Current) [%]			Limits [%]	Verdict
	33%	66%	100%		
THD (to the 50 th)	2.588	3.366	2.736	5	P
2 nd	0.823	0.467	0.278	1	P
3 rd	0.418	0.168	0.131	4	P
4 th	0.803	0.498	0.299	1	P
5 th	2.173	2.290	1.711	4	P
6 th	0.039	0.078	0.069	1	P
7 th	0.567	1.815	1.410	4	P

8 th	0.246	0.204	0.176	1	P
9 th	0.021	0.075	0.089	4	P
10 th	0.141	0.091	0.153	0.5	P
11 th	0.058	0.887	0.855	2	P
12 th	0.030	0.046	0.024	0.5	P
13 th	0.045	0.878	0.820	2	P
14 th	0.029	0.166	0.112	0.5	P
15 th	0.018	0.021	0.024	2	P
16 th	0.020	0.136	0.106	0.5	P
17 th	0.093	0.487	0.587	1.5	P
18 th	0.010	0.061	0.042	0.5	P
19 th	0.092	0.365	0.502	1.5	P
20 th	0.011	0.044	0.070	0.5	P
21 th	0.007	0.045	0.046	1.5	P
22 th	0.002	0.059	0.071	0.5	P
23 th	0.063	0.262	0.358	0.6	P
24 th	0.001	0.017	0.017	0.5	P
25 th	0.063	0.262	0.358	0.6	P
26 th	0.003	0.052	0.026	0.5	P
27 th	0.002	0.019	0.008	0.6	P
28 th	0.003	0.048	0.014	0.5	P
29 th	0.018	0.141	0.145	0.6	P
30 th	0.002	0.013	0.010	0.5	P
31 th	0.008	0.126	0.154	0.6	P
32 th	0.003	0.043	0.025	0.5	P
33 th	0.001	0.026	0.008	0.6	P
Phase C					
Harmonics	Measurements (At Rated Current) [%]			Limits [%]	Verdict
	33%	66%	100%		
THD (to the 50 th)	3.108	3.278	2.685	5	P
2 nd	0.658	0.380	0.228	1	P
3 rd	0.401	0.271	0.157	4	P
4 th	0.638	0.302	0.147	1	P
5 th	2.516	2.169	1.576	4	P
6 th	0.305	0.122	0.077	1	P

7 th	1.018	1.851	1.485	4	P
8 th	0.389	0.156	0.149	1	P
9 th	0.054	0.046	0.027	4	P
10 th	0.162	0.220	0.280	0.5	P
11 th	0.255	0.904	0.867	2	P
12 th	0.074	0.053	0.037	0.5	P
13 th	0.227	0.802	0.808	2	P
14 th	0.111	0.151	0.108	0.5	P
15 th	0.053	0.110	0.057	2	P
16 th	0.057	0.140	0.084	0.5	P
17 th	0.466	0.512	0.618	1.5	P
18 th	0.030	0.044	0.042	0.5	P
19 th	0.486	0.408	0.456	1.5	P
20 th	0.024	0.026	0.069	0.5	P
21 th	0.032	0.057	0.016	1.5	P
22 th	0.014	0.058	0.058	0.5	P
23 th	0.431	0.238	0.363	0.6	P
24 th	0.021	0.024	0.027	0.5	P
25 th	0.431	0.238	0.363	0.6	P
26 th	0.020	0.044	0.034	0.5	P
27 th	0.020	0.058	0.026	0.6	P
28 th	0.014	0.052	0.027	0.5	P
29 th	0.120	0.082	0.152	0.6	P
30 th	0.006	0.026	0.011	0.5	P
31 th	0.071	0.167	0.157	0.6	P
32 th	0.011	0.026	0.019	0.5	P
33 th	0.011	0.045	0.008	0.6	P

Note(s):

Test on model C6-75K-T6 and C6-125K-T12 to represent all the other models.

4.7		TABLE: Power Factor						P
For model C6-75K-T6								
Power conditions		(50±5) %	(60±5) %	(70±5) %	(80±5) %	(90±5) %	(100±5) %	
Limits		0.9 (leading / lagging)						
U [V]	L1-N	230.6	230.8	230.8	231.0	231.1	231.1	
U [V]	L2-N	230.5	230.7	230.7	230.9	231.0	231.0	
U [V]	L3-N	230.6	230.8	230.9	231.0	231.1	231.2	
I [A]	L1-N	54.28	65.11	75.68	86.58	97.28	108.32	
I [A]	L2-N	54.63	65.47	76.04	86.94	97.66	108.66	
I [A]	L3-N	54.38	65.23	75.83	86.76	97.54	108.53	
Fre. [Hz]		50.00	50.00	50.00	50.00	50.00	50.00	
P [W]		37618.3	45149.6	52491.7	60086.0	67540.4	75192.8	
Q [VA]		815.6	800.6	796.5	790.1	775.0	755.0	
S [VA]		37627.2	45156.7	52497.7	60091.2	67544.9	75196.6	
PF [λ]		1.000	1.000	1.000	1.000	1.000	1.000	
For model C6-125K-T12								
Power conditions		(50±5) %	(60±5) %	(70±5) %	(80±5) %	(90±5) %	(100±5) %	
Limits		0.9 (leading / lagging)						
U [V]	L1-N	231.0	231.1	231.3	231.5	231.7	231.8	
U [V]	L2-N	231.0	231.1	231.4	231.6	231.7	231.8	
U [V]	L3-N	231.0	231.2	231.4	231.6	231.6	231.7	
I [A]	L1-N	90.24	108.16	126.10	144.05	161.87	179.86	
I [A]	L2-N	90.60	108.51	126.49	144.46	162.29	180.32	
I [A]	L3-N	90.40	108.40	126.38	144.28	162.15	180.15	
Fre. [Hz]		50.00	50.00	50.00	50.00	50.00	50.00	
P [W]		62615.0	75084.7	87620.7	100164.3	112608.4	125180.2	
Q [VA]		770.0	751.0	714.5	686.7	642.7	582.4	
S [VA]		62619.8	75088.5	87623.7	100166.7	112610.2	125181.5	
PF [λ]		1.000	1.000	1.000	1.000	1.000	1.000	
Note(s): Test on model C6-75K-T6 and C6-125K-T12 to represent all the other models.								

5.2.1	TABLE: Over / Under Voltage				P
C6-125K-T12					
Rated voltage [Vrms]:		230V	Voltage accuracy [ΔV]:		1%Un
Frequency [Hz]		50	Rated recover time [s]:		20-300

Power condition:		☒ 100%		☐ (50-66)%		☐ (25-33)%	
Setting value U _N [Vrms]	Threshold / Trip value U [Vrms]						
	Measurements					Limits	
	M1	M2		M3			
L1-N: 115	114.6	114.6		114.7		U < 50%U _o	
L2-N: 115	114.6	114.6		114.6			
L3-N: 115	114.7	114.7		114.7			
L1-N: 195.5	195.2	195.5		195.3		50%U _o ≤U < 85%U _o	
L2-N: 195.5	195.4	195.1		195.2			
L3-N: 195.5	195.4	195.2		195.2			
L1-N: 253	253.6	253.8		253.6		110%U _o < U < 135%U _o	
L2-N: 253	253.7	253.7		253.7			
L3-N: 253	253.8	253.9		253.9			
L1-N: 310.5	310.3	310.3		310.3		135%U _o ≤ U	
L2-N: 310.5	310.1	310.3		310.3			
L3-N: 310.5	310.4	310.3		310.5			
Note(s): Increasing / Decreasing value ramp of 0.5V. (Voltage veracity < 0.1V).							
Trip U _o → U	Trip time [ms]					Recover time [s]	
	Measurements				Limits	Measurement	Limits
	Phases	M1	M2	M3			
U<50%U _o	L1-N:	14.50	14.50	14.75	100	73.50	20≤t≤300
	L2-N:	1.10	0.80	0.85		73.25	
	L3-N:	18.25	35.00	17.75		72.00	
50%U _o ≤U < 85%U _o	L1-N:	982.50	982.50	985.00	2000	74.50	20≤t≤300
	L2-N:	972.50	967.50	970.00		72.75	
	L3-N:	975.00	972.50	972.50		72.50	
110%U _o < U < 135%U _o	L1-N:	952.50	925.00	925.00	2000	75.00	20≤t≤300
	L2-N:	927.50	927.50	930.00		72.25	
	L3-N:	935.00	937.50	940.00		73.00	
135%U _o ≤ U	L1-N:	22.25	20.75	22.50	50	74.00	20≤t≤300
	L2-N:	31.00	28.50	30.00		73.00	
	L3-N:	38.50	35.00	38.00		73.75	
Note(s):							
Test on model C6-75K-T6 and C6-125K-T12 to represent all the other models.							

5.2.2	TABLE: Over / Under Frequency				P	
C6-125K-T12						
Rated voltage [Vrms]:	230		Frequency accuracy [ΔF]:	0.05Hz		
Frequency [Hz]	50		Rated recover time [s]:	20-300		
Power condition:	☒ 100%		☐ (50-66)%	☐ (25-33)%		
Setting value F _N [Hz]	Threshold / Trip value F [Hz]					
	Measurements				Limits	
	M1	M2	M3			
49.00	48.98	48.98	48.98	49.0		
51.00	51.00	50.99	51.00	51.0		
Note(s): Increasing / Decreasing value ramp of 0.01Hz, (Frequency veracity < 10 mHz).						
Trip F _O → F	Trip time [ms]				Recover time [s]	
	Measurements			Limits	Measurement	Limits
	M1	M2	M3			
F _N + ΔF → F _N - ΔF (F<49.0)	179.5	180.0	178.0	200	134.50	20≤t≤300
F _N - ΔF → F _N + ΔF (F>51.0)	165.0	165.5	167.0	200	134.75	20≤t≤300
Note(s): Test on model C6-75K-T6 and C6-125K-T12 to represent all the other models.						

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5.3		TABLE: Islanding Protection								
Power 100%										
Conditions		P _w [kW]		Q _L [kVA]		Q _c [kVA]		Q _f	Trip time [ms]	Limitation [ms]
PR: 90% PQ: 110%	L1:	39.50	L1:	47.55	L1:	43.20	1.15		176	2000
	L2:	39.40	L2:	48.35	L2:	43.40	1.16			2000
	L3:	39.15	L3:	47.90	L3:	43.55	1.17			2000
PR: 90% PQ: 105%	L1:	39.50	L1:	45.44	L1:	43.25	1.12		238	2000
	L2:	39.30	L2:	45.95	L2:	43.50	1.14			2000
	L3:	39.20	L3:	45.70	L3:	43.65	1.14			2000
PR: 90% PQ: 100%	L1:	39.45	L1:	43.40	L1:	43.25	1.10		1240	2000
	L2:	39.30	L2:	43.80	L2:	43.40	1.11			2000
	L3:	39.00	L3:	43.30	L3:	43.65	1.12			2000
PR: 90% PQ: 95%	L1:	39.55	L1:	41.40	L1:	43.50	1.07		287	2000
	L2:	39.25	L2:	41.90	L2:	43.70	1.09			2000
	L3:	39.15	L3:	41.35	L3:	43.85	1.09			2000
PR: 90% PQ: 90%	L1:	39.60	L1:	39.35	L1:	43.70	1.05		174	2000
	L2:	39.35	L2:	39.85	L2:	43.80	1.06			2000
	L3:	39.25	L3:	39.25	L3:	44.10	1.06			2000
PR: 95% PQ: 110%	L1:	41.05	L1:	46.75	L1:	42.55	1.09		191	2000
	L2:	41.10	L2:	47.65	L2:	42.85	1.10			2000
	L3:	40.90	L3:	47.15	L3:	43.00	1.10			2000
PR: 95% PQ: 90%	L1:	45.20	L1:	38.60	L1:	42.85	0.90		180	2000
	L2:	45.15	L2:	39.20	L2:	43.10	0.91			2000
	L3:	45.00	L3:	38.60	L3:	43.25	0.91			2000
PR: 100% PQ: 110%	L1:	42.75	L1:	46.40	L1:	42.20	1.04		195	2000
	L2:	42.75	L2:	47.30	L2:	42.45	1.05			2000
	L3:	42.50	L3:	46.80	L3:	42.55	1.05			2000
PR: 95% PQ: 105%	L1:	40.65	L1:	44.45	L1:	42.30	1.07		890	2000
	L2:	40.75	L2:	45.05	L2:	42.60	1.08			2000
	L3:	40.50	L3:	44.70	L3:	42.70	1.08			2000
PR: 95% PQ: 100%	L1:	40.80	L1:	42.55	L1:	42.45	0.10		1395	2000
	L2:	40.80	L2:	43.25	L2:	42.75	0.50			2000
	L3:	40.60	L3:	42.60	L3:	42.90	0.30			2000
PR: 95%	L1:	40.85	L1:	40.50	L1:	42.70	1.02		514	2000

PQ: 95%	L2:	40.95	L2:	41.15	L2:	42.95	1.03		2000
	L3:	40.70	L3:	40.45	L3:	43.05	1.03		2000
PR: 100% PQ: 105%	L1:	42.65	L1:	44.45	L1:	42.20	1.02	1232	2000
	L2:	42.85	L2:	45.05	L2:	42.55	1.02		2000
	L3:	42.45	L3:	44.65	L3:	42.60	1.03		2000
PR: 100% PQ: 100%	L1:	42.60	L1:	42.50	L1:	42.45	1.00	1980	2000
	L2:	42.65	L2:	43.25	L2:	42.65	1.01		2000
	L3:	42.50	L3:	42.40	L3:	42.85	1.00		2000
PR: 100% PQ: 95%	L1:	42.60	L1:	40.35	L1:	42.40	0.97	1196	2000
	L2:	42.55	L2:	40.95	L2:	42.65	0.98		2000
	L3:	42.55	L3:	40.25	L3:	42.85	0.98		2000
PR: 105% PQ: 105%	L1:	44.75	L1:	44.60	L1:	42.35	0.97	865	2000
	L2:	44.95	L2:	45.10	L2:	42.75	0.98		2000
	L3:	44.60	L3:	44.85	L3:	42.75	0.98		2000
PR: 105% PQ: 100%	L1:	44.80	L1:	42.60	L1:	42.40	0.95	1316	2000
	L2:	44.90	L2:	43.25	L2:	42.75	0.96		2000
	L3:	44.65	L3:	42.60	L3:	42.85	0.96		2000
PR: 105% PQ: 95%	L1:	44.75	L1:	40.35	L1:	42.45	0.93	430	2000
	L2:	44.85	L2:	41.00	L2:	42.70	0.93		2000
	L3:	44.70	L3:	40.20	L3:	42.80	0.93		2000
PR: 100% PQ: 90%	L1:	42.65	L1:	38.10	L1:	42.50	0.94	197	2000
	L2:	42.60	L2:	38.75	L2:	42.85	0.96		2000
	L3:	42.45	L3:	38.20	L3:	43.05	0.96		2000
PR: 105% PQ: 110%	L1:	44.85	L1:	46.40	L1:	42.30	0.99	194	2000
	L2:	44.95	L2:	47.45	L2:	42.60	1.00		2000
	L3:	44.70	L3:	46.75	L3:	42.60	1.00		2000
PR: 105% PQ: 90%	L1:	45.20	L1:	38.60	L1:	42.85	0.90	177	2000
	L2:	45.15	L2:	39.20	L2:	43.10	0.91		2000
	L3:	45.00	L3:	38.60	L3:	43.25	0.91		2000
PR: 110% PQ: 110%	L1:	47.20	L1:	46.75	L1:	42.65	0.95	175	2000
	L2:	47.15	L2:	47.60	L2:	42.85	0.96		2000
	L3:	46.95	L3:	47.15	L3:	43.00	0.96		2000
PR: 110% PQ: 105%	L1:	46.55	L1:	44.40	L1:	42.20	0.93	238	2000
	L2:	46.55	L2:	44.85	L2:	42.50	0.94		2000
	L3:	46.40	L3:	44.65	L3:	42.65	0.94		2000

PR: 110% PQ: 100%	L1:	46.40	L1:	42.30	L1:	42.20	0.91	299.3	2000
	L2:	46.70	L2:	43.05	L2:	42.55	0.92		2000
	L3:	46.25	L3:	42.10	L3:	42.50	0.92		2000
PR: 110% PQ: 95%	L1:	46.75	L1:	40.50	L1:	42.50	0.89	262	2000
	L2:	47.00	L2:	41.25	L2:	42.90	0.90		2000
	L3:	46.55	L3:	40.40	L3:	42.85	0.89		2000
PR: 110% PQ: 90%	L1:	47.10	L1:	38.65	L1:	42.90	0.87	166	2000
	L2:	46.95	L2:	39.25	L2:	43.10	0.88		2000
	L3:	46.95	L3:	38.65	L3:	43.35	0.87		2000
Power 66%									
Conditions	P _w [kW]		Q _L [kVA]		Q _c [kVA]		Q _f	Trip time [ms]	Limitation [ms]
PR: 100% PQ: 95%	L1:	28.05	L1:	27.10	L1:	28.15	0.99	210	2000
	L2:	27.90	L2:	26.85	L2:	27.80	0.98		2000
	L3:	27.95	L3:	26.80	L3:	27.80	0.98		2000
PR: 100% PQ: 96%	L1:	28.00	L1:	27.45	L1:	28.10	0.99	244	2000
	L2:	27.90	L2:	27.15	L2:	27.75	0.98		2000
	L3:	27.85	L3:	27.15	L3:	27.75	0.99		2000
PR: 100% PQ: 97%	L1:	28.15	L1:	27.70	L1:	28.15	0.99	248	2000
	L2:	27.90	L2:	27.40	L2:	27.80	0.99		2000
	L3:	27.90	L3:	27.45	L3:	27.80	0.99		2000
PR: 100% PQ: 98%	L1:	28.20	L1:	27.95	L1:	28.15	1.00	270	2000
	L2:	27.95	L2:	27.65	L2:	27.70	0.99		2000
	L3:	27.95	L3:	27.75	L3:	27.80	0.99		2000
PR: 100% PQ: 99%	L1:	28.15	L1:	28.30	L1:	28.15	1.00	682	2000
	L2:	27.95	L2:	27.95	L2:	27.75	1.00		2000
	L3:	28.00	L3:	28.00	L3:	27.80	1.00		2000
PR: 100% PQ: 100%	L1:	28.15	L1:	28.55	L1:	28.10	1.01	936	2000
	L2:	28.10	L2:	28.30	L2:	27.80	1.00		2000
	L3:	28.00	L3:	28.20	L3:	27.75	1.00		2000
PR: 100% PQ: 101%	L1:	28.05	L1:	28.80	L1:	28.00	1.01	456	2000
	L2:	27.95	L2:	28.40	L2:	27.65	1.00		2000
	L3:	27.85	L3:	28.40	L3:	27.60	1.01		2000
PR: 100% PQ: 102%	L1:	28.25	L1:	29.30	L1:	28.20	1.02	268	2000
	L2:	28.10	L2:	29.20	L2:	27.80	1.01		2000
	L3:	28.05	L3:	28.90	L3:	27.85	1.01		2000

PR: 100% PQ: 103%	L1:	28.25	L1:	29.60	L1:	28.20	1.02	245	2000
	L2:	28.10	L2:	29.45	L2:	27.75	1.02		2000
	L3:	28.05	L3:	29.20	L3:	27.80	1.02		2000
PR: 100% PQ: 104%	L1:	28.00	L1:	29.60	L1:	27.95	1.03	228	2000
	L2:	27.90	L2:	29.55	L2:	27.60	1.02		2000
	L3:	27.75	L3:	29.25	L3:	27.55	1.02		2000
PR: 100% PQ: 105%	L1:	28.20	L1:	30.05	L1:	28.10	1.03	192	2000
	L2:	28.10	L2:	30.00	L2:	27.75	1.03		2000
	L3:	28.00	L3:	29.60	L3:	27.70	1.02		2000
Power 33%									
Conditions	P _w [w]		Q _L [VA]		Q _C [VA]		Q _f	Trip time [ms]	Limitation [ms]
PR: 100% PQ: 95%	L1:	14.00	L1:	13.65	L1:	13.80	0.98	268	2000
	L2:	14.00	L2:	13.80	L2:	13.60	0.98		2000
	L3:	14.00	L3:	13.75	L3:	13.65	0.98		2000
PR: 100% PQ: 96%	L1:	13.95	L1:	13.85	L1:	13.75	0.99	500	2000
	L2:	13.90	L2:	13.90	L2:	13.55	0.99		2000
	L3:	13.95	L3:	13.90	L3:	13.60	0.99		2000
PR: 100% PQ: 97%	L1:	14.00	L1:	14.05	L1:	13.75	0.99	526	2000
	L2:	13.95	L2:	14.15	L2:	13.60	0.99		2000
	L3:	14.00	L3:	14.10	L3:	13.65	0.99		2000
PR: 100% PQ: 98%	L1:	14.00	L1:	14.15	L1:	13.75	1.00	540	2000
	L2:	14.00	L2:	14.30	L2:	13.60	1.00		2000
	L3:	14.00	L3:	14.20	L3:	13.65	0.99		2000
PR: 100% PQ: 99%	L1:	14.05	L1:	14.30	L1:	13.80	1.00	654	2000
	L2:	14.00	L2:	14.45	L2:	13.65	1.00		2000
	L3:	14.05	L3:	14.35	L3:	13.65	1.00		2000
PR: 100% PQ: 100%	L1:	14.10	L1:	14.40	L1:	13.80	1.00	806	2000
	L2:	14.05	L2:	14.45	L2:	13.60	1.00		2000
	L3:	14.10	L3:	14.45	L3:	13.65	1.00		2000
PR: 100% PQ: 101%	L1:	14.15	L1:	14.55	L1:	13.75	1.00	574	2000
	L2:	14.10	L2:	14.65	L2:	13.60	1.00		2000
	L3:	14.10	L3:	14.55	L3:	13.65	1.00		2000
PR: 100% PQ: 102%	L1:	14.10	L1:	14.70	L1:	13.80	1.01	536	2000
	L2:	14.05	L2:	14.80	L2:	13.60	1.01		2000
	L3:	14.05	L3:	14.70	L3:	13.65	1.01		2000

PR: 100% PQ: 103%	L1:	14.05	L1:	14.80	L1:	13.75	1.02	508	2000
	L2:	14.05	L2:	14.95	L2:	13.55	1.01		2000
	L3:	14.05	L3:	14.80	L3:	13.60	1.01		2000
PR: 100% PQ: 104%	L1:	14.10	L1:	15.00	L1:	13.75	1.02	450	2000
	L2:	14.10	L2:	15.10	L2:	13.60	1.02		2000
	L3:	14.05	L3:	14.90	L3:	13.65	1.02		2000
PR: 100% PQ: 105%	L1:	14.05	L1:	15.15	L1:	13.75	1.03	448	2000
	L2:	14.00	L2:	15.15	L2:	13.60	1.03		2000
	L3:	14.05	L3:	15.10	L3:	13.65	1.02		2000
Note(s): Test on model C6-125K-T12 to represent all the other models.									

End of test report

PHOTO DOCUMENTATION

CN22BUQD 002 attachment 1

for

Hybrid inverter

C6-75K-T6, C6-100K-T9, C6-110K-T12, C6-125K-T12

C6-75K-T6-40, C6-100K-T9-40, C6-110K-T12-40,

C6-125K-T12-40

Guangzhou Sanjing Electric Co., Ltd.



This documentation consists of 23 pages (excluding this cover page)

Model: see cover page



Figure 1. Front view

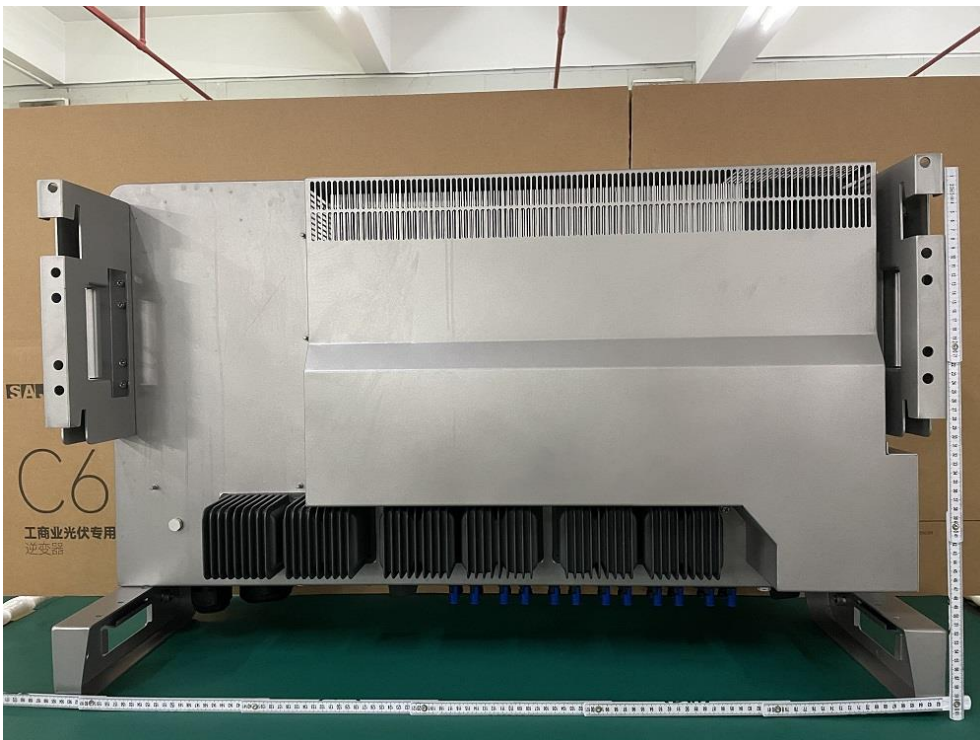


Figure 2. Back view

Model: see cover page

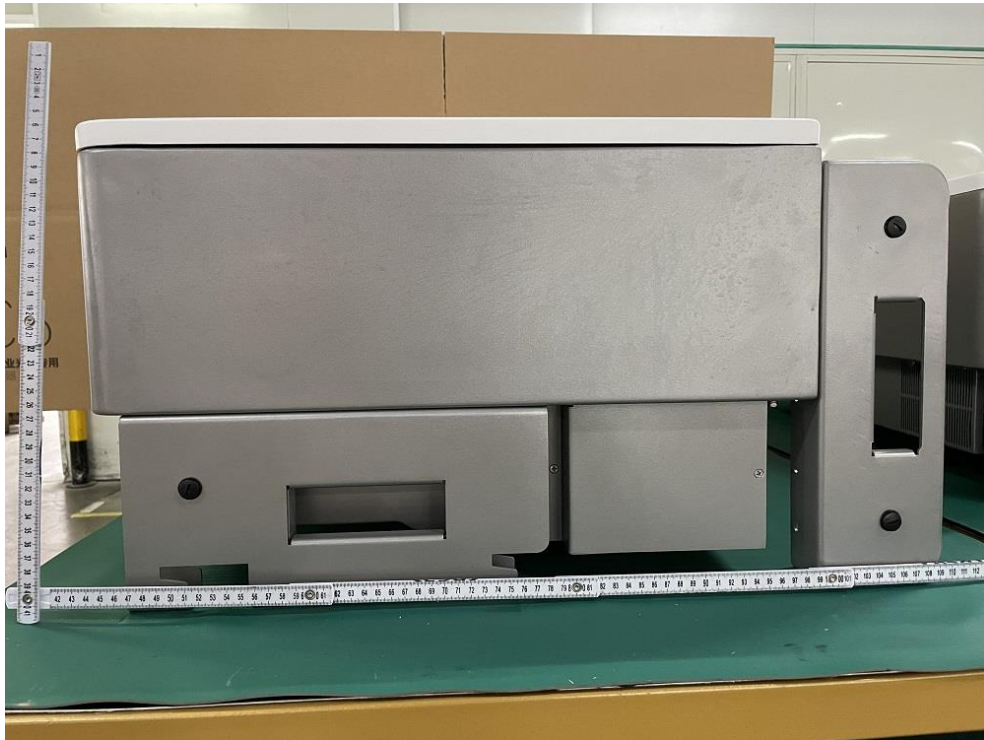


Figure 3. Left view



Figure 4. Right view

Model: see cover page



Figure 5. Top view



Figure 6. Connect view(C6-125K-T12, C6-110K-T12, C6-125K-T12-40, C6-110K-T12-40)

Model: see cover page



Figure 7. Connect view(C6-100K-T9, C6-100K-T9-40)



Figure 8. Connect view(C6-75K-T6, C6-75K-T6-40)

Model: see cover page



Figure 9. Internal ground view



Figure 10. External ground view

Model: see cover page

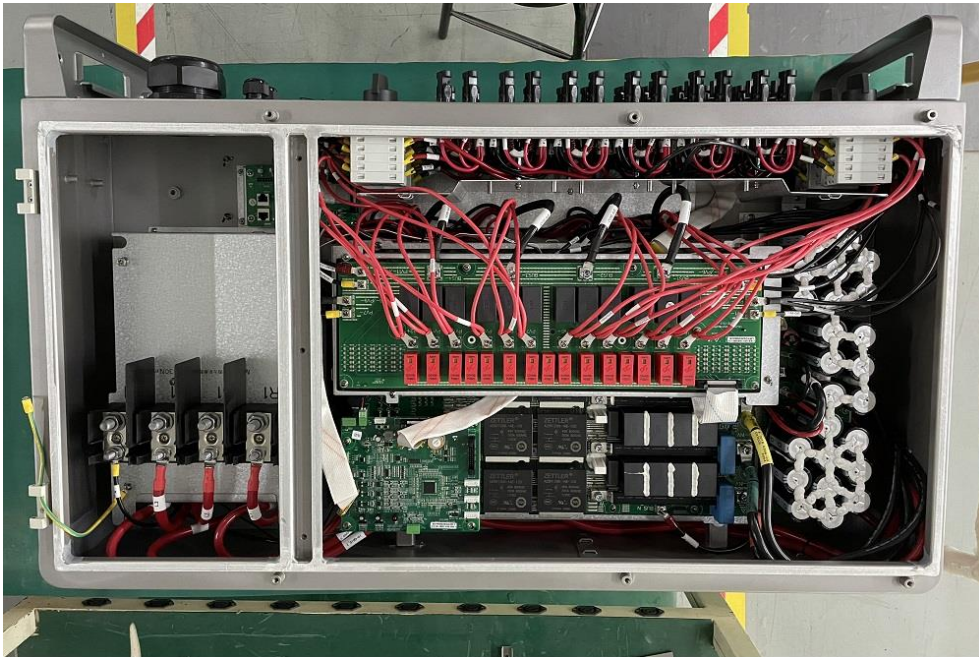


Figure 11. Internal view-1(C6-125K-T12, C6-110K-T12, C6-125K-T12-40, C6-110K-T12-40)



Figure 12. Internal view-2(C6-125K-T12, C6-110K-T12, C6-125K-T12-40, C6-110K-T12-40)

Model: see cover page

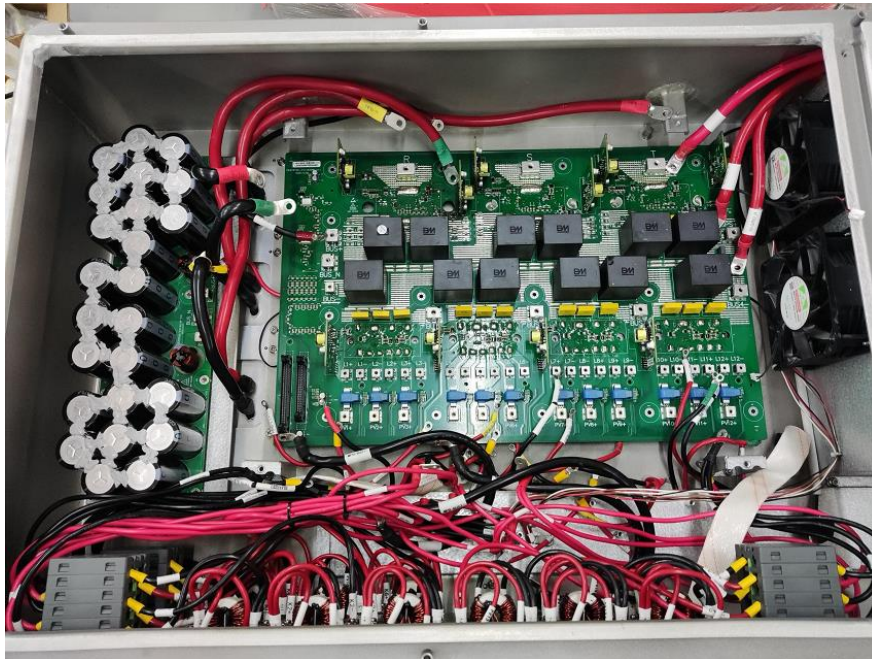


Figure 13. Internal view-3(C6-125K-T12, C6-110K-T12, C6-125K-T12-40, C6-110K-T12-40)



Figure 14. Internal view-1(C6-100K-T9, C6-75K-T6, C6-100K-T9-40, C6-75K-T6-40)

Model: see cover page

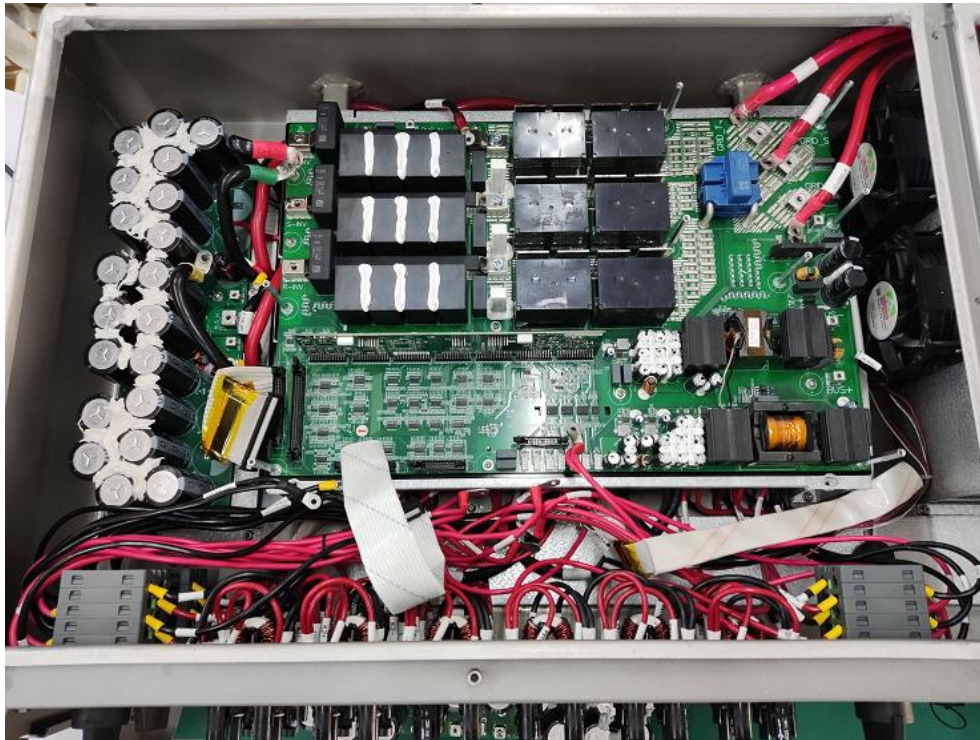


Figure 15. Internal view-2(C6-100K-T9, C6-75K-T6, C6-100K-T9-40, C6-75K-T6-40)



Figure 16. Internal view-3(C6-100K-T9, C6-75K-T6, C6-100K-T9-40, C6-75K-T6-40)

Model: see cover page

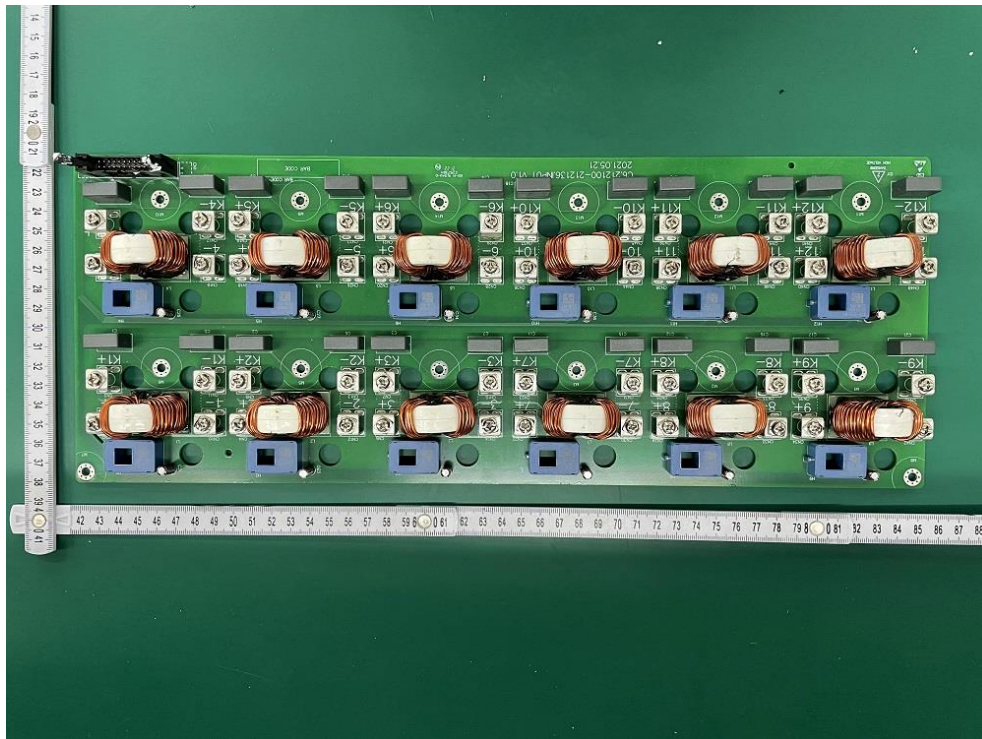


Figure 17. Front view of PV Input board
(C6-110K-T12, C6-125K-T12, C6-110K-T12-40, C6-125K-T12-40)

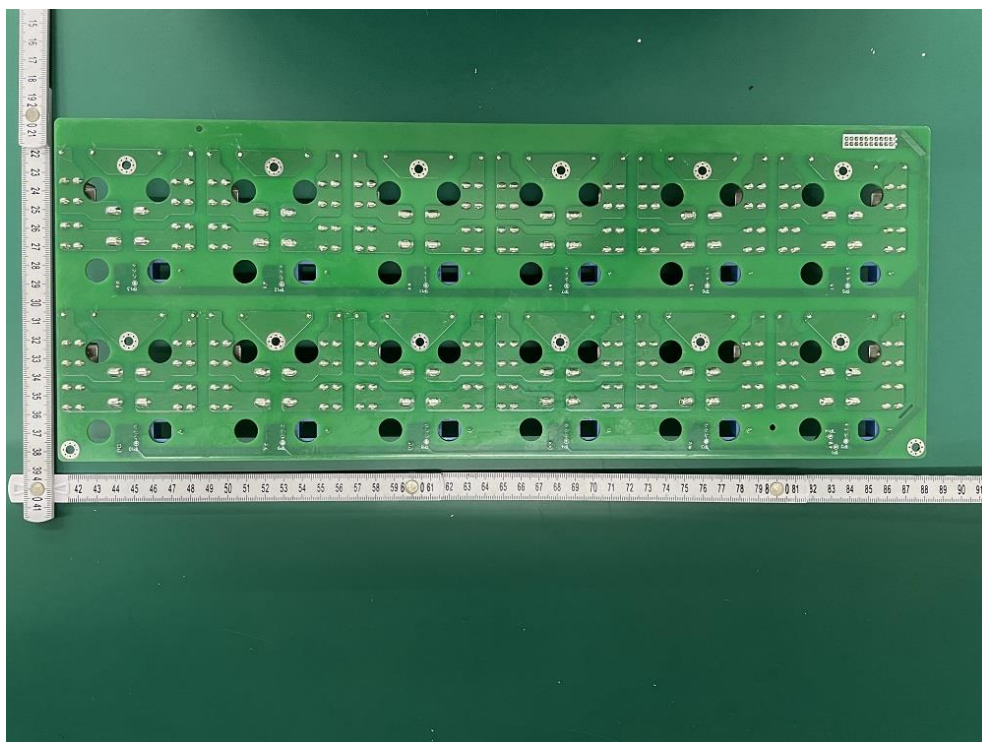


Figure 18. Back view of PV Input board
(C6-110K-T12, C6-125K-T12, C6-110K-T12-40, C6-125K-T12-40)

Model: see cover page

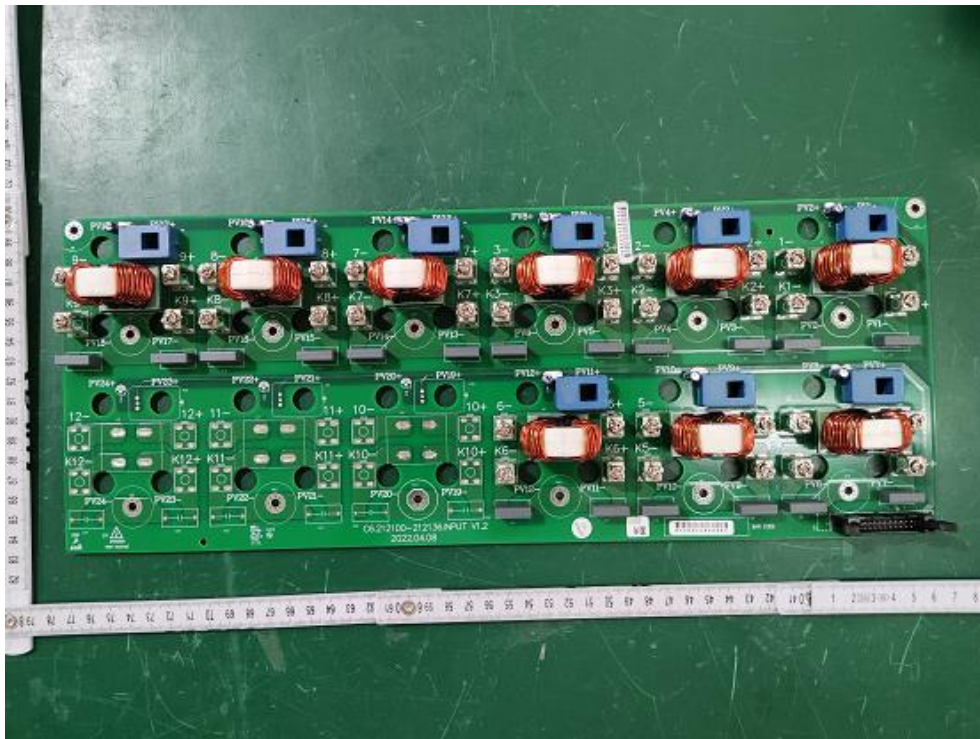


Figure 19. Front view of PV Input board(C6-100K-T9, C6-100K-T9-40)

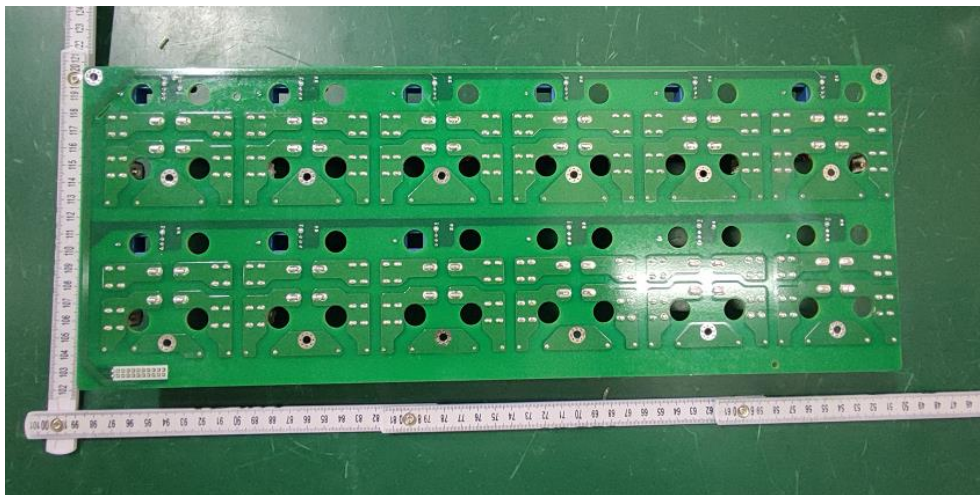


Figure 20. Back view of PV Input board(C6-100K-T9, C6-100K-T9-40)

Model: see cover page

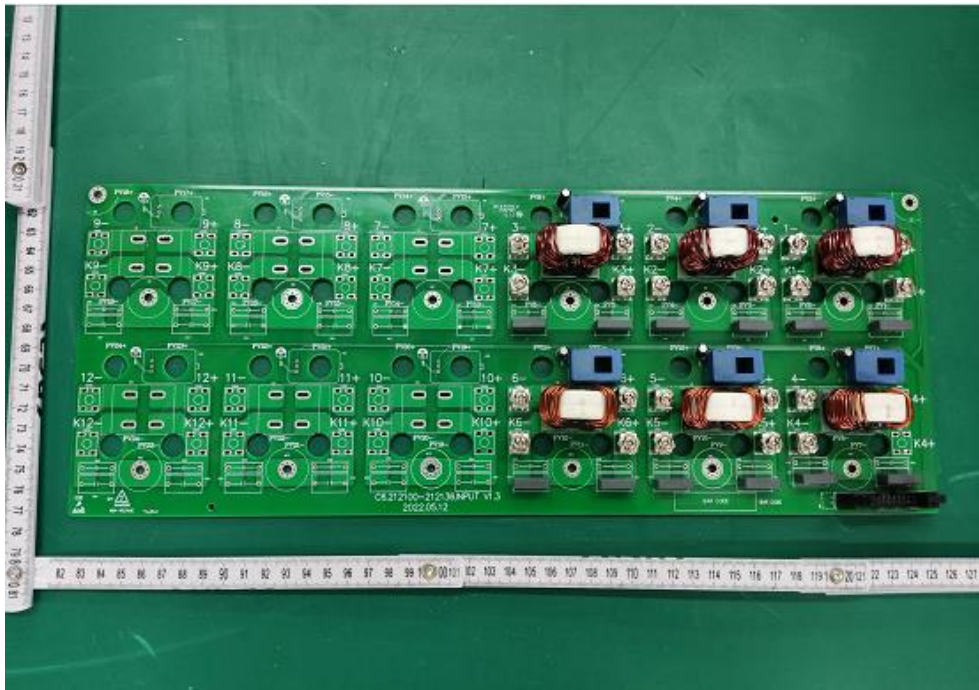


Figure 21. Front view of PV Input board(C6-75K-T6, C6-75K-T6-40)

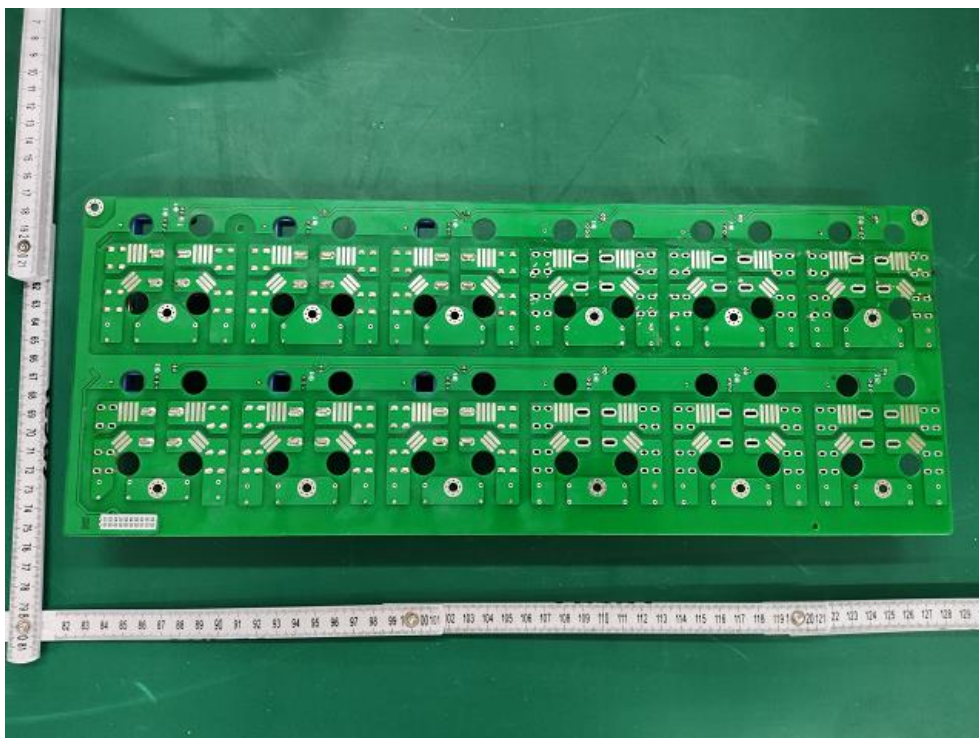


Figure 22. Back view of PV Input board(C6-75K-T6, C6-75K-T6-40)

Model: see cover page

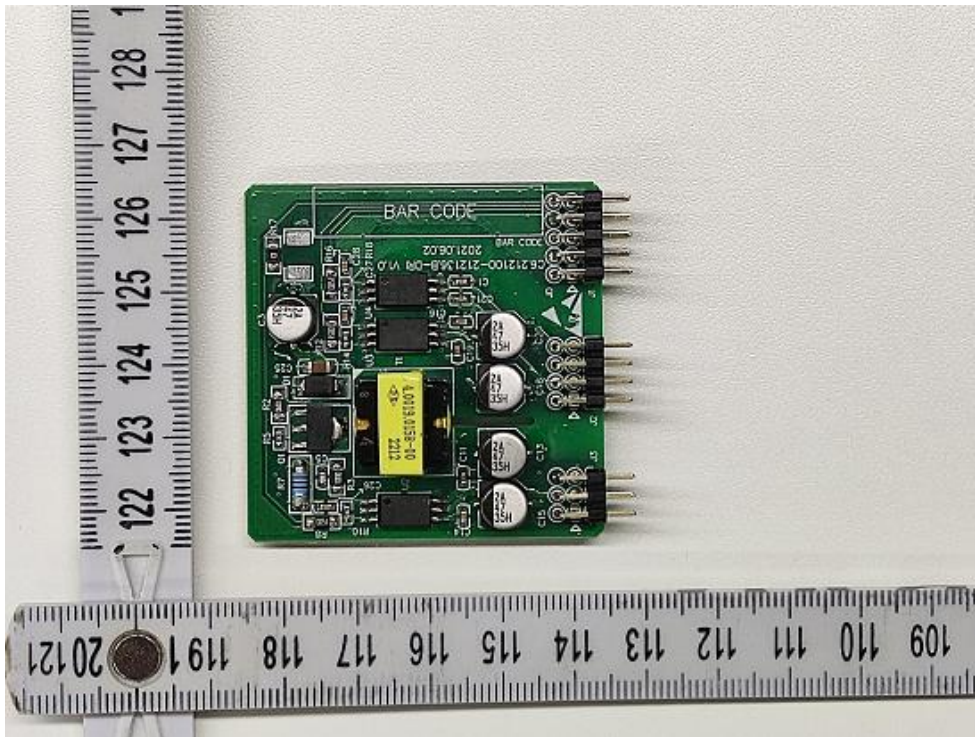


Figure 23. Front view of Boost drive board

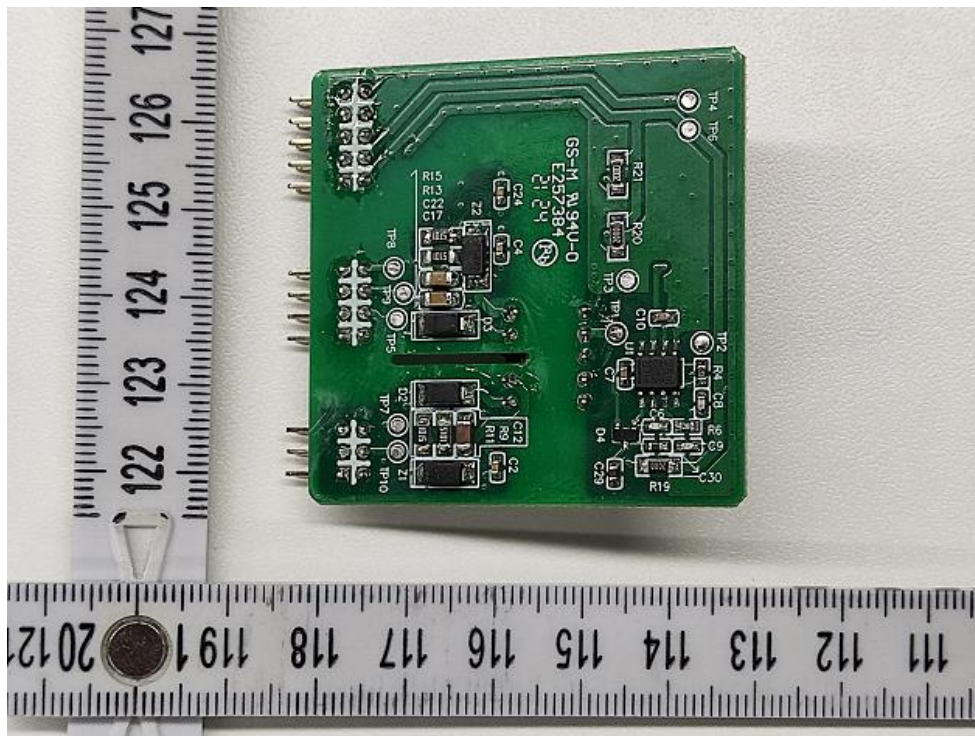


Figure 24. Back view of Boost drive board

Model: see cover page

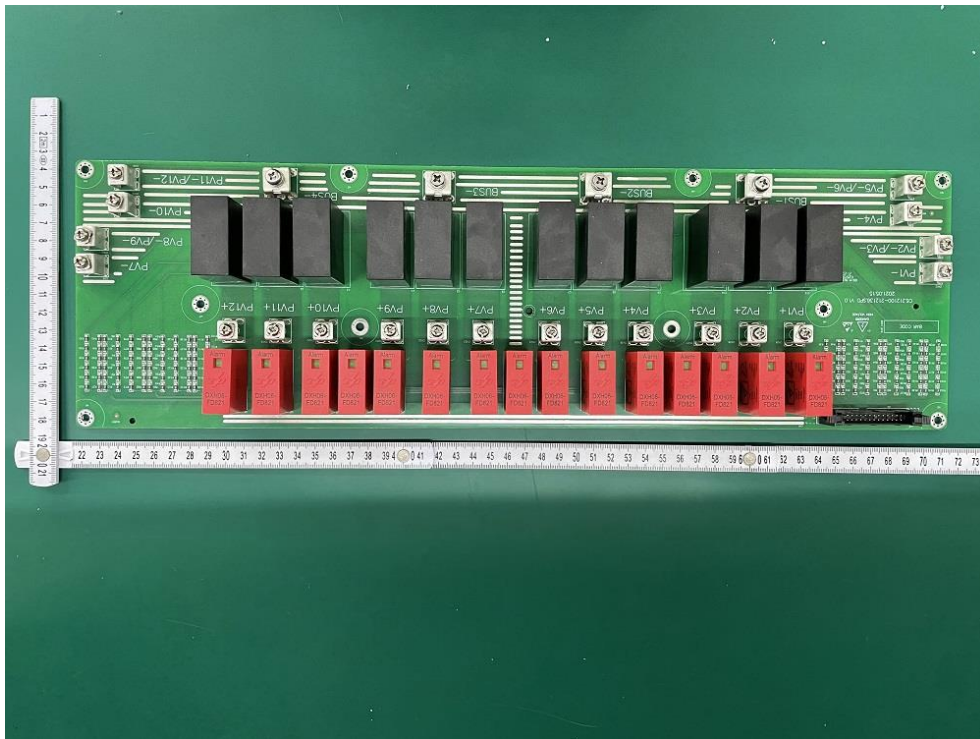


Figure 25. Front view of Lightning protection board

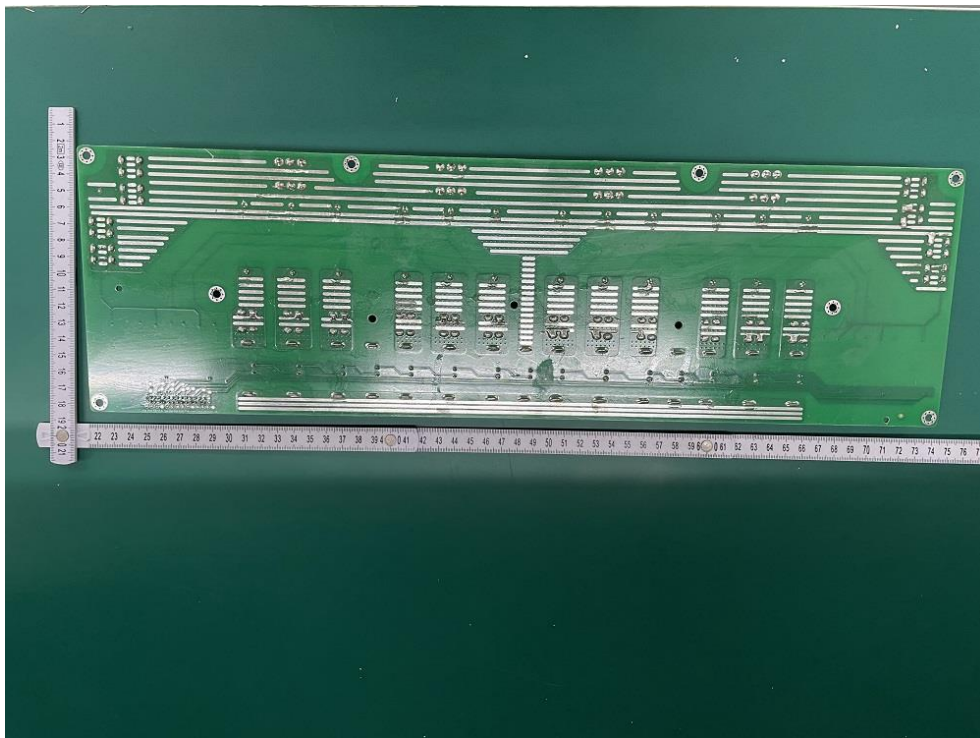


Figure 26. Back view of Lightning protection board

Model: see cover page



Figure 27. Front view of Electric capacity board

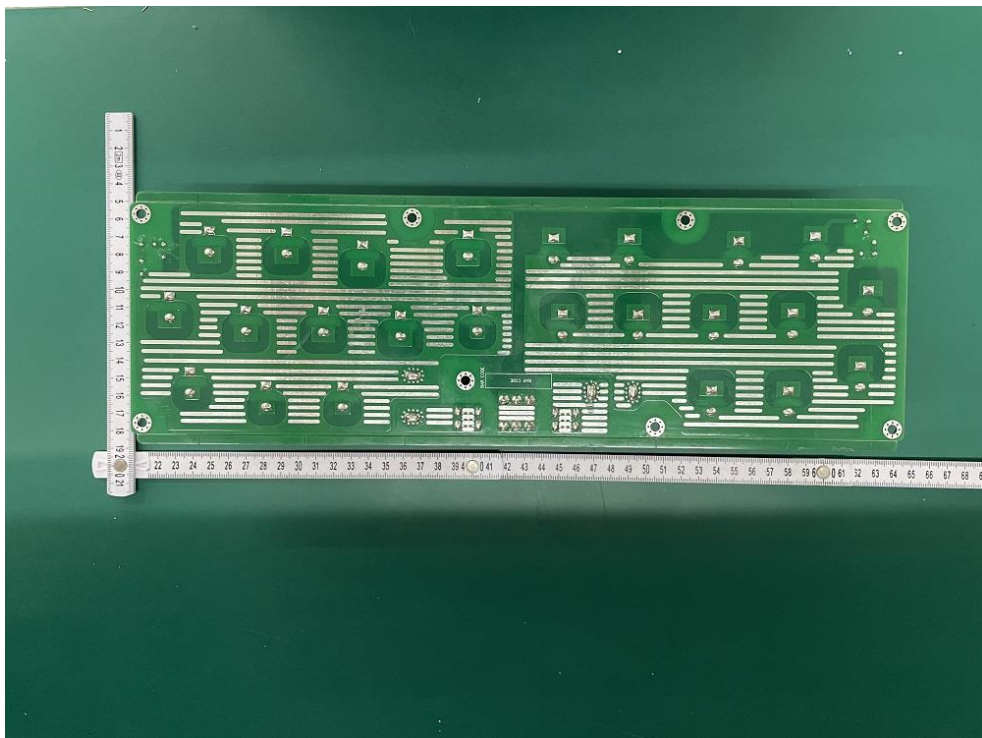


Figure 28. Back view of Electric capacity board

Model: see cover page

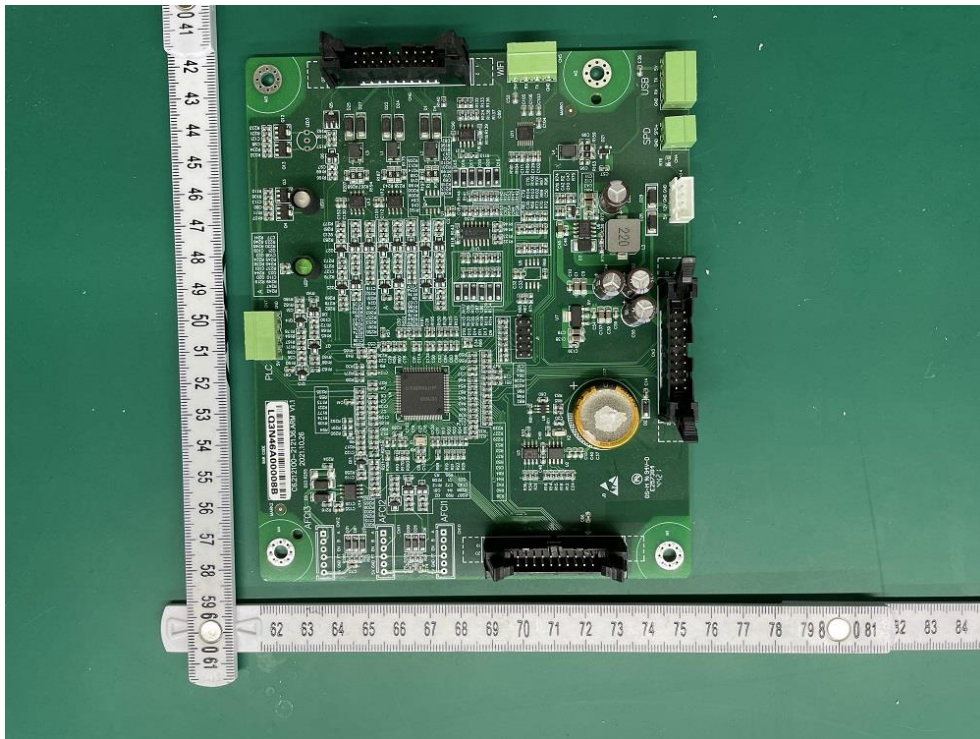


Figure 29. Front view of ARM board

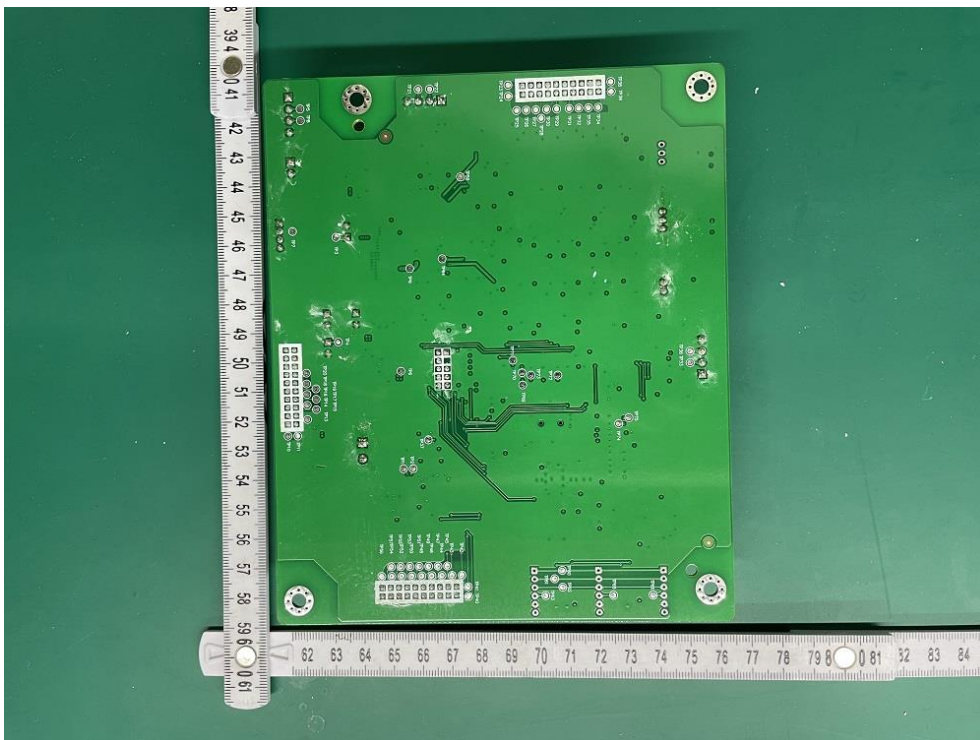


Figure 30. Back view of ARM board

Model: see cover page

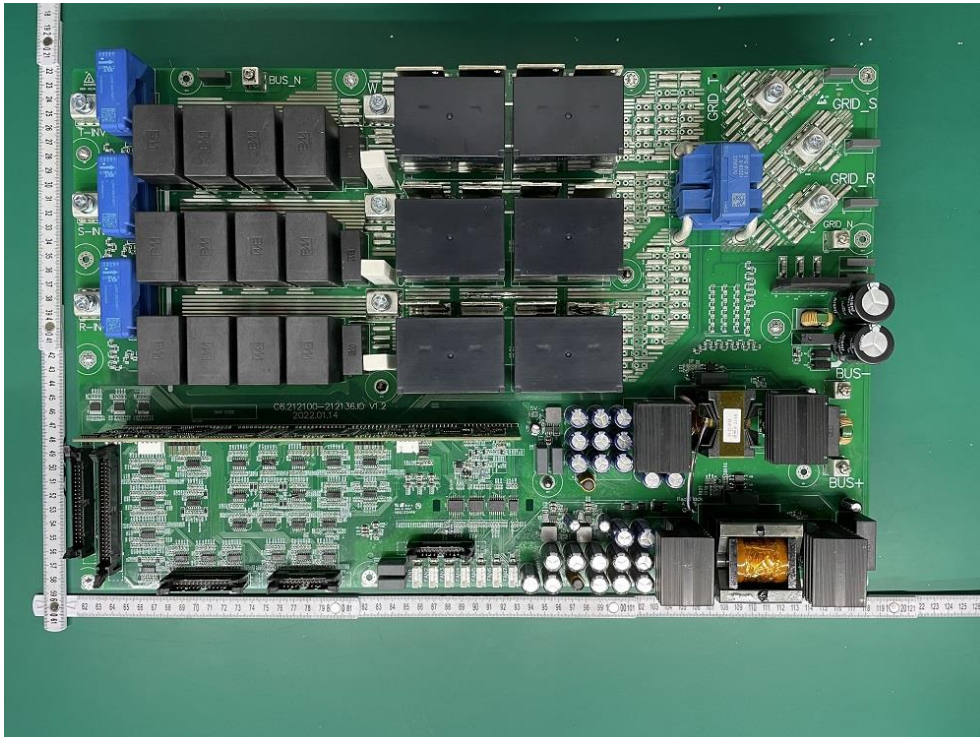


Figure 31. Front view of IO board

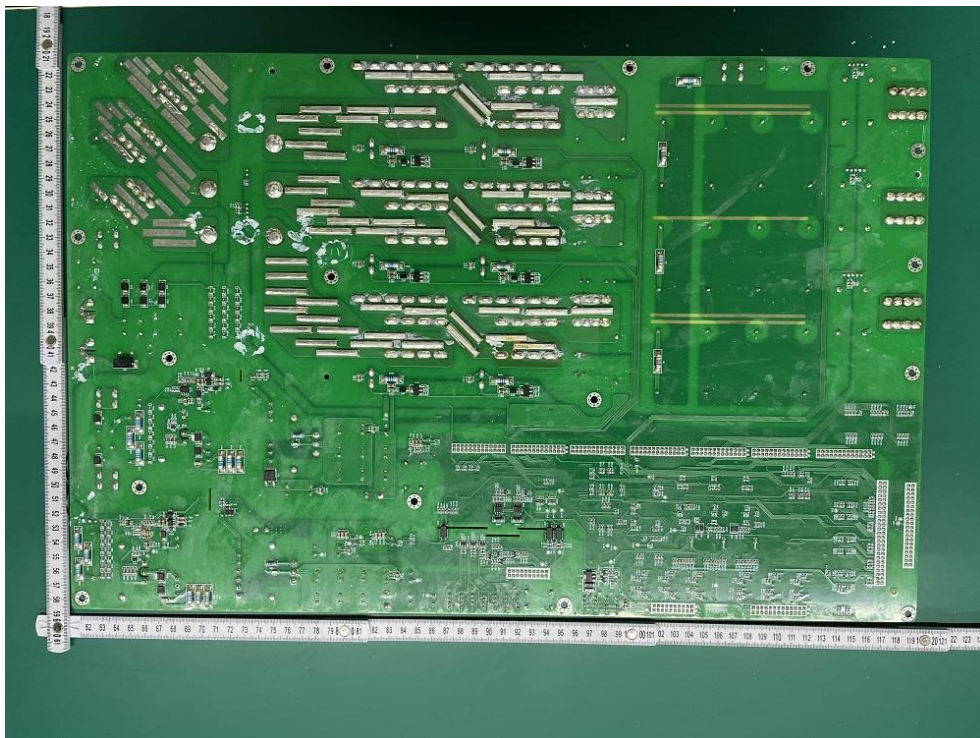


Figure 32. Back view of IO board

Model: see cover page

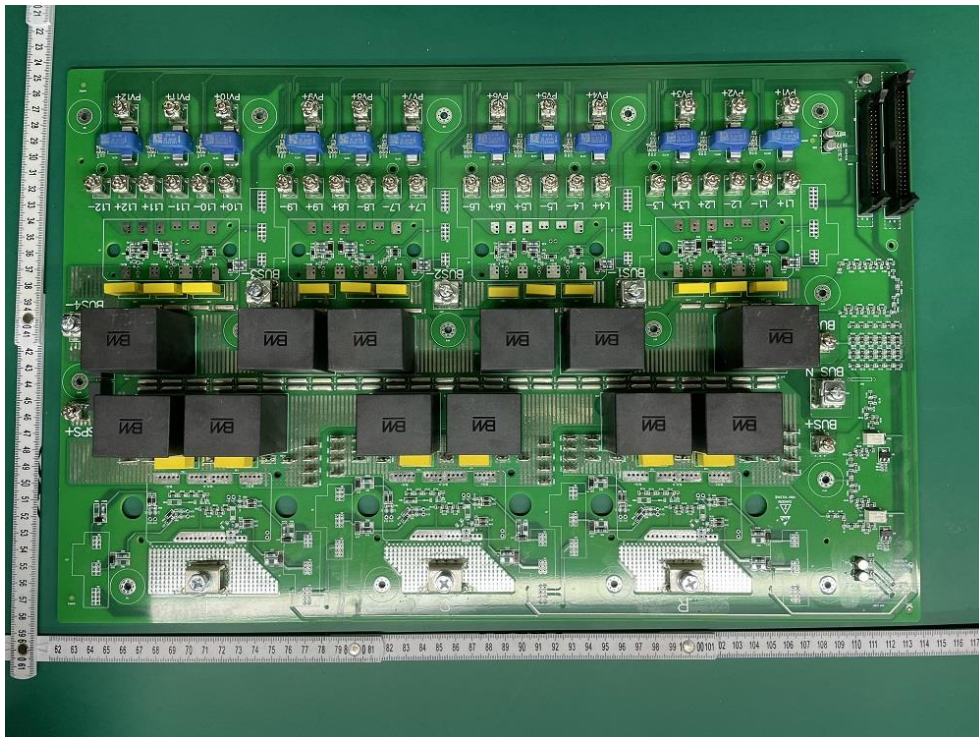


Figure 33. Front view of Main power board
(C6-110K-T12, C6-125K-T12, C6-110K-T12-40, C6-125K-T12-40)

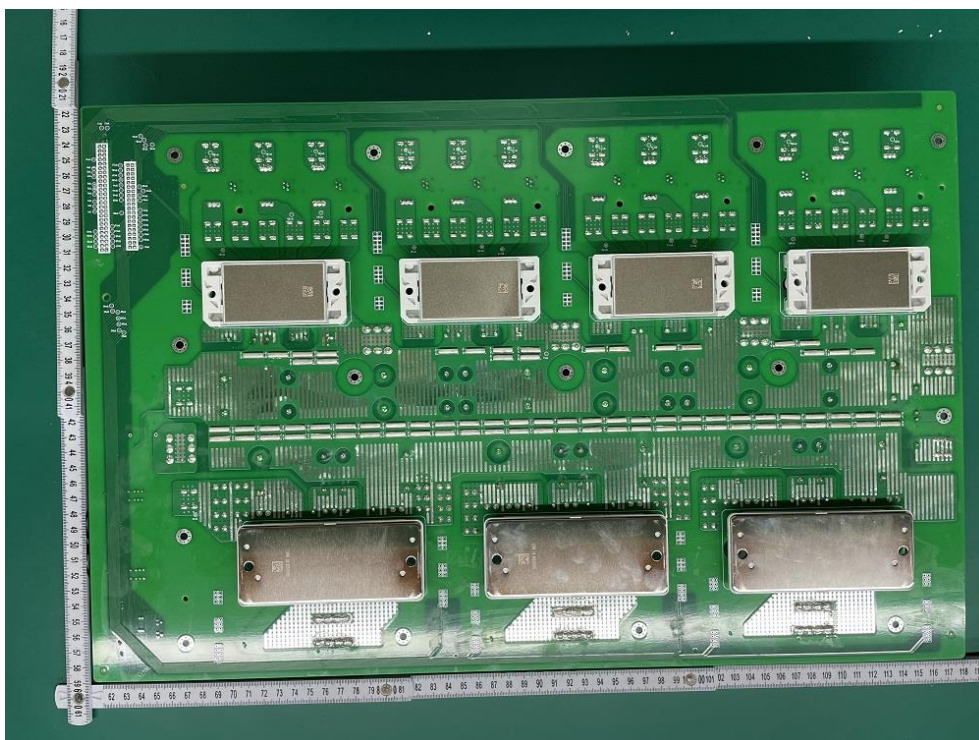


Figure 34. Back view of Main power board
(C6-110K-T12, C6-125K-T12, C6-110K-T12-40, C6-125K-T12-40)

Model: see cover page

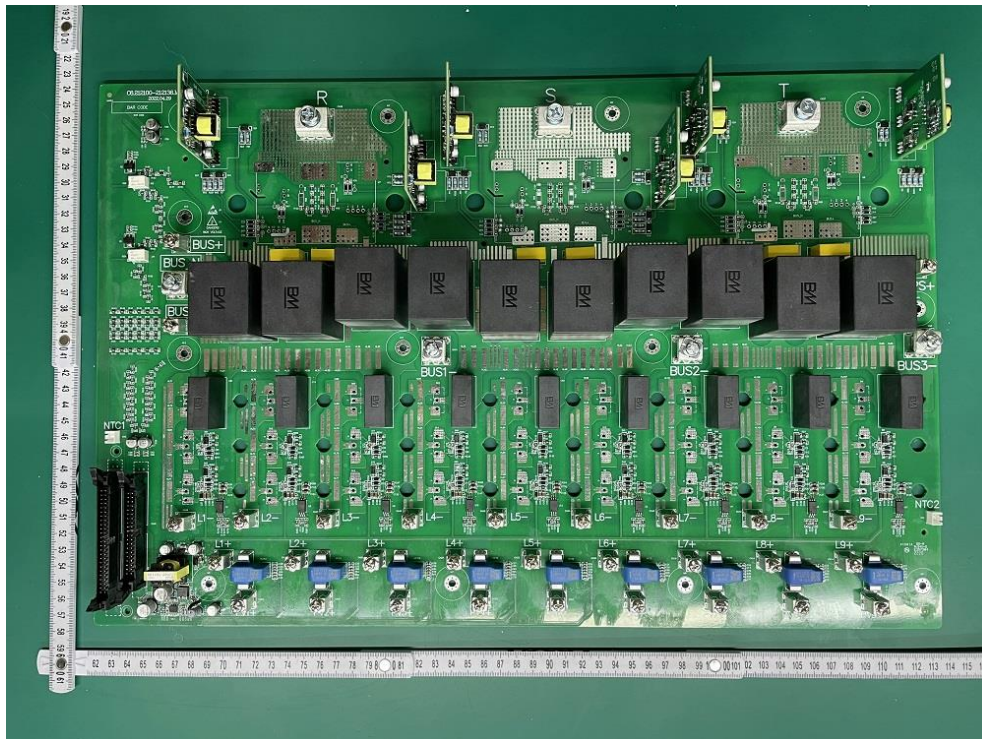


Figure 35. Front view of Main power board
(C6-75K-T6, C6-100K-T9, C6-75K-T6-40, C6-100K-T9-40)

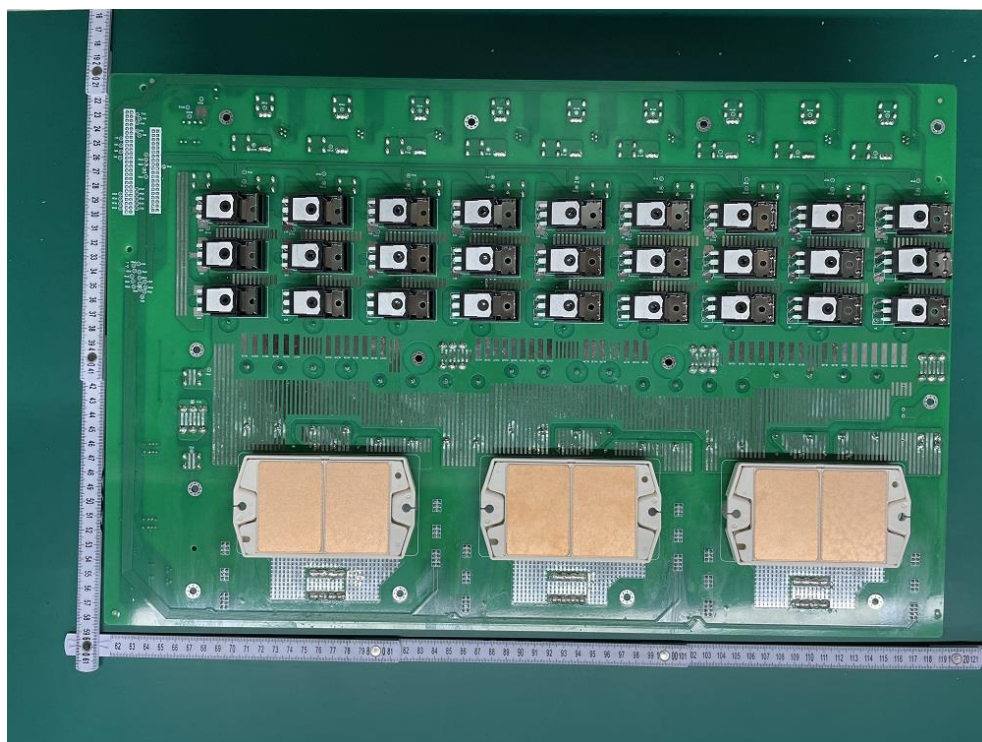


Figure 36. Back view of Main power board
(C6-75K-T6, C6-100K-T9, C6-75K-T6-40, C6-100K-T9-40)

Model: see cover page

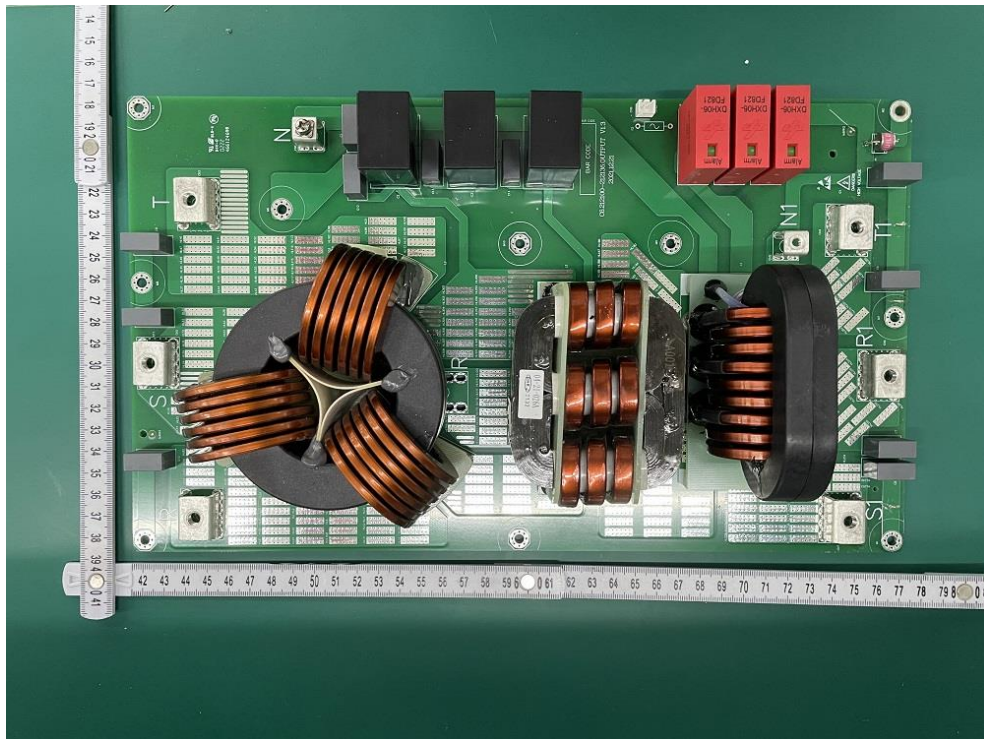


Figure 37. Front view of AC output board

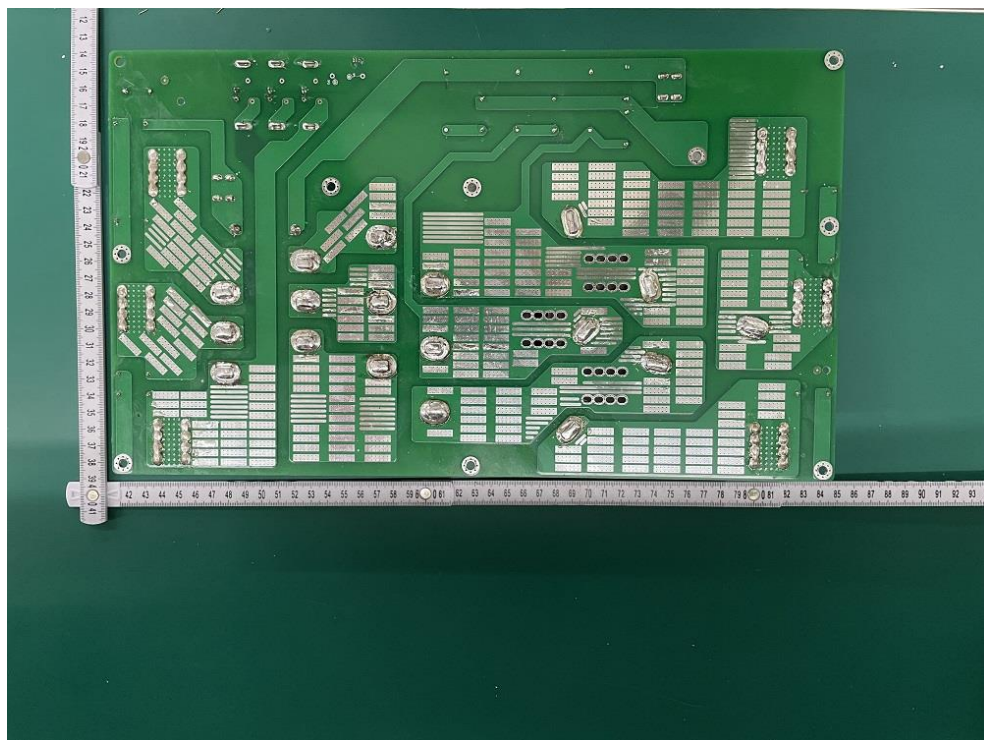


Figure 38. Back view of AC output board

Model: see cover page

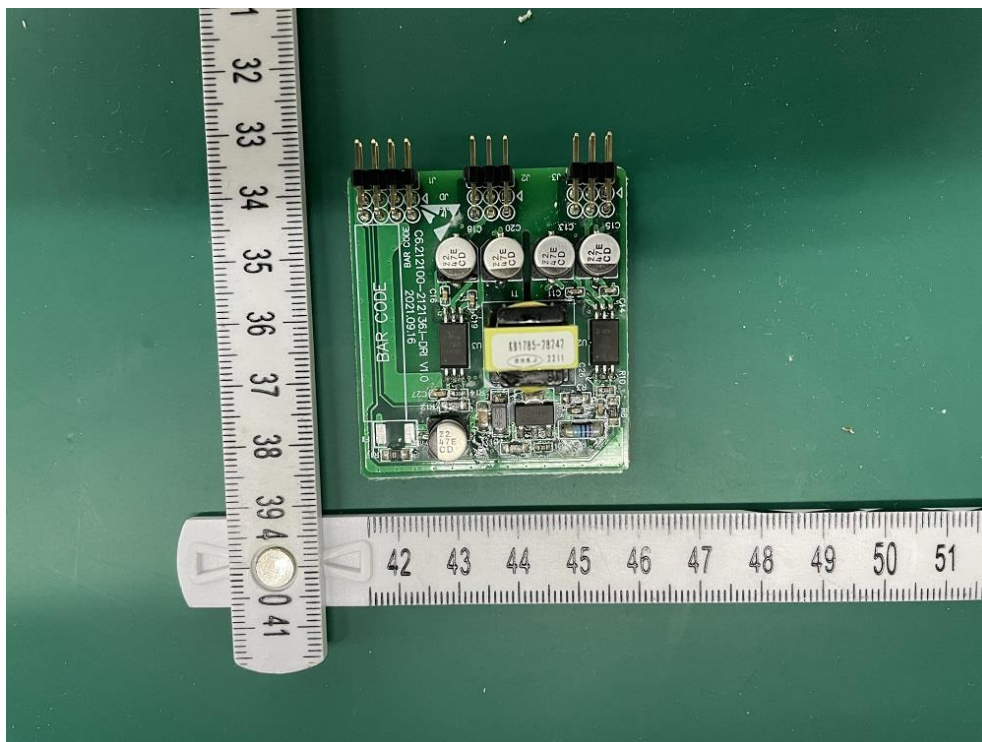


Figure 39. Front view of INV drive board

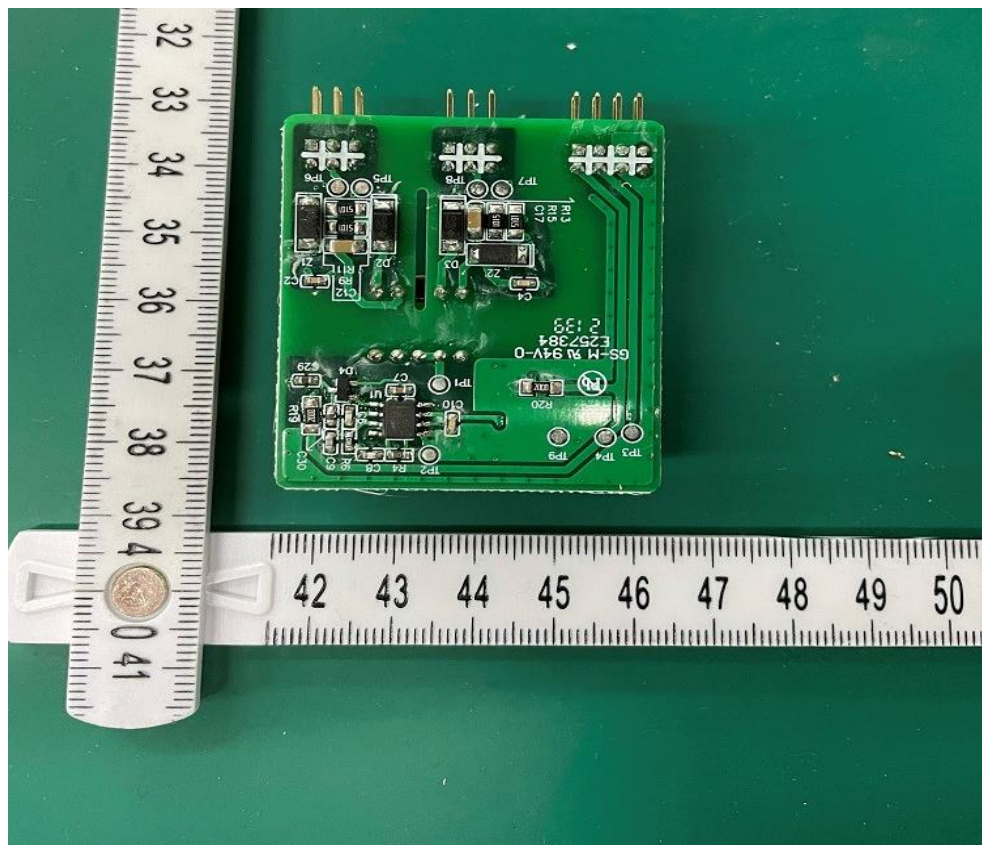


Figure 40. Back view of INV drive board

Model: see cover page

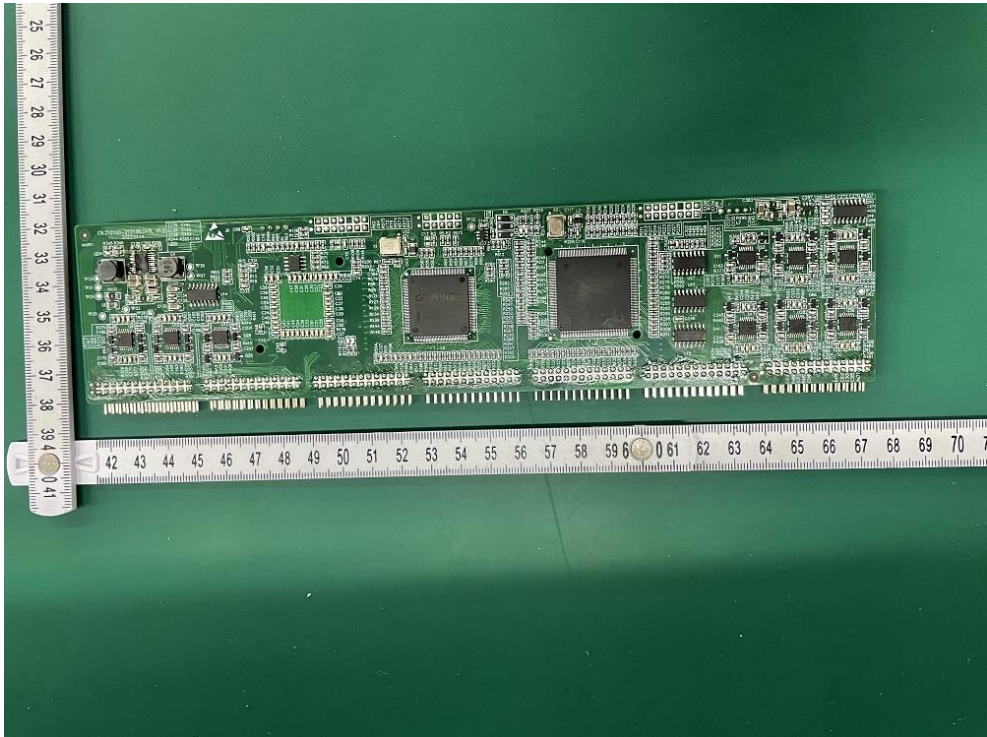


Figure 41. Front view of Control board

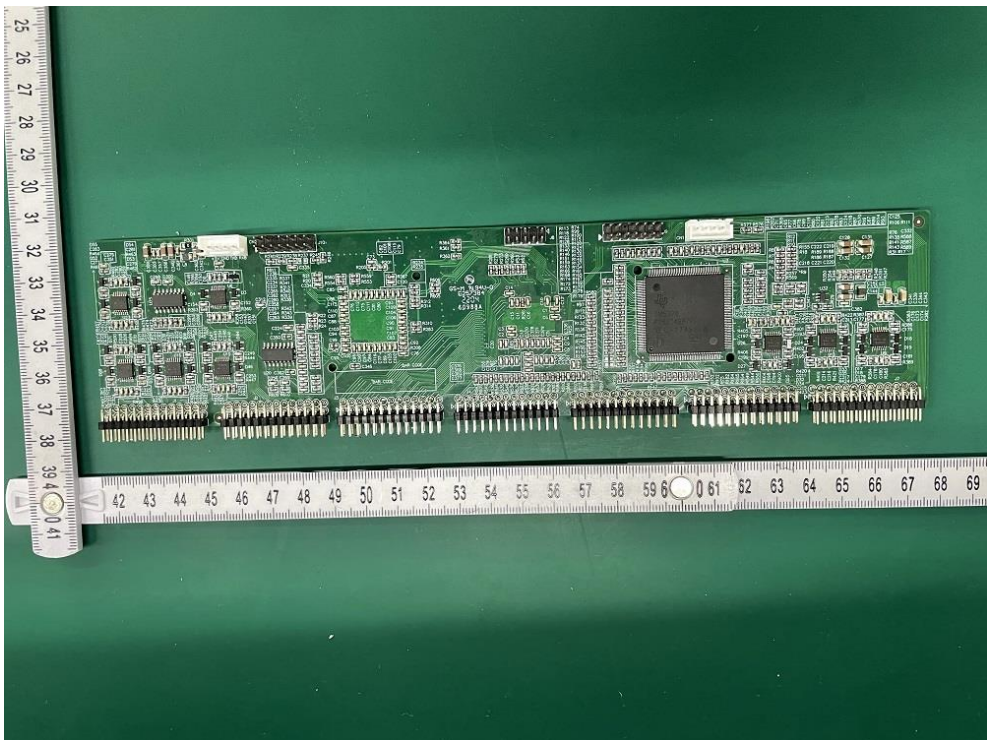


Figure 42. Back view of Control board

Model: see cover page

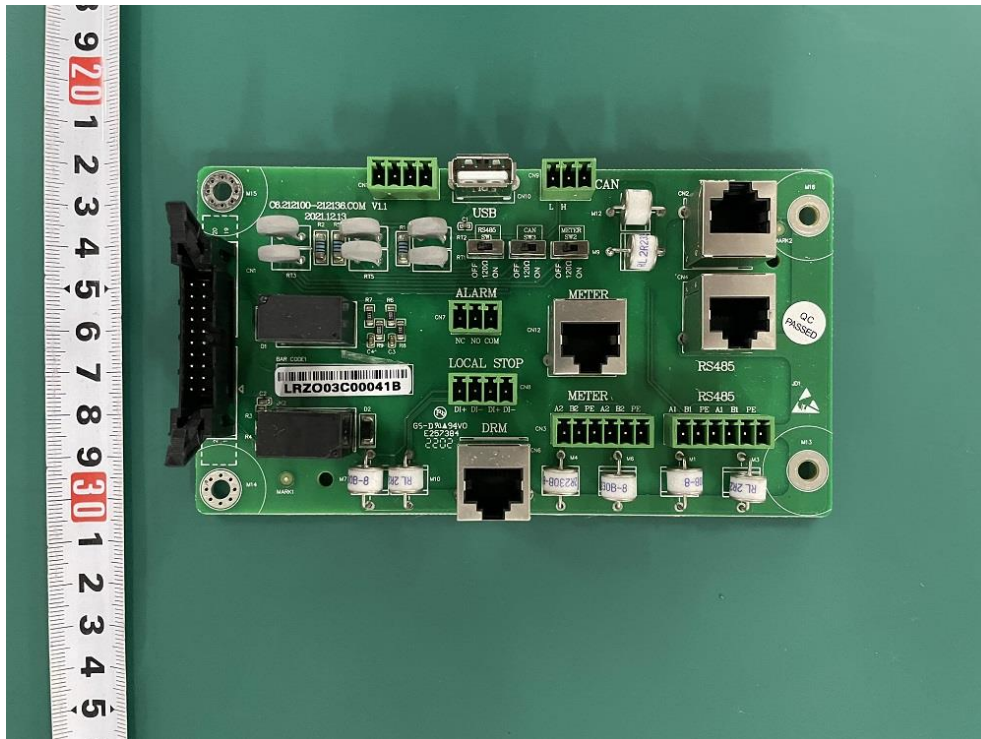


Figure 43. Front view of Communication board

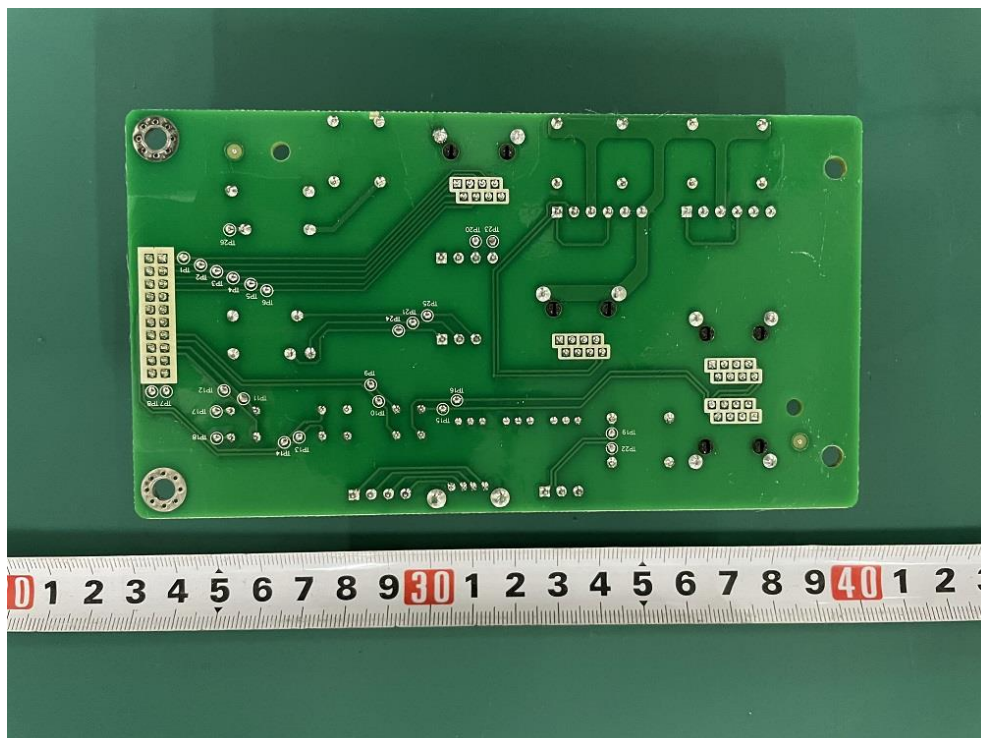


Figure 44. Back view of Communication board

Model: see cover page

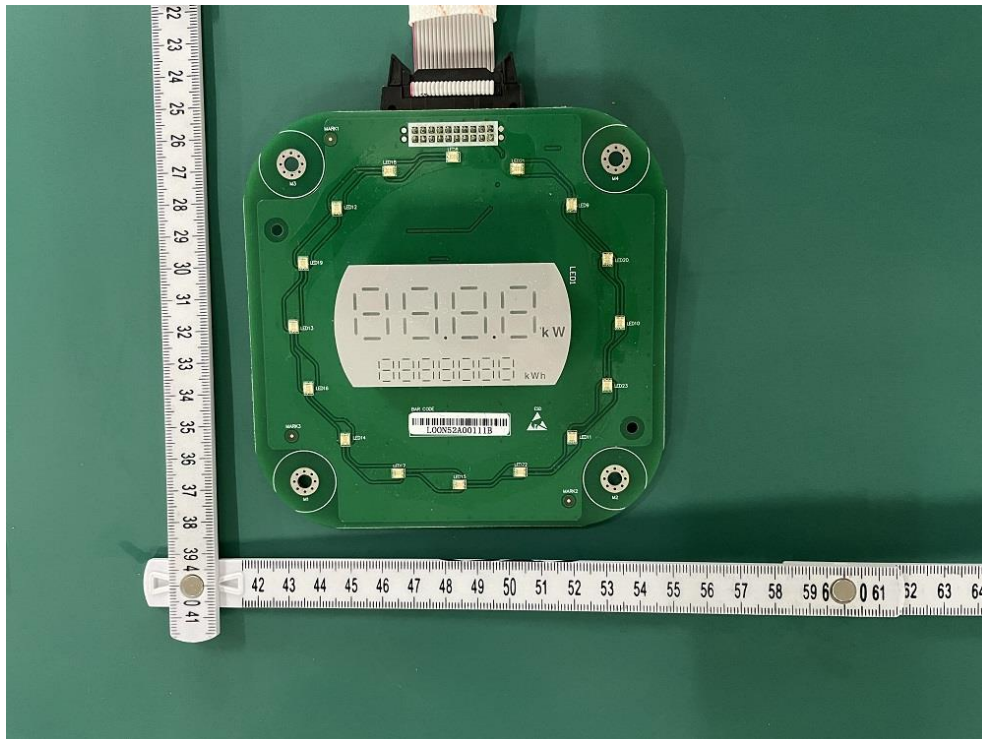


Figure 45. Front view of Display board

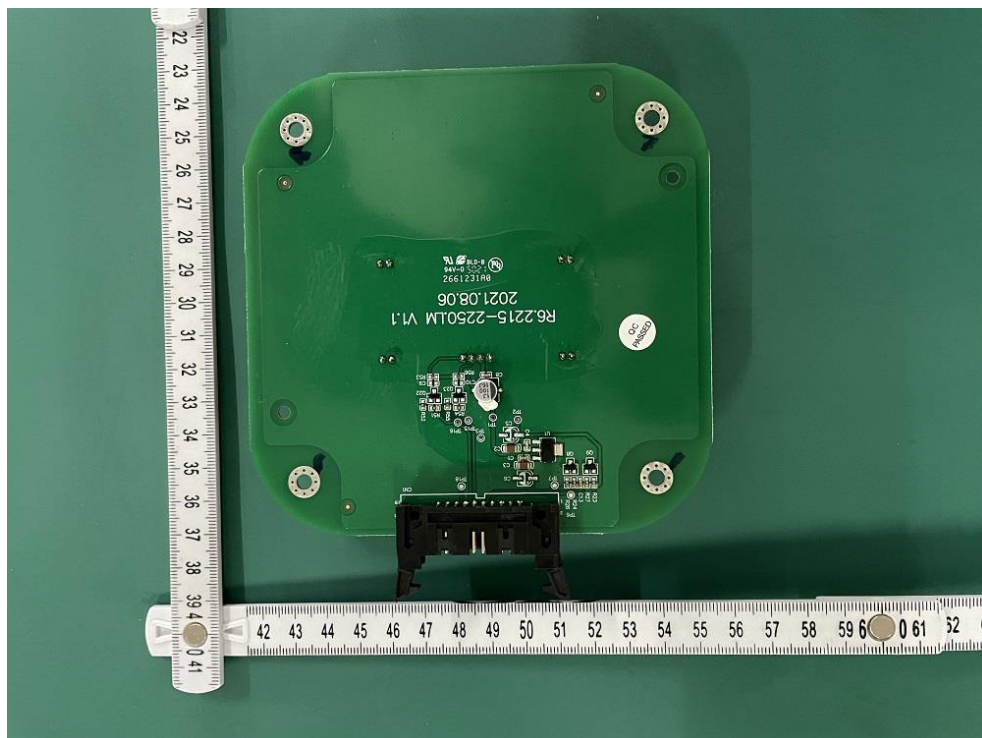


Figure 46. Back view of Display board