



TEST REPORT IEC 61800-5-1 Adjustable speed electrical power drive systems – Part 5-1: Safety requirements – Electrical, thermal and energy	
Report Reference No.	INVT.2017.07.19.0001
Date of issue.....	2017-07-19
Total number of pages	34 Pages
Testing Laboratory	Shenzhen INVT Electric Co., Ltd
Address	No.4 Building, Gaofa Industrial Park Longjing, Nanshan District, 518055 Shenzhen, PEOPLE'S REPUBLIC OF CHINA
Test specification:	
Standard	<input checked="" type="checkbox"/> EN 61800-5-1:2007 (2 nd Edition)
Test procedure	Type test
Non-standard test method.....	N/A
Test item description	
	Servo drive
Trade Mark	
Manufacturer	INVT INDUSTRIAL TECHNOLOGY(SHANGHAI)CO.,LTD. Building No.1 188 New junhuan Rd.,Minhang Dist.,Shanghai,China
Factory.....	INVT POWER ELECTRONICS (SUZHOU) CO., LTD. No.1 KunLunShan Road Suzhou Science & Technology Tower Hi-Tech Area Suzhou Jiangsu
Model/Type reference.....	SV-DA200-5R5-4-E0 SV-DA200-5R5-4-S0 SV-DA200-5R5-4-S7 SV-DA200-5R5-4-C0 SV-DA200-5R5-4-P0 SV-DA200-5R5-4-N0 SV-DA200-5R5-4-M0 SV-DA200-5R5-4-E0-00T0 SV-DA200-5R5-4-E7 SV-DA200-5R5-4-K0-I0L0 SV-DA200-5R5-4-K0-00L0 SV-DA200-4R4-4-E0 SV-DA200-4R4-4-S0 SV-DA200-4R4-4-S7 SV-DA200-4R4-4-C0 SV-DA200-4R4-4-P0 SV-DA200-4R4-4-N0 SV-DA200-4R4-4-M0 SV-DA200-4R4-4-E0-00T0 SV-DA200-4R4-4-E7 SV-DA200-4R4-4-K0-I0L0 SV-DA200-4R4-4-K0-00L0 SV-DA200-4R4-2-E0 SV-DA200-4R4-2-S0

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- SV-DA200-4R4-2-S7
- SV-DA200-4R4-2-C0
- SV-DA200-4R4-2-P0
- SV-DA200-4R4-2-N0
- SV-DA200-4R4-2-M0
- SV-DA200-4R4-2-E0-00T0
- SV-DA200-4R4-2-E7
- SV-DA200-4R4-2-K0-I0L0
- SV-DA200-4R4-2-K0-00L0
- SV-DA200-3R0-2-E0
- SV-DA200-3R0-2-S0
- SV-DA200-3R0-2-S7
- SV-DA200-3R0-2-C0
- SV-DA200-3R0-2-P0
- SV-DA200-3R0-2-N0
- SV-DA200-3R0-2-M0
- SV-DA200-3R0-2-E0-00T0
- SV-DA200-3R0-2-E7
- SV-DA200-3R0-2-K0-I0L0
- SV-DA200-3R0-2-K0-00L0
- SV-DA200-2R0-2-E0
- SV-DA200-2R0-2-S0
- SV-DA200-2R0-2-S7
- SV-DA200-2R0-2-C0
- SV-DA200-2R0-2-P0
- SV-DA200-2R0-2-N0
- SV-DA200-2R0-2-M0
- SV-DA200-2R0-2-E0-00T0
- SV-DA200-2R0-2-E7
- SV-DA200-2R0-2-K0-I0L0
- SV-DA200-2R0-2-K0-00L0

Ratings: Refer to general product information for details

Testing procedure and testing location:	
Testing Laboratory.....:	Shenzhen INVT Electric Co., Ltd.
Testing location/ address.....:	4# Building, Gaofa Scientific Industrial Park, Longjing, Nanshan, Shenzhen, 518055, China
Tested by (name + signature)	Weirong Yang 
Approved by (name + signature) .:	Fangyuan Zhang 
Summary of testing:	

Tests performed (name of test and test clause): The submitted samples were found to comply with the requirements of: - EN 61800-5-1:2007	Testing location: 4# Building, Gaofa Scientific Industrial Park, Longjing, Nanshan, Shenzhen, 518055, China
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Copy of marking plate:

Read manual carefully and follow the directions
务必在阅读使用说明书后, 按其步骤操作!

Disconnect all power and wait 15 min. before servicing. May cause electric shock.
通电中或断电15分钟内, 请勿触摸端子, 有触电危险!

Don't touch heatsink. May cause burn.
请勿触摸散热片, 有烫伤危险!

Contact currents up to 0.5mA. Before use must be reliable grounding.
接触电流可达0.5mA, 使用前必须可靠接地!

伺服驱动器 SERVO DRIVES		型号: MODEL: SV-DA200-5R5-4-E0
输入 INPUT	3P AC 380V (-15%) ~ 440V (+10%) 47~63Hz 11.3A	
输出 OUTPUT	3P AC 0V~Vin 0~400Hz 16.0A 5.5kW	
S/N:		

CE
Made in China

invt 上海英威腾工业技术有限公司
INVT INDUSTRIAL TECHNOLOGY (SH) CO., LTD.

SV-DA200-5R5-4-E0

S/N:

Power: 5.5kW
 Input: 3P AC 380V (-15%) ~ 440V (+10%) 47~63Hz 11.3A
 Output: 3P AC 0V~Vin 0~400Hz 16.0A 5.5kW
 Size: 320mmX180mmX270mm
 Gross weight: kg
 IP level: IP20
 ERP:

CE 中国制造

invt www.invt-tech.com
上海英威腾工业技术有限公司

Marking of all models are identical except for the designation name, current and power.
Warning on the product for all the models .

..... **Test item**

particulars:

Equipment under test	<input type="checkbox"/> PDS	<input type="checkbox"/> CDM	<input checked="" type="checkbox"/> BDM
Intended equipment location	<input type="checkbox"/> stand alone <input checked="" type="checkbox"/> for building-in		
Mains supply overvoltage category (OVC)	<input type="checkbox"/> OVC I <input type="checkbox"/> OVC II <input checked="" type="checkbox"/> OVC III <input type="checkbox"/> OVC IV		
Reduction of OVC for basic insulation used	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, by:		
Supply earthing systems and system voltage (V)	Supply earthing system		System voltage:
	<input checked="" type="checkbox"/> TN-S, TN-C, TN-C-S, TT (not corner earthed)		230 V
	<input type="checkbox"/> TN-C (middle point earthed)		

	<input type="checkbox"/> TN-S, TT (corner earthed) <input type="checkbox"/> IT (not corner earthed) <input type="checkbox"/> IT (corner earthed) <input type="checkbox"/> other:
OVC for potential free terminals	<input type="checkbox"/> OVC I <input type="checkbox"/> OVC II <input checked="" type="checkbox"/> OVC III <input type="checkbox"/> OVC IV
Other non-DVC A connections	N/A
Class of equipment	<input type="checkbox"/> Class 0 <input checked="" type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III
Pollution degree (PD)	<input type="checkbox"/> PD 1: <input checked="" type="checkbox"/> PD 2: <input type="checkbox"/> PD 3: <input type="checkbox"/> PD 4:
IP protection class(es)	IP20
Ambient temperature during operation (°C) with/without derating	45°C
Max. operation altitude (m)	2000
Altitude of test laboratory (m)	<500
Other particulars	N/A
Possible test case verdicts:	
- test case does not apply to the test object.....	N/A
- test object does meet the requirement	P (Pass)
- test object does not meet the requirement	F (Fail)
Testing:	
Date of receipt of test item	2017-06-09
Date(s) of performance of tests	From 2017-06-09 to 2014-07-19
Attachment No. 1: 11 pages of photo documentation	
General remarks:	
<p>The test 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 Issuing testing laboratory. “(see Enclosure #)” refers to additional information appended to the report. “(see appended table)” refers to a table appended to the report. Throughout this report a point is used as the decimal separator.</p>	
General product information:	
<p>DA200 series product adopting modular structure, is a function of extensible, feature-rich and powerful servo drive series products. Input , output and size of each model were listed as following:</p>	

Model No.	Rated Input	Rated Output	Size (mm)
SV-DA200-5R5-4-E0	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 11.3A	3PH AC 0V~Vin 0~400Hz 16A 5.5kW	320*180*270
SV-DA200-5R5-4-S0	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 11.3A	3PH AC 0V~Vin 0~400Hz 16A 5.5kW	
SV-DA200-5R5-4-S7	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 11.3A	3PH AC 0V~Vin 0~400Hz 16A 5.5kW	
SV-DA200-5R5-4-C0	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 11.3A	3PH AC 0V~Vin 0~400Hz 16A 5.5kW	
SV-DA200-5R5-4-P0	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 11.3A	3PH AC 0V~Vin 0~400Hz 16A 5.5kW	
SV-DA200-5R5-4-N0	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 11.3A	3PH AC 0V~Vin 0~400Hz 16A 5.5kW	
SV-DA200-5R5-4-M0	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 11.3A	3PH AC 0V~Vin 0~400Hz 16A 5.5kW	
SV-DA200-5R5-4-E0-00T0	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 11.3A	3PH AC 0V~Vin 0~400Hz 16A 5.5kW	
SV-DA200-5R5-4-E7	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 11.3A	3PH AC 0V~Vin 0~400Hz 16A 5.5kW	
SV-DA200-5R5-4-K0-I0L0	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 11.3A	3PH AC 0V~Vin 0~400Hz 16A 5.5kW	
SV-DA200-5R5-4-K0-00L0	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 11.3A	3PH AC 0V~Vin 0~400Hz 16A 5.5kW	
SV-DA200-4R4-4-E0	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 9.1A	3PH AC 0V~Vin 0~400Hz 12.0A 4.4kW	
SV-DA200-4R4-4-S0	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 9.1A	3PH AC 0V~Vin 0~400Hz 12.0A 4.4kW	
SV-DA200-4R4-4-S7	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 9.1A	3PH AC 0V~Vin 0~400Hz 12.0A 4.4kW	
SV-DA200-4R44-C0	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 9.1A	3PH AC 0V~Vin 0~400Hz 12.0A 4.4kW	
SV-DA200-4R4-4-P0	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 9.1A	3PH AC 0V~Vin 0~400Hz 12.0A 4.4kW	
SV-DA200-4R4-4-N0	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 9.1A	3PH AC 0V~Vin 0~400Hz 12.0A 4.4kW	
SV-DA200-4R4-4-M0	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 9.1A	3PH AC 0V~Vin 0~400Hz 12.0A 4.4kW	
SV-DA200-4R4-4-E0-00T0	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 9.1A	3PH AC 0V~Vin 0~400Hz 12.0A 4.4kW	

	9.1A	
SV-DA200-4R4-4-E7	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 9.1A	3PH AC 0V~Vin 0~400Hz 12.0A 4.4kW
SV-DA200-4R4-4-K0-I0L0	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 9.1A	3PH AC 0V~Vin 0~400Hz 12.0A 4.4kW
SV-DA200-4R4-4-K0-00L0	3PH,AC,380V(-15%)~440(+10%) ,47~63Hz, 9.1A	3PH AC 0V~Vin 0~400Hz 12.0A 4.4kW
SV-DA200-4R4-2-E0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 16.5A	3PH AC 0V~Vin 0~400Hz 16.5A 4.4kW
SV-DA200-4R4-2-S0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 16.5A	3PH AC 0V~Vin 0~400Hz 16.5A 4.4kW
SV-DA200-4R4-2-S7	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 16.5A	3PH AC 0V~Vin 0~400Hz 16.5A 4.4kW
SV-DA200-4R4-2-C0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 16.5A	3PH AC 0V~Vin 0~400Hz 16.5A 4.4kW
SV-DA200-4R4-2-P0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 16.5A	3PH AC 0V~Vin 0~400Hz 16.5A 4.4kW
SV-DA200-4R4-2-N0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 16.5A	3PH AC 0V~Vin 0~400Hz 16.5A 4.4kW
SV-DA200-4R4-2-M0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 16.5A	3PH AC 0V~Vin 0~400Hz 16.5A 4.4kW
SV-DA200-4R4-2-E0-00T0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 16.5A	3PH AC 0V~Vin 0~400Hz 16.5A 4.4kW
SV-DA200-4R4-2-E7	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 16.5A	3PH AC 0V~Vin 0~400Hz 16.5A 4.4kW
SV-DA200-4R4-2-K0-I0L0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 16.5A	3PH AC 0V~Vin 0~400Hz 16.5A 4.4kW
SV-DA200-4R4-2-K0-00L0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 16.5A	3PH AC 0V~Vin 0~400Hz 16.5A 4.4kW
SV-DA200-3R0-2-E0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 11.2A	3PH AC 0V~Vin 0~400Hz 13.0A 3.0kW
SV-DA200-3R0-2-S0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 11.2A	3PH AC 0V~Vin 0~400Hz 13.0A 3.0kW
SV-DA200-3R0-2-S7	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 11.2A	3PH AC 0V~Vin 0~400Hz 13.0A 3.0kW
SV-DA200-3R0-2-C0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 11.2A	3PH AC 0V~Vin 0~400Hz 13.0A 3.0kW
SV-DA200-3R0-2-P0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 11.2A	3PH AC 0V~Vin 0~400Hz 13.0A 3.0kW

	11.2A	
SV-DA200-3R0-2-N0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 11.2A	3PH AC 0V~Vin 0~400Hz 13.0A 3.0kW
SV-DA200-3R0-2-M0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 11.2A	3PH AC 0V~Vin 0~400Hz 13.0A 3.0kW
SV-DA200-3R0-2-E0-00T0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 11.2A	3PH AC 0V~Vin 0~400Hz 13.0A 3.0kW
SV-DA200-3R0-2-E7	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 11.2A	3PH AC 0V~Vin 0~400Hz 13.0A 3.0kW
SV-DA200-3R0-2-K0-I0L0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 11.2A	3PH AC 0V~Vin 0~400Hz 13.0A 3.0kW
SV-DA200-3R0-2-K0-00L0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 11.2A	3PH AC 0V~Vin 0~400Hz 13.0A 3.0kW
SV-DA200-2R0-2-E0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 7.5A	3PH AC 0V~Vin 0~400Hz 10.0A 2.0kW
SV-DA200-2R0-2-S0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 7.5A	3PH AC 0V~Vin 0~400Hz 10.0A 2.0kW
SV-DA200-2R0-2-S7	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 7.5A	3PH AC 0V~Vin 0~400Hz 10.0A 2.0kW
SV-DA200-2R0-2-C0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 7.5A	3PH AC 0V~Vin 0~400Hz 10.0A 2.0kW
SV-DA200-2R0-2-P0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 7.5A	3PH AC 0V~Vin 0~400Hz 10.0A 2.0kW
SV-DA200-2R0-2-N0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 7.5A	3PH AC 0V~Vin 0~400Hz 10.0A 2.0kW
SV-DA200-2R0-2-M0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 7.5A	3PH AC 0V~Vin 0~400Hz 10.0A 2.0kW
SV-DA200-2R0-2-E0-00T0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 7.5A	3PH AC 0V~Vin 0~400Hz 10.0A 2.0kW
SV-DA200-2R0-2-E7	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 7.5A	3PH AC 0V~Vin 0~400Hz 10.0A 2.0kW
SV-DA200-2R0-2-K0-I0L0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 7.5A	3PH AC 0V~Vin 0~400Hz 10.0A 2.0kW
SV-DA200-2R0-2-K0-00L0	3PH,AC,220V(-15%)~240(+10%) ,47~63Hz, 7.5A	3PH AC 0V~Vin 0~400Hz 10.0A 2.0kW

- When installing the equipment, all requirements of the mentioned standard must be fulfilled and it should be suitably installed in closed electrical operation area.
- Maximum operating temperature is 45°C.
- The input and output circuits were considered as DVC C circuits and signal circuit was considered as DVC A

circuit.

- TN-S, TN-C, TN-C-S and TT (not corner earthed) power systems were evaluated.
- The frequency inverter has no over current protective device. For safety operation, a suitable external circuit breaker must be employed before installation.

RIEC 61800-5-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	PROTECTION AGAINST ELECTRIC SHOCK, THERMAL, AND ENERGY HAZARDS		P
4.1	General		P
4.2	Fault conditions		P
4.3	Protection against electric shock		P
4.3.1	Decisive voltage classification		P
4.3.1.1	Use of decisive voltage class (DVC) :	DVC A and DVC C were used in the product	P
4.3.1.2	Limits of DVC		P
4.3.1.3	Requirements for protection	Protective separation provided between the DVC A and DVC C circuit. And basic insulation between DVC C circuit to the protection earthing.	P
4.3.1.4	Circuit evaluation		P
4.3.1.4.1	General		P
4.3.1.4.2	A.C. working voltage	R.M.S value and recurring peak voltage were measured	P
4.3.1.4.3	D.C. working voltage		P
4.3.1.4.4	Pulsating working voltage		P
4.3.2	Protective separation..... :	By double or reinforced insulation or by protective boding, protective impedance	P
4.3.3	Protection against direct contact		P
4.3.3.1	General		P
4.3.3.2	Protection by means of insulation of live parts		P
4.3.3.3	Protection by means of enclosures and barriers	Intended for installation in closed electrical operation area	P
4.3.4	Protection in case of direct contact		P
4.3.4.1	General		P
4.3.4.2	Protection using DVC A :	See below	P
4.3.4.3	Protection by means of protective impedance	By protective resistors	P

RIEC 61800-5-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.4.4	Protection by means of using limited voltage		N/A
4.3.5	Protection against indirect contact		P
4.3.5.1	General	Comply with the requirements for protective class I	P
4.3.5.2	Insulation between live parts and accessible conductive parts		P
4.3.5.3	Protective bonding circuit		P
4.3.5.3.1	General		P
4.3.5.3.2	Rating of protective bonding	Comply with 5.2.3.9	P
4.3.5.3.3	Protective bonding impedance		N/A
4.3.5.4	Protective earthing conductor	Through a dedicated protective bonding conductor	P
4.3.5.5	Means of connection for the protective earthing conductor		P
4.3.5.5.1	General		P
4.3.5.5.2	Touch current in case of failure of protective earthing conductor	Test were performed on models SV-DA200-5R5-4-S0 , Warning marking added on the enclosure.	P
4.3.5.6	Special features in equipment for protection class II	Class I equipment	N/A
4.3.6	Insulation		P
4.3.6.1	General		P
4.3.6.1.1	Influencing factors		P
4.3.6.1.2	Pollution degree	2	P
4.3.6.1.3	Oversvoltage Category	OVC III	P
4.3.6.1.4	Supply earthing systems	TN-S, TN-C, TN-C-S and TT (not corner earthed)	P
4.3.6.1.5	Insulation voltages	System voltage: 277V Impulse Voltage: 4000V Temporary overvoltage: 2120V(crest value)	P
4.3.6.2	Insulation to the surroundings		P
4.3.6.2.1	General		P
4.3.6.2.2	Circuits connected directly to the supply mains ... :		N/A
4.3.6.2.3	Circuits not connected directly to the supply mains:	Over voltage category III was used	P

RIEC 61800-5-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.6.2.4	Insulation between circuits	The input and output circuits were considered as DVC C circuits and signal circuit was considered as DVC A circuit. Protective separation was provided between DVC C to DVC A circuit and basic insulation between DVC C circuit to the protection earthing	P
4.3.6.3	Functional insulation		P
4.3.6.4	Clearance distances	(See appended table 4.3.6.4)	P
4.3.6.4.1	Determination		P
4.3.6.4.2	Electric field homogeneity		P
4.3.6.4.3	Clearance to conductive enclosures	See 4.3.6.4.1 & 5.2.2.5	P
4.3.6.5	Creepage distance	(See appended table 4.3.6.5)	P
4.3.6.5.1	General		P
4.3.6.5.2	Materials	IIIa	P
4.3.6.6	Coating		P
4.3.6.7	PWB spacing for functional insulation		N/A
4.3.6.8	Solid insulation	(See appended table 4.3.6.8)	P
4.3.6.8.1	General		P
4.3.6.8.2	Requirements for electrical withstand capability		P
4.3.6.8.2.1	Basic or supplementary insulation	(See appended table 4.3.6.8)	P
4.3.6.8.2.2	Double and reinforced insulation	(See appended table 4.3.6.8)	P
4.3.6.8.2.3	Functional insulation		P
4.3.6.8.3	Thin sheet or tape material	(See appended table 4.3.6.8)	P
4.3.6.8.3.1	General		P
4.3.6.8.3.2	Material thickness not less than 0,2 mm		P
4.3.6.8.3.3	Material thickness not less than 0,2 mm		P
4.3.6.8.3.4	Compliance		P
4.3.6.8.4	Printed wiring boards		N/A
4.3.6.8.4.1	General		P
4.3.6.8.4.2	Use of coating materials		N/A
4.3.6.8.5	Wound components		P
4.3.6.8.6	Potting materials		N/A
4.3.6.9	Insulation requirements above 30 kHz	Considered	P

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Clause	Requirement + Test	Result - Remark	Verdict
4.3.7	Enclosures		P
4.3.7.1	General	See cl. 4.4.3, cl. 5.2.2.4 and cl.5.2.2.5.3	P
4.3.7.2	Cast metal	See cl.5.2.2.5.2	N/A
4.3.7.3	Sheet metal		N/A
4.3.8	Wiring and connections		P
4.3.8.1	General		P
4.3.8.2	Routing	The wire was protected by smooth bushing	P
4.3.8.3	Colour coding	The wires in the colour green with or without one or more yellow stripes were not used other than for protective bonding.	P
4.3.8.4	Splices and connections		P
4.3.8.5	Accessible connections	Non-interchangeable/reversible connector used. Installed in closed electrical operation area	N/A
4.3.8.6	Interconnections between parts of the PDS		N/A
4.3.8.7	Supply connections		N/A
4.3.8.8	Terminals		P
4.3.8.8.1	Construction requirements		P
4.3.8.8.2	Connecting capacity		P
4.3.8.8.3	Connection		P
4.3.8.8.4	Wire bending space for wires 10 mm ² and greater	No such wire used	N/A
4.3.9	Output short circuit requirements	(See appended table 5.2.3.6)	P
4.3.10	Residual current-operated protective (RCD) or monitoring (RCM) device compatibility	No RCD or RCM provided	N/A
4.3.11	Capacitor Discharge	Discharge to 60V within 5s; except terminals (+)/(-) voltage discharge to 60 V within 5 min. Warning symbol according IEC 60417-5036 was provided and discharge time was also added.	P
4.3.12	Access conditions for high-voltage PDS	Not high-voltage PDS	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

4.4	Protection against thermal hazards		P
4.4.1	Minimizing the risk of ignition	(See appended table 1)	P
4.4.2	Insulation Materials		P
4.4.2.1	General	(See appended table 5.2.3.8)	P
4.4.2.2	Material requirements	See cl. 5.2.5.1, 5.2.5.2 and appended table 1.	P
4.4.3	Flammability of enclosure materials		P
4.4.4	Temperature limits		P
4.4.4.1	Internal parts	(See appended table 5.2.3.8)	P
4.4.4.2	External parts of CDM	(See appended table 5.2.3.8)	P
4.4.5	Specific requirements for liquid cooled PDS		N/A
4.4.5.1	Coolant		N/A
4.4.5.2	Design requirements		N/A
4.4.5.2.1	Corrosion resistance		N/A
4.4.5.2.2	Tubing, joints and seals		N/A
4.4.5.2.3	Provision for condensation		N/A
4.4.5.2.4	Leakage of coolant		N/A
4.4.5.2.5	Loss of coolant		N/A
4.4.5.2.6	Conductivity of coolant		N/A
4.4.5.2.7	Insulation requirements for coolant loss		N/A

4.5	Protection against energy hazards		P
4.5.1	Electrical energy hazards	Check in PDS	P
4.5.2	Mechanical energy hazards		N/A
4.5.2.1	General		N/A
4.5.2.2	Critical torsional speed		N/A
4.5.2.3	Transient torque analysis		N/A
4.5.3	Acoustic noise emission		N/A
4.6	Protection against environmental stresses		N/A

5	TEST REQUIREMENTS		P
5.1	General		P
5.1.1	Test objectives and classification	Type tests	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.1.2	Selection of test samples	The tests were conducted on models: Unless otherwise specified, the models SV-DA200-5R5-4-S0 were chosen as representative models to perform all the tests. unless otherwise stated.	P
5.1.3	Sequence of tests		P
5.1.4	Earthing Conditions	Neutral to earth	P
5.1.5	Compliance		P
5.1.6	Test Overview		P
5.2	Test specifications		P
5.2.1	Visual inspections (type test, sample test and routine test)		P
5.2.2	Mechanical tests		P
5.2.2.1	Clearance and creepage distances (type test)	(See appended table 5.2.2.1)	P
5.2.2.2	PWB short-circuit test (type test)	(See appended table 5.2.2.2)	P
5.2.2.3	Non-accessibility test (type test)		P
5.2.2.4	Enclosure integrity test (type test)	IP20	P
5.2.2.5	Deformation tests		P
5.2.2.5.1	General		P
5.2.2.5.2	Deflection test (type test)	250N,5s tested for metal enclosure	P
5.2.2.5.3	Impact test (type test)	Steel sphere(500g); 1.3m; No damage for display panel	P
5.2.3	Electrical tests		P
5.2.3.1	Impulse voltage test (type test and sample test)	(See appended table 5.2.3.1)	P
5.2.3.2	A.C. or d.c. voltage test (type and routine test)	(See appended table 5.2.3.2)	P
5.2.3.2.1	Purpose of test	The test is used to verify that the clearance and solid insulation of components and of assemble PDS/CDM/BDM has adequate dielectric strength to resist overvoltage conditions	P
5.2.3.2.2	Value and type of test voltage	3000 VAC for reinforced insulation, 1500 V AC for basic insulation	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.2.3.2.3	Performing the voltage test		P
5.2.3.2.4	Duration of the a.c. or d.c. voltage test	60 s	P
5.2.3.2.5	Verification of the a.c. or d.c. voltage test	No any electrical breakdown occurs	P
5.2.3.3	Partial discharge test (type test, sample test)		N/A
5.2.3.4	Protective impedance (type test and routine test) :	Resistor connection between the accessible live parts and circuits of DVC C. The test result using the circuit of IEC 60990.	P
5.2.3.5	Touch current measurement (type test)	Test ware performed on models SV-DA200-5R5-4-S0. Warning marking added on the enclosure.	P
5.2.3.6	Short-circuit test and Breakdown of components test (type tests)	(See appended table 5.2.3.6)	P
5.2.3.6.1	General		P
5.2.3.6.2	Test configuration		P
5.2.3.6.2.1	Supply voltage and current	Rated supply voltage used	P
5.2.3.6.3	Short-circuit test		P
5.2.3.6.3.1	Load conditions		P
5.2.3.6.3.2	Location of short-circuit		P
5.2.3.6.4	Breakdown of component test		P
5.2.3.6.4.1	Load condition	Normal load conditions	P
5.2.3.6.4.2	Application of short-circuit or open-circuit		P
5.2.3.6.5	Test sequence		P
5.2.3.6.6	Pass criteria		P
5.2.3.7	Capacitor discharge (type test)	Discharge to 60V within 5s; except terminals (+)/(-) voltage discharge to 60 V within 5 min. Warning symbol according IEC 60417-5036 was provided and discharge time was also added.	P
5.2.3.8	Temperature rise test (type test)	(See appended table 5.2.3.8)	P
5.2.3.9	Protective bonding (type test and routine test)	(See appended table 5.2.3.9)	P
5.2.4	Abnormal operation tests	(See appended table 5.2.4)	P
5.2.4.1	General		P

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Clause	Requirement + Test	Result - Remark	Verdict
5.2.4.2	Test duration		P
5.2.4.3	Pass criteria		P
5.2.4.4	Loss of phase (type test)	(See appended table 5.2.4)	P
5.2.4.5	Cooling failure tests (type tests)		P
5.2.4.5.1	General		P
5.2.4.5.2	Inoperative blower motor (type test)		P
5.2.4.5.3	Clogged filter (type test)		P
5.2.4.5.4	Loss of coolant	Air cooled equipment	N/A
5.2.5	Material tests		P
5.2.5.1	High current arcing ignition test (type test)		N/A
5.2.5.2	Glow-wire test (type test)		N/A
5.2.5.3	Hot wire ignition test (type test - alternative to Glow-wire test)		N/A
5.2.5.4	Flammability test (type test)	UL recognized material used	N/A
5.2.6	Environmental tests (type tests)		P
5.2.6.1	General		P
5.2.6.2	Acceptance criteria		P
5.2.6.3	Climatic tests		P
5.2.6.3.1	Dry heat test (steady state)		P
5.2.6.3.2	Damp heat test (steady state)		P
5.2.6.4	Vibration test (type test)		P
5.2.7	Hydrostatic pressure test (type test and routine test) :	Not a liquid cooled equipment	N/A
6	INFORMATION AND MARKING REQUIREMENTS		P
6.1	General		P
6.2	Information for selection	See appended table 6, part 6.2.	P
6.3	Information for installing and commissioning	See appended table 6, part 6.3.	P
6.3.1	General		P
6.3.2	Mechanical considerations		P
6.3.3	Environment		P

RIEC 61800-5-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.3.4	Handling and mounting		P
6.3.5	Motor and driven equipment		P
6.3.5.1	Motor selection		P
6.3.5.2	Motor integrated sensors		P
6.3.5.3	Critical torsional speeds	Check in PDS	N/A
6.3.5.4	Transient torque analysis	Check in PDS	N/A
6.3.6	Connections		P
6.3.6.1	General		P
6.3.6.2	Interconnection and wiring diagrams	Provided in the user manual	P
6.3.6.3	Conductor (cable) selection	Provided in the user manual	P
6.3.6.4	Terminal capacity and identification	Provided in the user manual	P
6.3.6.5	Protection requirements	No such accessible part	N/A
6.3.6.6	Earthing	Provided in the user manual	P
6.3.6.7	Protective earthing conductor current	Not exceed 3.5mA a.c	N/A
6.3.6.8	Special requirements		P
6.3.7	Overcurrent and short-circuit protection		P
6.3.8	Motor overload protection	Provided in the user manual	P
6.3.9	Commissioning		N/A
6.4	Information for use	See appended table 6, part 6.4.	P
6.4.1	General		P
6.4.2	Adjustment		P
6.4.3	Labels, signs and signals	Warning for high voltage	P
6.4.3.1	General		P
6.4.3.2	Isolators	No isolator	N/A
6.4.3.3	Visual and audible signals	For function purpose	N/A
6.4.3.4	Hot surfaces	No hot surfaces	N/A
6.4.3.5	Equipment marking		P
6.5	Information for maintenance	See appended table 6, part 6.5.	P
6.5.1	General		P
6.5.2	Capacitor discharge	Cl. 4.3.11 was complied, instruction provided	P

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Clause	Requirement + Test	Result - Remark	Verdict
6.5.3	Auto restart/bypass connection	No auto restart/bypass connection provided	N/A
6.5.4	PT/CT connection	CT provided, check in PDS	P
6.5.5	Other hazards		P
Annex A	Examples of protection in case of direct contact		P
Annex B	Examples of overvoltage category reduction		P
Annex C	Measurement of clearance and creepage distances		P
Annex D	Altitude correction for clearances		N/A
Annex E	Clearance and creepage distance determination for frequencies greater than 30 kHz		P
Annex F	Cross sections of round conductors		P
Annex G	Guidelines for RCD compability		N/A
Annex H	Symbols referred to in this part of IEC 61800		P

5.2.2.1	General selection and information of supply earthing systems for clearance distances										-
Power systems	TN-S, TN-C, TN-CS, TT (not corner earthed)		TN-S, TT (corner earthed)		TN-C (middle point earthed)		IT (not corner earthed)		IT (corner earthed)		
Rated voltage (V)	380		Not evaluated		Not evaluated		Not evaluated		Not evaluated		
Max. altitude (m)	2000		-		-		-		-		
System voltage	220		-		-		-		-		
	B/S	D/R	B/S	D/R	B/S	D/R	B/S	D/R	B/S	D/R	
Rated Impulse voltage (kV)	4.0	6.0	-	-	-	-	-	-	-	-	
Temporary overvoltage (V)	1500	3000	-	-	-	-	-	-	-	-	
Clearance (mm)	3.0	5.5	-	-	-	-	-	-	-	-	
Test impulse voltage for clearance (kV)	4.0	6.0	-	-	-	-	-	-	-	-	
IT corner earthed, simulated impedance (MΩ).....:					Not evaluated						
Supplementary information:											

5.2.2.1	TABLE: Working voltage measurements for clearance and creepage distances										-
Condition #	Between	TN-S, TN-C, TN-CS, TT (not corner earthed)		TN-S, TT (corner earthed)		TN-C (middle point earthed)		IT (not corner earthed)		IT (corner earthed)	
		peak	rms	peak	rms	peak	rms	peak	rms	peak	rms
Transformer SV-DA200-5R5-4-S0											
	Transformer Pri. and Sec.	743	475	Not apply	Not apply	Not apply	Not apply	Not evaluated	Not evaluated	Not evaluated	Not evaluated

5.2.2.1	TABLE: Clearance and creepage distance measurements (Model: SV-DA200-5R5-4-S0)							P
Clearance (cl) and creepage distance (cr) at/of/between:		U_{peak} (V)	U_{rms} (V)	Req. cl. (mm)	Meas. cl. (mm)	Req. cr. (mm)	Meas. cr. (mm)	
Model: SV-DA200-5R5-4-S0								
Functional:								
Different poles of inputs or outputs terminals on terminal block		400	280	3.0	4.1	3.0	4.1	
Output terminals (+) and (-)		755	540	3.0	27.9	5.4	27.9	

Basic/supplementary:						
Live part and earthing enclosure on terminal block	390	282	3.0	5.5	3.0	5.5
Bulk capacitor and earthing enclosure	390	282	3.0	5.4	3.0	14.5
Reinforced:						
TR1 primary winding and secondary terminal	743	475	5.5	6.0	9.6	12.5
Relay pri. ang sec. on power PCB	390	282	5.5	6.7	5.5	6.7
Optpo-coulier primary and secondary(PC2)	390	282	5.5	6.7	5.5	6.7
W phase detect PCB live part and CN3 trace	390	282	5.5	7.2	5.5	7.2
W phase detect PCB live part and CN5 trace	390	282	5.5	6.2	5.5	6.2
Supplementary information:						
Clearance (cl) and creepage distance (cr) at/of/between:	U_{peak} (V)	U_{rms} (V)	Req. cl. (mm)	Meas. cl. (mm)	Req. cr. (mm)	Meas. cr. (mm)
Functional:						

4.3.6.8 5.2.3.1 5.2.3.2 5.2.3.3	TABLE: Solid insulation, Impulse voltage test, A.C. or d.c. voltage test, Partial discharge test					P	
Test voltage applied between/at:			DTI (mm)	Impulse test (kV, circuit)	Electric strength test (V a.c., V d.c.)	Partial discharge test (V)	Result
Basic/supplementary:							
Input /output terminals to earthing terminal			-	4.0	1500Vac	N/A	P
Insulation sheet			-	4.0	1500Vac	N/A	P
Internal wire			-	4.0	1500Vac	N/A	P
Reinforced:							
Input /output to signal connector			-	6.0	3000Vac	N/A	P
Transformer primary and secondary			-	6.0	3000Vac	N/A	P
Heat shrink tube			-	6.0	3000Vac	N/A	P
2 layers of insulated tape			-	6.0	3000Vac	N/A	P
Supplementary information: .							

5.2.3.5	TABLE: Touch current measurement						P
Location (Model SV-DA200-5R5-4-S0)	Single / Three phase	Test configuration	Measured current (mA)		Result		
			a.c	d.c	Pass	Fail	
Input /output to earthing terminal	Three phase	Let go	0.52	-	P		
Input /output to signal connector	Three phase	Let go	0.03	-	P		

Warning marking added on the enclosure for the other models.
 Measurements have been carried out according to figures 11 of IEC 60990.

5.2.3.8	TABLE: Temperature rise test (Model SV-DA200-5R5-4-S0)			P
	Supply voltage (V)	323		—
	Derating (%)	-15%		—
	Rated maximum ambient temperature (°C)	45.0		—
	Ambient T _{min} (°C)	23.8		—
	Ambient T _{max} (°C)	24.7		—
Part / Location	Measured	Max. Limit *		Result

Load: [External inductor](#)

Part / Location	Temp (°C)	Adjust to T _{ma} (°C)	(°C)	Pass	Fail
Input terminal	33.5	53.8	60	P	
Output terminal	37.2	57.5	60	P	
Relay ambient K1	40.9	61.2	85	P	
Bulk capacitor C106	31.7	52.0	85	P	
IGBT1	48.8	69.1	85	P	
RV1	26.8	47.1	85	P	
RV5	35.8	56.1	85	P	
Rectifier bridge body U9	38.5	58.8	125	P	
Q2	43.2	63.5	85	P	
TR1 winding	46.4	66.7	125	P	
TR1 core	46.2	66.5	125	P	
PC2	46.1	66.4	85	P	
PC1	38.8	59.1	85	P	
Y-cap C60	34.5	54.8	85	P	
Heat sink	54.4	74.7	85	P	
External enclosure near heat sink sink	31.5	51.8	80	P	
Wire connected fan	39.6	59.9	80	P	

Fan	28.4	48.7	70	P	
Key	30.0	50.3	65	P	
Ambient: t1: 23.8 °C ; t2: 24.7 °C		<i>temperature curves see page</i>			

5.2.3.8	TABLE: Temperature rise test (Model SV-DA200-5R5-4-S0)				P
	Supply voltage (V)	484			—
	Derating (%)	+10%			—
	Rated maximum ambient temperature (°C)	45.0			—
	Ambient T _{min} (°C)	24.1			—
	Ambient T _{max} (°C)	24.9			—
Part / Location	Measured	Max. Limit *			Result
Load: External inductor					
Part / Location	Temp (°C)	Adjust to T _{ma} (°C)	(°C)	Pass	Fail
Input terminal	32.3	52.4	125	P	
Output terminal	38.8	58.9	125	P	
Relay ambient K1	41.8	61.9	85	P	
Bulk capacitor C106	30.5	50.6	85	P	
IGBT1	50.4	70.5	85	P	
RV1	27.7	47.8	85	P	
RV5	34.6	54.7	85	P	
Rectifier bridge body U9	40.1	60.2	125	P	
Q2	44.1	64.2	85	P	
TR1 winding	45.2	65.3	125	P	
TR1 core	47.8	67.9	125	P	
PC2	47.0	67.1	85	P	
PC1	37.6	57.7	85	P	
Y-cap C60	36.1	56.2	85	P	
Heat sink	55.3	75.4	85	P	
External enclosure near heat sink sink	30.3	50.4	70	P	
Wire connected fan	41.2	61.3	80	P	
Fan	29.3	49.4	70	P	
Key	28.8	48.9	65	P	
Ambient: t1: 24.4 °C ; t2: 24.9 °C		<i>temperature curves see page</i>			

5.2.2.2 5.2.3.6 5.2.4	TABLE: PWB short-circuit test, Short-circuit test and breakdown of component test, Abnormal operation tests			P
	Ambient temperature (°C)		25°C 68RH	—
	Mains fuse during test (A)		A suitable external circuit breaker must be employed before installation	—
Component No.	Fault	Supply voltage (V)	Test time	Observation
Model SV-DA200-5R5-4-S0 supply PCB				
TR1 pin (9-10)	Short circuit	440	10min	After short, unit shut down immediately. Recoverable after remove fault condition. No damage, no hazard.
PC2 pin(3-4)	Short circuit	440	10min	After short, unit shut down immediately. Recoverable after remove fault condition. No damage, no hazard.
C104	Short circuit	440	10min	After short, unit shut down immediately. Recoverable after remove fault condition. No damage, no hazard.
C106	Short circuit	440	10min	After short, unit shut down immediately. Recoverable after remove fault condition. No damage, no hazard.
Rectifier bridge U9	Short circuit	440	10min	unit shut down. Unrecoverable .U9 damage, no hazard.
Half filter	clogged	440	60min	Unit operated as normal. No damage, no hazard
All filter	clogged	440	60min	Unit shut down during test. No damage, no hazard
Output U-V	Short circuit	440	10min	Unit show Er01-0 immediately. Recoverable after remove fault condition. No damage, no hazard
Output U-W	Short circuit	440	10min	Unit show Er01-0 immediately. Recoverable after remove fault condition. No damage, no hazard
Ouput V-W	Short circuit	440	10min	Unit show Er01-0 immediately. Recoverable after remove fault condition. No damage, no hazard
Loss phase	Loss T	440	10min	Unit operated as normal.No damage,no hazard
Loss phase	Loss S	440	10min	Unit operated as normal.No damage,no hazard
Loss phase	Loss R	440	10min	Unit operated as normal.No damage,no hazard
All blower motors	Inoperative	440	60min	Unit shut down during test. No damage, no hazard

5.2.3.9	TABLE: Protective bonding(SV-DA200-5R5-4-S0)		P
	Test current (A)	20A	—

Points of application	Resistance (mΩ)	Voltage (V)	Test time (s)	Result
Metal enclosure	Max.14	-	60	Pass
Supplementary information: limit is 20 mΩ				

5.2.5	TABLE: Material tests					N/A
Part	Manufacturer of material/part	Type of material/part	Thickness (mm)	Test	Result	
—	—	—	—	—	—	
Supplementary information: UL Recognized material used						

1	TABLE: List of materials and components separately evaluated					P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity	
SV-DA200-5R5-4-S0						
PCB	HUIZHOU GLORYSKY ELECTRONICS CO LTD	GS-M2	130℃, V-0	UL94,UL796	UL	
Relay(K1)	DONGGUAN Churod ELECTRICAL CO LTD	T9AS1D12-24	Coil: 24VDC,30A, 240VAC	UL60947-4-1	UL	
-Alt	TYCO ELECTRONICS(SHENZHEN) CO.,LTD	T9AS1D12-24	Coil: 24VDC,30A, 240VAC	UL60947-4-1	UL	
-Alt	XIAMEN HONGFA ELECTROACOUSTIC CO LTD	T9AS1D12-24	Coil: 24VDC,30A, 240VAC	UL60947-4-1	UL	
Varistor (RV5)	Centra Science Corp.	CNR-14D102K	1000V, 85℃	EN 61800-5-1	Tested with appliance	
(Alt.)	EPCOS	S14K1000	1000V, 85℃	EN 61800-5-1	Tested with appliance	
(Alt)	EPCOS	S14K625	625V, 85℃	EN 61800-5-1	Tested with appliance	
(Alt)	SHANXI HUAXING ELECTRONIC GROUP CO LTD	MYG20G14K102	625V,0.6W	EN 61800-5-1	Tested with appliance	
(Alt)	RIGHTKING (SHENZHEN) CO LTD	102KD14	625V,0.6W	UL1557	UL	
Opto coupler(PC1,PC2,PC10)	SHARP CORP ELECTRONIC COMPONENTS AND DEVICES COMPANY	PC817 series	5000Vac	UL E64380, VDE 40008087	SHARP CORP ELECTRONIC COMPONENTS AND DEVICES COMPANY	

(Alt)	LITE-ON TECHNOLOGY CORP	LTV-816 Series	5000Vac	UL E113898, VDE 40015248	LITE-ON TECHNOLOGY CORP
Rectifier bridge (U9)	PAN JIT ELECTRONICS (WUXI) CO LTD	DI1010S	1000V,1A,1 50°C	UL1012	UL
Terminal connector (CN1)	DEGSON ELECTRONICS CO LTD	DG65R-B-12P-13-00AH	300V,20A	UL1059	UL
Transformer on supply PCB (T1)	SHENZHEN BOULDER ELECTRONIC CO.,LTD.	DA100		EN61800-5-1	Tested with appliance
-Bobbin	CHANG CHUN PLASTICS CO LTD	ETD34	150°C, V-0	UL94,UL746	UL
- Magnet wire	CHENGWEI INDUSTRIAL CO LTD	2UEW	130°C, V-0	UL1446	UL
- Triple wire	SHENZHEN CHANGYUAN ELECTRONIC MATERIAL CO LTD	KTE-B	130°C, V-0	UL1446	UL
-Insulation tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT-280	130°C, V-0	UL510	UL
- Magnet tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	WF-2902	130°C, V-0	UL510	UL
-Tube	HUIZHOU FUREDA PLASTICS CO., LTD	FED-TT-L	200°C	UL224	UL
- VARNISH	TAIHU INSULATION MATERIAL CO LTD	T4260(a)	130°C	UL1446	UL
Varistor (RV1,RV4,RV11,RV12)	Centra Science Corp.	CNR-14D511K	511V, 85°C	EN 61800-5-1	Tested with appliance
(Alt.)	EPCOS	S14K320	320V, 85 °C	EN 61800-5-1	Tested with appliance
(Alt)	SHANXI HUAXING ELECTRONIC GROUP CO LTD	MYG20G14K511	511V, 85 °C	EN 61800-5-1	Tested with appliance

(Alt)	RIGHTKING (SHENZHEN) CO LTD	511KD14	511V, 85 °C	UL1557	UL
Opto coupler(PC3,PC4,PC 5,PC6,PC7,PC8,PC9)	AVAGO TECHNOLOGIE S PTE LTD	ACPL-W314	Rated 110° C, Isolation voltage: 5000 V	UL1577	UL
(Alt)	TOSHIBA CORP, SEMICONDUCT OR CO DISCRETE SEMICONDUCT OR DIV	TLP701HF	Rated 100° C, Isolation voltage: 5000 V	UL1577	UL
(Alt)	TOSHIBA CORP, SEMICONDUCT OR CO DISCRETE SEMICONDUCT OR DIV	FOD8314T	Rated 100° C, Isolation voltage: 5000 V	UL1577	UL
(Alt)	LITE-ON TECHNOLOGY CORP	LTV-314W	Rated 105° C, Isolation voltage: 5000 V	UL1577	UL
(Alt)	TOSHIBA CORP, SEMICONDUCT OR CO DISCRETE SEMICONDUCT OR DIV	TLP5701	Rated 110° C, Isolation voltage: 5000 V	UL1577	UL
(Alt)	RENESAS ELECTRONICS CORPORATION	PS9031	Rated 125° C, Isolation voltage: 5000 V	UL1577	UL
(Alt)	VISHAY SEMICONDUCT OR GMBH	VOL3120T	Rated 110° C, Isolation voltage: 5300 V	UL1577	UL
Y cap. (C39,C40,C45,C60,C 82,C83,C84)	FENGHUA (HOLDING) CO LTD ZHENGHUA CERAMIC	CT7-Y2	rated 250 Vac, 125° C4.7 nF	UL60384-14	UL
(Alt)	SHAANXI HUAXING ELECTRONIC DEVELOPMENT CO	CT7Y2	rated 250 Vac, 125° C 4.7 nF	UL60384-14	UL
(Alt)	MURATA MFG CO LTD	KH	rated minimum 250 Vac, 125° C 4.7 nF	UL60384-14	UL

(Alt)	TDK CORPORATION	CS	rated 300 Vac, 125° C, 4.7 nF	UL60384-14	UL
(Alt)	VISHAY ELECTRONIC GMBH	VY2	rated 300 Vac, 125° C, 4.7 nF	UL60384-14	UL
FAN	YEN SUN TECHNOLOGY CORP	FD248032EB-P	24VDC, 0.45 A	UL507	UL
IGBT	FUJI ELECTRIC CO LTD	7MBR50VM120-50	1200V, 50A	UL1557	UL
(Alt)	STARPOWER SEMICONDUCTOR LTD	GD50PIT120C5 SN	1200V, 50A	UL1557	UL
(Alt)	INFINEON TECHNOLOGIE S AG	FP50R12KT4	1200V, 50A	UL1557	UL
Protective resistors (R5, R8, R18, R65, R79, R81, R82, R83, R203, R204, R205, R206, R208, R209, R210, R211)	Various	Various	1/2W; 510kΩ	EN61800-5-1	Tested with appliance
4.4KW series and 3.0KW series					
IGBT	INFINEON TECHNOLOGIE S AG	FP50R06KE3	600V, 50A	UL1557	UL
FAN	SHENZHEN BAIKE MOTOR ELECTRONICS CO LTD	DBA08025B24 G	24V, 0.23A, 54.81CFM	UL507	UL
(Alt)	ADDA CORP	AD0824UB-A71GL	24V, 0.26A, 56.768CFM	UL507	UL
(Alt)	YEN SUN TECHNOLOGY CORP	FD248025EB-N	24V, 0.23A, 59.2CFM	UL507	UL
(Alt)	SHENZHEN HUAXIA HENGTAI ELECTRONIC CO LTD	DA08025B24U A	24V, 0.4A, 60.91CFM	UL507	UL
(Alt)	FOXCONN TECHNOLOGY CO LTD	PVA080G24Q	24V, 0.31A, 63.51 CFM	UL507	UL
Terminal connector (CN1)	DEGSON ELECTRONICS CO LTD	DG65R-B-12P-13-00AH	300V, 20A	UL1059	UL
Rectifier bridge (U9)	PAN JIT ELECTRONICS (WUXI) CO LTD	DI1010S	1000V, 1A, 1 50°C	UL1012	UL
2.0KW series					
Rectifier bridge (U9)	PAN JIT ELECTRONICS (WUXI) CO LTD	DI1010S	1000V, 1A, 1 50°C	UL1012	UL

Terminal connector (CN1)	ANYTEK TECHNOLOGY CORP	OQ0501010000 G	300V,20A	UL486A-486B	UL
Terminal connector (CN2)	ANYTEK TECHNOLOGY CORP	OQ0701010000 G	300V,20A	UL486A-486B	UL
Relay on drive PCB	Dongguan Churod Electronics Co., Ltd.	OZF series	240Vac,16A	EN 61810-1	UL E58304/TUV R50139112
(Alt)	Song Chuan Precision Co., Ltd.	CHZ03-V-124DA2	250Vac,16A	EN 61810-1	TUV R50212872
(Alt)	Song Chuan Precision Co., Ltd.	855AP-1A-C	250Vac,16A	EN 61810-1	TUV R50057260
(Alt)	Xiamen Hongfa Electroacoustics Co., Ltd.	JQX-115	250Vac,16A	EN 61810-1	VDE 116934
(Alt)	OMRON Corporation	G2RL-2	250Vac,16A	EN 61810-1	VDE 119650
IGBT	INFINEON TECHNOLOGIE S AG	FP25R12W2T 4	1200V,25A	UL1557	UL
(Alt)	STARPOWER SEMICONDUCTOR LTD	GD25PJT120L 3S	1200V,25A	UL1557	UL
FAN	SHENZHEN BAIKE MOTOR ELECTRONICS CO LTD	DBA08025B24 G	24V, 0.21A,	UL507	UL
(Alt)	YEN SUN TECHNOLOGY CORP	FD246025EB	24V, 0.21A,	UL507	UL
(Alt)	ADDA CORP	AD0624VB	24V, 0.21A,	UL507	UL

6	TABLE: Information and marking requirements					P
		Product	Package	Installation	User	Maintenance
6.2	Information for selection					
	- Name or trademark of the manufacturer, supplier or importer	OK	OK	OK	OK	OK
	- Catalogue number or equivalent	OK	OK	OK	OK	OK
	- Voltage rating	OK	-	OK	-	OK
	- Current rating	OK	-	OK	-	OK
	- Power rating	OK	-	OK	-	OK
	- Frequency	OK	-	OK	-	OK
	- Number of phases	OK	-	OK	-	OK
	- Reference to standards	-	-	OK	-	-
	- Date code or serial number	OK	-	-	-	-

- Reference to instructions	-	-	OK	OK	OK
6.3	Information for installation and commissioning				
6.3.2: Mechanical considerations	-	OK	OK	-	OK
- Dimensions (SI units)	-	-	OK	-	OK
- Mass (SI units)	-	OK	OK	-	OK
- Mounting details (SI units)	-	-	OK	-	OK
6.3.3: Environment (operation, transport, storage)	-	-	OK	-	OK
- Temperature	-	-	OK	-	OK
- Humidity	-	-	OK	-	OK
- Altitude	-	-	OK	-	OK
- Pollution	-	-	OK	-	OK
- Ultra violet light	-	-	OK	-	OK
- Type of electrical supply system	-	-	OK	-	-
- Field supply requirements (if any)	-	-	OK	-	-
- IP rating	OK	-	OK	-	OK
6.3.4: Handling and mounting	-	OK	OK	-	OK
- Packing and unpacking	-	OK	OK	-	OK
- Moving	-	OK	OK	-	OK
- Lifting	-	OK	OK	-	OK
- Strength and rigidity of mounting surface	-	OK	OK	-	OK
- Fastening	-	OK	OK	-	OK
- Coolant type and design pressure for liquid cooled product	-	-	OK	-	OK
- Provision of adequate access for operation, adjustment and maintenance	-	OK	OK	-	OK
- Warning if mounting surface exceeds 90 °C :	-	-	N/A	-	-
6.3.5.1: Motor selection	-	-	N/A	N/A	N/A
6.3.5.2: Motor integrated sensors	-	-	N/A	N/A	N/A
6.3.5.3: Critical torsional speeds	-	-	N/A	N/A	N/A
6.3.5.4: Transient torque analysis	-	-	N/A	N/A	N/A
6.3.6.2: Interconnection and wiring diagrams ..	-	-	OK	-	OK
6.3.6.3: Conductor (cable) selection	-	-	OK	-	OK
6.3.6.4: Terminal capacity and identification ...	OK	-	OK	-	OK
6.3.6.5: Protection requirements	-	-	OK	OK	OK
- Protective class	OK	-	OK	OK	OK
- Interface details	-	-	OK	-	OK
- Terminals with protective separation	-	-	OK	OK	OK
6.3.6.6: Earthing	-	-	OK	-	OK

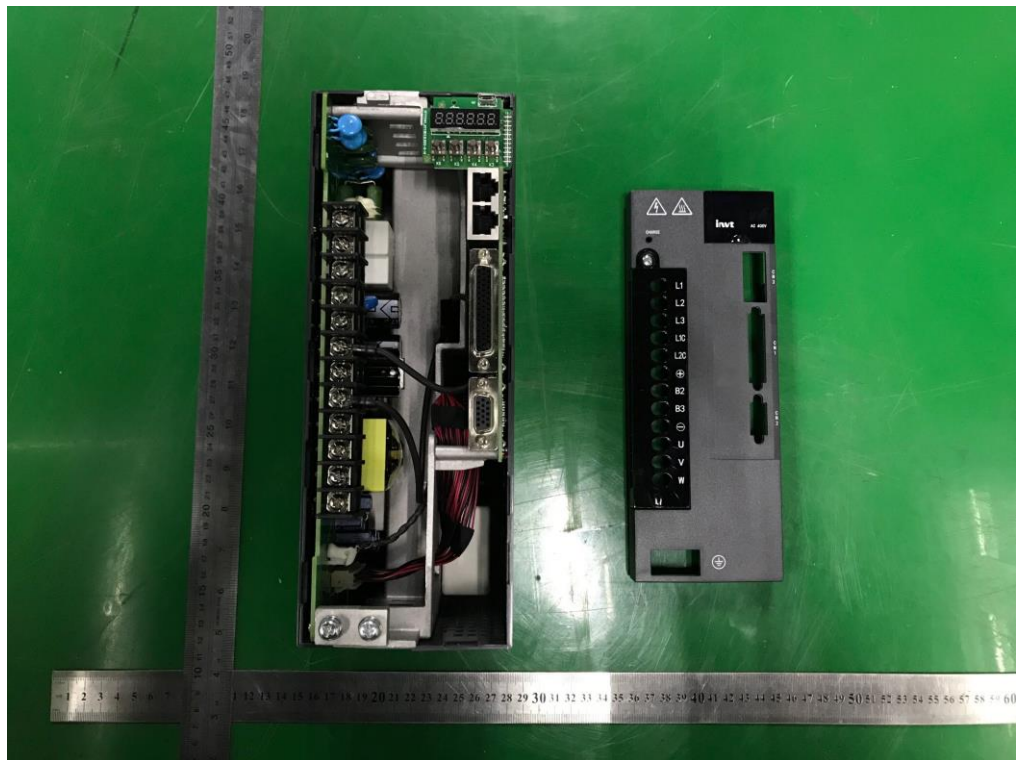
- Symbol IEC 60417-5019, PE or green-yellow	OK	-	-	-	-
- Symbol IEC 6417-5172 for Class II	N/A	-	-	-	-
6.3.6.7: Protective earthing conductor current :	-	-	OK	-	OK
- Symbol ISO 7000-0434 and instruction	OK	-	OK	-	OK
- RCD compability	-	-	N/A	-	N/A
6.3.6.8: Special requirements	-	-	OK	-	OK
6.3.7: Supply overcurrent or short-circuit protection	-	-	OK	-	OK
6.3.8: Motor overload protection	-	-	OK	-	OK
6.3.9: Commissioning	-	-	OK	-	-
6.4	Information for use				
6.4.1: General	-	-	OK	OK	OK
6.4.2: Adjustment	OK	-	OK	OK	OK
6.4.3: Labels, signs, and signals	OK	-	OK	OK	OK
6.4.3.1: General	OK	-	OK	OK	OK
6.4.3.2: Isolators	OK	-	-	-	-
6.4.3.3: Visual and audible signals	OK	-	-	OK	-
6.4.3.4: Hot surfaces, symbol IEC 60417-5041	N/A	-	-	N/A	-
6.4.3.5: Equipment marking	OK	-	OK	OK	OK
6.5	Information for maintenance				
6.5.1: General.....	-	-	-	OK	OK
- Maintenance procedures and schedules	-	-	-	-	OK
- Maintenance schedules	-	-	-	OK	OK
- Safety precautions	-	-	-	-	OK
- Location of live parts accessible during maintenance	-	-	-	-	OK
- Adjustment procedures	-	-	OK	OK	OK
- Repair and replacement procedures	-	-	-	-	OK
- Special tools list	-	-	-	OK	OK
6.5.2: Capacitor discharge	OK	-	OK	-	OK
6.5.3: Auto restart/bypass	-	-	OK	OK	OK
6.5.4: Potential Transformer (PT) / Current Transformer (CT) connection	OK	-	OK	-	OK
6.5.5: Other hazards	OK	-	-	-	OK
Supplementary information:					

Photographs of samples

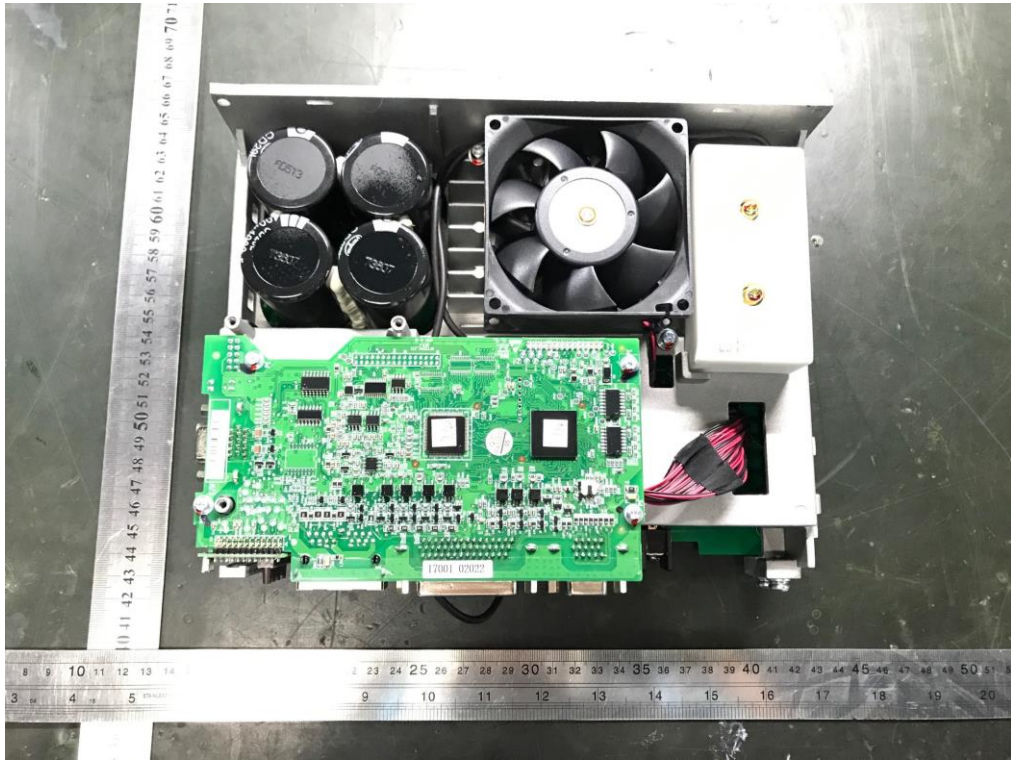
(Model No.: **SV-DA200-5R5-4-S0**)



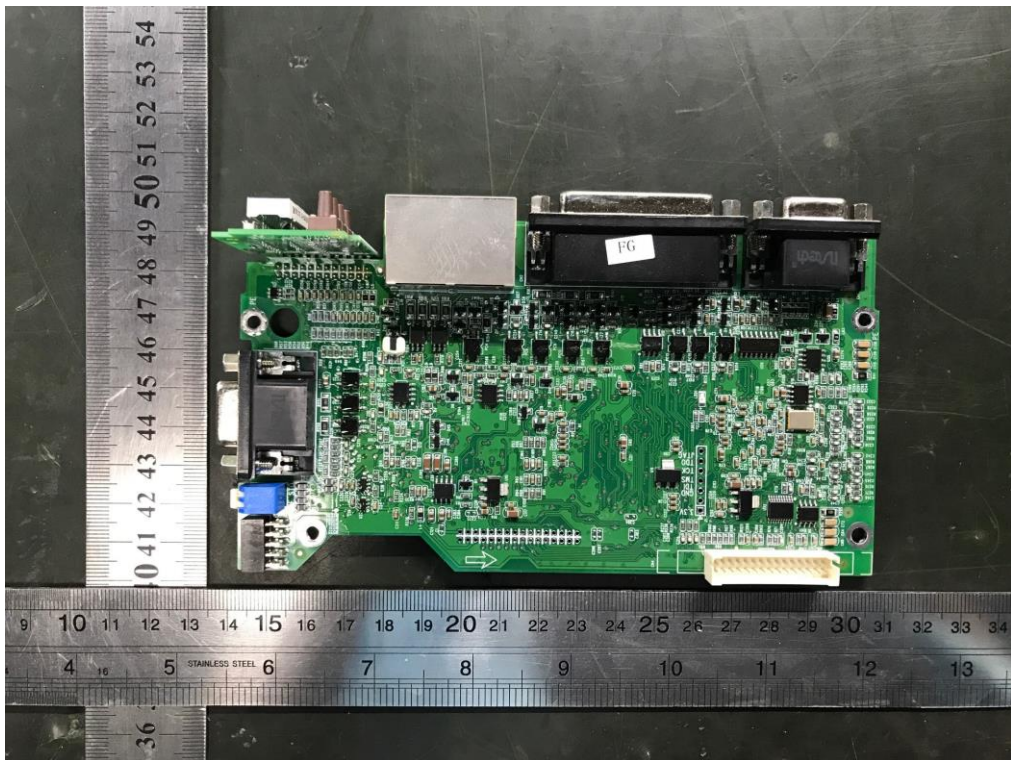
General view



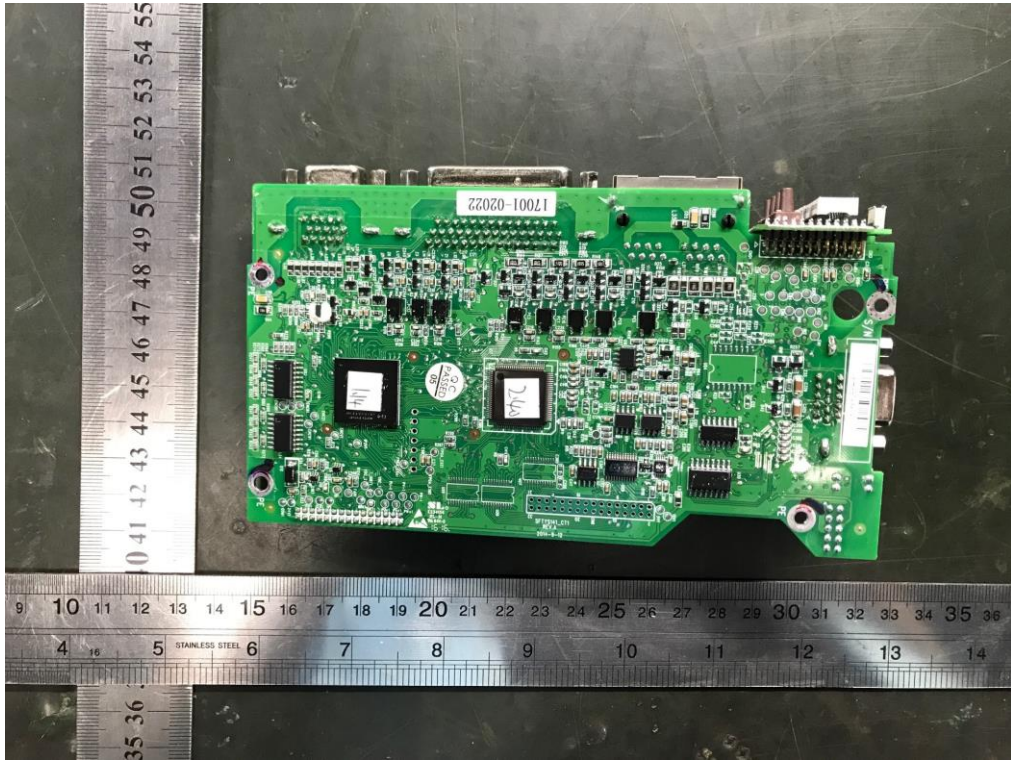
Internal view



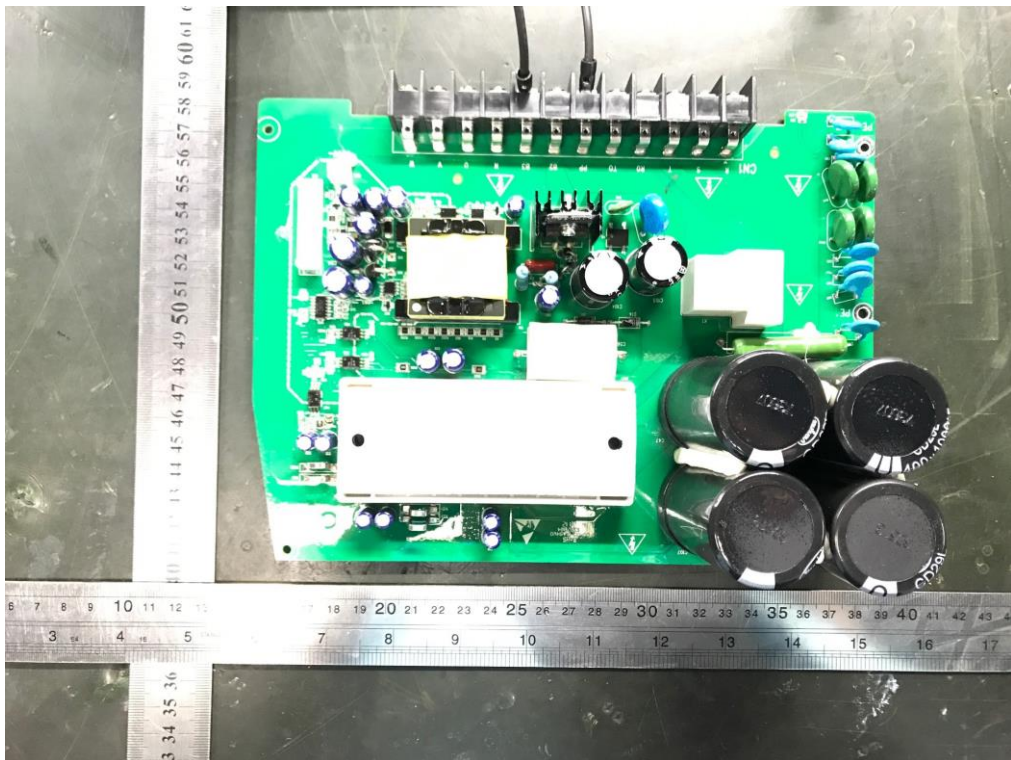
Internal view



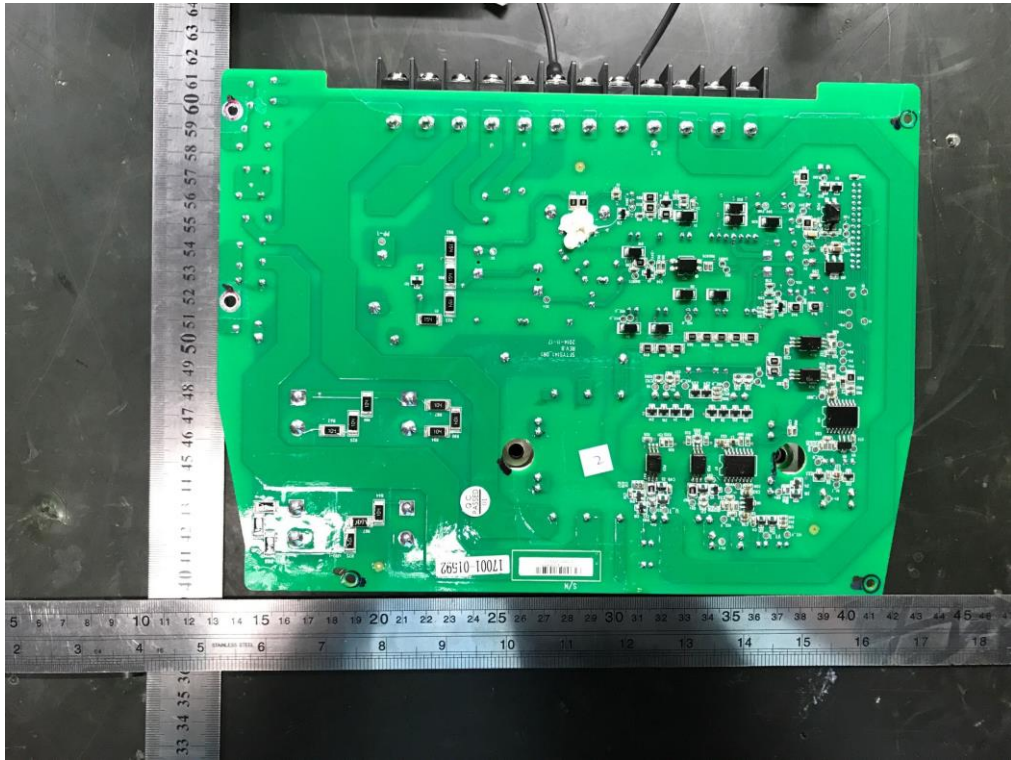
Control panel PCB components side



Control panel PCB track side



Drive PCB components side



Drive PCB track side

-END OF REPORT-