



TEST REPORT nr. S09107801

Safety (LVD)

Test item

Description : Automation doors
Trademark : BFT
Model/Type..... : VISTA SL2 (Double-leaf)

Test Specification

Standard..... : See inside at page 3

Client's name : BFT S.p.A.

Address..... : Via Lago di Vico, 44 - 36015 Schio (VI) -Italy-

Manufacturer's name : Same as client

Address..... : --

Report

Tested by : A. Borriero - Technician

A. Borriero

Approved by : R. Beghetto - Laboratory Manager

R. Beghetto

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Contents : 65 pages

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The test results presented in this report relate only to the item tested.



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1. Summary

Reference standards:

EN 60335-1 (2002) + A11 (2004) + A1 (2004) + A12 (2006) + A2 (2006)+ A1/EC (2007)+ A13 (2008)

Clause	Test	Remark	Verdict
5.	General conditions for the tests		P
6.	Classification		P
7.	Marking and instructions		P
8.	Protection against access to live parts		P
9.	Starting of motor-operated appliances		N
10.	Power input and current		P
11.	Heating		P
13.	Leakage current and electric strength at operating temperature		P
14.	Transient overvoltages		N
15.	Moisture resistance		P
16.	Leakage current and electric strength		P
17.	Overload protection of transformers and associated circuits		N
18.	Endurance		N
19.	Abnormal operation		NE
20.	Stability and mechanical hazards		P
21.	Mechanical strength		P
22.	Construction	*Pass except: cl. 22.46 NE	*
23.	Internal wiring		P
24.	Components		P
25.	Supply connection and external flexible cords		P
26.	Terminals for external conductors		P
27.	Provision for earthing		P
28.	Screws and connections		P
29.	Clearances, creepage distances and solid insulation		P
30.	Resistance to heat and fire		P
31.	Resistance to rusting		P
32.	Radiation, toxicity and similar hazards		P

Remarks

Results are written following the exactly sequence of the performed measurement



The external installation-wires are not part of this test report.
All components must be comply with the requirements of sub-clause 30.2.3 of these standards.
The installation of the doors is not part of this test report. The appliance is only a drive unit.
Appliance intended to be installed by a professional installer, because it needs additional safety components specified according to site conditions and therefore the overall safety depends on the installation.
The tests are made on the appliance VISTA SL2 (Double-leaf) with electric lock mod. ERV and manual release.
Appliance tested with raceway.
Appliance tested fastening to the wall.
Appliance intended as subassembly (component). It is responsibility of the assembler of equipment incorporating electrical machines as components to ensure that the overall equipment is safe.
Mechanical hazardous and dangerous malfunction of drive and movable part of the driven part are not covered by this test report.





2. Description of Equipment under test (EUT)

Rating(s) : 230V~ 50Hz 200W
 Load(s) : Max leaf: 1200N+1200N
 Class of protection against electrical shock : Class I
 Degree of protection (IP code) : IPX0
 Serial Number..... : ---
 Components list : See cl. 11.1 of this test report
 Copy of marking plate : See cl. 5.2 of this test report

3. Testing and sampling

Date of receipt of test item : 22/09/2008
 Testing start date..... : 26/11/2008
 Testing end date : 23/09/2009
 Samples tested nr..... : 1
 Sampling procedure..... : Equipment used for testing was picked up by the manufacturer, at the end of the production process with random criterion
 Internal identification : Adhesive label with the product number P090740

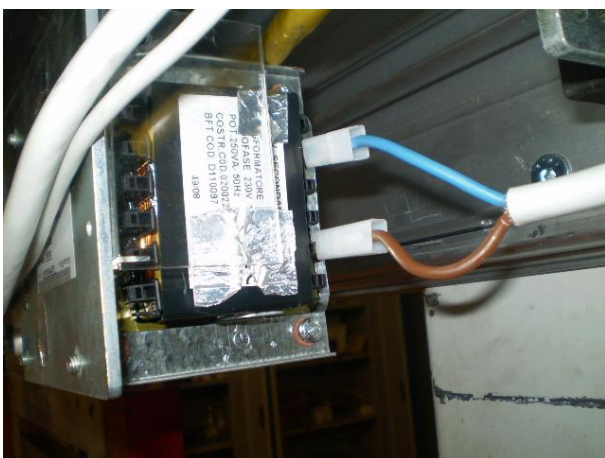
4. Operative conditions

EUT exercising : The appliance is operated for consecutive cycles until steady conditions are established at temperature ambient of 25°C (continuous operation).
 Auxiliary equipment : Accessories (24V~ 0.5A) resistive load;
 Accessories Vsafe (24V~ 0.18A) resistive load;
 Emergency battery: 2 X 12V 1.2Ah;
 Artificial load (doors);



5. Photograph(s)

5.1 Photograph(s) of EUT



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5.2 Marking plate





6. Equipment list

<i>Id. number</i>	<i>Manufacturer</i>	<i>Model</i>	<i>Description</i>	<i>Serial number</i>
CMC B001	CMC	SM001	Test pin	---
CMC B002	CMC	SM002	Test probe	---
CMC B003	ATS	SMIP2X	Test finger IP2X	146/99
CMC B004	CMC	SMIP3X	Rigid steel IP3X	---
CMC B005	CMC	SMIP4X	Rigid steel IP4X	---
CMC B006	Delta Ohm	HD8802	Digital thermometer	291096D294
CMC B008	EDC	8170 CF	HV tester	1162
CMC B009	EDC	8270 CL	Insulation Tester	372
CMC B010	EDC	9170 DG	Security resist. Tester	334
CMC B011	Valex	1800300	Calliper	---
CMC B012	CMC	SMIPX5	Nozzle IPX5	---
CMC B013	CMC	SMIPX6	Nozzle IPX6	---
CMC B014	CMC	SMAIPX56	Connection for nozzle IPX5/IPX6	---
CMC B015	LUTRON	FG-5000	Digital force gauge	L398212
CMC B016	PTL	F22.50	Impact-test apparatus	9709349
CMC B017	Super Lap/split	Super Lap/split	Chronometer	---
CMC B018	ATS	Art. N. 02.04	Ball-pressure apparatus	26
CMC B019	BETA	580/25F	Dynamometric screwdriver	7GT035996
CMC B020	CMC	SM004	Leakage current tester	---
CMC B021	Ci-efte-Gi	HT	Variac	4598
CMC B025	Borletti	COC 100 S	Calliper	602992
CMC B026	Angelantoni	UY 245 IU	Climatic chamber	1059.78
CMC B027	ATS	Art. N. 01.02-A	Rigid test finger	064/98
CMC B028	ATS	Art. N. 01.10	Test finger nail	065/98
CMC B029	CMC	SM005	Glow Wire Test	---
CMC B030	CEWAL	DN 150	Manometer	6-16425
CMC B031	ATS	BF01	Steel Ball	---
CMC B036	Ridge Tool Company	RIDGID 1450	Pump for plant test	---
CMC B038	CMC	CU01	Humidity test chamber	---
CMC B039	CMC	K	Thermocouple	---
CMC B040	CMC	FP01	Plastics test oven	---
CMC B041	Borletti	FD 110	Dynamometer	---
CMC B046	Elettrotest	TPS/M 6000	AC Source	67
CMC B047	ATS	Art. 01.06	Test Needle 1 mm, force 1N	466/02
CMC B048	ATS	Art. 01.07	Test Needle 2,5 mm, force 3N	467/02
CMC B049	ATS	Art. 01.09	Test Sphere 50 mm	478/02
CMC B050	ATS	BF02	Test Sphere 12,5 mm	---
CMC B051	ATS	Art. 01.12	Test Wire 1 mm	480/02



<i>Id. number</i>	<i>Manufacturer</i>	<i>Model</i>	<i>Description</i>	<i>Serial number</i>
CMC B052	ATS	Art. 01.11	Test Rod 2,5 mm	479/02
CMC B053	ATS	Art. 02.07-A	Needle-flame	101/03
CMC B054	Angelantoni	UY 560	Climatic chamber	1265
CMC B055	CMC	SM006	Leakage current tester	---
CMC B057	Agilent	34970A	Data acquisition	MY41022158
CMC B058	ATS	Art. 03.02-A	IP5X-IP6X chamber	002111/03
CMC B059	Delta Ohm	HD9216	Thermo hygrometer	3006104
CMC B060	ATS	Art. BF02	1 kg Sphere	---
CMC B061	ATS	Art. 10J	10 J Hammer	001
CMC B062	Agilent	34970A	Data acquisition	MY41009272
CMC B063	Chauvin Arnoux	C.A 6160	Multitester	14091466
CMC B064	Novex	64210	Stereo Microscopes	---
CMC B065	CMC	PA01	Pneumatic arm	---
CMC B066	Testo	521-3	Pressure tester	01229247/606
CMC B067	Kern	DE 120K10N	Electronic platform balance	WC0634274
CMC B068	Fluke	Ti20	Thermal Imager	92420133
CMC B069	Angelantoni	CH 600C	Climatic chamber	41973
CMC B070	Dini Argeo	DFW06+ETB6	Electronic platform balance	117330+117353B1
CMC B071	Siemens	SAG	CO / CO2 / O2 Analyzer system	02.26.12.006
CMC B072	CMC	PT01	Pressure Tester	---
CMC B073	ISCO	NS 9060	Plastics test oven	38654-T4E
CMC B074	CMC	CIP06	IP Chamber IPX1,2,3,4,5,6	---
CMC B075	STAHWILLE	775/30	Dynamometric screwdriver	07F007
CMC B076	RS	440 9574	Chronometer	---
CMC B081	ATS	Art. 03.20	Nozzle IPX4	071/08
CMC B082	KERN	80005	Dynamometer	---
CMC B083	KERN	80020	Dynamometer	---
CMC S005	Xitron	2503	Power supply analyser	2503592013
CMC S026	Chroma	C6530	AC Source	653000095
CMC S031	Tektronix	TDS 210	Digital oscilloscope	B010552
CMC S032	SCHAFFNER	NSG 2050	Surge source with CDN	200111-253AR
CMC S035	Eutron	BVR 1800 30-50	DC Source	3004
CMC S122	Fluke	336	Amperometric clamp meter	81754972
CMC S126	LDS + Dactron	V730-335+LASER	Vibration testing system	132+133+4512698
CMC S139	Wilcoxon	736	Accelerometer 101 mV/g	12245
CMC S140	Wilcoxon	732A	Accelerometer 9.8 mV/g	1424
CMC S141	Dytran	3023A1	Accelerometer Triaxial	383
CMC S156	Yokogawa	DL9040	Digital oscilloscope	91F643771
CMC A011	Riedel	Hexane	Hexane	---

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7. Measurement uncertainty

Test	Expanded uncertainty	Note
Temperature	±3.7 °C	1
Power	±0.7 %	1
Current	±0.5 %	1
Leakage current	±2.6 %	1
Voltage	±0.3 %	1
Resistance	±0.2 %	1
Force	±5 cN	1
Length	±0.18 mm	1
Insulation test	±2.1 %	1
Security resistance test	±2.3 %	1
Electric strength		2
IPX1 – IPX6		2
IP5X – IP6X		2
Humidity test		2
Climatic test (temperature)	±2.0 %	1
Climatic test (humidity)	±3.0 %	1
Vibration (level)	±4.6 %	1
Vibration (frequency)	±1.0 %	1

Note 1:

The expanded uncertainty reported according to EN55016-4-2 (2004-10) is based on a standard uncertainty multiplied by a coverage factor of $K_p=2$, providing a level of confidence of $p = 95.4\%$

Note 2:

It has been demonstrated that the used test equipment meets the specified requirements in the standard with at least a 95% confidence



8. Reference documents

Reference no.	Description
EN 60335-1 (2002) + A11 (2004) + A1 (2004) + A12 (2006) + A2 (2006) + A1/EC (2007) + A13 (2008)	Household and similar electrical appliances - Safety Part 1: General requirements
Internal Procedure PM001 rev. 2.0 (Quality Manual)	Measure procedure
Internal Procedure INC_M rev. 6.0 (Quality Manual)	Measurement uncertainty calculation



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9. Deviation from test specification

Clause 11: In agreement with the client, heating test is evaluated at ambient temperature of 25 °C.

Clause 22.11: In agreement with the client, the tests are carried out only at temperature ambient of 25°C; the tests are not carried out after Cl. 11.

Clause 30.2.3: Thermoplastic material near internal electric connection of motor are enclosed in metal housing; the risk of flame propagation in the extern is negligible (declaration of the client). Glow wire tests at 850°C and 750°C are not carried out.

10. Test case verdicts

Test case does not apply to the test object..... : N / N.A.

Test item does meet the requirement..... : P / Pass / Complies

Test item does not meet the requirement..... : F / Fail / Does not comply

Test not performed : NE / Not Executed

“(see remark #)” refers to remark appended to the report.

“(see appended table)” refers to table appended to the report.

11. Results

Tests results are reported in this clause.

Measurement uncertainty is in accordance with document CMC INC_M rev. 6.0.

Measurement uncertainty calculated with: 95% of confidence level, covering factor $k = 2$


EN 60335-1

Clause	Requirement – Test	Result - Remark	Verdict
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11.1 Report Form EN 60335-1

5	GENERAL CONDITIONS FOR THE TESTS		
	Tests performed according to Cl. 5, e.g. nature of supply, sequence of testing, etc.		P
6	CLASSIFICATION		
6.1	Protection against electric shock	Class I	P
6.2	Protection against harmful ingress of water	IPX0	P
7	MARKING		
7.1	Rated voltage or voltage range (V)	230V	P
	Single-phase appliances: 230V covered		P
	Multi-phase appliances: 400V covered		N
	Nature of supply	~	P
	Rated frequency or frequency range (Hz)	50Hz	P
	Rated input or rated current	200W	P
	Manufacturer's or responsible vendor's name, trademark or identification mark	BFT	P
	Model or type reference	VISTA SL2	P
	Symbol for Class II (Symbol 5172 of IEC 60417)		N
	IP number	IPX0	N
	The enclosure of electrically-operated water valves incorporated in external hose-sets for connection of an appliance to the water mains marked with symbol IEC 60417-5036 (DB:2002-10) if their working voltage exceeds extra-low voltage		N
7.2	Warning for stationary appliances for multiple supply		N
	Warning placed in vicinity of terminal cover		N
7.3	Range of rated values correctly marked		N
7.4	Voltage setting clearly discernible		N
7.5	Marking of rated input for each rated voltage		N
	Marking for upper and lower limits of rated input		N
7.6	Correct symbols used		P
7.7	Correct connection diagram, fixed to the appliance		N
7.8	Not for type Z attachment:		P
	- marking of terminals for the neutral conductor (N)		P

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Clause	Requirement – Test	Result - Remark	Verdict
	- marking of earthing terminals		P
	- marking not placed on removable parts		P
7.9	Marking or placing of switches which may cause a hazard	Accessible only adequately skilled technical personnel	P
7.10	Indications of switches and regulating devices by use of figures, letters or other		P
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		P
7.11	Indication for direction of adjustment of controls		P
7.12	Instructions for safe use provided		P
	If it is necessary to take precautions during user maintenance, appropriate details is given		P
	The instructions state the substance of the following: "This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance."		P
7.12.1	Sufficient details for installation supplied		P
7.12.2	Stationary appliances not fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III, the instructions state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules	See instructions	P
7.12.3	Insulation in contact with parts exceeding 50 K; instruction		P
7.12.4	Information with regard to building-in:	No building in	N
	- dimensions of space		N
	- dimensions and position of support		N
	- distances between parts and surrounding structure		N
	- ventilation openings		N
	- connection to supply mains and interconnection of separate components		N
	- allow disconnection of the appliance after installation, by accessible plug or a switch in the fixed wiring, unless		N
	a switch complying with 24.3		N
7.12.5	Replacement cord, type X attachment		N
	Replacement cord, type Y attachment		N
	Replacement cord, type Z attachment		N

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Clause	Requirement – Test	Result - Remark	Verdict
7.12.6	Caution in the instructions for heating appliances with a non-self-resetting thermal cut-out		N
7.12.7	Instructions for fixed appliances stating how the appliance is to be fixed		P
7.12.8	Instructions for appliances connected to the water mains		N
	- max. inlet water pressure (Pa):		N
	- min. inlet water pressure, if necessary (Pa):		N
	Instructions concerning new and old hose-sets for appliances connected to the water mains by detachable hose-sets		N
7.13	Instructions and other texts in official language	Only Italian version checked	P
7.14	Marking easily legible and durable		P
7.15	Marking on a main part		P
	Marking clearly discernible from outside		P
	For portable appliances, cover can be removed or opened without a tool		N
	Stationary appliance: name or trademark and model or type reference visible after installation	Model is under not non-detachable cover (choice of the manufacturer)	P
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions	Model is under not non-detachable cover (choice of the manufacturer)	P
	Indication for switches and controls in vicinity of components; not on removable parts if misleading		P
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link	Marking on link and cover of terminals	P
8	PROTECTION AGAINST ACCESSIBILITY TO LIVE PARTS		
8.1	Adequate protection against accidental contact with live parts		P
8.1.1	All positions; detachable parts removed		P
	Removal of lamps: protection against contact with live parts		N
	Use of test probe B of IEC 61032: no contact with live parts		P
8.1.2	Use of test probe 13 of IEC 61032 through openings in class 0 appliances and class II appliances/ constructions: no contact with live parts		P
	Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts		P
8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032: no contact with live parts of visible glowing heating elements		N

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Clause	Requirement – Test	Result - Remark	Verdict
8.1.4	Accessible part not considered live if:		P
	- extra-low a.c. voltage: peak values not exceeding 42.4 V	28.3 V~ r.m.s.	P
	- extra-low d.c. voltage: not exceeding 42.4 V	40 V ===	P
	- or separated from live parts by protective impedance		N
	- or separated from live parts by protective impedance, d.c. current not exceeding 2 mA		N
	- or separated from live parts by protective impedance, a.c. peak value not exceeding 0.7 mA		N
	- for peak value 42.4 V up to and including 450 V capacitance not exceeding 0.1 μ F		N
	- for peak value 450 V up to and including 15 kV, the discharge does not exceed 45 μ C		N
	- for voltages having a peak value over 15 kV, the energy in the discharge does not exceed 350 mJ		N
8.1.5	Live parts protected at least by basic insulation before installation or assembly (checked by inspection and the test of 8.1.1):		P
	- built-in appliances		N
	- fixed appliances		P
	- separate units		N
8.2	Class II appliances and constructions adequately protected against accidental contact with basic insulation and metal parts separated from live parts with only basic insulation		P
	Only possible to touch parts separated from live parts by double or reinforced insulation		P
9	STARTING OF MOTOR-OPERATED APPLIANCES		
	Requirements and test are specified in part 2 when necessary		N
10	POWER INPUT AND CURRENT		
10.1	Power input at rated voltage and normal operating temperature not deviating from rated input by more than shown in table	(see appended table)	P
10.2	Current at normal operating temperature not deviating from rated current by more than shown in table		N
11	HEATING		
11.1	No excessive temperatures in normal use		P
11.2	Placing and mounting of appliance as described:		P
	- built-in		N
	- against a wall		P

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Clause	Requirement – Test	Result - Remark	Verdict
	- suspended in still air		N
	- on the floor or table		N
	- fixed to a ceiling		N
	- on its stand		N
11.3	Temperature rises determined by thermocouples or resistance method		P
	Temperature rises of windings determined by resistance method, unless		P
	The windings makes it difficult to make the necessary connections		P
11.4	Heating appliances operated under normal operation at 1.15 times rated power input		N
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage	1.06Vn	P
11.6	Combined appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage		N
11.7	Appliances are operated for a duration corresponding to the most unfavourable conditions of normal use	(see appended table) See also 9. Deviation from test specification.	P
11.8	Protective devices do not operate, except:		P
	components in protective electronic circuits tested for the number of cycles specified in 24.1.4	Compliance is checked after cl. 19	N
	Sealing compound not flowing out		P
	Temperatures not exceeding values in table 3	(see appended table) See also 9. Deviation from test specification.	P
13	LEAKAGE CURRENT AND ELECTRIC STRENGTH		
13.1	Leakage current not excessive and electric strength adequate		P
	Heating appliances operated at 1.15 times rated power input		N
	Motor-operated appliances and combined appliances supplied at 1.06 times rated voltage		P
	Protective impedance and radio interference filters disconnected before carrying out the tests		P
13.2	Leakage current measured by means of circuit described in figure 4 IEC 60990		P
	Leakage current measurements	(see appended table)	P
13.3	Electric strength test of insulation	(see appended table)	P
	No breakdown during the test		P

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Clause	Requirement – Test	Result - Remark	Verdict
14	TRANSIENT OVERVOLTAGES		
	Appliances withstand the transient overvoltages to which they may be subjected		N
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6		N
	No flashover during the test, unless of functional insulation		N
	In case of flashover of functional insulation, the appliance complies with clause 19 with the clearance short circuited		N
15	MOISTURE RESISTANCE		
15.1	Enclosure provides the degree of moisture protection according to classification of appliance (tests 15.1.1 and 15.1.2)	IPX0	N
	Withstand electric strength test specified in 16.3		N
	No trace of water on insulation which can result in a reduction of distances and clearances below values specified in 29.1		N
15.1.1	Appliance subjected to test as specified in IEC 60529		N
	Water valves in external hoses for connection of an appliance to the water mains tested as specified for IPX7 appliances		N
15.1.2	Hand-held appliance turned continuously through the most unfavourable positions during the test		N
	Built-in appliance installed according to the manufacturer's instruction		N
	Appliances placed or used on the floor or table placed on a horizontal unperforated support		N
	Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted on a wooden board		N
	For IPX3 appliances, the base of wall mounted appliances is placed at the same level as the pivot axis of the oscillating tube		N
	For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube		N
	However, for appliances normally used on the floor or table, the movement is limited to two times 90° for a period of 5 min, the support being placed at the level of the pivot axis of the oscillating tube		N
	Appliances normally fixed to a ceiling are mounted underneath a horizontal unperforated support, the pivot axis of the oscillating tube located at the level of the underside of the support		N

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Clause	Requirement – Test	Result - Remark	Verdict
	For IPX4 appliances, the movement of the tube is limited to two times 90° from the vertical for a period of 5 min		N
	Wall-mounted appliances, take into account the distance to the floor stated in the instructions		N
	Appliances with type X attachment fitted with a flexible cord as described		N
	Detachable parts tested as specified		N
15.2	Spillage of liquid does not affect the electrical insulation		N
	Appliances with type X attachment fitted with a flexible cord as described		N
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N
	Detachable parts removed		N
	Overfilling test with additional amount of liquid		N
	The appliance withstands the electric strength test of 16.3		N
	No trace of water on insulation which can result in reduction of distances and clearances below values specified in 29		N
15.3	Humidity treatment for 48 h		P
	Withstanding the test of Cl. 16	(see Clause 16.)	P
16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		
16.1	No excessive leakage current and adequate insulation and electric strength (tests 16.2 and 16.3)		P
	Protective impedance disconnected from live parts before carrying out the tests		N
16.2	Single-phase appliances: test voltage 1.06 times rated voltage		P
	Three-phase appliances: test voltage 1.06 times rated voltage divided by $\sqrt{3}$		N
	Leakage current measurements	(see appended table)	P
16.3	Electric strength tests (values in table 7)	(see appended table)	P
	No breakdown during the tests		P
17	OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS		
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use		N
	Appliance supplied with 1.06 or 0.94 times rated voltage and the most unfavourable short-circuit or overload likely to occur in normal use applied		N

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Clause	Requirement – Test	Result - Remark	Verdict
	Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15 K		N
	Temperature of the winding not exceeding the value specified in table 8		N
	however limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		N
18	ENDURANCE		
	Requirements and tests are specified in part 2 when necessary		N
20	STABILITY AND MECHANICAL HAZARDS		
20.1	Adequate stability	Fixed appliance	N
	Tilting test through an angle of 10°; appliance does not overturn		N
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15°		N
	Possible heating test in overturned position; temperature rise does not exceed values shown in table 9		N
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury	In agreement with the client moving parts of appliances are positioned or enclosed to provide adequate protection against personal injury in normal use.	P
	Protective enclosures, guards and similar parts are non-detachable		P
	Adequate mechanical strength and fixing of protective enclosures		P
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard, if unexpectedly reclosed		P
	Not possible to touch dangerous moving parts with test finger		P
21	MECHANICAL STRENGTH		
21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		P
	No damage after three blows applied to various parts of the enclosure, impact energy 0.5 ± 0.04 J		P
	If necessary, supplementary or reinforced insulation subjected to the electric strength test of 16.3		N
	If necessary, repetition of groups of three blows on a new sample		N
21.2	Accessible parts of solid insulation having strength to prevent penetration by sharp implements		P
	The insulation is tested as specified, unless		N
	the thickness of supplementary insulation is at least 1 mm and reinforced insulation is at least 2 mm		P

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Clause	Requirement – Test	Result - Remark	Verdict
22	CONSTRUCTION		
22.1	Appliance marked with the first numeral of the IP system: relevant requirements of IEC 529 are fulfilled	IPX0	N
22.2	Stationary appliance: means to provide all-pole disconnection from the supply provided, the following means being available:		P
	- a supply cord fitted with a plug		N
	- a switch complying with 24.3		N
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided	See instructions	P
	- an appliance inlet		N
	Single-pole switches and single-pole protective devices that disconnect heating elements from the supply mains in single-phase, permanently connected class 0I appliances and class I appliances are connected to the phase conductor		N
22.3	Appliance provided with pins: no undue strain on socket-outlets		N
	Applied torque not exceeding 0.25 Nm		N
	Pull force of 50N to each pin after the appliance has being placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1mm		N
	Each pin subjected to a torque of 0.4Nm; the pins are not rotating unless rotating does not impair compliance with the standard		N
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets		N
22.5	No risk of electric shock when touching the pins of the plug		NP
22.6	Electrical insulation not affected by condensing water or leaking liquid		P
	Electrical insulation of Class II appliances not affected in case of a hose rupture or seal leak		N
22.7	Adequate safeguards against the risk of excessive pressure in appliances provided with steam-producing devices		N
22.8	Electrical connections not subject to pulling during cleaning of compartments to which access can be gained without the aid of a tool, and which are likely to be cleaned in normal use	In agreement with client the opening between cover and load bearing header not to be cleaned in normal use.	N
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances		N
	Adequate insulating properties of oil or grease to which insulation is exposed		N

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Clause	Requirement – Test	Result - Remark	Verdict
22.10	Not possible to reset voltage-maintained non-self-resetting thermal cut-outs by the operation of an automatic switching device incorporated within the appliance		N
	Non-self-resetting thermal motor protectors have a trip-free action unless they are voltage maintained		N
	Reset buttons of non-self-resetting controls are located or protected so that their accidental resetting is unlikely to occur if this could result in a hazard		N
22.11	Reliable fixing of non-detachable parts which provide the necessary degree of protection against electric shock, moisture or contact with moving parts		P
	Obvious locked position of snap-in devices used for fixing such parts		P
	No deterioration of the fixing properties of snap-in devices used in parts which are likely to be removed during installation or servicing		N
	Tests	See also 9. Deviation from test specification.	P
22.12	Handles, knobs etc. fixed in a reliable manner		N
	Fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible		N
	Axial force 15 N applied to parts, the shape of which being so that an axial pull is unlikely to be applied		N
	Axial force 30 N applied to parts, the shape of which being so that an axial pull is likely to be applied		N
22.13	Is unlikely that handles, when gripped as in normal use, make the operators hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only		N
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance	Test results depend also of the installation	P
	No exposed pointed ends of self tapping screws etc., liable to be touched by the user in normal use or during user maintenance	Test results depend also of the installation	P
22.15	Storage hooks and the like for flexible cords smooth and well rounded		N
22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands, no undue wear of contacts		N
	Cord reel tested with 6000 operations, as specified		N
	Electric strength test of 16.3, voltage of 1000 V applied		N
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner		N
22.18	Current-carrying parts and other metal parts resistant to corrosion under normal conditions of use		P

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Clause	Requirement – Test	Result - Remark	Verdict
22.19	Driving belts not used as electrical insulation		P
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless material used is non-corrosive, non-hygroscopic and non-combustible		N
	Compliance is checked by inspection and, if necessary, by appropriate test		N
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless impregnated		P
	Not applicable for magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements		N
22.22	Appliance does not contain asbestos		P
22.23	Oils containing polychlorinated biphenyl (PCB) not used		N
22.24	Bare heating elements adequately supported		N
	In case of rupture, the heating conductor is unlikely to come in contact with earthed metal parts or accessible metal parts		N
22.25	Sagging heating conductors cannot come into contact with accessible metal parts		N
22.26	The insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation		P
22.27	Parts connected by protective impedance separated by double or reinforced insulation		N
22.28	Metal parts of Class II appliances conductively connected to gas pipes or in contact with water: separated from live parts by double or reinforced insulation		N
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of protection against electric shock is maintained after installation		N
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or		P
	so constructed that they cannot be replaced in an incorrect position, and so that if they are omitted, the appliance is rendered inoperable or manifestly incomplete		P
22.31	Creepage distances and clearances over supplementary and reinforced insulation not reduced below values specified in 29.1 as a result of wear		P
	Creepage distances and clearances between live parts and accessible parts not reduced to less than values specified for supplementary insulation if wires, screws etc. becomes loose		P

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Clause	Requirement – Test	Result - Remark	Verdict
22.32	Supplementary and reinforced insulation designed or protected against deposition of dirt or dust		P
	Ceramic material not tightly sintered, similar material or beads alone not used as supplementary or reinforced insulation		N
	Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.1		N
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N
	Insulating material in which heating conductors are embedded is considered to be basic insulation and not reinforced insulation		N
22.33	Conductive liquids which are or may become accessible in normal use are not in direct contact with live parts		N
	Electrodes are not used for heating liquids		N
	Class II constructions: conductive liquids which are or may become accessible in normal use are not in direct contact with basic insulation or reinforced insulation		N
	Class II constructions: conductive liquids which are in contact with live parts are not in direct contact with reinforced insulation		N
22.34	Shafts of operating knobs, handles, levers etc. not live, unless the shaft is not accessible when the part is removed		N
22.35	For constructions other than those of class III, handles, levers and knobs that are held or actuated in normal use do not become live in the event of a failure of basic insulation. If these handles, levers and knobs are of metal and if their shafts or fixings are likely to become live in the event of a failure of basic insulation, they are adequately covered by insulating material or their accessible parts are separated from their shafts or fixings by supplementary insulation		N
	This requirement does not apply to handles, levers and knobs on stationary appliances other than those of electrical components, provided they are either reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		N
22.36	Handles continuously held in the hand in normal use are so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless they are separated from live parts by double or reinforced insulation		N
22.37	Capacitors in Class II appliances not connected to accessible metal parts, unless complying with 22.42		N
	Metal casings of capacitors in Class II appliances separated from accessible metal parts by supplementary insulation, unless complying with 22.42		N

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Clause	Requirement – Test	Result - Remark	Verdict
22.38	Capacitors not connected between the contacts of a thermal cut-out		N
22.39	Lamp holders only used for the connection of lamps		N
22.40	Motor-operated appliances and combined appliances, intended to be moved while in operation or which have accessible moving parts, are fitted with a switch to control the motor		N
	The actuating member of this switch easily visible and accessible		N
	Unless the appliance can operate continuously, automatically or remotely without giving rise to a hazard, appliances for remote operation are fitted with a switch for stopping the operation of the appliance. The actuating member of this switch is easily visible and accessible	Appliance can operate remotely without giving rise to a hazard	N
22.41	Appliances do not incorporate components containing liquid mercury		P
22.42	Protective impedance consisting of at least two separate components		N
	Values specified in 8.1.4 not exceeded if any one of the components is short-circuited or open circuited		N
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur		N
22.44	Appliances have not an enclosure that is shaped or decorated like a toy		P
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.4 due to deformation as a result of an external force applied to the enclosure		P
22.46	Software used in protective electronic circuits is software class B or C		NE
22.47	Appliances connected to the water mains withstand the water pressure expected in normal use		N
	No leakage from any part, including any inlet water hose		N
22.48	Appliances connected to the water mains constructed to prevent backsiphonage of non-potable water		N
22.49	For remote operation, the duration of operation is set before the appliance can be started unless the appliance switches off automatically at the end of a cycle or it can operate continuously without giving rise to a hazard		N
22.50	Controls incorporated in the appliance, if any, take priority over controls actuated by remote operation	In agreement with the client, appliance not incorporated controls;	N

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Clause	Requirement – Test	Result - Remark	Verdict
22.51	A control on the appliance is manually adjusted to the setting for remote operation before the appliance can be operated in this mode. There is a visual indication on the appliance showing that the appliance is adjusted for remote operation. The manual setting and the visual indication of the remote mode are not necessary on appliances that can		P
	- operate continuously, or		N
	- operate automatically, or		N
	- be operated remotely,		P
	without giving rise to a hazard		P
22.52	Socket-outlets on appliances accessible to the user are in accordance with the socket-outlet system used in the country in which the appliance is sold		N
23	INTERNAL WIRING		
23.1	Wireways smooth and free from sharp edges		P
	Wires protected against contact with burrs, cooling fins etc.		P
	Wire holes in metal well rounded or provided with bushings		P
	Wiring effectively prevented from coming into contact with moving parts		P
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges or corners		N
	Beads inside flexible metal conduits contained within an insulating sleeve		N
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		N
	Flexible metallic tubes not causing damage to insulation of conductors		N
	Open-coil springs not used		N
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N
	No damage after 10000 flexings		N
	Electric strength test, 1000 V between live parts and metal parts		N
23.4	Bare internal wiring sufficiently rigid and fixed		N
23.5	The basic insulation of internal wiring withstanding the electrical stress likely to occur in normal use		P
	No breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		P

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Clause	Requirement – Test	Result - Remark	Verdict
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by positive means		N
23.7	Only the colour combination green/yellow used for earthing conductors		P
23.8	Aluminium wires not used for internal wiring		P
23.9	No lead-tin soldering of stranded conductors where they are subject to contact pressure, unless		P
	clamping means so constructed that there is no risk of bad contact due to cold flow of the solder		N
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, at least equivalent to that of light polyvinyl chloride sheathed flexible cord (60227 IEC 52)		N
24	COMPONENTS		
24.1	Components comply with safety requirements in relevant IEC standards	(see appended table)	P
	List of components	(see appended table)	P
	Components not tested and found to comply with relevant IEC standard for the number of cycles specified are tested in accordance with 24.1.1 to 24.1.9		P
	Components not tested and found to comply with relevant IEC standard, components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		P
	Additional requirements for lampholders and starterholders		N
24.1.1	Capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing, complying with IEC 60384-14, or	Tested separately. Comply with IEC 60384-14	N
	tested according to annex F		N
24.1.2	Safety isolating transformers complying with IEC 61558-2-6, or		N
	tested according to annex G		P
24.1.3	Switches complying with IEC 61058-1, the number of cycles of operation being at least 10000, or	Tested separately. Comply with IEC 61058-1	P
	tested according to annex H		N
	If the switch operates a relay or contactor, the complete switching system is subjected to the test		N
24.1.4	Automatic controls complying with IEC 60730-1: additional tests according to this standard and 11.3.5 to 11.3.8 and Cl. 17 of IEC60730-1 as type 1 controls, the cycles of operation being:		N
	- thermostats: 10000		N

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Clause	Requirement – Test	Result - Remark	Verdict
	- temperature limiters: 1000		N
	- self-resetting thermal cut-outs: 300		N
	- voltage-maintained non-self-resetting thermal cut-outs: 1000		N
	- other non-self-resetting thermal cut-outs: 30		N
	- energy regulators: 10000		N
	- timers: 10000		N
	Thermal motor protectors are tested in combination with their motor under the conditions specified in Annex D		N
	For water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains, the degree of protection declared for subclause 6.5.2 of IEC 60730-2-8 is IPX7		N
24.1.5	Appliance couplers complying with IEC 60320-1		N
	However, appliances classified higher than IPX0, the appliance couplers complying with IEC 60320-2-3		N
	The relevant standard for interconnection couplers is IEC 60320-2-2		N
24.1.6	Small lamp holders similar to E10 lampholders complying with IEC 60238, the requirements for E10 lampholders being applicable		N
24.1.7	If the remote operation of the appliance is via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance are EN 41003 and EN 60950-1:2006, subclause 6.3		N
24.1.8	The relevant standard for thermal links is IEC 60691. Thermal links that do not comply with IEC 60691 are considered to be an intentionally weak part for the purposes of Clause 19		N
24.1.9	Relays, other than motor starting relays, are tested as part of the appliance. However, they are also tested in accordance with Clause 17 of IEC 60730-1 under the maximum load conditions occurring in the appliance for at least the number of operations in 24.1.4 selected according to the relay function in the appliance	Compliance is checked after cl. 19	N
24.2	No switches or automatic controls in flexible cords		P
	No devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		P
	No thermal cut-outs that can be reset by soldering		P
24.3	Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and having a contact separation in all poles, providing full disconnection under overvoltage category III conditions	See instruction	P

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Clause	Requirement – Test	Result - Remark	Verdict
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1		N
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance and used accordingly		N
	Voltage across capacitors in series with a motor winding does not exceed 1,1 times rated voltage, when the appliance is supplied at 1,1 times rated voltage under minimum load		N
24.6	Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42V		N
	In addition, the motors are complying with the requirements of Annex I		N
24.7	Hose-sets for connection of appliances to the water mains, complying with IEC 61770 and supplied with the appliance		N
25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		
25.1	Appliance not intended for permanent connection to fixed wiring, means for connection to the supply:		N
	- supply cord fitted with a plug		N
	- an appliance inlet having at least the same degree of protection against moisture as required for the appliance		N
	- pins for insertion into socket-outlets		N
25.2	Appliance not provided with more than one means of connection to the supply		N
	Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1250 V for 1 min between each means of connection causes no breakdown		N
25.3	Connection of supply wires for appliance intended to be permanently connected to fixed wiring possible after the appliance has been fixed to its support		P
	Appliance provided with a set of terminals for the connection of cables of fixed wiring, cross-sectional areas specified in 26.6		N
	Appliance provided with a set of terminals allowing the connection of a flexible cord		N
	Appliance provided with a set of supply leads accommodated in a suitable compartment		N
	Appliance provided with a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate type of cable or conduit		P

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Clause	Requirement – Test	Result - Remark	Verdict
25.4	Cable and conduit entries, rated current of appliance not exceeding 16A, dimensions according to table 10		P
	Introduction of conduit or cable does not affect the protection against electric shock or reduce creepage distances and clearances below values specified in 29		P
25.5	Method for assemble supply cord with the appliance:	Appliance intended to be permanently connected to fixed wiring of supply	N
	- type X attachment		N
	- type Y attachment		N
	- type Z attachment		N
	Type X attachment other than those with a specially prepared cord, are not used for flat twin tinsel cords		N
25.6	Plugs fitted with only one flexible cord		N
	Supply cords of single-phase portable appliances having a rated current not exceeding 16 A, provided with a plug complying with the following Standard Sheets of IEC 83:		N
	- for Class I appliances: Standard Sheet C2b, C3b or C4		N
	- for Class II appliances: Standard Sheet C5 or C6		N
25.7	Supply cords is one of the following types:		P
	- Rubber sheathed. Their properties are at least those of ordinary tough rubber sheathed cords (code designation 60245 IEC 53);		N
	- Polychloroprene sheathed. Their properties are at least those of ordinary polychloroprene sheathed cords (code designation 60245 IEC 57);		N
	- Cross-linked polyvinyl chloride sheathed. Their properties are at least those of cross-linked polyvinyl chloride sheathed cords (code designation 60245 IEC 87);		N
	- Polyvinyl chloride sheathed. These cords are not used if they are likely to touch metal parts having a temperature rise exceeding 75 K during the test of Clause 11. Their properties are at least those of		P
	• light polyvinyl chloride sheathed cord (code designation 60227 IEC 52), for appliances having a mass not exceeding 3 kg;		N
	• ordinary polyvinyl chloride sheathed cord (code designation 60227 IEC 53), for other appliances;	Raceway. Only for indoor use. Supply cable: H05VV-F See instruction	P
	- Heat resistant polyvinyl chloride sheathed. These cords are not used for type X attachment other than specially prepared cords. Their properties are be at least those of		N

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Clause	Requirement – Test	Result - Remark	Verdict
	• heat-resistant light polyvinyl chloride sheathed cord (code designation 60227 IEC 56), for appliances having a mass not exceeding 3 kg;		N
	• heat-resistant polyvinyl chloride sheathed cord (code designation 60227 IEC 57), for other appliances		N
25.8	Nominal cross-sectional area of supply cords according to table 11; rated current (A); cross-sectional area (mm ²)	See instruction: 3x1.5mm ²	P
25.9	Supply cord not in contact with sharp points or edges		P
25.10	Green/yellow core for earthing purposes in Class I appliance	See instruction	P
25.11	Conductors of supply cords not consolidated by lead-fin soldering where they are subject to contact pressure, unless		N
	clamping means so constructed that there is no risk of bad contacts due to cold flow of the solder		N
25.12	Moulding the cord to part of the enclosure does not damage the insulation of the supply cord		N
25.13	Inlet opening so shaped as to prevent damage to the supply cord		P
	Unless the enclosure at the inlet opening is of insulation material, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		P
	If unsheathed supply cord, a similar additional bushing or lining is required, unless		N
	the appliance is class 0		N
25.14	Supply cords adequately protected against excessive flexing		N
	Flexing test; applied force (N); number of flexings		N
	The test does not result in:		N
	- short-circuit between the conductors		N
	- breakage of more than 10% of the strands of any conductor		N
	- separation of the conductor from its terminal		N
	- loosening of any cord guard		N
	- damage, within the meaning of the standard, to the cord or the cord guard		N
	- broken strands piercing the insulation and becoming accessible		N
25.15	Conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorages	Raceway	N
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged		N

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Clause	Requirement – Test	Result - Remark	Verdict
	Pull and torque test of supply cord, values shown in table 10: pull (N); torque (Nm) (not on automatic cord reel)	Only for supply cord: Pull 100N; Torque 0.35Nm	P
	Max. 2 mm displacement of the cord, and conductors not moved more than 1 mm in the terminals		P
25.16	Cord anchorages for type X attachments so constructed and located that:	Only for supply cord	P
	- replacement of the cord is easily possible		P
	- it is clear how the relief from strain and the prevention of twisting are obtained		P
	- they are suitable for different types of cord		P
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless separated from		P
	- accessible metal parts by supplementary insulation		N
	- the cord is not clamped by a metal screw which bears directly on the cord		P
	- at least one part of the cord anchorage securely fixed to the appliance, unless part of a specially prepared cord		P
	- screws which have to be operated when replacing the cord do not fix any other component, if applicable		P
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N
	- for Class 0, 0I and I appliances: they are of insulating material or are provided with an insulating lining, unless a failure of the insulation of the cord does not make accessible metal parts live		P
	- for Class II appliances: they are of insulating material, or if of metal, they are insulated from accessible metal parts by supplementary insulation		N
25.17	Adequate cord anchorages for type Y and Z attachment		N
25.18	Cord anchorages only accessible with the aid of a tool, or	Only for supply cord	P
	so constructed that the cord only can be fitted with the aid of a tool		P
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N
	Tying the cord into a knot or tying the cord with string not used		P
25.20	Conductors of the supply cord for type Y and Z attachment adequately additionally insulated		N

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Clause	Requirement – Test	Result - Remark	Verdict
25.21	Space for supply cable for fixed wiring or supply cord for type X attachment constructed to permit checking of conductors with respect to correct positioning and connection before fitting any cover, no risk of damage, no contact with accessible metal parts if a conductor becomes loose, etc.		P
	For portable appliances, the uninsulated end of a conductor prevented from any contact with accessible metal parts, unless the end of the cord is such that the conductors are unlikely to slip free		N
25.22	Appliance inlet:		N
	- live parts not accessible during insertion or removal		N
	- connector can be inserted without difficulty		N
	- the appliance is not supported by the connector		N
	- is not for cold conditions if temperature rise of external metal parts exceeds 75 K, unless the supply cord is not likely to touch such metal parts		N
25.23	Interconnection cords comply with the requirements for the supply cord, except as specified		P
	If necessary, electric strength test of 16.3		N
25.24	Interconnection cords not detachable without the aid of a tool		P
25.25	Dimension of the pins and engagement face are to be in accordance with the dimensions of the relevant plug listed in IEC 60083		N
26	TERMINALS FOR EXTERNAL CONDUCTORS		
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors		P
	Terminals only accessible after removal of a non-detachable cover		P
	However, earthing terminals may be accessible if a tool is required to make the connections and means are provided to clamp the wire independently from its connection		N
26.2	Appliances with type X attachment and appliances for connection to fixed wiring provided with terminals in which connection is made by means of screws, nuts or equally effective devices		P
	Screws and nuts serve only to clamp supply conductors, except		P
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		P
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone		N

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Clause	Requirement – Test	Result - Remark	Verdict
	Soldering alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free at the soldered joint		N
26.3	Terminals for type X attachment and for connection to fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure and without damaging the conductor		P
	The terminal is fixed so that when the clamping means is tightening or loosening:		P
	- the terminal does not loosen		P
	- internal wiring is not subjected to stress		P
	- creepage distances and clearances are not reduced below the values in 29		P
	Compliance checked by inspection and by the test of subclause 9.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified. Nominal diameter of thread (mm); screw category; torque (Nm)	Certified terminals	P
26.4	Terminals for type X attachment, except those with a specially prepared cord, and those for connection to fixed wiring, no special preparation of conductors required, and so constructed or placed that conductors prevented from slipping out		P
26.5	Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection to other parts that result in a hazard		P
	Stranded conductor test, 8 mm insulation removed		P
	No contact between live parts and accessible metal parts and, for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only		P
26.6	Terminals for type X attachment and for connection to fixed wiring suitable for connection of conductors with required cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm ²)	2.5mm ²	P
	Terminals only suitable for a specially prepared cord		N
26.7	Terminals for type X attachment accessible after removal of a cover or part of the enclosure		P
26.8	Terminals for the connection to fixed wiring, including the earthing terminal, located close to each other		P
26.9	Terminals of the pillar type constructed and located as specified	Certified terminals	P
26.10	Terminals with screw clamping and screwless terminals not used for flat twin tinsel cords, unless conductors ends fitted with a device suitable for screw terminals	Certified terminals	P
	Pull test of 5 N to the connection		P

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Clause	Requirement – Test	Result - Remark	Verdict
26.11	For type Y and Z attachment: soldered, welded, crimped and similar connections may be used		N
	For Class II appliances: the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N
	For Class II appliances: soldering, welding or crimping alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free		N
27	PROVISION FOR EARTHING		
27.1	Accessible metal parts of Class 0I and I appliances, permanently and reliably connected to an earthing terminal		P
	Earthing terminals not connected to neutral terminal		P
	Class 0, II and III appliance have no provision for earthing		N
	Safety extra-low voltage circuits not earthed, unless protective extra-low voltage circuits		P
27.2	Clamping means adequately secured against accidental loosening		P
	Terminals used for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm ² , and		N
	do not provide earthing continuity between different parts of the appliance		N
	These conductors cannot be loosened without the aid of a tool		N
27.3	For detachable parts that are plugged into another part of the appliance, and having an earth connection, the earth connection made before and separated after current-carrying connections when removing the part		N
	Current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		P
27.4	No risk of corrosion resulting from contact between metal of earthing terminal and other metal		P
	Adequate resistance to corrosion of coated or uncoated parts providing earthing continuity, other than parts of a metal frame or enclosure		P
	Parts of steel providing earthing continuity provided at the essential areas with an electroplated coating, thickness at least 5 µm		N
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		P
	In case of aluminium alloys precautions taken to avoid risk of corrosion		P

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Clause	Requirement – Test	Result - Remark	Verdict
27.5	Low resistance of connection between earthing terminal and earthed metal parts		P
	This requirement does not apply to connections providing earthing continuity in the protective extra-low voltage circuit, provided that clearances of basic insulation are based on the rated voltage of the appliance		N
	Resistance not exceeding 0.1 Ω at the specified low-resistance test	30 m Ω	P
27.6	The printed conductors of printed circuit boards is not used to provide earthing continuity in hand-held appliances		N
	They may be used to provide earthing continuity in other appliances if at least two tracks are used with independent soldering points and the appliance complies with 27.5 for each circuit		N
28	SCREWS AND CONNECTIONS		
28.1	Fixings and electrical connections and connections providing earthing continuity withstand mechanical stresses		P
	Screws not of soft metal liable to creep, such as zinc or aluminium		P
	Diameter of screws of insulating material min. 3 mm		N
	Screws of insulating material not used for any electrical connection or connection providing earthing continuity		N
	Screws used for electrical connections or for connections providing earthing continuity screw into metal		P
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		N
	Type X attachment, screws to be removed for replacement of supply cord, or for users maintenance, not of insulating material if their replacement by a metal screw can impair basic insulation		N
	For screws and nuts; test as specified	(see appended table); Screws of fixing cover are not tested.	P
28.2	Contact pressure not transmitted through insulating material liable to shrink or distort, unless shrinkage or distortion compensated		P
	This requirement does not apply to electrical connections in circuits carrying a current not exceeding 0,5 A		N
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp these parts directly in contact with each other		N

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Clause	Requirement – Test	Result - Remark	Verdict
	Thread-cutting (self-tapping) screws and thread rolling screws is only used for electrical connections if they generate a full form standard machine screw thread. However, threadcutting(self-tapping) screws are not used if they are likely to be operated by the user or installer		P
	Thread-cutting, thread rolling and space-threaded screws may be used in connections providing earthing continuity provided it is not necessary to disturb the connection:		P
	– in normal use,		P
	– during user maintenance,		P
	– when replacing a supply cord having a type X attachment, or		P
	– during installation		P
	At least two screws must be used for each connection providing earthing continuity unless the screw forms a thread having a length of at least half the diameter of the screw		P
28.4	Screws and nuts making mechanical connection between different parts of the appliance, and also making electrical connection or connections providing earthing continuity secured against loosening		P
	Rivets for current-carrying connections subject to torsion secured against loosening		N
29	CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH INSULATION		
	Clearances, creepage distances and solid insulation withstand electrical stress		P
	If coatings are used on printed circuit boards to protect the microenvironment (Type 1 coating) or to provide basic insulation (Type 2 coating), Annex J applies		N
	The microenvironment is pollution degree 1 under Type 1 coating		N
	There are no clearance or creepage distance requirements under Type 2 coating		N
29.1	Clearances not less than the values specified in table 16, taking into account the rated impulse voltage for the overvoltage categories of table 15, unless		P
	for basic insulation and functional insulation they comply with the impulse voltage test of clause 14		N
	However, if the construction is affected by wear, distortion, movement of the parts or during assembly, the clearances for rated impulse voltages of 1500V and above are increased by 0.5 mm and the impulse voltage test is not applicable		N
	Impulse voltage test not applicable:		N
	- when the microenvironment is pollution degree 3		N

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Clause	Requirement – Test	Result - Remark	Verdict
	- for basic insulation of class 0 and class 01 appliances		N
	Appliances are in overvoltage category II		P
	Compliance is checked by inspection and measurements as specified	(see appended table)	P
29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage	(see appended table 29.1)	P
	Clearance at the terminals of tubular sheathed heating elements may be reduced to 1mm if the microenvironment is pollution degree 1		N
	Lacquered conductors of windings assumed to be bare conductors		P
29.1.2	Clearances of supplementary insulation not less than those specified for basic insulation in table 16	(see appended table 29.1)	P
29.1.3	Clearances of reinforced insulation not less than those specified for basic insulation in table 16, but using the next higher step for rated impulse voltage	(see appended table 29.1)	P
29.1.4	For functional insulation, the values of table 16 are applicable, unless	(see appended table 29.1)	P
	the appliance complies with clause 19 with the functional insulation short-circuited	For SELV circuits: NE	N
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		N
	Lacquered conductors of windings considered to be bare conductors		P
	However, clearances at crossover points are not measured		P
29.1.5	Appliances having higher working voltage than rated voltage, the voltage used for determining clearances from table 16 is the sum of the rated impulse voltage and the difference between the peak value of the working voltage and the peak value of the rated voltage		N
	If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, clearances of basic insulation on the secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage		N
	Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation based on the working voltage used as the rated voltage in table 15		P
29.2	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree		P
	Pollution degree 2 applies, unless		N
	precautions taken to protect the insulation; pollution degree 1		N

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Clause	Requirement – Test	Result - Remark	Verdict
	insulation subjected to conductive pollution; pollution degree 3		P
	Compliance is checked by inspection and measurements as specified	(see appended table)	P
29.2.1	Creepage distances of basic insulation not less than specified in table 17	(see appended table 29.2)	P
	Except for pollution degree 1, creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14		N
29.2.2	Creepage distances of supplementary insulation at least as specified for basic insulation in table 17	(see appended table 29.2)	P
29.2.3	Creepage distances of reinforced insulation at least double as specified for basic insulation in table 17	(see appended table 29.2)	P
29.2.4	Creepage distances of functional insulation not less than specified in table 18	(see appended table 29.2)	P
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited	For SELV circuits: NE	N
29.3	Supplementary and reinforced insulation having adequate thickness, or a sufficient number of layers, to withstand the electrical stresses		P
	Compliance checked by:		P
	- measurement, in accordance with 29.3.1, or		P
	- an electric strength test in accordance with 29.3.2, or		N
	- an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3 and a thickness as specified in 29.3.21 for accessible reinforced insulation		N
29.3.1	Supplementary insulation having a thickness of at least 1 mm		P
	Reinforced insulation having a thickness of at least 2 mm		P
29.3.2	Each layer of material withstand the electric strength test of 16.3 for supplementary insulation		N
	Supplementary insulation consisting of at least 2 layers		N
	Reinforced insulation consisting of at least 3 layers		N
29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2, followed by		N
	the electric strength test of 16.3		N
	If the temperature rise during the tests of Clause 19 does not exceed the value specified in Table 3, the test of IEC 60068-2-2 is not carried out		N

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Clause	Requirement – Test	Result - Remark	Verdict
29.3.Z1	Thickness prescriptions as specified in 29.3.Z1 for accessible reinforced insulation consisting of a single layer		N
30	RESISTANCE TO HEAT, FIRE		
30.1	External parts of non-metallic material,		P
	parts supporting live parts, and	Components used are separately certified / tested	P
	thermoplastic material providing supplementary or reinforced insulation,		P
	sufficiently resistant to heat		P
	Ball-pressure test according to IEC 60695-10-2	(see appended table)	P
	External parts: at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature (°C)	Ball pressure test on cover of transformer (POLILAC 766) are not carried out.	P
	Parts supporting live parts: at 40°C plus the maximum temperature rise determined during the test of clause 11, or at 125°C, whichever is the higher; temperature (°C)	Components used are separately certified / tested	P
	Parts of thermoplastic material providing supplementary or reinforced insulation, 25°C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C)		N
30.2	Parts of non-metallic material are resistant to ignition and spread of fire		P
	Compliance is checked by the test of 30.2.1. In addition,		P
	- for attended appliances, 30.2.2 is applicable		N
	- for unattended appliances, 30.2.3 is applicable		P
	Appliances for remote operation are considered to be appliances that are operated while unattended and consequently they are subjected to the test of 30.2.3.		P
	For printed circuit board see 30.2.4		P
30.2.1	Glow-wire test of IEC 60695-2-11 at 550 °C, unless	(see appended table)	P
	the material is classified at least HB40 according to IEC 60695-11-10		N
	Parts for which the glow-wire test cannot be carried out meet the requirements in ISO9772 for category HBF material		N
30.2.2	For appliances that are operated while attended, parts of non-metallic material supporting current-carrying connections, and parts of non-metallic material within a distance of 3 mm of such connections, are subjected to the glow-wire test of IEC 60695-2-11. However, the glow-wire test is not carried out on parts of material classified as having a glowwire flammability index according to IEC 60695-2-12 of at least		N

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Clause	Requirement – Test	Result - Remark	Verdict
	-750°C, for connections carrying a current exceeding 0.5A during normal operation		N
	-650°C, for other connections		N
	Requirements for thickness of the sample		N
	Requirements for material within 3mm of a current carrying part		N
	Test not applicable to conditions as specified		N
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2	Components used are separately certified / tested See also 9. Deviation from test specification.	P
	Test not applicable to conditions as specified		P
30.2.3.1	Parts of non-metallic material supporting connections that carry a current exceeding 0.2 A during normal operation, and parts of non-metallic material within a distance of 3 mm of such connections, are subjected to the glow-wire test of IEC 60695-2-11 with a test severity of 850 °C	Components used are separately certified / tested	P
	However, the glow-wire test is not carried out on parts of material classified as having a glow-wire flammability index of at least 850 °C according to IEC 60695-2-12	Components used are separately certified / tested	N
	Additional requirements for the thickness of the sample		N
	The test is also not carried out on small parts that comply with the needle-flame test of Annex E or on small parts of material classified as V-0 or V-1 according to IEC 60695-11-10		N
	Additional requirements for non-metallic material is within 3mm of a current connection		P
30.2.3.2	Parts of non-metallic material supporting current-carrying connections, and	Components used are separately certified / tested	P
	parts of non-metallic material within a distance of 3mm,		P
	subjected to glow-wire test of IEC 60695-2-11		P
	However the glow-wire test is not carried out on parts of materials classified as having a glow-wire ignition temperature according to IEC 60695-2-13 at least	Components used are separately certified / tested	N
	-775°C, for connections that carry a current exceeding 0,2A during normal operation		N
	-650°C, for other connections		N
	Additional requirements for sample with a thickness within $\pm 0,1$ mm of the relevant part 60695-2-13		N

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Clause	Requirement – Test	Result - Remark	Verdict
	Where an non-metallic material is within 3 mm of a current carrying connection, but is shielded from the connection by a different material, the glow-wire test of IEC 60695-2-11 is carried out at the relevant temperature with the tip of the glow-wire applied to the interposed shielding material with the shielded material in place and not directly to the shielded material. The test is carried out with:	Components used are separately certified / tested	P
	750 °C, for connections that carry a current exceeding 0.2 A during normal operation,		P
	650 °C, for other connections		N
	If a flame persists longer than 2 s during the test, parts above the connection, as specified, subjected to the needle-flame test of annex E, unless	Only for coil former of transformer;	P
	However, parts shielded by a flame barrier that meets the needle-flame test of Annex E are not tested		N
	The needle-flame test is not carried out on parts of material classified as V-0 or V-1 according to IEC 60695-11-10 provided that the test sample used for the classification was no thicker than the relevant part of the appliance	Only metal parts; Coil former of transformer V-0;	P
30.2.4	Base material of printed circuit boards subjected to needle-flame test of annex E		N
	Test not applicable to conditions as specified	V-0	P
31	RESISTANCE TO RUSTING		
	Relevant ferrous parts adequately protected against rusting		P
32	RADIATION, TOXICITY AND SIMILAR HAZARDS		
	Appliances do not emit harmful radiation or present a toxic or similar hazard due to their operation in normal use		P
A	ANNEX A, ROUTINE TESTS		
	Description of routine tests to be carried out by the manufacturer	Routine tests are intended to be carried out by the manufacturer	P
B	ANNEX B, APPLIANCES POWERED BY RECHARGEABLE BATTERIES		
	The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance		N
	This annex does not apply to battery chargers		N
B.3.1.9	Appliance operated under the following conditions:		N
	-the appliance, supplied by its fully charged battery, operated as specified in relevant part 2		N
	-the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		N

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Clause	Requirement – Test	Result - Remark	Verdict
	-if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		N
	If the appliance incorporates inductive coupling between two parts that are detachable from each other, the appliance is supplied from the supply mains with the detachable part removed		N
B.3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		N
B.5.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		N
B.7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage and polarity of the terminals		N
B.7.12	The instructions for appliances incorporating batteries intended to be replaced by the user includes required information		N
	Details about how to remove batteries containing materials hazardous to the environment given		N
B.7.15	Markings placed on the part of the appliance connected to the supply mains		N
B.8.2	Appliances having batteries that according to the instruction may be replaced by the user need only have basic insulation between live parts and the inner surface of the battery compartment		N
	If the appliance can be operated without batteries, double or reinforced insulation required		N
B.11.7	The battery is charged for the period described		N
B.19.1	Appliances subjected to tests of 19.101, 19.102 and 19.103		N
B.19.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		N
B.19.102	Short-circuiting of the terminals of the battery, being fully charged, for appliances having batteries that can be removed without the aid of a tool		N
B.19.103	Appliances having batteries replaceable by the user supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction		N
B.21.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength, checked according to procedure 2 of IEC 60068-2-32		N
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-32, the number of falls being:		N
	- 100, the mass of part does not exceed 250 g		N

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Clause	Requirement – Test	Result - Remark	Verdict
	- 50, the mass of part exceeds 250 g		N
	After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met		N
B.22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		N
B.25.13	An additional lining or bushing not required for interconnection cords operating at safety extra-low voltage		N
B.30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		N
	For other parts, 30.2.2 applies		N
C	ANNEX C, AGEING TEST ON MOTORS		
	Test carried out when doubt with regard to the classification of the insulating system of a motor winding		N
D	ANNEX D, ALTERNATIVE REQUIREMENTS FOR PROTECTED MOTORS		
	Applicable to appliances having motors that incorporate thermal motor protectors. This test must be carried out on the sample present on the appliance		N
E	ANNEX E, NEEDLE-FLAME TEST		
	Needle-flame test carried out in accordance with IEC 60695-11-5, with the following modifications:		N
7	Severities		N
	The duration of application of the test flame is 30 s ± 1 s		N
9	Test procedure		N
9.1	The specimen is arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1		N
9.2	The first paragraph does not apply		N
	If possible, the flame is applied at least 10 mm from a corner		N
9.3	The test is carried out on one specimen		N
	If the specimen does not withstand the test, the test may be repeated on two further specimens, both withstanding the test		N
11	Evaluation of test results		N
	The duration of burning not exceeding 30 s		N
	However, for printed circuit boards, the duration of burning not exceeding 15 s		N
F	ANNEX F, CAPACITORS		

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Clause	Requirement – Test	Result - Remark	Verdict
	Capacitors likely to be permanently subjected to the supply voltage, and used for radio interference suppression or voltage dividing, comply with the following clauses of IEC 60384-14, with the following modifications:	Tested separately Comply with IEC 60384-14	N
F.1.5	Terminology		N
F.1.5.3	Class X capacitors tested according to subclass X2		N
F.1.5.4	This subclause is applicable		N
F.1.6	Marking		N
	Items a) and b) are applicable		N
F.3.4	Approval testing		N
F.3.4.3.2	Table II is applicable as described		N
F.4.1	Visual examination and check of dimensions		N
	This subclause is applicable		N
F.4.2	Electrical tests		N
F.4.2.1	This subclause is applicable		N
F.4.2.5	This subclause is applicable		N
F.4.2.5.2	Only table IX is applicable		N
	Values for test A apply		N
	However, for capacitors in heating appliances the values for test B or C apply		N
F.4.12	Damp heat, steady state		N
	This subclause is applicable		N
	Only insulation resistance and voltage proof are checked		N
F.4.13	Impulse voltage		N
	This subclause is applicable		N
F.4.14	Endurance		N
	Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 applicable		N
F.4.14.7	Only insulation resistance and voltage proof are checked		N
	Visual examination, no visible damage		N
F.4.17	Passive flammability test		N
	This subclause is applicable		N
F.4.18	Active flammability test		N
	This subclause is applicable		N
G	ANNEX G, SAFETY ISOLATING TRANSFORMERS		

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Clause	Requirement – Test	Result - Remark	Verdict
	The following modifications to this standard are applicable for safety isolating transformers:		P
G.7	Marking and instructions		N
G.7.1	Transformers for specific use marked with:	Incorporated transformer	N
	-name, trademark or identification mark of the manufacturer or responsible vendor		N
	-model or type reference		N
G.17	Overload protection of transformers and associated circuits		N
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1		N
G.22	Construction		P
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable	(see appended table G. 22)	P
G.29	Clearances, creepage distances and solid insulation		P
G.29.1 and G.29.2	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply		P
H	ANNEX H, SWITCHES		
	Switches comply with the following clauses of IEC 61058-1, as modified:	Tested separately Comply with IEC 61058-1	N
	-The tests of IEC 61058-1 carried out under the conditions occurring in the appliance		N
	-Before being tested, switches are operated 20 times without load		N
H.8	Marking and documentation		N
	Switches are not required to be marked		N
	However, switches that can be tested separately from the appliance marked with the manufacturer's name or trade mark and the type reference		N
H.13	Mechanism		N
	The tests may be carried out on a separate sample		N
H.15	Insulation resistance and dielectric strength		N
H.15.1	Not applicable		N
H.15.2	Not applicable		N
H.15.3	Applicable for full disconnection and micro-disconnection		N
H.17	Endurance		N
	Compliance is checked on three separate appliances or switches		N

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Clause	Requirement – Test	Result - Remark	Verdict
	For 17.2.4.4, the number of cycles is 10 000, unless otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335		N
	Switches for operation under no load and which can be operated only by a tool and switches operated by hand that are interlocked so that they cannot be operated under load, are not subjected to the tests		N
	Subclauses 17.2.2 and 17.2.5.2 not applicable		N
	The ambient temperature during the test is that occurring in the appliance during the test of Clause 11 in IEC 60335-1		N
	Temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1		N
H.20	Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies		N
	This clause is applicable to clearances and creepage distances for functional insulation, across full disconnection and micro-disconnection, as stated in table 24		N
I	ANNEX I, MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE		
	The following modifications to this standard are applicable for motors having basic insulation that is inadequate for the rated voltage of the appliance:		N
I.8	Protection against access to live parts		N
I.8.1	Metal parts of the motor are considered to be bare live parts		N
I.11	Heating		N
I.11.3	Temperature rise of the body of the motor is determined instead of the temperature rise of the windings		N
I.11.8	Temperature rise of the body of the motor, where in contact with insulating material, not exceeding values in table 3 for the relevant insulating material		N
I.16	Leakage current and electric strength		N
I.16.3	Insulation between live parts of the motor and its other metal parts not subjected to the test		N
I.19	Abnormal operation		N
I.19.1	The tests of 19.7 to 19.9 not carried out		N
I.19.101	Appliance operated at rated voltage with each of the following fault conditions:		N
	- short circuit of the terminals of the motor, including any capacitor incorporated in the motor circuit		N
	- short circuit of each diode of the rectifier		N

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Clause	Requirement – Test	Result - Remark	Verdict
	- open circuit of the supply to the motor		N
	- open circuit of any parallel resistor, the motor being in operation		N
	Only one fault simulated at a time, the tests carried out consecutively		N
I.22	Construction		N
I.22.101	For class I appliances incorporating a motor supplied by a rectifier circuit, the d.c. circuit being insulated from accessible parts of the appliance by double or reinforced insulation		N
	Compliance checked by the tests specified for double and reinforced insulation		N
J	ANNEX J, COATED PRINTED CIRCUIT BOARDS		
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		N
5.7	Climatic sequence		N
	When production samples are used, three samples of the printed circuit board are tested		N
5.7.1	Cold		N
	The test is carried out at -25°C		N
5.7.3	Rapid change of temperature		N
	Severity 1 is specified		N
5.9	Additional tests		N
	This subclause is not applicable		N
K	ANNEX K, OVERVOLTAGE CATEGORIES		
	The information on overvoltage categories is extracted from IEC 60664-1		P
	Overvoltage category is a numeral defining a transient overvoltage condition		P
	Equipment of overvoltage category IV is for use at the origin of the installation		N
	Equipment of overvoltage category III is equipment in fixed installations and for cases where the reliability and the availability of the equipment is subject to special requirements		N
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation		P
	If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies		N

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Clause	Requirement – Test	Result - Remark	Verdict
	Equipment of overvoltage category I is equipment for connection to circuits in which measures are taken to limit transient overvoltages to an appropriate low level		N
L	ANNEX L, GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES		
	Sequences for the determination of clearances and creepage distances		P
M	ANNEX M, POLLUTION DEGREE		
	The information on pollution degrees is extracted from IEC 60664-1		P
	Pollution		P
	The microenvironment determines the effect of pollution on the insulation, taking into account the macroenvironment		P
	Means may be provided to reduce pollution at the insulation by effective enclosures or similar		P
	Minimum clearances specified where pollution may be present in the microenvironment		P
	Degrees of pollution in the microenvironment		P
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		P
	- pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence		N
	- pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected		P
	- pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected		N
	- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		N
N	ANNEX N, PROOF TRACKING TEST		
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications:		N
N.7	Test apparatus		N
N.7.3	Test solutions		N
	Test solution A is used		N
N.10	Determination of proof tracking index (PTI)		N
N.10.1	Procedure		N
	The proof voltage is 100V, 175V, 400V or 600V		N

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Clause	Requirement – Test	Result - Remark	Verdict
	The last paragraph of Clause 3 applies		N
	The test is carried out on five specimens		N
	In case of doubt, additional test with proof voltage reduced by 25V, the number of drops increased to 100		N
N.10.2	Report		N
	The report stating if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V		N
O	ANNEX O, SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30		
	Description of tests for determination of resistance to heat and fire		P
P	ANNEX P, GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN WARM DAMP EQUABLE CLIMATES		
	Modifications applicable for class 0 and 01 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WDaE		N
	Modifications may also be applied to class 1 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WdaE, if liable to be connected to a supply mains that excludes the protective earthing conductor		N
5.7	The ambient temperature for the tests of Clauses 11 and 13 is 40 ⁺³ ₀ °C		N
7.1	The appliance marked with the letters WDaE		N
7.12	The instructions state that the appliance is to be supplied through a RCD having a rated residual operating current not exceeding 30 mA		N
	The instructions state that the appliance is considered to be suitable for use in countries having a warm damp equable climate, but may also be used in other countries		N
11.8	The values of Table 3 are reduced by 15 K		N
13.2	The leakage current for class I appliances not exceeding 0.5 mA		N
15.3	The value of t is 37 °C		N
16.2	The leakage current for class I appliances not exceeding 0.5 mA		N
19.13	The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3		N
Q	ANNEX Q, SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS		
	Description of tests for appliances incorporating electronic circuits		N
R	ANNEX R, SOFTWARE EVALUATION		

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Clause	Requirement – Test	Result - Remark	Verdict
	Software evaluated in accordance with the following clauses of Annex H of IEC 60730-1, as modified		N
H.2	Only definitions H.2.16 to H.2.20 applicable		N
H.7	Only footnotes 12) to 18) of Table 7.2, as modified, applicable		N
H.11.12	All the subclauses of H.11.12, as modified, except H.11.12.6 and H.11.12.6.1, applicable		N
H.11.12.7	Delete text		N
H.11.12.7.1	For appliances using software class C having a single channel with self-test and monitoring structure, the manufacturer provides the measures necessary to address the fault/errors in safety related segments and data		N
H.11.12.8	Software fault/error detection occurs before compliance with 19.13 of IEC 60335-1 is impaired		N
H.11.12.8.1	Replace text		N
H.11.12.13	Software and safety related hardware under its control initializes and terminates before compliance with 19.13 of IEC 60335-1 is impaired		N
ZA	ANNEX ZA, SPECIAL NATIONAL CONDITIONS		
ZA.7.12	DENMARK: Requirements regarding marking tag of power supply cord and connection of earthing wire for class I appliances delivered without a plug		N
ZA.19.5	NORWAY: The test is also applicable to appliances intended to be permanently connected to fixed wiring		N
ZA.22.2	FRANCE, NORWAY: The second paragraph of this subclause, dealing with single-phase, permanently connected class I appliances having heating elements, is not applicable due to the supply system		N
ZA.25.6	BELGIUM, FRANCE, SPAIN, UNITED KINGDOM: Plugs according to standard sheet C2b not allowed		N
	AUSTRIA, FINLAND, GERMANY, ICELAND, IRELAND, ITALY, LUXEMBOURG, NETHERLANDS, NORWAY, PORTUGAL, SPAIN, SWEDEN, SWITZERLAND, UNITED KINGDOM: Plugs according to standard sheet C3b not allowed		N
	DENMARK: Supply cords of single-phase portable appliances having a rated current not exceeding 13 A provided with a plug according to the following:		N
	Class I appliances: Section 107-2-D1, ed.3 1998, Standard Sheet DK 2-1a		N
	For appliances covered by a Part 2 of EN 60335, also plugs in accordance with Section 107-2-D1, ed. 3, 1998, Standard Sheet C2b, C3b or C4 are allowed		N
	Class II appliances: Section 107-2-D1, ed.3 1998, Standard Sheet C1b, C5, C6, DKA 2-1a and DKA 2-1b		N

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Clause	Requirement – Test	Result - Remark	Verdict
	Stationary single-phase appliances, having a rated current not exceeding 13 A, and provided with a supply cord and a plug, the plug is in accordance with the requirements above		N
	Multi-phase appliances and single-phase appliances having a rated current exceeding 13 A, and provided with a supply cord and a plug, the plug is in accordance with the requirements below:		N
	Class I appliances: Section 107-2-D1, Standard Sheet DK 6-1a / EN 60309-2, Standard Sheet 2-II, 2-IV		N
	Class II appliances: Section 107-2-D1, Standard Sheet DK 6-1a / EN 60309-2, Standard Sheet 2-II, 2-IV, the earthing contact not being connected		N
	The current for the plug not exceeding the values specified; standard sheet (no.); current (A):		N
	IRELAND: Only plugs according to Standard Sheets B2 and C5 allowed (see also Annex ZB)		N
	ITALY: Only plugs listed in CENELEC Report R0BT-005:2001 allowed		N
	SPAIN: For appliances for household use, only the following plugs are allowed:		N
	according to UNE 20315: ESC 10-1b, C2b, C4, C6 or ESB 25-5b		N
	according to UNE-EN 50075		N
	SWITZERLAND: supply cords of portable household and similar electrical appliances having a rated current not exceeding 10 A, provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets:		N
	SEV 6532-2.1991, plug type 15, 3P+N+PE, 250/400 V, 10 A		N
	SEV 6533-2.1991, plug type 11, L+N, 250 V, 10 A		N
	SEV 6534-2.1991 plug type 12, L+N+PE, 250 V, 10 A		N
	UNITED KINGDOM: Only plugs according to Standard Sheets B2 and C5 allowed (see also Annex ZB)		N
ZA.25.8	IRELAND, UNITED KINGDOM: replacement of figures (rated current/cross-sectional area) in the table		P
ZB	ANNEX ZB, A-DEVIATIONS		
ZB.4	SWITZERLAND: Information about batteries with carbon-zinc and alkali-manganese		N
ZB.7.1	ITALY: The voltage is 220 V/380 V		N
ZB.25.6	IRELAND: These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and allow only plugs complying with I.S. 401:1997, or equivalent, to be fitted to domestic appliances		N

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Clause	Requirement – Test	Result - Remark	Verdict
	UNITED KINGDOM: These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and allow only plugs to BS 1363 to be fitted to domestic appliances. It also allows plugs to BS 4573 and standard sheet C5 to be fitted to shavers and toothbrushes		N
29.3	GERMANY: (Gesetz über technische Arbeitsmittel und Verbraucherschutzprodukte (Geräte- und Produktsicherheitsgesetz,) Article 4, sentence 1 of paragraph 1 [Law on technical labour equipment and consumer products {Equipment and product safety law}] of 6 January 2004) The provisions of the third dashed item are not applicable for appliances, where the insulation is accessible. Appropriate additional measures, such as a multilayered insulation or adequate thickness, shall be taken if used for accessible insulation to ensure that the appliance will not become hazardous in case of the presence of one failure (e.g. a hole in the layer)		N
ZC	ANNEX ZC, NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS		
	This Standard incorporates provisions from the publications listed		P
ZD	ANNEX ZD, IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS		
	A list of code designations for different types of flexible cords		P



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Clause	Requirement – Test	Result - Remark	Verdict
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10.1	TABLE: input deviation measurements					P
Input deviation dP of/at:	P rated (W)	P (W)	dP (%)	Limit dP (%)	Remark	
230V 50Hz	200	80	-60	+5	---	

10.2	TABLE: input deviation measurements					N
Input deviation dI of/at:	I rated (A)	I (A)	dI (%)	Limit dI (%)	Remark	
---	---	---	---	---	---	

11.7	TABLE: heating temperature specifications			P
Test step	Temperature	Duration	Remarks	
Accessories (24V~ 0.5A); Accessories Vsafe (24V~ 0.18A); Emergency battery: 2 X 12V 1.2Ah; The appliance is operated for consecutive cycles until steady conditions are established at temperature ambient of 25°C (continuous operation). Doors used during the test: length = 0.62m; height = 1.12m; weight = 118.5kg	See table 11.8	28230 s	---	

11.8	TABLE: Temperature rise measurements			P
Probe nr.	Temperature rise dT of part/at:	dT (K)	Limit dT (K)	
	Room temperature t ₁ (°C)	25		
	Room temperature t ₂ (°C)	25		
	Test voltage (V)	244~		
102	Winding of inductance B1	106.9	115	
103	Ambient of inductance B2	63.7	100	
104	External enclosure of motor (for internal wiring)	46.9	50	
105	Metal plate of control unit ARIA (for internal wiring)	22.8	50	
106	Outer surface of capacitor C60	32.9	100	
107	Windings of electromagnet	70.6	85	

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Clause	Requirement – Test	Result - Remark	Verdict		
108	Ambient of motor windings	51.3	115		
109	Terminals of supply control unit	41.2	105		
110	Push buttons of control unit (only for regulation during installation)	24.8	60		
111	Supply terminals	11.4	75		
112	Thermoplastic cover of supply apparatus (in contact with supply cable)	22.1	50		
113	Secondary winding of transformer	55.5	115		
114	Primary winding of transformer	51	115		
115	Coil former of transformer	28.5	60		
116	Ambient of switch	17	100		
117	R.F.I filter	24.2	60		
118	Thermoplastic cover of supply apparatus (internal)	35.7	For cl. 30.1		
119	Thermoplastic cover of supply apparatus (external)	17.8	60		
120	Core of transformer (for internal wiring and accessible surface)	43.5	50		
T1	External enclosure of motor appliance	14	60		
T2	Metal plate of supply apparatus (for internal wiring)	19.3	50		
T3	Surface of switch	11.7	60		
During the test display of control unit reported E40.					
Winding temperature rise measurements					
Temperature rise dT of winding:	R ₁ (Ω)	R ₂ (Ω)	dT (K)	Limit dT (K)	Insulation class
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Clause	Requirement – Test	Result - Remark	Verdict
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13.2	TABLE: leakage current measurements at operating temperature		P
	Heating appliances: at 1,15 times maximum rated input (W)	---	
	Motor-operated and combined appliances: at 1,06 times rated voltage (V)	244~	
Leakage current I between:		I (mA)	Limit I (mA)
any pole of the supply and accessible metal parts		0.52	3.5
any pole of the supply and metal foil over enclosure		0.01	3.5
any pole of the supply and terminals of safety extra low voltage		0.05	3.5

13.3	TABLE: electric strength measurements at operating temperature		P
Test voltage applied between:		Test voltage (V)	Breakdown
Basic insulation		1000	No
Supplementary insulation		1750	No
Reinforced insulation		3000	No

14	TABLE: transient overvoltages					N
Clearance between:	Cl (mm)	Required Cl (mm)	Rated impulse voltage (V)	Impulse test voltage (V)	Flashover (Yes/No)	
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Clause	Requirement – Test	Result - Remark	Verdict
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16.2	TABLE: leakage current measurements		P
	At 1,06 times rated voltage (V)	244~	---
Leakage current I between:		I (mA)	Limit I (mA)
any pole of the supply and accessible metal parts		0.52	3.5
any pole of the supply and metal foil over enclosure		0.01	3.5
any pole of the supply and terminals of safety extra low voltage		0.05	3.5

16.3	TABLE: electric strength measurements		P
Test voltage applied between:		Test voltage (V)	Breakdown
Basic insulation		1250	No
Supplementary insulation		1750	No
Reinforced insulation		3000	No

17	TABLE: Overload protection, temperature rise measurements		N
	At 1,06-0,94 times rated voltage (V)	---	
Temperature rise dT of part/at:		dT (K)	Limit dT (K)
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Clause	Requirement – Test	Result - Remark	Verdict
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24	TABLE: List of critical components and materials		
Component / Part	Manufacturer / Trademark	Type / Model and Technical data	Mark(s) of conformity
Fused terminal blocks with:	AMERICOR	Type 503 Si 400V 2.5mm ² 10A 100°C	IMQ,...
- Fuse-holder	AMERICOR	250V 6.3A 5x20mm	IMQ,...
- Fuse link	VARIOUS	5 x 20mm T 1.6A L250V	IMQ,...
Switch	SIGNAL LUX	C2 8(2)A 250V~ 5E4 125/55	IMQ,...
Electronic circuit with: (See ANNEX 1)	BFT	FILTRO3 Rev.A 94 V0	Tested in appliance
- R.F.I. filter	ARCOTRONICS	FAH.AV3100.ZC 250V~ 50/60Hz 1.6A 25/85/21	VDE,...
- V.D.R.	VARIOUS	S14K275	UL, CSA
Internal wiring	VARIOUS	H05V-K 300/500V 1mm ²	HAR
Transformer with:	BFT	Cod. D110097 00002 Pri. 230V~ 50/60Hz Sec. 0-26V~ 250VA Class F	Tested in appliance
- Internal wiring	VARIOUS	H05V-K 300/500V 1mm ²	HAR
Internal wiring	VARIOUS	FROH2R 450V/750V 2x2.5mm ²	EC declaration of conformity
Internal wiring	VARIOUS	300/500V 2x1mm ²	EC declaration of conformity
Motor	BFT	Code 1076_92C 24V=== Insulation Class F	Tested in appliance
Encoder with: (See ANNEX 1)	BFT	ENC02B Rev.B 94 V0	Tested in appliance
- Internal wiring	VARIOUS	AWM STYLE 2095 80°C 300V 4x0.25 mm ²	EC declaration of conformity
Electronic circuit with: (See ANNEX 1)	BFT	Mod. ARIA PCB ARIA Rev. C 94V-0 Receiver Unit: BFT MD 433 SET Ver. Software ARIA 1.01	Tested in appliance



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Clause	Requirement – Test	Result - Remark	Verdict
- Terminals	ELETTOGIBI	PA 252 400V 10A 2.5mm ² 85°C	VDE,...
- Terminals	ELETTOGIBI	PA 253 400V 10A 2.5mm ² 85°C	VDE,...
- Inductance	SCHAFFNER	RN242-6-02 2X1.8mH 250Vac 50-60Hz 6A at 40°C 40/125/56	VDE,...
- Inductance	MARINI	40µHx2 class F	Tested in appliance
Electro-magnet	MELPEM	M42 EL063 E4299 24Vd.c.	Tested separately by manufacturer
Internal wiring	VARIOUS	2x0.5mm ² HT105	EC declaration of conformity

Supplementary information:
Compliance with the IEC Standard for the relevant component is ensured by manufacturer's documents

28.1	TABLE: Screws and connections				P
Use of screws	Diameter	Torque (Nm)	Times	Remark	
Screw of earthing transformer	3.9	1.2	5	---	
Screws of cover terminals 230V	2.8	0.4	10	---	



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Clause	Requirement – Test	Result - Remark	Verdict
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29.1	TABLE: Clearances					P
	Overvoltage category:		II			
	Type of insulation:					
Rated impulse voltage (V):	Min. cl (mm)	Basic	Functional	Supplementary	Reinforced	Verdict / Remark
330	0.5	---	---	---	---	---
500	0.5	---	---	---	---	---
1500	0.5	---	---	---	---	---
2500	1.5	1.5	1.5	1.5	---	P
4000	3.0	---	---	---	3.0	P
6000	5.5	---	---	---	---	---
8000	8.0	---	---	---	---	---
10000	11.0	---	---	---	---	---

29.1.5	TABLE: Clearances for working voltage > rated voltage					N
	Overvoltage category.....:		II			
	Type of insulation:					
Rated impulse voltage (V):	Min. cl (mm)	Basic	Functional	Supplementary	Reinforced	Verdict / Remark
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Clause	Requirement – Test	Result - Remark	Verdict
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29.2	TABLE: Creepage distances. basic. supplementary and reinforced insulation										P	
Working voltage (V)	Creepage distance (mm)							Type of insulation				Verdict
	Pollution degree											
	1	2			3			Type of insulation				
		Material group			Material group							
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	B*)	S*)	R*)	Verdict	
≤50	0.2	0.6	0.9	1.2	1.5	1.7	1.9	B	---	---	---	
≤50	0.2	0.6	0.9	1.2	1.5	1.7	1.9	---	S	---	---	
≤50	0.4	1.2	1.8	2.4	3.0	3.4	3.8	---	---	R	---	
>50 and ≤125	0.3	0.8	1.1	1.5	1.9	2.1	2.4	B	---	---	---	
>50 and ≤125	0.3	0.8	1.1	1.5	1.9	2.1	2.4	---	S	---	---	
>50 and ≤125	0.6	1.6	2.2	3.0	3.8	4.2	4.8	---	---	R	---	
>125 and ≤250	0.6	1.3	1.8	2.5	3.2	3.6	4.0	B	---	---	P	
>125 and ≤250	0.6	1.3	1.8	2.5	3.2	3.6	4.0	---	S	---	P	
>125 and ≤250	1.2	2.6	3.6	5.0	6.4	7.2	8.0	---	---	R	P	
>250 and ≤400	1.0	2.0	2.8	4.0	5.0	5.6	6.3	B	---	---	---	
>250 and ≤400	1.0	2.0	2.8	4.0	5.0	5.6	6.3	---	S	---	---	
>250 and ≤400	2.0	4.0	5.6	8.0	10.0	11.2	12.6	---	---	R	---	
>400 and ≤500	1.3	2.5	3.6	5.0	6.3	7.1	8.0	B	---	---	---	
>400 and ≤500	1.3	2.5	3.6	5.0	6.3	7.1	8.0	---	S	---	---	
>400 and ≤500	2.6	5.0	7.2	10.0	12.6	14.2	16.0	---	---	R	---	
>500 and ≤800	1.8	3.2	4.5	6.3	8.0	9.0	10.0	B	---	---	---	
>500 and ≤800	1.8	3.2	4.5	6.3	8.0	9.0	10.0	---	S	---	---	
>500 and ≤800	3.6	6.4	9.0	12.6	16.0	18.0	20.0	---	---	R	---	
>800 and ≤1000	2.4	4.0	5.6	8.0	10.0	11.0	12.5	B	---	---	---	
>800 and ≤1000	2.4	4.0	5.6	8.0	10.0	11.0	12.5	---	S	---	---	
>800 and ≤1000	4.8	8.0	11.2	16.0	20.0	22.0	25.0	---	---	R	---	
>1000 and ≤1250	3.2	5.0	7.1	10.0	12.5	14.0	16.0	B	---	---	---	
>1000 and ≤1250	3.2	5.0	7.1	10.0	12.5	14.0	16.0	---	S	---	---	
>1000 and ≤1250	6.4	10.0	14.2	20.0	25.0	28.0	32.0	---	---	R	---	
>1250 and ≤1600	4.2	6.3	9.0	12.5	16.0	18.0	20.0	B	---	---	---	



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Clause	Requirement – Test								Result - Remark			Verdict
>1250 and ≤1600	4.2	6.3	9.0	12.5	16.0	18.0	20.0	---	S	---	---	
>1250 and ≤1600	8.4	12.6	18.0	25.0	32.0	36.0	40.0	---	---	R	---	
>1600 and ≤2000	5.6	8.0	11.0	16.0	20.0	22.0	25.0	B	---	---	---	
>1600 and ≤2000	5.6	8.0	11.0	16.0	20.0	22.0	25.0	---	S	---	---	
>1600 and ≤2000	11.2	16.0	22.0	32.0	40.0	44.0	50.0	---	---	R	---	
>2000 and ≤2500	7.5	10.0	14.0	20.0	25.0	28.0	32.0	B	---	---	---	
>2000 and ≤2500	7.5	10.0	14.0	20.0	25.0	28.0	32.0	---	S	---	---	
>2000 and ≤2500	15.0	20.0	28.0	40.0	50.0	56.0	64.0	---	---	R	---	
>2500 and ≤3200	10.0	12.5	18.0	25.0	32.0	36.0	40.0	B	---	---	---	
>2500 and ≤3200	10.0	12.5	18.0	25.0	32.0	36.0	40.0	---	S	---	---	
>2500 and ≤3200	20.0	25.0	36.0	50.0	64.0	72.0	80.0	---	---	R	---	
>3200 and ≤4000	12.5	16.0	22.0	32.0	40.0	45.0	50.0	B	---	---	---	
>3200 and ≤4000	12.5	16.0	22.0	32.0	40.0	45.0	50.0	---	S	---	---	
>3200 and ≤4000	25.0	32.0	44.0	64.0	80.0	90.0	100.0	---	---	R	---	
>4000 and ≤5000	16.0	20.0	28.0	40.0	50.0	56.0	63.0	B	---	---	---	
>4000 and ≤5000	16.0	20.0	28.0	40.0	50.0	56.0	63.0	---	S	---	---	
>4000 and ≤5000	32.0	40.0	56.0	80.0	100.0	112.0	126.0	---	---	R	---	
>5000 and ≤6300	20.0	25.0	36.0	50.0	63.0	71.0	80.0	B	---	---	---	
>5000 and ≤6300	20.0	25.0	36.0	50.0	63.0	71.0	80.0	---	S	---	---	
>5000 and ≤6300	40.0	50.0	72.0	100.0	126.0	142.0	160.0	---	---	R	---	
>6300 and ≤8000	25.0	32.0	45.0	63.0	80.0	90.0	100.0	B	---	---	---	
>6300 and ≤8000	25.0	32.0	45.0	63.0	80.0	90.0	100.0	---	S	---	---	
>6300 and ≤8000	50.0	64.0	90.0	126.0	160.0	180.0	200.0	---	---	R	---	
>8000 and ≤10000	32.0	40.0	56.0	80.0	100.0	110.0	125.0	B	---	---	---	
>8000 and ≤10000	32.0	40.0	56.0	80.0	100.0	110.0	125.0	---	S	---	---	
>8000 and ≤10000	64.0	80.0	112.0	160.0	200.0	220.0	250.0	---	---	R	---	
>10000 and ≤12500	40.0	50.0	71.0	100.0	125.0	140.0	160.0	B	---	---	---	
>10000 and ≤12500	40.0	50.0	71.0	100.0	125.0	140.0	160.0	---	S	---	---	
>10000 and ≤12500	80.0	100.0	142.0	200.0	250.0	280.0	320.0	---	---	R	---	
*) B=Basic. S=Supplementary and R=Reinforced												

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Clause	Requirement – Test	Result - Remark	Verdict
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29.2	TABLE: Creepage distances. functional insulation							P
Working voltage (V)	Creepage distance (mm) Pollution degree							Verdict / Remark
	1	2			3			
	Material group			Material group				
	I	II	IIIa/IIIb	I	II	IIIa/IIIb		
≤50	0.2	0.6	0.8	1.1	1.4	1.6	1.8	---
>50 and ≤125	0.3	0.7	1.0	1.4	1.8	2.0	2.2	---
>125 and ≤250	0.4	1.0	1.4	2.0	2.5	2.8	3.2	P
>250 and ≤400	0.8	1.6	2.2	3.2	4.0	4.5	5.0	---
>400 and ≤500	1.0	2.0	2.8	4.0	5.0	5.6	6.3	---
>500 and ≤800	1.8	3.2	4.5	6.3	8.0	9.0	10.0	---
>800 and ≤1000	2.4	4.0	5.6	8.0	10.0	11.0	12.5	---
>1000 and ≤1250	3.2	5.0	7.1	10.0	12.5	14.0	16.0	---
>1250 and ≤1600	4.2	6.3	9.0	12.5	16.0	18.0	20.0	---
>1600 and ≤2000	5.6	8.0	11.0	16.0	20.0	22.0	25.0	---
>2000 and ≤2500	7.5	10.0	14.0	20.0	25.0	28.0	32.0	---
>2500 and ≤3200	10.0	12.5	18.0	25.0	32.0	36.0	40.0	---
>3200 and ≤4000	12.5	16.0	22.0	32.0	40.0	45.0	50.0	---
>4000 and ≤5000	16.0	20.0	28.0	40.0	50.0	56.0	63.0	---
>5000 and ≤6300	20.0	25.0	36.0	50.0	63.0	71.0	80.0	---
>6300 and ≤8000	25.0	32.0	45.0	63.0	80.0	90.0	100.0	---
>8000 and ≤10000	32.0	40.0	56.0	80.0	100.0	110.0	125.0	---
>10000 and ≤12500	40.0	50.0	71.0	100.0	125.0	140.0	160.0	---

EN 60335-1

Clause	Requirement – Test	Result - Remark	Verdict
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30.1	TABLE: ball-pressure test	P	
Part:	Test temperature (°C)	Impression diameter (mm)	
Coil-former of transformer (CRASTIN SK655FR V-0)	125	1.3	
Cover of terminal supply (NOVODUR P2K)	77	1.3	
Lateral protection of carter (NOVODUR P2K)	75	1.3	

30.2	TABLE: glow - wire test	P		
Part:	Test temperature (°C)	Observed	Remark	
Coil-former of transformer (CRASTIN SK655FR V-0)	850	ti 2s; te 31s; (flames); No ignition of the wrapping tissue	---	
Coil-former of transformer (CRASTIN SK655FR V-0)	750	ti 15s; te 31s; (flames); No ignition of the wrapping tissue	---	
Tape of transformer (MYLAR)	550	---	---	
Cover of terminal supply (NOVODUR P2K)	550	---	---	
Cover of transformer (POLILAC 766)	550	---	---	
Cover of electronic circuit (NOVODUR P2K)	550	---	---	
Protection transformer (POLICARBONATO SICOKLAR E71.15)	550	---	---	
Lateral protection of carter (ABS ISOTER)	550	---	---	
Box encoder (ABS ISOTER)	550	---	---	
Support of ERV magnet (MILTON 11 C140 BK)	550	---	---	



EN 60335-1

Clause	Requirement – Test	Result - Remark	Verdict
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G. 22	TABLE: Insulation resistance, electric strength and voltage test			P
test insulating resistance between: (EN 61558-1 Cl. 18.2)		R (MΩ)		required R (MΩ)
Input winding and the body		>100		7
Output winding and the body		>100		7
Input winding and output winding		>100		5
test voltage applied between: (EN 61558-1 Cl. 18.3)		test voltage (V)		breakdown
Input winding and the body		3750		No
Output winding and the body		3750		No
Input winding and output winding		3750		No
part:	test voltage (V)	frequency (Hz)	time (min)	breakdown
Input circuit (EN 61558-1 Cl. 18.4)	460	100	5	No

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Distinta Scheda Filtro.txt

01 BFT SPA		DISTINTA BASE		E S P L O S I O N E		S C A L A R	
E		(DTS1) Data 21/09/09					
.LIVELLI	SEQ	COD.PARTE	D E S C R I Z I O N E		PR	MAG	UM
PESO U.	TP	QUANTITA'	UBIC.	F/O			

		D111337	00002	SCHEDA FILTRO RETE MOD. GET VE 230			N.
0,0100	4	1,00					
.01	CS1	BCSFILTRO3		C.S.FILTRO3	A		N.
	4	1,0000					
.01	FM1	B0		COMPONENTE DA NON MONTARE	A		N.
	5	1,0000					
.01	FM2	B0		COMPONENTE DA NON MONTARE	A		N.
	5	1,0000					
.01	FM3	B0		COMPONENTE DA NON MONTARE	A		N.
	5	1,0000					
.01	FR1	BFRFAHAV-1.6A		FILTRO RETE A C.S. 1.6A ARCOTRONICS	A		N.
	4	1,0000					
.01	JP1	BMRFASTON4.8		LINGUELLA FASTON DA CS 4.8X0.8	A		N.
	4	1,0000					
.01	JP2	BMRFASTON4.8		LINGUELLA FASTON DA CS 4.8X0.8	A		N.
	4	1,0000					
.01	JP3	BMRFASTON4.8		LINGUELLA FASTON DA CS 4.8X0.8	A		N.
	4	1,0000					
.01	JP4	B0		COMPONENTE DA NON MONTARE	A		N.
	5	1,0000					
.01	JP5	BMRFASTON4.8		LINGUELLA FASTON DA CS 4.8X0.8	A		N.
	4	1,0000					
.01	JP6	BMRFASTON4.8		LINGUELLA FASTON DA CS 4.8X0.8	A		N.
	4	1,0000					
.01	RV1	BVS14LK27		MOV S14K275	A		N.
	4	1,0000					

Distinta Scheda Encoder.txt

01 BFT SPA		DISTINTA BASE		E S P L O S I O N E		S C A L A R	
E		(DTS1) Data 21/09/09					
.LIVELLI	SEQ	COD.PARTE	D E S C R I Z I O N E			PR	MAG UM
PESO U.	TP	QUANTITA'	UBIC.	F/O			
	0	F111211 00003	COPIA SCHEDA ENCODER ENC02B X VISTA-SL				N.
		1,00					
.01	CS1	BCSENC02B	C.S.ENC02B			A	N.
	4	1,0000					
.01	C1	BCC0U150V05LM	COND. CER. 100NF 50V 20% P.5 Z5U			A	N.
	4	1,0000					
.01	C2	BCV47U25V05LM	COND.EL.47UF 25V 20% 85° D5 H11			A	N.
	4	1,0000					
.01	DZ1	BDZ3V30W5	DIODO ZENER 3V3 0.5W 5%			A	N.
	4	1,0000					
.01	DZ2	BDZ3V30W5	DIODO ZENER 3V3 0.5W 5%			A	N.
	4	1,0000					
.01	ISO1	BCITCST1202	FOTOINTERUPTE TCST1202			A	N.
	4	1,0000					
.01	ISO2	BCITCST1202	FOTOINTERUPTE TCST1202			A	N.
	4	1,0000					
.01	JP2	BMR280378-1	CONNETT. AMP MODU2 4 POLI 90° POL.			A	N.
	4	1,0000					
.01	Q1	BTRBC337	TRANSISTOR BC 337-25			A	N.
	4	1,0000					
.01	Q2	BTRBC337	TRANSISTOR BC 337-25			A	N.
	4	1,0000					
.01	Q3	BTRBC337	TRANSISTOR BC 337-25			A	N.
	4	1,0000					
.01	R1	BRC470R0W5J	RES. ST. CARB. 470R 5% 0.5W			A	N.
	4	1,0000					
.01	R2	BRC012KW25J	RES. ST. CARB. 12K 5% 0.25W			A	N.
	4	1,0000					
.01	R3	BRC012KW25J	RES. ST. CARB. 12K 5% 0.25W			A	N.
	4	1,0000					
.01	R4	BRC04K7W25J	RES. ST. CARB. 4K7 5% 0.25W			A	N.
	4	1,0000					
.01	R5	BRC04K7W25J	RES. ST. CARB. 4K7 5% 0.25W			A	N.
	4	1,0000					
.01	R6	BRC047KW25J	RES. ST. CARB. 47K 5% 0.25W			A	N.
	4	1,0000					
.01	U1	BCICD40106	CIRCUITO INTEGRATO CD 40106BE			A	N.
	4	1,0000					

Distinta Scheda Aria.txt

01 BFT SPA		DISTINTA BASE		E S P L O S I O N E		A D	U N	L
I V E L L O		(DTS1) Data 21/09/09		D E S C R I Z I O N E			PR	MAG UM
.LIVELLI	SEQ	COD.PARTE	QUANTITA'	UBIC.	F/O			
PESO U.	TP							
	0	F111823 00001	1,00	COPIA SCHEDA ARIA -PORTA AUTOMATICA-	0			N.
.01	BZ1	BBUZZMINI3-15	1,0000	BUZZMINI3-15V			A	N.
.01	B1	BBOLUTK501098	1,0000	BOB. SU NUCLEO AD OLLA D.MODE 2X40UH	0		A	N.
.01	B2	BBFRN242-6/02	1,0000	BOB. FILT SCHAFFNER C.MODE 2X1.8MH 6A			A	N.
.01	CS1	BCSARIA	1,0000	C.S.ARIA			A	N.
.01	C1	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C10	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C11	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C12	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C13	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C14	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C15	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C16	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C17	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C18	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C19	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C2	BCZ10U35V05LM	1,0000	COND. EL. SMD 10UF 35V 20%			A	N.
.01	C20	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C21	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C22	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C23	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C24	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C25	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C26	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C27	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C28	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C29	BCC0U150V805M	1,0000	COND. CHIP Y5V 100NF 50V 20% 0805			A	N.
.01	C3	BCP01U63V05LJ	1,0000	COND. POLIEST. 1UF 63V 5% P.5			A	N.
.01	C30	BCL01N50V805K	1,0000	COND. CHIP X7R 1NF 50V 10% 0805			A	N.
.01	C31	BCL01N50V805K	1,0000	COND. CHIP X7R 1NF 50V 10% 0805			A	N.

Distinta Scheda Aria.txt

.01	4	1,0000						
	C32	BCL01N50V805K	COND. CHIP X7R 1NF 50V 10% 0805	A	N.			
.01	4	1,0000						
	C33	BCL01N50V805K	COND. CHIP X7R 1NF 50V 10% 0805	A	N.			
.01	4	1,0000						
	C34	BCL01N50V805K	COND. CHIP X7R 1NF 50V 10% 0805	A	N.			
.01	4	1,0000						
	C35	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A	N.			
.01	4	1,0000						
	C36	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A	N.			
.01	4	1,0000						
	C37	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A	N.			
.01	4	1,0000						
	C38	BCL01N50V805K	COND. CHIP X7R 1NF 50V 10% 0805	A	N.			
.01	4	1,0000						
	C39	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A	N.			
.01	4	1,0000						
	C4	BCP0U163V05LK	COND. POLIEST. 100NF 63V 10% P.5	A	N.			
.01	4	1,0000						
	C40	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A	N.			
.01	4	1,0000						
	C41	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A	N.			
.01	4	1,0000						
	C42	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A	N.			
.01	4	1,0000						
	C43	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A	N.			
.01	4	1,0000						
	C44	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A	N.			
.01	4	1,0000						
	C45	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A	N.			
.01	4	1,0000						
	C46	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A	N.			
.01	4	1,0000						
	C47	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A	N.			
.01	4	1,0000						
	C5	BCV3L363V26LM	COND.EL.3300UF 63V 20%85° D26 H31.5	A	N.			
.01	4	1,0000						
	C52	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A	N.			
.01	4	1,0000						
	C53	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A	N.			
.01	4	1,0000						
	C56	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A	N.			
.01	4	1,0000						
	C59	BCL10N50V805K	COND. CHIP X7R 10NF 50V 10% 0805	A	N.			
.01	4	1,0000						
	C6	BCV3L363V26LM	COND.EL.3300UF 63V 20%85° D26 H31.5	A	N.			
.01	4	1,0000						
	C60	BCP10U0K27L5K	COND. POLIEST. 10U 100V	A	N.			
.01	4	1,0000						
	C61	BCC0U10K100LM	COND. CER. 100NF 100V 20% P.5 Z5U	A	N.			
.01	4	1,0000						
	C62	BCC0U10K100LM	COND. CER. 100NF 100V 20% P.5 Z5U	A	N.			
.01	4	1,0000						
	C63	BCZ01U50V04LM	COND. EL. SMD 1UF 50V 20%	A	N.			
.01	4	1,0000						
	C64	BCZ01U50V04LM	COND. EL. SMD 1UF 50V 20%	A	N.			
.01	4	1,0000						
	C65	BCL10N50V805K	COND. CHIP X7R 10NF 50V 10% 0805	A	N.			
.01	4	1,0000						
	C68	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A	N.			
.01	4	1,0000						
	C7	BCZ10U35V05LM	COND. EL. SMD 10UF 35V 20%	A	N.			
.01	4	1,0000						
	C9	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A	N.			
.01	4	1,0000						
	DL5	BDL3R	DIODO LED 3MM ROSSO	A	N.			
.01	4	1,0000						
	DP1	BPROK435A01	PONTE RADD. DA CS 35A 400V	A	N.			

Distinta Scheda Aria.txt

.01	4	1,0000	BDSTV1500	DISSIPATORE TV1500	A	N.
.01	4	1,0000	BDHZ13VW35	DIODO ZENER SMD 13V 0W35 5% MMELF	A	N.
.01	4	1,0000	BDHZ5V1W35MM	DIODO ZENER SMD 5V1 0W35 5% MMELF	A	N.
.01	4	1,0000	BDHZ5V1W35MM	DIODO ZENER SMD 5V1 0W35 5% MMELF	A	N.
.01	4	1,0000	BDHZ5V6W35MM	DIODO ZENER SMD 5V6 0W35 5% MMELF	A	N.
.01	4	1,0000	BDHZ5V6W35MM	DIODO ZENER SMD 5V6 0W35 5% MMELF	A	N.
.01	4	1,0000	BDHBAV70	DOPPIO DIODO BAV70 SMD	A	N.
.01	4	1,0000	BDHBAV70	DOPPIO DIODO BAV70 SMD	A	N.
.01	4	1,0000	BDHBYG20G	DIODO VELOCE SMT BYG20G	A	N.
.01	4	1,0000	BDHBYG20G	DIODO VELOCE SMT BYG20G	A	N.
.01	4	1,0000	BDHBYG20G	DIODO VELOCE SMT BYG20G	A	N.
.01	4	1,0000	BDHBYG20G	DIODO VELOCE SMT BYG20G	A	N.
.01	4	1,0000	BDHBYG20G	DIODO VELOCE SMT BYG20G	A	N.
.01	4	1,0000	BDHBAV70	DOPPIO DIODO BAV70 SMD	A	N.
.01	4	1,0000	BDHBAV70	DOPPIO DIODO BAV70 SMD	A	N.
.01	4	1,0000	BDHBAW56	DOPPIO DIODO BAW56 SMD	A	N.
.01	4	1,0000	BDHBAV70	DOPPIO DIODO BAV70 SMD	A	N.
.01	4	1,0000	BDHBAW56	DOPPIO DIODO BAW56 SMD	A	N.
.01	4	1,0000	BMR110209	P. MORS. EST. VERT. P.5 9 POLI	A	N.
.01	4	1,0000	BMR110109	MORS. ESTRAIBILE P.5 9 POLI	A	N.
.01	4	1,0000	BMRB4B-XH-A	CONNETT.MASCHIO 4VIE A VASCHETTA	A	N.
.01	4	1,0000	BMR110202	P. MORS. EST. VERT. P.5 2 POLI	A	N.
.01	4	1,0000	BMR110102P052	MORS. ESTRAIBILE P.5 2 POLI	A	N.
.01	4	1,0000	BMR280371-1	CONNETT. AMP MODU2 4 POLI POL.	A	N.
.01	4	1,0000	D111722 00002	MOD.RIC.TERM.DIL STAND MD433-SET	A	N.
.01	4	1,0000	BMRCRH-AS13	STRIP FEMMINA 13 POLI P.2.54	A	N.
.01	4	1,0000	BMRCRH-AS13	STRIP FEMMINA 13 POLI P.2.54	A	N.
.01	4	1,0000	BMRCHA2545-32	PIN STRIP90° P.2.54 3X2 POLI MASCHIO	A	N.
.01	4	1,0000	BMRCHA2545-6	PIN STRIP90° P.2.54 6 POLI MASCHIO	A	N.
.01	4	1,0000	BMR280370-1	CONNETT. AMP MODU2 2 POLI POL.	A	N.
.01	4	1,0000	BMRFASTON6.3	LINGUELLA FASTON DA CS 6.3X0.8	A	N.
.01	4	1,0000	BMR110202	P. MORS. EST. VERT. P.5 2 POLI	A	N.
.01	4	1,0000	BMR110102P052	MORS. ESTRAIBILE P.5 2 POLI	A	N.
.01	4	1,0000	BMRFASTON6.3	LINGUELLA FASTON DA CS 6.3X0.8	A	N.

Distinta Scheda Aria.txt

	4	1,0000				
.01	JP5	BMR110208	P. MORS. EST. VERT. P.5 8 POLI	A	N.	
	4	1,0000	O			
.01	JP5A	BMR110108	MORS. ESTRAIBILE P.5 8 POLI	A	N.	
	4	1,0000	O			
.01	JP6	BMR110202	P. MORS. EST. VERT. P.5 2 POLI	A	N.	
	4	1,0000				
.01	JP6A	BMR110102P052	MORS. ESTRAIBILE P.5 2 POLI	A	N.	
	4	1,0000				
.01	JP7	BMRFASTON6.3	LINGUELLA FASTON DA CS 6.3X0.8	A	N.	
	4	1,0000				
.01	JP8	BMRFASTON6.3	LINGUELLA FASTON DA CS 6.3X0.8	A	N.	
	4	1,0000				
.01	K1	BRL24VD01A012	RELE 1SC 1A B.24VDC 12.7X7.6X9.7	A	N.	
	4	1,0000				
.01	K2	BRL24VD01A012	RELE 1SC 1A B.24VDC 12.7X7.6X9.7	A	N.	
	4	1,0000				
.01	K3	BRL24VD01A012	RELE 1SC 1A B.24VDC 12.7X7.6X9.7	A	N.	
	4	1,0000				
.01	Q1	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.	
	4	1,0000				
.01	Q10	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.	
	4	1,0000				
.01	Q11	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.	
	4	1,0000				
.01	Q12	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.	
	4	1,0000				
.01	Q13	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.	
	4	1,0000				
.01	Q14	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.	
	4	1,0000				
.01	Q15	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.	
	4	1,0000				
.01	Q16	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.	
	4	1,0000				
.01	Q17	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.	
	4	1,0000				
.01	Q18	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.	
	4	1,0000				
.01	Q19	BTRIRF1310N	TRANSISTOR MOSFET IRF1310N	A	N.	
	4	1,0000	O			
.01	Q2	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.	
	4	1,0000				
.01	Q20	BTRIRF1310N	TRANSISTOR MOSFET IRF1310N	A	N.	
	4	1,0000	O			
.01	Q21	BTHBC846	TRANSISTOR NPN BC 846 SMD	A	N.	
	4	1,0000				
.01	Q22	BTHBC857	TRANSISTOR PNP BC 857 SMD	A	N.	
	4	1,0000				
.01	Q23	BTHBC857	TRANSISTOR PNP BC 857 SMD	A	N.	
	4	1,0000				
.01	Q24	BTHBC846	TRANSISTOR NPN BC 846 SMD	A	N.	
	4	1,0000				
.01	Q25	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.	
	4	1,0000				
.01	Q26	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.	
	4	1,0000				
.01	Q27	BTRIRF1310N	TRANSISTOR MOSFET IRF1310N	A	N.	
	4	1,0000	O			
.01	Q28	BTRIRF1310N	TRANSISTOR MOSFET IRF1310N	A	N.	
	4	1,0000	O			
.01	Q29	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.	
	4	1,0000				
.01	Q3	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.	
	4	1,0000				
.01	Q30	BTHBC857	TRANSISTOR PNP BC 857 SMD	A	N.	
	4	1,0000				
.01	Q31	BTHBC857	TRANSISTOR PNP BC 857 SMD	A	N.	

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.01	4	1,0000	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.
.01	4	1,0000	BTRTIP122C	TRANSISTOR TIP 122 C	A	N.
.01	4	1,0000	BTRIRF1310N	TRANSISTOR MOSFET IRF1310N	A	N.
.01	4	1,0000	BTHBC857	TRANSISTOR PNP BC 857 SMD	A	N.
.01	4	1,0000	BTHBC856	TRANSISTOR PNP BC 856 SMD	A	N.
.01	4	1,0000	BTHBC857	TRANSISTOR PNP BC 857 SMD	A	N.
.01	4	1,0000	BTHBC856	TRANSISTOR PNP BC 856 SMD	A	N.
.01	4	1,0000	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.
.01	4	1,0000	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.
.01	4	1,0000	BTHBC857	TRANSISTOR PNP BC 857 SMD	A	N.
.01	4	1,0000	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.
.01	4	1,0000	BTHBC857	TRANSISTOR PNP BC 857 SMD	A	N.
.01	4	1,0000	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.
.01	4	1,0000	BTHBC857	TRANSISTOR PNP BC 857 SMD	A	N.
.01	4	1,0000	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.
.01	4	1,0000	BTHBC857	TRANSISTOR PNP BC 857 SMD	A	N.
.01	4	1,0000	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.
.01	4	1,0000	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.
.01	4	1,0000	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.
.01	4	1,0000	BTHBC847	TRANSISTOR NPN BC 847 SMD	A	N.
.01	4	1,0000	BVS10L30V	MOV S10K30	A	N.
.01	4	1,0000	BVS10L30V	MOV S10K30	A	N.
.01	4	1,0000	BVS10L30V	MOV S10K30	A	N.
.01	4	1,0000	BVS10L30V	MOV S10K30	A	N.
.01	4	1,0000	BRH08K20W1J	RES.CHIP 0805 8K2 0.1W 5%	A	N.
.01	4	1,0000	BRH03K30W1J	RES.CHIP 0805 3K3 0.1W 5%	A	N.
.01	4	1,0000	BRH001K0W1J	RES.CHIP 0805 1K 0.1W 5%	A	N.
.01	4	1,0000	BRMR06805WK	RES.ST.MET. 0.068 OHM 10% 5W	A	N.
.01	4	1,0000	BRMR06805WK	RES.ST.MET. 0.068 OHM 10% 5W	A	N.
.01	4	1,0000	BRH022K0W1J	RES.CHIP 0805 22K 0.1W 5%	A	N.
.01	4	1,0000	BRH000R0W1J	PONTICELLO SMD 0-OHM 0805	A	N.
.01	4	1,0000	BRH010K0W1J	RES.CHIP 0805 10K 0.1W 5%	A	N.
.01	4	1,0000	BRH03K30W1J	RES.CHIP 0805 3K3 0.1W 5%	A	N.
.01	4	1,0000	BRH022K0W1J	RES.CHIP 0805 22K 0.1W 5%	A	N.

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.01	4	1,0000						
	R111	BRH150K0W1J	RES.CHIP	0805	150K	0.1w	5%	A N.
.01	4	1,0000						
	R114	BRH000R0W1J	PONTICELLO	SMD	0-OHM	0805		A N.
.01	4	1,0000						
	R115	BRH04K70W1J	RES.CHIP	0805	4K7	0.1w	5%	A N.
.01	4	1,0000						
	R116	BRH010K0W1J	RES.CHIP	0805	10K	0.1w	5%	A N.
.01	4	1,0000						
	R118	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A N.
.01	4	1,0000						
	R12	BRH03K30W1J	RES.CHIP	0805	3K3	0.1w	5%	A N.
.01	4	1,0000						
	R120	BRH04K70W1J	RES.CHIP	0805	4K7	0.1w	5%	A N.
.01	4	1,0000						
	R124	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A N.
.01	4	1,0000						
	R125	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A N.
.01	4	1,0000						
	R126	BRH560R0W1J	RES.CHIP	0805	560R	0.1w	5%	A N.
.01	4	1,0000						
	R127	BRH560R0W1J	RES.CHIP	0805	560R	0.1w	5%	A N.
.01	4	1,0000						
	R128	BRH560R0W1J	RES.CHIP	0805	560R	0.1w	5%	A N.
.01	4	1,0000						
	R129	BRH560R0W1J	RES.CHIP	0805	560R	0.1w	5%	A N.
.01	4	1,0000						
	R13	BRH010K0W1J	RES.CHIP	0805	10K	0.1w	5%	A N.
.01	4	1,0000						
	R130	BRH04K70W1J	RES.CHIP	0805	4K7	0.1w	5%	A N.
.01	4	1,0000						
	R131	BRH560R0W1J	RES.CHIP	0805	560R	0.1w	5%	A N.
.01	4	1,0000						
	R132	BRH02K20W1J	RES.CHIP	0805	2K2	0.1w	5%	A N.
.01	4	1,0000						
	R133	BRH560R0W1J	RES.CHIP	0805	560R	0.1w	5%	A N.
.01	4	1,0000						
	R134	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A N.
.01	4	1,0000						
	R135	BRH01K80W1J	RES.CHIP	0805	1K8	0.1w	5%	A N.
.01	4	1,0000						
	R136	BRH015K0W1J	RES.CHIP	0805	15K	0.1w	5%	A N.
.01	4	1,0000						
	R137	BRH560R0W1J	RES.CHIP	0805	560R	0.1w	5%	A N.
.01	4	1,0000						
	R138	BRH02K20W1J	RES.CHIP	0805	2K2	0.1w	5%	A N.
.01	4	1,0000						
	R139	BRH01K80W1J	RES.CHIP	0805	1K8	0.1w	5%	A N.
.01	4	1,0000						
	R14	BRH02K20W1J	RES.CHIP	0805	2K2	0.1w	5%	A N.
.01	4	1,0000						
	R140	BRH015K0W1J	RES.CHIP	0805	15K	0.1w	5%	A N.
.01	4	1,0000						
	R141	BRH100R0W1J	RES.CHIP	0805	100R	0.1w	5%	A N.
.01	4	1,0000						
	R142	BRH001K0W1J	RES.CHIP	0805	1K	0.1w	5%	A N.
.01	4	1,0000						
	R143	BRH001K0W1J	RES.CHIP	0805	1K	0.1w	5%	A N.
.01	4	1,0000						
	R144	BRH010K0W1J	RES.CHIP	0805	10K	0.1w	5%	A N.
.01	4	1,0000						
	R145	BRH04K70W1J	RES.CHIP	0805	4K7	0.1w	5%	A N.
.01	4	1,0000						
	R146	BRH08K20W1J	RES.CHIP	0805	8K2	0.1w	5%	A N.
.01	4	1,0000						
	R147	BRH02K20W1J	RES.CHIP	0805	2K2	0.1w	5%	A N.
.01	4	1,0000						
	R148	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A N.

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.01	4	1,0000							
	R149	BRH02K20W1J	RES.CHIP	0805	2K2	0.1w	5%	A	N.
	4	1,0000							
.01	R15	BRH010K0W1J	RES.CHIP	0805	10K	0.1w	5%	A	N.
	4	1,0000							
.01	R150	BRH010K0W1J	RES.CHIP	0805	10K	0.1w	5%	A	N.
	4	1,0000							
.01	R151	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A	N.
	4	1,0000							
.01	R152	BRH03K30W1J	RES.CHIP	0805	3K3	0.1w	5%	A	N.
	4	1,0000							
.01	R153	BRH010K0W1J	RES.CHIP	0805	10K	0.1w	5%	A	N.
	4	1,0000							
.01	R154	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A	N.
	4	1,0000							
.01	R155	BRH03K30W1J	RES.CHIP	0805	3K3	0.1w	5%	A	N.
	4	1,0000							
.01	R156	BRH010K0W1J	RES.CHIP	0805	10K	0.1w	5%	A	N.
	4	1,0000							
.01	R157	BRH010K0W1J	RES.CHIP	0805	10K	0.1w	5%	A	N.
	4	1,0000							
.01	R158	BRH04R70W1J	RES.CHIP	0805	4R7	0.1w	5%	A	N.
	4	1,0000							
.01	R159	BRH04R70W1J	RES.CHIP	0805	4R7	0.1w	5%	A	N.
	4	1,0000							
.01	R16	BRH02K20W1J	RES.CHIP	0805	2K2	0.1w	5%	A	N.
	4	1,0000							
.01	R160	BRH560R0W1J	RES.CHIP	0805	560R	0.1w	5%	A	N.
	4	1,0000							
.01	R161	BRH02K20W1J	RES.CHIP	0805	2K2	0.1w	5%	A	N.
	4	1,0000							
.01	R162	BRH010K0W1J	RES.CHIP	0805	10K	0.1w	5%	A	N.
	4	1,0000							
.01	R17	BRH02K20W1J	RES.CHIP	0805	2K2	0.1w	5%	A	N.
	4	1,0000							
.01	R18	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A	N.
	4	1,0000							
.01	R19	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A	N.
	4	1,0000							
.01	R2	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A	N.
	4	1,0000							
.01	R20	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A	N.
	4	1,0000							
.01	R21	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A	N.
	4	1,0000							
.01	R22	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A	N.
	4	1,0000							
.01	R23	BRH03K30W1J	RES.CHIP	0805	3K3	0.1w	5%	A	N.
	4	1,0000							
.01	R24	BRH03K30W1J	RES.CHIP	0805	3K3	0.1w	5%	A	N.
	4	1,0000							
.01	R25	BRH03K30W1J	RES.CHIP	0805	3K3	0.1w	5%	A	N.
	4	1,0000							
.01	R26	BRH03K30W1J	RES.CHIP	0805	3K3	0.1w	5%	A	N.
	4	1,0000							
.01	R27	BRH03K30W1J	RES.CHIP	0805	3K3	0.1w	5%	A	N.
	4	1,0000							
.01	R28	BRH010K0W1J	RES.CHIP	0805	10K	0.1w	5%	A	N.
	4	1,0000							
.01	R29	BRH010K0W1J	RES.CHIP	0805	10K	0.1w	5%	A	N.
	4	1,0000							
.01	R3	BRH010K0W1J	RES.CHIP	0805	10K	0.1w	5%	A	N.
	4	1,0000							
.01	R30	BRH001K0W1J	RES.CHIP	0805	1K	0.1w	5%	A	N.
	4	1,0000							
.01	R31	BRH001K0W1J	RES.CHIP	0805	1K	0.1w	5%	A	N.
	4	1,0000							
.01	R32	BRH001K0W1J	RES.CHIP	0805	1K	0.1w	5%	A	N.

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.01	4	1,0000							
	R33	BRH001K0W1J	RES.CHIP	0805	1K	0.1W	5%	A	N.
.01	4	1,0000							
	R34	BRH010K0W1J	RES.CHIP	0805	10K	0.1W	5%	A	N.
.01	4	1,0000							
	R35	BRH010K0W1J	RES.CHIP	0805	10K	0.1W	5%	A	N.
.01	4	1,0000							
	R36	BRH010K0W1J	RES.CHIP	0805	10K	0.1W	5%	A	N.
.01	4	1,0000							
	R37	BRH03K30W1J	RES.CHIP	0805	3K3	0.1W	5%	A	N.
.01	4	1,0000							
	R38	BRH047R0W1J	RES.CHIP	0805	47R	0.1W	5%	A	N.
.01	4	1,0000							
	R39	BRH03K30W1J	RES.CHIP	0805	3K3	0.1W	5%	A	N.
.01	4	1,0000							
	R4	BRH022K0W1J	RES.CHIP	0805	22K	0.1W	5%	A	N.
.01	4	1,0000							
	R40	BRH047R0W1J	RES.CHIP	0805	47R	0.1W	5%	A	N.
.01	4	1,0000							
	R41	BRH01K50W1J	RES.CHIP	0805	1K5	0.1W	5%	A	N.
.01	4	1,0000							
	R42	BRH01K50W1J	RES.CHIP	0805	1K5	0.1W	5%	A	N.
.01	4	1,0000							
	R43	BRH022K0W1J	RES.CHIP	0805	22K	0.1W	5%	A	N.
.01	4	1,0000							
	R44	BRH022K0W1J	RES.CHIP	0805	22K	0.1W	5%	A	N.
.01	4	1,0000							
	R45	BRH010K0W1J	RES.CHIP	0805	10K	0.1W	5%	A	N.
.01	4	1,0000							
	R46	BRH010K0W1J	RES.CHIP	0805	10K	0.1W	5%	A	N.
.01	4	1,0000							
	R47	BRH100R0W1J	RES.CHIP	0805	100R	0.1W	5%	A	N.
.01	4	1,0000							
	R48	BRH010K0W1J	RES.CHIP	0805	10K	0.1W	5%	A	N.
.01	4	1,0000							
	R49	BRH012K0W1J	RES.CHIP	0805	12K	0.1W	5%	A	N.
.01	4	1,0000							
	R5	BRH022K0W1J	RES.CHIP	0805	22K	0.1W	5%	A	N.
.01	4	1,0000							
	R50	BRH010K0W1J	RES.CHIP	0805	10K	0.1W	5%	A	N.
.01	4	1,0000							
	R51	BRH010K0W1J	RES.CHIP	0805	10K	0.1W	5%	A	N.
.01	4	1,0000							
	R52	BRH022K0W1J	RES.CHIP	0805	22K	0.1W	5%	A	N.
.01	4	1,0000							
	R53	BRH010K0W1J	RES.CHIP	0805	10K	0.1W	5%	A	N.
.01	4	1,0000							
	R54	BRH001K0W1J	RES.CHIP	0805	1K	0.1W	5%	A	N.
.01	4	1,0000							
	R55	BRH04K70W1J	RES.CHIP	0805	4K7	0.1W	5%	A	N.
.01	4	1,0000							
	R56	BRH022K0W1J	RES.CHIP	0805	22K	0.1W	5%	A	N.
.01	4	1,0000							
	R57	BRH012K0W1J	RES.CHIP	0805	12K	0.1W	5%	A	N.
.01	4	1,0000							
	R58	BRH04K70W1J	RES.CHIP	0805	4K7	0.1W	5%	A	N.
.01	4	1,0000							
	R59	BRH010K0W1J	RES.CHIP	0805	10K	0.1W	5%	A	N.
.01	4	1,0000							
	R6	BRH022K0W1J	RES.CHIP	0805	22K	0.1W	5%	A	N.
.01	4	1,0000							
	R60	BRH000R0W1J	PONTICELLO SMD	0-OHM	0805			A	N.
.01	4	1,0000							
	R61	BRH010K0W1J	RES.CHIP	0805	10K	0.1W	5%	A	N.
.01	4	1,0000							
	R62	BRH082K0W1J	RES.CHIP	0805	82K	0.1W	5%	A	N.
.01	4	1,0000							
	R63	BRH022K0W1J	RES.CHIP	0805	22K	0.1W	5%	A	N.

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.01	4	1,0000								
	R64	BRH010K0W1J	RES.CHIP	0805	10K	0.1w	5%	A	N.	
	4	1,0000								
.01	R65	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A	N.	
	4	1,0000								
.01	R66	BRH010K0W1J	RES.CHIP	0805	10K	0.1w	5%	A	N.	
	4	1,0000								
.01	R67	BRH010K0W1J	RES.CHIP	0805	10K	0.1w	5%	A	N.	
	4	1,0000								
.01	R68	BRH047K0W1J	RES.CHIP	0805	47K	0.1w	5%	A	N.	
	4	1,0000								
.01	R69	BRH047K0W1J	RES.CHIP	0805	47K	0.1w	5%	A	N.	
	4	1,0000								
.01	R7	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A	N.	
	4	1,0000								
.01	R70	BRH047K0W1J	RES.CHIP	0805	47K	0.1w	5%	A	N.	
	4	1,0000								
.01	R71	BRH047K0W1J	RES.CHIP	0805	47K	0.1w	5%	A	N.	
	4	1,0000								
.01	R72	BRH010K0W1J	RES.CHIP	0805	10K	0.1w	5%	A	N.	
	4	1,0000								
.01	R73	BRH010K0W1J	RES.CHIP	0805	10K	0.1w	5%	A	N.	
	4	1,0000								
.01	R77	BRH047K0W1J	RES.CHIP	0805	47K	0.1w	5%	A	N.	
	4	1,0000								
.01	R78	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A	N.	
	4	1,0000								
.01	R79	BRH015K0W1J	RES.CHIP	0805	15K	0.1w	5%	A	N.	
	4	1,0000								
.01	R8	BRH010K0W1J	RES.CHIP	0805	10K	0.1w	5%	A	N.	
	4	1,0000								
.01	R80	BRH015K0W1J	RES.CHIP	0805	15K	0.1w	5%	A	N.	
	4	1,0000								
.01	R81	BRH100R0W1J	RES.CHIP	0805	100R	0.1w	5%	A	N.	
	4	1,0000								
.01	R82	BRH010R0W1J	RES.CHIP	0805	10R	0.1w	5%	A	N.	
	4	1,0000								
.01	R83	BRH010R0W1J	RES.CHIP	0805	10R	0.1w	5%	A	N.	
	4	1,0000								
.01	R84	BRH100R0W1J	RES.CHIP	0805	100R	0.1w	5%	A	N.	
	4	1,0000								
.01	R85	BRH02K20W1J	RES.CHIP	0805	2K2	0.1w	5%	A	N.	
	4	1,0000								
.01	R86	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A	N.	
	4	1,0000								
.01	R87	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A	N.	
	4	1,0000								
.01	R88	BRH02K20W1J	RES.CHIP	0805	2K2	0.1w	5%	A	N.	
	4	1,0000								
.01	R9	BRH03K30W1J	RES.CHIP	0805	3K3	0.1w	5%	A	N.	
	4	1,0000								
.01	R91	BRH04K70W1J	RES.CHIP	0805	4K7	0.1w	5%	A	N.	
	4	1,0000								
.01	R92	BRH04K70W1J	RES.CHIP	0805	4K7	0.1w	5%	A	N.	
	4	1,0000								
.01	R93	BRH100R0W1J	RES.CHIP	0805	100R	0.1w	5%	A	N.	
	4	1,0000								
.01	R94	BRH010R0W1J	RES.CHIP	0805	10R	0.1w	5%	A	N.	
	4	1,0000								
.01	R95	BRH010R0W1J	RES.CHIP	0805	10R	0.1w	5%	A	N.	
	4	1,0000								
.01	R96	BRH100R0W1J	RES.CHIP	0805	100R	0.1w	5%	A	N.	
	4	1,0000								
.01	R97	BRH001K0W1J	RES.CHIP	0805	1K	0.1w	5%	A	N.	
	4	1,0000								
.01	R98	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A	N.	
	4	1,0000								
.01	R99	BRH022K0W1J	RES.CHIP	0805	22K	0.1w	5%	A	N.	

Distinta Scheda Aria.txt

	4	1,0000				
.01	U1	BCHL78M05CDT	CIRCUITO INTEGRATO SMD L78M05CDT	A	N.	
	4	1,0000				
.01	U11	BCHLM26CIM501	SENSORE TEMPERATURA LM26CIM5-SPA (75°	A	N.	
	4	1,0000				
.01	U3	BCHMAX485CSA	CIRCUITO INTEGRATO MAX485CSA SMD	A	N.	
	4	1,0000				
.01	U5	BCIARIA	MICROP.PROGRAM.ARIA		N.	
	0	1,0000				
.01	U6	BCI24LC16B	EEPROM SERIALE 16K 24LC16B-I/P	A	N.	
	4	1,0000				
.01	U7	BCHLM358	CIRCUITO INTEGRATO LM358 SMD	A	N.	
	4	1,0000				
.01	Z1	BZC08PINLAM	ZOCCOLO LAMELLARE 8 PIN	A	N.	
	4	1,0000				