




TEST REPORT

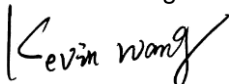
Applicant: Guangzhou Aucotech Automation Technology Ltd
Address of Applicant: Hongshi Business Building, 11 Kehua Road, SCI-TECH Industry Park, Taihe Town, Baiyun District, Guangzhou, CHINA

Equipment Under Test (EUT)

Product Name: Servo Drive
Brand Name:  AUCTECH
Model No.: Please Refer To Page 5.
Applicable standards: EN 61800-5-1:2007+A1:2017+A11:2021
Date of sample receipt: May 29, 2023
Date of Test: May 29, 2023 To June 15, 2023
Date of report issued: August 29, 2023
Test Result : PASS*

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.

Authorized Signature



Kevin Wang
Laboratory Manager



EBO assures objectivity and justness of the test, and fulfill the duty of confidentiality for applicant's information. Applicant should undertake responsibility for the authenticity of submitted sample and information. The result(s) shown in this report refer only to the sample(s) tested. The test results only reflect the evaluation of the sample under test and are not authorized for other purposes. EBO do not accept any liability to you for any loss arising out of or in connection with this report, in contract, tort, by statute or otherwise. This report is invalid without signatures of approver and special seal for inspection of EBO, or it has been reproduced in full or part. This report shall not be published as advertisement without the approval of EBO. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. This document is issued by the company under its General Conditions of Service accessible at <http://www.ebotest.com/zjyb/318.html>.



TEST REPORT
 per
EN 61800-5-1
Adjustable speed electrical power drive systems
Part 5-1: Safety requirements for Electrical, thermal and energy

Administrative Data

Report Reference No. : EBO2305111-E276A-1

Testing laboratory : Shenzhen EBO Testing Center

Address : 2F, Qiaohongsheng Cultural Creative Park, Yintian Industrial Zone, Xixiang Street, Bao 'an District, Shenzhen

Tested by (name and signature)..... : Bernie Xia *Bernie Xia*

Approved by (name and signature) . : Kevin Wang *Kevin Wang*

Date of issue : August 29, 2023

Contents..... : 23 Pages.



Test specification:

Standard(s) : EN 61800-5-1:2007+A1:2017+A11:2021

Test procedure : CE-LVD

Non-standard test method : N/A


Applicant's name : Guangzhou Aucotech Automation Technology Ltd

Address..... : Hongshi Business Building, 11 Kehua Road, SCI-TECH Industry Park, Taihe Town, Baiyun District, Guangzhou, CHINA

Manufacturer..... : Guangzhou Aucotech Automation Technology Ltd

Address..... : Hongshi Business Building, 11 Kehua Road, SCI-TECH Industry Park, Taihe Town, Baiyun District, Guangzhou, CHINA

Test item description..... : Servo Drive

Brand Name..... : 

Model/Type reference..... : Please Refer To Page 5.

Model tested..... : AD2RE-1R8SA-E

Rating(s) : Input: AC 200-240V, 50/60Hz
 Output: AC 0-240V, 0-600HZ, 4.2A, 750W



Test item particulars:		
Type of item tested.....:	Safety Evaluation	
Description of equipment function.....:	AC SERVO DRIVE	
Overall size of the equipment (L x W x H).....:	See instruction	
Mass of the equipment (kg).....:	/	
Accessories and detachable parts included in the evaluation.....:	—	
Option.....:	—	
Test case verdicts:		
Test case does not apply to the test object.....:	N(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.....:	May 29, 2023	
Date (s) of performance of tests.....:	May 29, 2023 To June 15, 2023	
General Remarks:		
This report shall not be reproduced except in full without the written approval of the testing laboratory.		
The test results presented in this report relate only to the item(s) tested.		
"(see remark #)" refers to a remark appended to the report.		
"(see Annex #)" refers to an annex appended to the report.		
Throughout this report a comma is used as the decimal separator.		
Copy of Marking Plate:		
<div style="border: 1px solid black; padding: 10px; margin: 0 auto; width: 80%;"> <p>Product Name: SERVO DRIVE Model no.: AD2RE-1R8SA-E ta=40°C Input: AC 200-240V, 50/60HZ Output: AC 0-240V, 0-600HZ, 4.2A, 750W Guangzhou Aucotech Automation Technology Ltd Hongshi Business Building, 11 Kehua Road, SCI-TECH Industry Park, Taihe Town, Baiyun District, Guangzhou, CHINA</p> <div style="text-align: center;"> </div> <p>S/N:XXXXXX Importer:XXXXXX Address:XXXXXX Made In China</p> </div>		
Summary of Testing:		
The product has been tested and found in compliance with the standard requirements.		
All models are identical in the same PCB layout, interior structure and electrical circuits. The only differences are the model name and appearance color for commercial purpose.		
We select the models of maximum power model AD2RE-1R8SA-E for all testings.		

Version

Version No.	Date	Description
00	June 16, 2023	Original
01	June 25, 2023	New report (Change model)
02	August 29, 2023	New report (Change Applicant , Change Manufacturer, Address, Brand Name, Product Name, Model Name)



Model No.:

AD2RE-1R8SA-E	AD2RE-2R8SA-E	AD2RE-3R5SA-E	AD2RE-4R2SA-E
AD2RE-060PA-E	AD2RE-100SA-E	AD2RE-120SA-E	AD2RE-120PA-E
AD2RE-140SA-E	AD2RE-6R8SC-E	AD2RE-8R3SC-E	AD2RE-100SC-E
AD2RE-120SC-E	AD2RE-140SC-E	AD2RE-180SC-E	AD2RE-210SC-E
AD2RE-250SC-E	AD2RE-340SC-E	AD3RE-1R8SA-E-S	AD3RE-2R8SA-E-S
AD3RE-3R5SA-E-S	AD3RE-4R2SA-E-S	AD2RE-1R8SA-E-□	AD2RE-2R8SA-E-□
AD2RE-3R5SA-E-□	AD2RE-4R2SA-E-□	AD2RE-060PA-E-□	AD2RE-100SA-E-□
AD2RE-120SA-E-□	AD2RE-120PA-E-□	AD2RE-140SA-E-□	AD2RE-6R8SC-E-□
AD2RE-8R3SC-E-□	AD2RE-100SC-E-□	AD2RE-120SC-E-□	AD2RE-140SC-E-□
AD2RE-180SC-E-□	AD2RE-210SC-E-□	AD2RE-250SC-E-□	AD2RE-340SC-E-□
AD3RE-1R8SA-E-□	AD3RE-2R8SA-E-□	AD3RE-3R5SA-E-□	AD3RE-4R2SA-E-□

Note:

□ = A~Z (contain 26 letters), or □ = 0~9 (contain 10 numbers) , or □ is empty.

Remark: All models are identical in the same PCB layout, interior structure and electrical circuits. The only differences are the model name and appearance color for commercial purpose.



EN 61800-5-1			
Clause	Requirement + Test	Result - Remark	Verdict

4	PROTECTION AGAINST ELECTRIC SHOCK, THERMAL, AND ENERGY HAZARDS		-
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 C for all circuits	P
4.3.1.2	Limits of DVC	< 1000 V r.m.s	P
4.3.1.3	Requirements for protection	Basic insulation on opposite input live part. Basic insulation on live part and protective bonding or earth.	P
4.3.1.4	Circuit evaluation		P
4.3.1.4.1	General		P
4.3.1.4.2	A.C. working voltage		P
4.3.1.4.3	D.C. working voltage		N
4.3.1.4.4	Pulsating working voltage		N
4.3.2	Protective separation:	Basic insulation on opposite input live part. Basic insulation on live part and protective bonding or earth.	P
4.3.3	Protection against direct contact	Built-in product, overall should be considered in end use system	P
4.3.3.1	General		P
4.3.3.2	Protection by means of insulation of live parts	Plastic cover is separated from live parts	P
4.3.3.3	Protection by means of enclosures and barriers	Build-in component consider in end system, according installation instruction will install closed electrical operation areas.	N
4.3.4	Protection in case of direct contact	Build-in component consider in end system	N
4.3.4.1	General		N
4.3.4.2	Protection using DVC A:		N
4.3.4.3	Protection by means of protective impedance		N
4.3.4.4	Protection by means of using limited voltages		N
4.3.5	Protection against indirect contact	Build-in component consider in end system again.	P



EN 61800-5-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.5.1	General	Product cover by plastic cover, internal output circuit with protect earth terminal.	P
4.3.5.2	Insulation between live parts and accessible conductive parts	See appended table 5.2.2.1	P
4.3.5.3	Protective bonding circuit		P
4.3.5.3.1	General	Except protective chassis, other Part circuits see subclause 4.3.4.3 to 4.3.4.4	P
4.3.5.3.2	Rating of protective bonding	See appended table 5.2.3.9 and sub-clause 4.3.5.4	P
4.3.5.3.3	Protective bonding impedance		N
4.3.5.4	Protective earthing conductor	See components list table 1 and clause 5.2.3.9.	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	See appended table 5.2.3.5 and components list table.	P
4.3.5.6	Special features in equipment for protective class II		N
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	Overvoltage category	III for input terminal, II after earthed SPD circuits.	P
4.3.6.1.4	Supply earthing systems	TN (TN-C, TN-S, TN-C-S) TT	P
4.3.6.1.5	Insulation voltages	2120 V crest value for temporary overvoltage. 4000 V for impluse voltage for OVC III and 2500 V for impluse voltage for OVC II	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 ...:	OVC III consider.	P
4.3.6.2.3	Circuits not connected directly to the supply mains		N
4.3.6.2.4	Insulation between circuits	Considered, basic between protective earth and live part.	P
4.3.6.3	Functional insulation		P



EN 61800-5-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.6.4	Clearance distances	See appended table 5.2.2.1.	P
4.3.6.4.1	Determination	3000 m Max.	P
4.3.6.4.2	Electric field homogeneity		N
4.3.6.4.3	Clearance to conductive enclosures	Considered, see sub-clause 5.2.2.5.	P
4.3.6.5	Creepage distances	See appended table 5.2.2.1.	P
4.3.6.5.1	General		P
4.3.6.5.2	Materials	IIIa	P
4.3.6.6	Coating		N
4.3.6.7	PWB spacings for functional insulation	See appended components list table 1	P
4.3.6.8	Solid insulation		N
4.3.6.8.1	General		N
4.3.6.8.2	Requirements for electrical withstand capability		N
4.3.6.8.2.1	Basic or supplementary insulation		N
4.3.6.8.2.2	Double and reinforced insulation		N
4.3.6.8.2.3	Functional insulation		N
4.3.6.8.3	Thin sheet or tape material		N
4.3.6.8.3.1	General		N
4.3.6.8.3.2	Material thickness not less than 0,2 mm		N
4.3.6.8.3.3	Material thickness less than 0,2 mm		N
4.3.6.8.3.4	Compliance		N
4.3.6.8.4	Printed wiring boards (PWBs)		N
4.3.6.8.4.1	General		N
4.3.6.8.4.2	Use of coating materials		N
4.3.6.8.5	Wound components		N
4.3.6.8.6	Potting materials		N
4.3.6.9	Insulation requirements above 30 kHz		N
4.3.7	Enclosures		N
4.3.7.1	General		N
4.3.7.2	Cast metal		N
4.3.7.3	Sheet metal		N
4.3.8	Wiring and connections		P
4.3.8.1	General		P
4.3.8.2	Routing		N



EN 61800-5-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.8.3	Colour coding		P
4.3.8.4	Splices and connections		P
4.3.8.5	Accessible connections	Built-in component consider in end system	N
4.3.8.6	Interconnections between parts of the PDS		N
4.3.8.7	Supply connections		N
4.3.8.8	Terminals	See appended component list table 1	P
4.3.8.8.1	Construction requirements		P
4.3.8.8.2	Connecting capacity		P
4.3.8.8.3	Connection		N
4.3.8.8.4	Wire bending space for wires 10 mm ² and greater		N
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	Built-in component consider in end system.	P
4.3.11	Capacitor discharge	Built-in component consider in end system.	N
4.3.12	Access conditions for high-voltage PDS		N
4.4	Protection against thermal hazards		P
4.4.1	Minimizing the risk of ignition	See appended table 1.	P
4.4.2	Insulating 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	Built-in component consider in end system	N
4.4.4	Temperature limits	Built-in component consider in end system again.	P
4.4.4.1	Internal parts		P
4.4.4.2	External parts of CDM	Used within BDM.	N
4.4.5	Specific requirements for liquid cooled PDS		N
4.4.5.1	Coolant		N
4.4.5.2	Design requirements		N
4.4.5.2.1	Corrosion resistance		N
4.4.5.2.2	Tubing, joints and seals		N
4.4.5.2.3	Provision for condensation		N
4.4.5.2.4	Leakage of coolant		N



EN 61800-5-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.4.5.2.5	Loss of coolant		N
4.4.5.2.6	Conductivity of coolant		N
4.4.5.2.7	Insulation requirements for coolant hoses		N
4.4.6	Motor overload and overtemperature protection		P
4.4.6.1	Means of protection		P
4.4.6.2	CDM/BDM with electronic motor overload protection		P
4.4.6.3	CDM/BDM with electronic motor overload protection with thermal memory retention		P
4.4.6.4	CDM/BDM with electronic motor overload protection which is speed sensitive		P
4.4.6.5	CDM/BDM providing monitoring and automatic reduction of motor current by means of thermal sensors		P
4.5	Protection against energy hazards		P
4.5.1	Electrical energy hazards		P
4.5.2	Mechanical energy hazards		N
4.5.2.1	General		N
4.5.2.2	Critical torsional speed		N
4.5.2.3	Transient torque analysis		N
4.5.3	Acoustic noise emission		N
4.6	Protection against environmental stresses		N
5	TEST REQUIREMENTS		P
5.1	General		P
5.1.1	Test objectives and classification	Sample tests.	P
5.1.2	Selection of test samples	See product general information.	P
5.1.3	Sequence of tests		P
5.1.4	Earthing conditions	Neutral to earth;	P
5.1.5	Compliance	Verified by suitable examination, visual inspection, and/or measurement.	P
5.1.6	Test Overview		—
5.2	Test specifications		P
5.2.1	Visual inspections (type test, sample test and routine test)		P
5.2.2	Mechanical tests		N
5.2.2.1	Clearance and creepage distances (type test)	See appended table 5.2.2.1.	P



EN 61800-5-1			
Clause	Requirement + Test	Result - Remark	Verdict
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)		N
5.2.2.4	Enclosure integrity test (type test)		N
5.2.2.5	Deformation tests		N
5.2.2.5.1	General		N
5.2.2.5.2	Deflection test (type test)		N
5.2.2.5.3	Impact test (type test), temperature (°C)		N
5.2.3	Electrical tests		P
5.2.3.1	Impulse voltage test (type test and sample test)	Clearances and solid insulation have adequate dielectric strength	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		P
5.2.3.2.2	Value and type of test voltage		P
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		P
5.2.3.2.5	Verification of the a.c. or d.c. voltage test		P
5.2.3.3	Partial discharge test (type test, sample test)		N
5.2.3.4	Protective impedance (type test and routine test) :		N
5.2.3.5	Touch current measurement (type test)	See appended table 5.2.3.5.	P
5.2.3.6	Short-circuit test and Breakdown of components test (type tests)		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		P
5.2.3.6.3	Short-circuit test	See appended table 5.2.3.6.3.	P
5.2.3.6.3.1	Load conditions		P
5.2.3.6.3.2	Short-circuit between phase terminals of power outputs		P
5.2.3.6.3.3	Short-circuit between phase terminals of power output and protective earth		P
5.2.3.6.4	Breakdown of components test	See appended table 5.2.3.6.4.	P
5.2.3.6.4.1	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



EN 61800-5-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.2.3.6.6	Pass criteria		P
5.2.3.7	Capacitor discharge (type test)	Built-in component consider in end system	N
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
5.2.4.2	Test duration		P
5.2.4.3	Pass criteria		P
5.2.4.4	Loss of phase (type test)		P
5.2.4.5	Cooling failure tests (type tests)		N
5.2.4.5.1	General		P
5.2.4.5.2	Inoperative blower motor		P
5.2.4.5.3	Clogged filter		N
5.2.4.5.4	Loss of coolant		N
5.2.5	Material tests		N
5.2.5.1	High current arcing ignition test (type test)		N
5.2.5.2	Glow-wire test (type test)		N
5.2.5.3	Hot wire ignition test (type test – alternative to Glow-wire test)		N
5.2.5.4	Flammability test (type test)		N
5.2.6	Environmental tests (type tests)		N
5.2.6.1	General		N
5.2.6.2	Acceptance criteria		N
5.2.6.3	Climatic tests		N
5.2.6.3.1	Dry heat test (steady state)	Test conditions: 40°C of ambient air, BDM operates during 16 hours.	P
5.2.6.3.2	Damp heat test (steady state)	Test conditions: power supply disconnected, ambient air is 40°C, humidity is 95%, and test duration is 96 hours.	P
5.2.6.4	Vibration test (type test)	Test conditions: power supply disconnected. Motion is sinusoidal. Vibration amplitude/acceleration is 0.075mm/1g	P
5.2.7	Hydrostatic pressure test (type test and routine test)		N



EN 61800-5-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.2.8	Electronic motor overload protection test (type test)	See appended Table 5.2.8.	N
5.2.8.1	General requirements		N
5.2.8.2	Test set-up		N
5.2.8.3	Pass criteria		N
5.2.8.4	CDM/BDM electronic motor overload protection test (type test)		N
5.2.8.5	CDM/BDM electronic motor thermal memory retention shutdown test (type test)		N
5.2.8.6	CDM/BDM electronic motor thermal memory retention loss of power test (type test)		N
5.2.8.7	CDM/BDM electronic motor thermal speed sensitivity test (type test)		N
5.2.9	Circuit functionality evaluation (routine and/or sample test)		P
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		N
6.3.3	Environment		P
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		N
6.3.5.4	Transient torque analysis		N
6.3.6	Connections		P
6.3.6.1	General		P
6.3.6.2	Interconnection and wiring diagrams		P
6.3.6.3	Conductor (cable) selection		P
6.3.6.4	Terminal capacity and identification		P
6.3.6.5	Protection requirements		P
6.3.6.6	Earthing		P
6.3.6.7	Protective earthing conductor current		P



EN 61800-5-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.3.6.8	Special requirements		N
6.3.7	Overcurrent and short-circuit protection		P
6.3.8	Motor overload protection and overtemperature protection		P
6.3.8.1	CDM/BDM not incorporating internal electronic motor overload and overtemperature protection		P
6.3.8.2	CDM/BDM incorporating internal electronic motor overload and overtemperature protection		P
6.3.9	Commissioning		P
6.4	Information for use	See appended table 6, part 6.4.	P
6.4.1	General		
6.4.2	Adjustment		
6.4.3	Labels, signs and signals		
6.4.3.1	General		
6.4.3.2	Isolators		N
6.4.3.3	Visual and audible signals		
6.4.3.4	Hot surfaces		N
6.4.3.5	Equipment marking		
6.5	Information for maintenance	See appended table 6, part 6.5.	
6.5.1	General		
6.5.2	Capacitor discharge		N
6.5.3	Auto restart/bypass connection		N
6.5.4	PT/CT connection		N
6.5.5	Other hazards		N
Annex A	Examples of protection in case of direct contact	Considered	—
Annex B	Examples of overvoltage category reduction	Considered	—
Annex C	Measurement of clearance and creepage distances	Considered	P
Annex D	Altitude correction for clearances	Considered	—
Annex E	Clearance and creepage distance determination for frequencies greater than 30 kHz	Considered	—
Annex F	Cross-sections of round conductors	Considered	—
Annex G	Guidelines for RCD compatibility	Considered	—
Annex H	Symbols referred to in this part of IEC 61800	Considered	—



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	
PCB	Interchangeable	Interchangeable	V-0,130°C	UL 796	UL	

5.2.2.1	TABLE: General selection and information of supply earthing systems for clearance distances										-
Network systems	TN-S, TN-C, TN-CS, TT (not corner earthed)		TN-S, TT (corner earthed)		TN-C (middle point earthed)		IT (not corner referenced)		IT (corner referenced)		
Rated voltage (V)	230		N/A		N/A		N/A		N/A		
Max. altitude (m)	3000		N/A		N/A		N/A		N/A		
System voltage for impulse / TOV (V)	247 V r.m.s.		N/A		N/A		N/A		N/A		
	BI/SI	RI	BI/SI	RI	BI/SI	RI	BI/SI	RI	BI/SI	RI	
Rated Impulse voltage (kV)	Case A Case B	N/A	--	--	--	--	--	--	--	--	
Temporary overvoltage (V rms / V peak)	2120	N/A	--	--	--	--	--	--	--	--	
Clearance (mm)	3.5 for OVC III 2.6 for OVC II	N/A	--	--	--	--	--	--	--	--	
Test impulse voltage for clearance (kV)	Case A Case B	N/A	--	--	--	--	--	--	--	--	
Supplementary information: Case A: 4kV for input terminal, Case B: 2.5kV for after MOV.											



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 referenced)		IT (corner referenced)			
		peak	rms	peak	rms	peak	rms	peak	rms	peak	rms		
--	Basic for Between Live parts and protective earth	455	247	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
IT network, simulated impedance (Ω)..... :				1 k Ω according to IEC 60990.									
Supplementary information: --													
Condition #:--													

5.2.2.1		TABLE: Clearances and creepage distances					
clearance cl and creepage distance cr at/between:		U peak (V)	U rms (V)	Req. cl (mm)	Meas. cl (mm)	Req. cr (mm)	Meas. cr (mm)
Minimum distance of Among L, N		--	247	3.5	5.0	3.5	5.0
L to earth on PCB		--	247	2.6	4.2	2.8	4.2
L on PCB to cover external		--	247	5.5	14.2	5.6	> 14.2
Supplementary information: U r.m.s. is phase to earth.							
Altitude: 3000m							



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:		DTI (mm)	Impulse test (kV, circuit)	Electric strength test (VAC, VDC, s)	Partial discharge test (V)	Result
Between Live parts and protective earth		N/A	N/A	1500	N/A	P
Between Live parts and Plastic enclosure		N/A	N/A	3000*	N/A	P
Supplementary information: *: ref. data only.						

5.2.3.5	TABLE:	Touch current measurement						
Single phase equipment								
L – N TN-S, TN- C, TN-CS, TT (not corner earthed) Figure 6	L – L TN-C, TT (middle point earthed) Figure 7	L – L TN, TT (not corner earthed) Figure 8	L – N IT (not corner refer- enced) Figure 9	L – N IT (corner refer- enced) Figure 9	L – L IT (not corner refer- enced) Figure 10	L – L IT (corner refer- enced) Figure 10	Limit for 50 Hz (mA)	Limit for 60 Hz (mA)
protective earth	N/A	N/A	N/A	N/A	N/A	N/A	3,5	N/A
Three-phase equipment								
TN-S, TN-C, TN-CS, TT (not corner earthed) Figure 11	IT (star point referenced) Figure 12	IT (corner referenced) Figure 12	TN, TT (corner earthed) Figure 13	TN, TT (middle point earthed) Figure 14	Limit for 50 Hz (mA)	Limit for 60 Hz (mA)		
protective earth / chassis	N/A	N/A	N/A	N/A	3,5	N/A		
Supplementary information: Measurements have been carried out according to figures of IEC 60990.								



5.2.3.6.3 5.2.3.6.4 5.2.4.4 5.2.4.5 5.2.8	TABLE: Short-circuit test Breakdown of components test Loss of phase test Cooling failure tests Electronic motor overload protection test				P
Tested item	Fault (SC, OC, OL)	Supply voltage (V)	Test time	Test environment (ambient, fuse etc.) and observation	Result
Input	SC	230	15mins	Unit shutdown immediately, no damage, no hazard.	P
D73	SC	230	10min	Unit shutdown, no hazard	P
C146	SC	230	10min	Unit shutdown, no hazard	P
U34 pin 1-2	SC	230	10min	Unit shutdown, no hazard	P
U2 pin 4-5	SC	230	10min	Unit shutdown, no hazard	P
Supplementary information:					

5.2.3.8	TABLE: Temperature rise test, thermocouple method						P
	Supply voltage (V)	230	--	--	--	--	—
	Supply frequency (Hz) ...	50Hz	--	--	--	--	—
	Load (V, A)	--	--	--	--	--	—
	Ambient (°C)	40	--	--	--	--	—
Thermocouple Location		Temperature measured (°C)				Limit (°C)	
C46		80.4	--	--	--	--	105
Connector JP1		71.3	--	--	--	--	--
U1 body		80.4	--	--	--	--	100
Y-cap		83.4	--	--	--	--	125
PCB near U29		81.9	--	--	--	--	130
PCB under 97		60.7	--	--	--	--	130
Optocoupler IC		71.3	--	--	--	--	100
Enclosure		45.9	--	--	--	--	Ref.
Supplementary information: test temperature data reference only, built-in product should consider in end system with an enclosure again.							

5.2.3.9	TABLE: Protective bonding				P
Points of application		Voltage (V)	Resistance (mΩ)	Test time (min)	Result
Output terminal block protective earth / driver board		5V	1.4	60	P
Supplementary information:					

5.2.5	TABLE: Material test				
-------	-----------------------------	--	--	--	--



Object / Part No. / Material	Manufacturer / trademark / type designation	Test procedure	Result
--	--	--	--
Supplementary information: --			

6	TABLE: Information and marking requirements	Product	Package	Installation	User	Maintenance
6.2	Information for selection					
- Name or trademark of the manufacturer, supplier or importer	OK	OK	OK	OK	OK	OK
- Catalogue number or equivalent	OK	OK	OK	OK	OK	OK
- Input voltage rating	OK	-	OK	-	OK	OK
- Input current rating	OK	-	OK	-	OK	OK
- Input power rating	OK	-	OK	-	OK	OK
- Input frequency	OK	-	OK	-	OK	OK
- Input number of phases	OK	-	OK	-	OK	OK
- Reference to standards	-	-	OK	-	-	-
- Date code or serial number	OK	-	-	-	-	-
- Reference to instructions	-	-	OK	OK	OK	OK
- Protective class	See 6.3.6.6.					
- Type of electrical supply system	See 6.3.3.					
- Prospective short-circuit current and protective device characteristics	See 6.3.7.					
- Field supply requirements (if any)	See 6.3.3.					
- Coolant type and design pressure	-	-		-		
- IP rating		-		-		
- Operating and storage environment	See 6.3.3.					
- Reference to relevant standards	-	-		-		-
- Date code or serial number		-	-	-		-
- Reference to instructions	-	-				
6.3	Information for installation and commissioning					
6.3.2: Mechanical considerations	-	OK	OK	-		OK
- Dimensional drawing (SI units)	-	-	OK	-		OK
- Mass (SI units)	-	OK	OK	-		OK
- Mounting drawing (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	-	-	N/A	-		N/A
- Type of electrical supply system	-	-	OK	-		-
- Field supply requirements (if any)	-	-	N/A	-		-
- Other	N/A	-	N/A	-		N/A



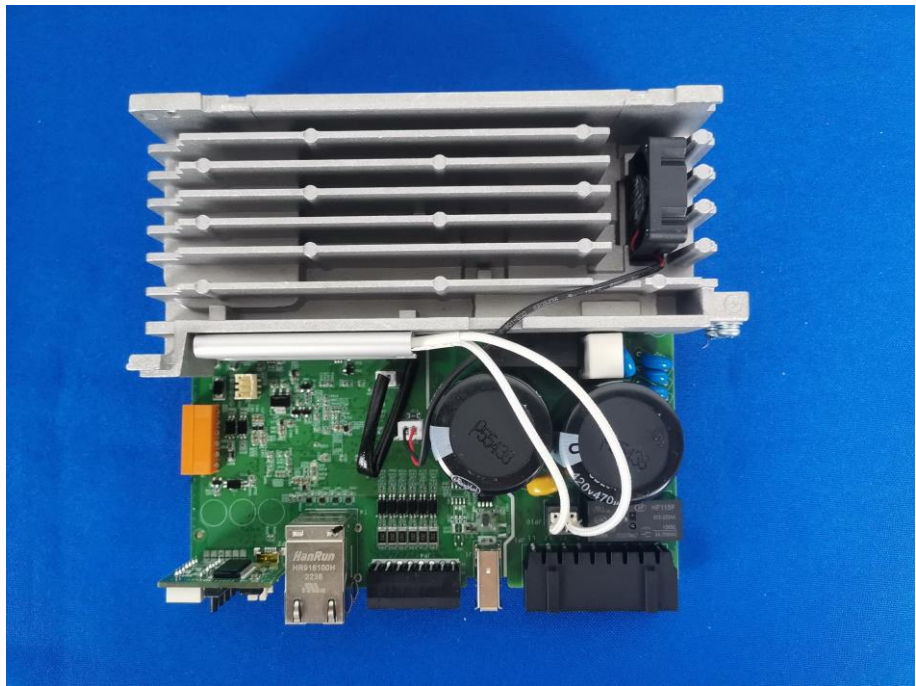
6.3.4: Handling and mounting	-	OK	OK	-	OK
- Packing and unpacking	-	OK	OK	-	OK
- Moving	-	OK	OK	-	OK
- Lifting	-	OK	OK	-	OK
- Strength and rigidity of mounting surface	-	OK	OK	-	OK
- Fastening	-	OK	OK	-	OK
- Coolant type and design pressure for liquid cooled product	-	N/A	N/A		N/A
- Provision of adequate access for operation, adjustment and maintenance	-	-	OK	-	OK
- Warning regarding combustibility if mounting surface exceeds 90 °C	-	N/A	N/A	-	N/A
6.3.5: Motor and driven equipment					
6.3.5.1: Motor selection	-	-	OK	OK	OK
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: Connections					
6.3.6.1: General	-	-		-	
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 0	OK	-	OK	OK	OK
- Interface details	-	-	OK	-	OK
- Terminals with protective separation	-	-	OK		OK
6.3.6.6: Earthing	-	-	OK	-	OK
- High-voltage PDS: Earthing switch	-	-		-	
- 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	-	-	N/A		N/A
- Symbol ISO 7000-0434 and instruction	N/A	-	N/A	-	N/A
- RCD compability	-	-	OK	-	OK
- RCD/RCM caution notice and marking ISO 7000-0434	N/A	-	-		-
6.3.6.8: Special requirements	-	-	N/A	-	N/A
6.3.7: Overcurrent or short-circuit protection ..	-	-	N/A	-	N/A
- Electronic power output short-circuit protection circuitry conditions	-	-		-	
6.3.8: Motor overload protection and overtemperature protection	-	-	N/A	-	N/A
6.3.8.1: CDM/BDM not incorporating internal electronic motor overload and overtemperature protection	-	-		-	-
6.3.8.2: CDM/BDM incorporating internal electronic motor overload and overtemperature protection	-	-		-	
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	-

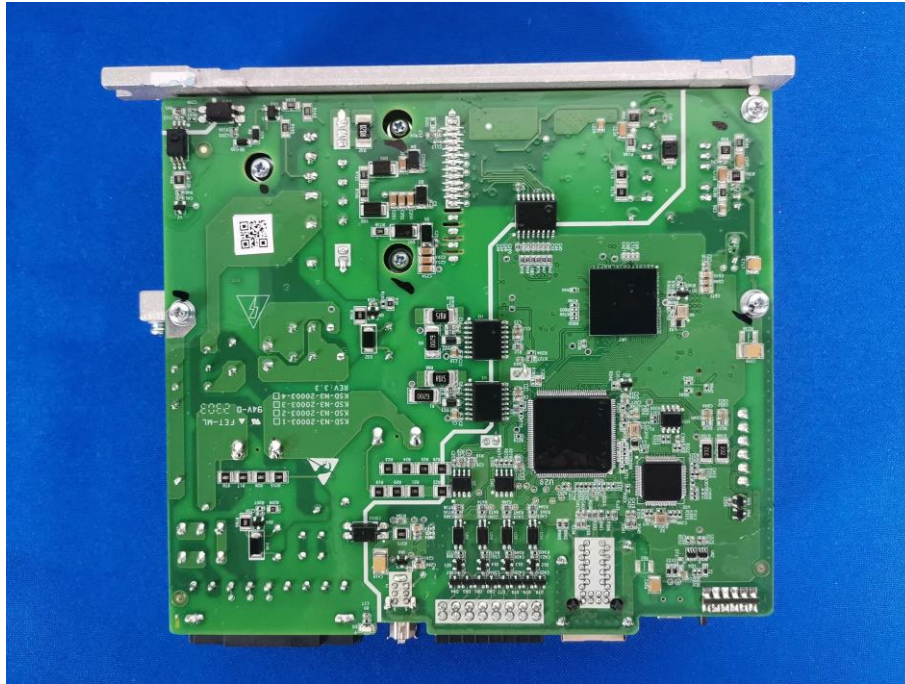


6.4.3.4: Hot surfaces, symbol IEC 60417-5041	N/A	-	-	N/A	-
6.4.3.5: Equipment marking	OK	-	OK	OK	OK
- Control devices		-			
- Indicating devices		-			
- Replaceable fuses		-			
- Movable connectors		-			
- Test points		-			
- Polarized devices		-			
- Pre-set controls					
6.5	Information for maintenance				
6.5.1: General	-	-	-	OK	OK
- Maintenance procedures.....	-	-	-	-	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
- Other relevant information (e.g. special tools list)	-	-	-	N/A	N/A
6.5.2: Capacitor discharge	N/A	-	N/A	-	N/A
6.5.3: Auto restart/bypass connection	-	-	N/A	N/A	N/A
6.5.4: Potential Transformer (PT) / Current Transformer (CT) connection	N/A	-	N/A	-	N/A
6.5.5: Other hazards	N/A	-	-	-	N/A
Supplementary information:					

Photographs of the EUT







Remark: Results & photo(s) of this report refer to test report EBO2305111-E276A

(EBO authenticate the photo on original report only)

*** End of Report ***