



TEST REPORT nr. S08015601

Safety (LVD)

Test item

Description..... : Control unit
 Trademark..... : BFT
 Model/Type..... : ALCOR N

Test Specification

Standard : EN 60335-1 (2002) + A11 (2004) + A1 (2004) + A12 (2006) + A2 (2006)
 (Except clauses 11 Heating and 19 Abnormal operation)

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 - *Supervisor* A. Borriero

Approved by : R. Beghetto - *Laboratory Manager* R. Beghetto

Date of issue..... : 28.04.2008

Contents : 60 pages

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



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1. Summary			
<u>Reference standard:</u> EN 60335-1:2002; EN 60335-1/A11:2004; EN 60335-1/A1:2004; EN 60335-1/A12:2006; EN 60335-1/A2:2006.			
Clause	Test	Remark	Verdict
4.	General requirement		P
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		NE
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		P
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

Results are written following the exactly sequence of the performed measurement.

Appliance intended to be installed by qualified personnel.

The external installation-wires are not part of this test report.

Appliance marked with the grade IP55. See CMC Test Report S06035201.

Mechanical hazardous and dangerous malfunction of drive and movable part of the gate are not covered by this test report.

The tests are carried out on the box provided with:

- Gland type PG21 and diameter of cable 18mm;
- Gland type PG21 and diameter of cable 9mm;
- Gland type PG 11 and diameter of cable 8mm
- Gland type PG 9 and diameter of cable 6mm.



2. Description of Equipment under test (EUT)

Rating(s) : 230V~ 50Hz 3.5A
Load(s) : 2 motors: max 2 x 230 V~ 1.5A
Class of protection against electrical shock : Class I
Degree of protection (IP code) : IP55
Serial number : ---
Components list : See cl. 11.1 of this test report;
See ANNEX1
Copy of marking plate : See cl. 5 of this test report

3. Testing and sampling

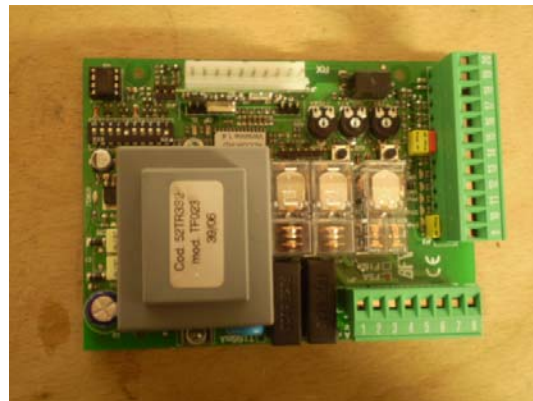
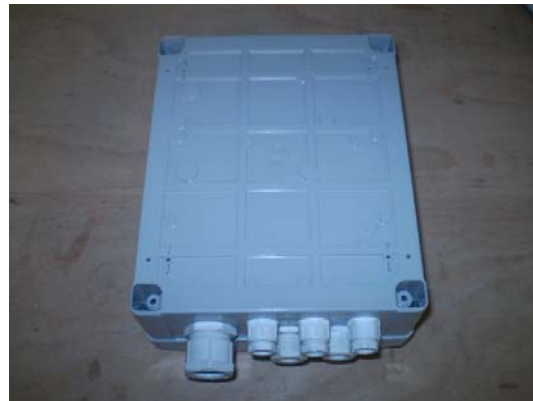
Date of receipt of test item : 31.01.2008
Testing start date : 31.01.2008
Testing end date : 28.04.2008
Samples tested nr : 1
Sampling procedure : Equipment used for testing was picked up by the
manufacturer, at the end of the production process with
random criterion
Internal identification : Adhesive label with the product number P080102

4. Operative conditions

EUT exercising : Continuous operation
Auxiliary equipment : ---



5. Photograph(s) of EUT

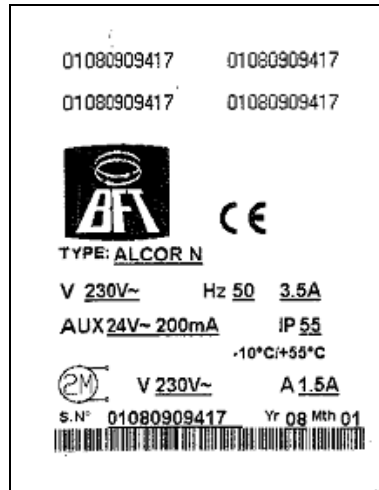




CMC
Centro Misure Compatibilità S.r.l.
Via dell'Electronica, 12/C
36016 Thiene (VI)



5.1 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-effe-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



<i>Id. number</i>	<i>Manufacturer</i>	<i>Model</i>	<i>Description</i>	<i>Serial number</i>
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
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 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 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	---



7. Measurement uncertainty

<i>Test</i>	<i>Value</i>
Temperature	2.3 °C
Power	0.4 %
Current	0.5 %
Leakage Current	0.06 mA
Voltage	0.4 %
Resistance	0.2 %
Force	5 cN
Length	0.1 mm
Insulation test	3.5%
Security resistance test	< 3.3 %
Vibration	5.1 %
Electric Strength	< 3 %
IPX1 – IPX6	1-1.05 mm/min – IPX1 3-3.5 mm/min – IPX2 < 5% – IPX3- IPX6
IP5X – IP6X	< 5%
Humidity	< 2% Humidity < 2°C Temperature



8. Reference documents

<i>Reference no.</i>	<i>Description</i>
EN 60335-1:2002	Household and similar electrical appliances - Safety Part 1: General requirements.
EN 60335-1/A11:2004	Household and similar electrical appliances - Safety Part 1: General requirements.
EN 60335-1/A1:2004	Household and similar electrical appliances - Safety Part 1: General requirements.
EN 60335-1/A12:2006	Household and similar electrical appliances - Safety Part 1: General requirements.
EN 60335-1/A2:2006	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



9. Deviation from test specification

The client declare that the components have been previously test and shown to comply with resistance to fire requirements of this standard (clause 30.2.3).

In agreement with the client for clause 25.15, the cords are subjected to the following tests:

- PG21 – PG11: Pull 100N; Torque 0.35Nm
- PG9: Pull 60N; Torque 0.25Nm

In agreement with the client for clause 30.2.3, the test is carried out on coil former of transformer (TEFNA-ZETTI 16Z6DG EI4825) with resin (CAMATINI MC28) together.

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

In this clause tests results are reported.

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

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


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Clause	Requirement – Test	Result - Remark	Verdict
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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, II, III	Class I	P
6.2	Protection against harmful ingress of water	IP55	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		N
	Rated frequency or frequency range (Hz)	50Hz	P
	Rated input or rated current	3.5A	P
	Manufacturer's or responsible vendor's name, trademark or identification mark	BFT	P
	Model or type reference	ALCOR N	P
	Symbol for Class II (Symbol 5172 of IEC 60417)		N
	IP number	IP55	P
	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		N
7.10	Indications of switches and regulating devices by use of figures, letters or other		N
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		N
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 shall be given		P
	The instructions shall state the substance of the following:		P
	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.		P
	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		P
7.12.3	Insulation in contact with parts exceeding 50 K; instruction		N
7.12.4	Information with regard to 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		P
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions		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 PCB and fuse link.	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
8.1.4	Accessible part not considered live if:		P
	- extra-low a.c. voltage: peak values not exceeding 42,4 V	27.1V~	P
	- extra-low d.c. voltage: not exceeding 42,4 V		N
	- or separated from live parts by protective impedance		N

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Clause	Requirement – Test	Result - Remark	Verdict
	- 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 shall not exceed 45 μ C		N
	- for voltages having a peak value over 15 kV, the energy in the discharge shall 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		N
10.2	Current at normal operating temperature not deviating from rated current by more than shown in table	(see appended table)	P
11	HEATING		
11.1	No excessive temperatures in normal use		NE
11.2	Placing and mounting of appliance as described:		NE
	- built-in		NE
	- against a wall		NE
	- suspended in still air		NE
	- on the floor or table		NE
	- fixed to a ceiling		NE
	- on its stand		NE
11.3	Temperature rises determined by thermocouples or resistance method		NE
	Temperature rises of windings determined by resistance method, unless		NE

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Clause	Requirement – Test	Result - Remark	Verdict
	The windings makes it difficult to make the necessary connections		NE
11.4	Heating appliances operated under normal operation at 1,15 times rated power input		NE
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0,94 and 1,06 times rated voltage		NE
11.6	Combined appliances operated under normal operation at most unfavourable voltage between 0,94 and 1,06 times rated voltage		NE
11.7	Appliances are operated for a duration corresponding to the most unfavourable conditions of normal use		NE
11.8	Protective devices do not operate, except:		NE
	components in protective electronic circuits tested for the number of cycles specified in 24.1.4		NE
	Sealing compound not flowing out		NE
	Temperatures not exceeding values in table 3		NE
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	244V	P
	Protective impedance and radio interference filters disconnected before carrying out the tests		N
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
14	TRANSIENT OVERVOLTAGES		
	Appliances withstand the transient overvoltages to which they may be subjected		P
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6	(see appended table)	P
	No flashover during the test, unless of functional insulation		P
	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)	IP55 See CMC Test Report S06035201.	P
	Withstand electric strength test specified in 16.3		P
	No trace of water on insulation which can result in a reduction of distances and clearances below values specified in 29.1		P

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Clause	Requirement – Test	Result - Remark	Verdict
15.1.1	Appliance subjected to test as specified in IEC 60529	IP55	P
	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		P
	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
	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

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Clause	Requirement – Test	Result - Remark	Verdict
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	244V	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
	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
19	ABNORMAL OPERATION		
19.1	The risk of fire or mechanical damage under abnormal or careless operation obviated		NE
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe		NE
19.2	Appliances with heating elements: test conditions as in Cl. 11, with restricted heat dissipation; test voltage (V): power input of 0,85 times rated power input		NE
19.3	Test of 19.2 repeated; test voltage (V): power input of 1,24 times rated power input		NE
19.4	Test conditions as in Cl. 11 any control limiting the temperature during tests of Cl. 11 short-circuited		NE

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Clause	Requirement – Test	Result - Remark	Verdict
19.5	Test of 19.4 repeated on Class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the elements sheath		NE
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		NE
	The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an all-pole disconnection occurs during the test of 19.4		NE
19.6	Appliances with PTC heating elements tested as specified		NE
19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque or locking moving parts		NE
	Locked rotor, motor capacitors open circuited or short-circuited, if required		NE
	Locked rotor, capacitors open-circuited one at a time		NE
	Test repeated with capacitors short-circuited one at a time, if required		NE
	Appliances with timer or controller supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed		NE
	Test period at rated voltage (s or min) or until steady state conditions established		NE
	Winding temperatures not exceeding limiting temperature; type of appliance; insulation class; measured temperature (°C)		NE
19.8	Three-phase motors operated at rated voltage with one phase disconnected		NE
19.9	Running overload test of appliance incorporating motors at rated voltage; motor windings insulation class; measured temperature (°C); allowed temperature (°C)		NE
19.10	Series motor operated at 1,3 times rated voltage for 1 min		NE
	Parts not ejected from the appliance during test		NE
19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless they comply with the conditions specified in 19.11.1		NE
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.3 and 19.11.4		NE
	Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly are subjected to the test of 19.11.4.8		NE
	Appliances having a device with an off position obtained by electronic disconnection, or a device that can be place the appliance in a stand-by mode, subjected to the tests of 19.11.4		NE
	During and after each test the following is checked:		NE
	- the temperature of the windings do not exceed the values specified in table 8		NE
	- the appliance complies with the conditions specified in 19.13		NE
	- any current flowing through protective impedance not exceeding the limits specified in 8.1.4		NE

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Clause	Requirement – Test	Result - Remark	Verdict
	If a conductor of a printed board becomes open circuited, the appliance is considered to have withstood the particular test, provided all three of the following conditions are met:		NE
	- the material of the printed circuit board withstands the burning test of annex E		NE
	- any loosened conductor does not reduce the clearances or creepage distances between live parts and accessible metal parts below the values specified in cl. 29		NE
	- the appliance withstands the tests of 19.11.2 with open-circuited conductor bridged		NE
19.11.1	Before applying the fault conditions a) to f) in 19.11.2, it is checked if circuits or parts of circuit meet both of the following conditions:		NE
	- the electronic circuit is a low-power circuit, that is, the maximum power at low-power points does not exceed 15 W according to the tests specified		NE
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction in other parts of the appliance does not rely on the correct functioning of the electronic circuit		NE
19.11.2	Fault conditions applied one at a time, the appliance operated under conditions specified in Cl. 11, but supplied at rated voltage, the duration of the tests as specified:		NE
	a) short-circuit of creepage distances and clearances between live parts of different potential, if these distances are less than the values specified in 29.1, unless the relevant part is adequately encapsulated		NE
	b) open circuit at the terminals of any component		NE
	c) short-circuit of capacitors, unless they comply with IEC 60384-14		NE
	d) short-circuit of any two terminals of an electronic component, other than integrated circuits. This fault condition is not applied between the circuits of an optocoupler		NE
	e) failure of triacs in the diode mode		NE
	f) failure of an integrated circuit		NE
	g) failure of an electronic power switching device in a partial turn-on mode with loss of gate (base) control (FET's, MOSFET's, IGBT, ecc)		NE
19.11.3	If the appliance incorporates a protective electronic circuit which operates to ensure compliance with clause 19, the relevant test is repeated with a single fault simulated, as indicated in a) to f) of 19.11.2		NE
19.11.4	Appliances having a switch with an off position obtained by electronic disconnection, or		NE
	a switch that can be placed in the stand-by mode,		NE
	subjected to the tests of 19.11.4.1 to 19.11.4.7		NE
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.4.1 to 19.11.4.7, except that		NE
	appliances operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena.		NE

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Clause	Requirement – Test	Result - Remark	Verdict
	Appliances having a switch with an off position obtained by electronic disconnection, or		NE
	a switch that can be placed in the stand-by mode,		NE
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4		NE
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3		NE
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4, test level 3 or 4 as specified		NE
19.11.4.4	The power supply terminals of the appliance subjected to voltage surges in accordance with IEC 61000-4-5, test level 3 or 4 as specified		NE
	Earthed heating elements in class I appliances disconnected		NE
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3		NE
19.11.4.6	The appliance is subjected to the class 3 voltage dips and interruptions in accordance with IEC 61000-4-11		NE
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2		NE
19.11.4.8	Supply voltage dip. See EN 60335-1/A2		NE
19.12	If the safety of the appliance for any of the fault conditions specified in 19.11.2 depends on the operation of a miniature fuse-link complying with IEC 127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A)		NE
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		NE
	Temperature rises not exceeding the values shown in table 9		NE
	Compliance with Cl. 8 shall not be impaired		NE
	Appliance still operable and complying with 20.2		NE
	Appliance, other than Class III, withstands the electric strength test of 16.3 as specified in tab. 4		NE
	After the operation or interruption of a control, clearances and creepage distances across the functional insulation shall withstand the electric strength test of 16.3, the test voltage, however, being twice the working voltage		NE
	The appliance does not undergo a dangerous malfunction, and		NE
	no failure of protective electronic circuits, if the appliance is still operable		NE
	Appliances tested with an electronic switch in the off position, or in the stand-by mode, shall		NE
	- not become operational, or		NE
	- if they become operational, not result in a dangerous malfunction during or after the tests of 19.11.4		NE
19.14	Appliances are operated under the conditions of Clause 11. Any contactor or relay contact that operates under the conditions of Clause 11 is short-circuited		NE

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Clause	Requirement – Test	Result - Remark	Verdict
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Clause	Requirement – Test	Result - Remark	Verdict
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		N
	Protective enclosures, guards and similar parts are non-detachable		N
	Adequate mechanical strength and fixing of protective enclosures		N
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard, if unexpectedly reclosed		N
	Not possible to touch dangerous moving parts with test finger		N
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 $0,5 \pm 0,04$ 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		N
	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
22	CONSTRUCTION		
22.1	Appliance marked with the first numeral of the IP system: relevant requirements of IEC 529 are fulfilled	IP55 See CMC Test Report S06035201.	P
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 instruction	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 shall be connected to the phase conductor		N

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Clause	Requirement – Test	Result - Remark	Verdict
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		N
22.6	Electrical insulation not affected by condensing water or leaking liquid		N
	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		N
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances		P
	Adequate insulating properties of oil or grease to which insulation is exposed		N
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 shall have a trip-free action unless they are voltage maintained		N
	Reset button of non-self-resetting controls shall be 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		N
	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		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

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Clause	Requirement – Test	Result - Remark	Verdict
22.13	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		P
	No exposed pointed ends of self tapping screws etc., liable to be touched by the user in normal use or during user maintenance		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
22.19	Driving belts not used as electrical insulation		N
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		N
	Not applicable for magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements		N
22.22	Appliance shall not contain asbestos		P
22.23	Oils containing polychlorinated biphenyl (PCB) not used		P
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

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Clause	Requirement – Test	Result - Remark	Verdict
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or		N
	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
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 shall 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 shall be adequately covered by insulating material or their accessible parts shall be 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

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Clause	Requirement – Test	Result - Remark	Verdict
	Metal casings of capacitors in Class II appliances separated from accessible metal parts by supplementary insulation, unless complying with 22.42		N
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 shall be fitted with a switch for stopping the operation of the appliance.		N
	The actuating member of this switch easily visible and accessible.		N
22.41	Appliances shall 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 shall not have 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	Class A software. Agreement with the client.	N
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 shall be 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.		P
22.50	Controls incorporated in the appliance, if any, shall take priority over controls actuated by remote operation.		N
22.51	A control on the appliance shall be manually adjusted to the setting for remote operation before the appliance can be operated in this mode. There shall be 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		N
	- operate continuously, or		N
	- operate automatically, or		N

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Clause	Requirement – Test	Result - Remark	Verdict
	- be operated remotely,		P
	without giving rise to a hazard.		P
22.52	Socket-outlets on appliances accessible to the user shall be 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		N
	Wiring effectively prevented from coming into contact with moving parts		N
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		N
	No breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		N
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		N
23.8	Aluminium wires not used for internal wiring		N
23.9	No lead-tin soldering of stranded conductors where they are subject to contact pressure, unless		N
	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

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Clause	Requirement – Test	Result - Remark	Verdict
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24	COMPONENTS		
24.1	Components comply with safety requirements in relevant IEC standards	(see appended table)	P
	List of components	(see appended table)	P
	See also note 1, 2, 3 and 4 clause 24 of EN 60335-1/A2	See 9.Deviation from test specification	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		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		N
	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
	- 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

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Clause	Requirement – Test	Result - Remark	Verdict
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 is IEC 62151.		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.		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	N
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

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Clause	Requirement – Test	Result - Remark	Verdict
	- 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		P
	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		P
	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
25.4	Cable and conduit entries, rated current of appliance not exceeding 16A, dimensions according to table 10		N
	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:		P
	- type X attachment		P
	- type Y attachment		N
	- type Z attachment		N
	Type X attachment other than those with a specially prepared cord, shall not be 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 shall be one of the following types:		P
	- Rubber sheathed. Their properties shall be at least those of ordinary tough rubber sheathed cords (code designation 60245 IEC 53);		N
	- Polychloroprene sheathed. Their properties shall be at least those of ordinary polychloroprene sheathed cords (code designation 60245 IEC 57);	See instruction: H07RN-F	P

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Clause	Requirement – Test	Result - Remark	Verdict
	- Cross-linked polyvinyl chloride sheathed. Their properties shall be at least those of cross-linked polyvinyl chloride sheathed cords (code designation 60245 IEC 87);		N
	- Polyvinyl chloride sheathed. These cords shall not be used if they are likely to touch metal parts having a temperature rise exceeding 75 K during the test of Clause 11. Their properties shall be 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;		N
	- Heat resistant polyvinyl chloride sheathed. These cords shall not be used for type X attachment other than specially prepared cords. Their properties shall be at least those of		N
	• 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		P
25.11	Conductors of supply cords not consolidated by lead-tin 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	See instruction: the inlet opening is of insulation material	N
	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

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Clause	Requirement – Test	Result - Remark	Verdict
	- 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		P
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged		P
	Pull and torque test of supply cord, values shown in table 10: pull (N); torque (Nm) (not on automatic cord reel)	See 9. Deviations from test specification	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:		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		N
	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		P
	Tying the cord into a knot or tying the cord with string not used		N
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	Screws	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		N
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone		N
	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 shall be fixed so that when the clamping means is tightening or loosening:		P

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Clause	Requirement – Test	Result - Remark	Verdict
	- the terminal does not loosen		P
	- internal wiring is not subjected to stress		N
	- 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 terminal	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)	1.5mm 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		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		P
	Pull test of 5 N to the connection		P
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

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Clause	Requirement – Test	Result - Remark	Verdict
	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		N
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
	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	See instruction	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		P
	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
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		P
27.6	The printed conductors of printed circuit boards shall not be 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		P
	Screws of insulating material not used for any electrical connection or connection providing earthing continuity		P

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Clause	Requirement – Test	Result - Remark	Verdict
	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		P
	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		P
	For screws and nuts; test as specified	(see appended table)	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
	Thread-cutting (self-tapping) screws and thread rolling screws shall only be used for electrical connections if they generate a full form standard machine screw thread. However, thread-cutting(self-tapping) screws shall not be used if they are likely to be operated by the user or installer.		N
	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:		N
	– in normal use,		N
	– during user maintenance,		N
	– when replacing a supply cord having a type X attachment, or		N
	– during installation		N
	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.		N
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

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Clause	Requirement – Test	Result - Remark	Verdict
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	(only for SELV)	P
	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
	- 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		N
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) See also clause 29.1 only for SELV. Impulse test voltage of clause 14.	P
	the appliance complies with clause 19 with the functional insulation short-circuited	See Cl.19 Short circuit of functional insulation because clearances distances are less than the values specified.	NE
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		N
	Lacquered conductors of windings considered to be bare conductors		N
	However, clearances at crossover points are not measured		N
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	(see appended table 29.1.5)	P
	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

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Clause	Requirement – Test	Result - Remark	Verdict
	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		P
	precautions taken to protect the insulation; pollution degree 1		N
	insulation subjected to conductive pollution; pollution degree 3		N
	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	See Cl.19 Short circuit of functional insulation because creepage distances are less than the values specified.	NE
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.Z1 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

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Clause	Requirement – Test	Result - Remark	Verdict
	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
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; Coil former of transformer tested at a temperature of 125°C (see appended table)	P
	thermoplastic material providing supplementary or reinforced insulation,	Thermoplastic material of box tested at a temperature of 75°C (see appended table)	P
	sufficiently resistant to heat		P
	Ball-pressure test according to IEC 60695-10-2		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)	See Cl.11	NE
	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)	See Cl.11	NE
	Parts of thermoplastic material providing supplementary or reinforced insulation, 25°C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C)	See Cl.19	NE
30.2	Parts of non-metallic material shall be 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	See 9. Deviation from test specification.	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.	See 9. Deviation from test specification.	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		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	See 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	See 9. Deviation from test specification.	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.		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	See 9. Deviation from test specification.	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		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
	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:		P

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Clause	Requirement – Test	Result - Remark	Verdict
	750 °C, for connections that carry a current exceeding 0,2 A during normal operation,	See 9. Deviation from test specification.	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		N
	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.		N
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	94V-0	P
31	RESISTANCE TO RUSTING		
	Relevant ferrous parts adequately protected against rusting		P
32	RADIATION, TOXICITY AND SIMILAR HAZARDS		
	Appliances shall 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
	-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

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Clause	Requirement – Test	Result - Remark	Verdict
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 68-2-32		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
	- 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

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Clause	Requirement – Test	Result - Remark	Verdict
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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 \pm 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		
	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:		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

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Clause	Requirement – Test	Result - Remark	Verdict
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

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Clause	Requirement – Test	Result - Remark	Verdict
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		
	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:		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 Annex 2	P
G.29	Clearances, creepage distances and solid insulation		P
G.29.1, G.29.2 and G.29.3	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply (EN60335-1/A11:2004)	See Annex 2	P
H	ANNEX H, SWITCHES		
	Switches comply with the following clauses of IEC 61058-1, as modified:		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

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Clause	Requirement – Test	Result - Remark	Verdict
	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
	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

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Clause	Requirement – Test	Result - Remark	Verdict
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
	- 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		P

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Clause	Requirement – Test	Result - Remark	Verdict
	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		P
	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		P
	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		P
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 microenvironment		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		P
	- 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		P
	- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		P
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

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Clause	Requirement – Test	Result - Remark	Verdict
N.10.1	Procedure		N
	The proof voltage is 100V, 175V, 400V or 600V		N
	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 (with A2 modification)		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 +30 °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		
	Software evaluated in accordance with the following clauses of Annex H of IEC 60730-1, as modified		N

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Clause	Requirement – Test	Result - Remark	Verdict
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
	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

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Clause	Requirement – Test	Result - Remark	Verdict
	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
	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
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					N
Input deviation dP of/at:	P rated (W)	P (W)	dP (%)	required dP (%)	remark	
---	---	---	---	---	---	

10.2	TABLE: input deviation measurements					P
Input deviation dI of/at:	I rated (A)	I (A)	dI (%)	required dI (%)	remark	
230V~ 50Hz	3.5	3.1	-11.4	+15%	---	

Test performed with a resistor simulating the motor.

11.7	TABLE: heating temperature specifications				NE
Test step	Temperature	duration	Remarks		
---	---	---	---		

11.8	TABLE: Temperature rise measurements					NE
	Room temperature t1 (°C)					---
	Room temperature t2 (°C)					---
	Test voltage (V)					---
Probe nr.	Temperature rise dT of part/at:		dT (K)			Required dT (K)
---	---		---	---	---	---
Winding temperature rise measurements						
Temperature rise dT of winding:		R ₁ (Ω)	R ₂ (Ω)	dT (K)	Required 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)	required I (mA)
Any pole of the supply and earthing contact		<0.1	3.5
Any pole of the supply and SELV		<0.1	0.25
Any pole of the supply and metal foil over enclosure		<0.1	0.25

13.3	TABLE: electric strength measurements at operating temperature		P
test voltage applied between:		test voltage (V)	Breakdown
Basic insulation		1000	No
Reinforced insulation		3000	No
Basic insulation (U=400)		1180	No
Reinforced insulation (U=400V)		3360	No

14	TABLE: transient overvoltages				P
Clearance between:	CI (mm)	Required CI (mm)	Rated impulse voltage (V)	Impulse test voltage (V)	Flashover (Yes/No)
Functional insulation of SELV circuits	0.25	0.5	500	550	No

16.2	TABLE: leakage current measurements		P
	at 1,06 times rated voltage (V).....	244	---
leakage current I between:		I (mA)	required I (mA)
Any pole of the supply and earthing contact		<0.1	3.5
Any pole of the supply and SELV		<0.1	0.25
Any pole of the supply and metal foil over enclosure		<0.1	0.25



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Clause	Requirement – Test	Result - Remark	Verdict
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16.3	TABLE: electric strength measurements		P
test voltage applied between:		test voltage (V)	Breakdown
Basic insulation		1000	No
Reinforced insulation		3000	No
Basic insulation (U=400)		1180	No
Reinforced insulation (U=400V)		3360	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)	Required dT (K)
---		---	---

19.	TABLE: Abnormal operation, temperature and temperature rise measurements					NE		
Probe Nr.	Part measured	Max. limit temp. rise deg C (K)	Measured max. limit temperature rise deg C (K)					
			§---	§---	§---	§---	§---	§---
---	---	---	---	---	---	---	---	---
Windings:		Measured max. limit temperature (°C)						
---		---	---	---	---	---	---	---

19.13	TABLE: electric strength measurements		NE
test voltage applied between:		test voltage (V)	breakdown
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Clause	Requirement – Test	Result - Remark	Verdict
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24	TABLE: List of components and materials			
Ref.	Component/Part	Manufacturer	Type/Model and Technical data	Mark(s)
	Electronic circuit with: (See ANNEX 1)	BFT	Mod. ALCOR N Version 1.4 PCB ALCOR N Rev. D 94V-0 Receiver Unit: BFT MD433 SET	---
	- Terminals	SAURO	COF - COM PA 66 250V 15A 2.5mm ² T110°C	IMQ
	- Fuse – holder	OMEGA	C1020 5x20mm 250V	---
	- Fuse link	OMEGA	5x20mm T 100mA L250V	IMQ...
	- Fuse link	OMEGA	5 x 20mm F 5A L250V	IMQ,...
	- Varistor	WALSIN	471K10D 300V	UL,VDE
	- Relays	OMRON	- G2R2-2 250V~ 16A 12V=== - G2R2-1-E 250V~ 16A 12V===	IMQ,...
	-Transformer	BFT	mod. TF 023 PRI: 230V 50Hz SEC: 11.5-0-11.5V 11.5VA Cl. F	---
Compliance with the IEC Standard for the relevant component is ensured by manufacturer's documents				

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Clause	Requirement – Test	Result - Remark	Verdict
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28.1	TABLE: Screws and connections				P
Use of screws	Diameter	Torque (Nm)	Times	Result	
Earthing contact of plane	4.0	1.2	5	P	
Screw (cover of box)	11	2.5	10	P	

29.1	TABLE: Clearances						P
Overvoltage category.....	II					P	
		Type of insulation:					
Rated impulse voltage (V):	Min. cl (mm)	Basic	Functional	Supplementary	Reinforced	Verdict / Remark	
330	0.5	---	---	---	---	---	
500	0.5	0.5	0.5*	---	---	P *(See clause 14)	
800	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						P
Overvoltage category.....	II					---	
		Type of insulation:					
Rated impulse voltage (V):	Min. cl (mm)	Basic	Functional	Supplementary	Reinforced	Verdict / Remark	
2740	1.5	1.74	1.74**	1.74	---	P	
4240	3.0	---	---	---	3.3	P	
**Functional insulation short-circuited							

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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) Pollution degree							Type of insulation			Verdict
	1	2			3						
	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	---	---	P
>250 and ≤400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	---	S	---	P
>250 and ≤400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	---	---	R	P
>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	P / short circuited
>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 / short circuited
>250 and ≤400	0,8	1,6	2,2	3,2	4,0	4,5	5,0	P / short circuited
>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	---

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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	125	1	
Thermoplastic material of box	75	1	

30.2	TABLE: glow - wire test			P
part:	test temperature (°C)	Observed	Remark	
Thermoplastic material of box	550	No flames, no glowing;	---	
Enclosure of transformer (TEFNA-ZETTI 16x25)	550	No flames, no glowing;	---	
Resin (CAMATINI MC28) with enclosure of transformer (TEFNA-ZETTI 16x25)	750	No flames, no glowing;	*	
Resin (CAMATINI MC28) with enclosure of transformer (TEFNA-ZETTI 16x25)	850	No flames, no glowing;	*	
Coil former of transformer (TEFNA-ZETTI 16Z6DG EI4825) with resin (CAMATINI MC28)	750	No flames, no glowing;	See 9.Deviation from test specification	
Coil former of transformer (TEFNA-ZETTI 16Z6DG EI4825) with resin (CAMATINI MC28)	850	Ti :1s; Te 47s	See 9.Deviation from test specification	

* = Material is within 3 mm of a current carrying connection but is shielded from the connection by a different material (resin CAMATINI MC28).
The glow-wire test of IEC 60695-2-11 is carried out 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.

ANNEX 1 of document nr. S08015601

DTS100P

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 26/07/07
 .LIVELLI SEQ COD.PARTE D E S C R I Z I O N E PR MAG
 UM PESO U. TP QUANTITA' UBIC.

		F111809 00002 COPIA SCHEDA ALCOR N 230V 50/60HZ		
N.				
	0	1,00		
.01	001	BRH04K70W1J	RES.CHIP 0805 4K7 0.1W 5%	A
N.	4	1,0000		
.01	002	BRH04K70W1J	RES.CHIP 0805 4K7 0.1W 5%	A
N.	4	1,0000		
.01	003	BRH04K70W1J	RES.CHIP 0805 4K7 0.1W 5%	A
N.	4	1,0000		
.01	004	BRH04K70W1J	RES.CHIP 0805 4K7 0.1W 5%	A
N.	4	1,0000		
.01	005	BRH04K70W1J	RES.CHIP 0805 4K7 0.1W 5%	A
N.	4	1,0000		
.01	006	BRH010K0W1J	RES.CHIP 0805 10K 0.1W 5%	A
N.	4	1,0000		
.01	007	BRH010K0W1J	RES.CHIP 0805 10K 0.1W 5%	A
N.	4	1,0000		
.01	008	BRH010K0W1J	RES.CHIP 0805 10K 0.1W 5%	A
N.	4	1,0000		
.01	009	BRH470R0W1J	RES.CHIP 0805 470R 0.1W 5%	A
N.	4	1,0000		
.01	010	BRH470R0W1J	RES.CHIP 0805 470R 0.1W 5%	A
N.	4	1,0000		
.01	011	BRH470R0W1J	RES.CHIP 0805 470R 0.1W 5%	A
N.	4	1,0000		
.01	012	BRH470R0W1J	RES.CHIP 0805 470R 0.1W 5%	A
N.	4	1,0000		
.01	013	BRH470R0W1J	RES.CHIP 0805 470R 0.1W 5%	A
N.	4	1,0000		
.01	014	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A
N.	4	1,0000		
.01	015	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A
N.	4	1,0000		
.01	016	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A
N.	4	1,0000		
.01	017	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A
N.	4	1,0000		
.01	018	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A
N.	4	1,0000		
.01	019	B0	COMPONENTE DA NON MONTARE	A
N.	5	1,0000		
.01	020	B0	COMPONENTE DA NON MONTARE	A
N.	5	1,0000		
.01	021	B0	COMPONENTE DA NON MONTARE	A
N.	5	1,0000		
.01	022	B0	COMPONENTE DA NON MONTARE	A
N.	5	1,0000		
.01	023	B0	COMPONENTE DA NON MONTARE	A
N.	5	1,0000		
.01	024	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A
N.	4	1,0000		
.01	025	BTHBC817	TRANSISTOR NPN BC 817 SMD	A
N.	4	1,0000		
.01	026	BTHBC817	TRANSISTOR NPN BC 817 SMD	A
N.	4	1,0000		
.01	027	BTHBC817	TRANSISTOR NPN BC 817 SMD	A
N.	4	1,0000		
.01	028	BTHBC817	TRANSISTOR NPN BC 817 SMD	A
N.	4	1,0000		
.01	029	BTHBC817	TRANSISTOR NPN BC 817 SMD	A

Pagina 1

				DTS100P		
N.		4	1,0000			
.01	030	BDHLHR974		DIODO LED SMD 0805 ROSSO		A
N.		4	1,0000			
.01	031	BDHLHR974		DIODO LED SMD 0805 ROSSO		A
N.		4	1,0000			
.01	032	BDHLHR974		DIODO LED SMD 0805 ROSSO		A
N.		4	1,0000			
.01	033	BDHLHR974		DIODO LED SMD 0805 ROSSO		A
N.		4	1,0000			
.01	034	BDHLHR974		DIODO LED SMD 0805 ROSSO		A
N.		4	1,0000			
.01	035	BRH010K0W1J		RES.CHIP 0805 10K 0.1W 5%		A
N.		4	1,0000			
.01	036	BRH010K0W1J		RES.CHIP 0805 10K 0.1W 5%		A
N.		4	1,0000			
.01	037	BRH04K70W1J		RES.CHIP 0805 4K7 0.1W 5%		A
N.		4	1,0000			
.01	038	BPT010K01D		POT.CARB.ERM.1G.10K LIN.ORIZZ.10MM		A
N.		4	1,0000			
.01	039	BPT010K01D		POT.CARB.ERM.1G.10K LIN.ORIZZ.10MM		A
N.		4	1,0000			
.01	040	BPT010K01D		POT.CARB.ERM.1G.10K LIN.ORIZZ.10MM		A
N.		4	1,0000			
.01	041	BRH100R0W1J		RES.CHIP 0805 100R 0.1W 5%		A
N.		4	1,0000			
.01	042	BRH100R0W1J		RES.CHIP 0805 100R 0.1W 5%		A
N.		4	1,0000			
.01	043	BRH100R0W1J		RES.CHIP 0805 100R 0.1W 5%		A
N.		4	1,0000			
.01	044	BCC0U150V805M		COND. CHIP Y5V 100NF 50V 20% 0805		A
N.		4	1,0000			
.01	045	BCC0U150V805M		COND. CHIP Y5V 100NF 50V 20% 0805		A
N.		4	1,0000			
.01	046	BCC0U150V805M		COND. CHIP Y5V 100NF 50V 20% 0805		A
N.		4	1,0000			
.01	047	BDHZ4V7W35MM		DIODO ZENER SMD 4V7 0W35 5% MMELF		A
N.		4	1,0000			
.01	048	BDHZ4V7W35MM		DIODO ZENER SMD 4V7 0W35 5% MMELF		A
N.		4	1,0000			
.01	049	BIT12V50L0103		INT.PULS.DA C.S. SMT 6X6X7MM		A
N.		4	1,0000			
.01	050	BIT12V50L0103		INT.PULS.DA C.S. SMT 6X6X7MM		A
N.		4	1,0000			
.01	051	BMR826926-3		PIN STRIP P.2.54 3POLI STAGN. H12.4		A
N.		4	2,0000			
.01	052	BCPF1		COPERCHIO PER PORTAF.DA CS 5X20		A
N.		4	1,0000			
.01	053	BCPF1		COPERCHIO PER PORTAF.DA CS 5X20		A
N.		4	1,0000			

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 26/07/07
.LIVELLI SEQ COD.PARTE D E S C R I Z I O N E PR MAG
UM PESO U. TP QUANTITA' UBIC.

 F111809 00002 COPIA SCHEDA ALCOR N 230V 50/60HZ
N. 0 1,00
.01 054 BFS25000A1TA FUSIBILE 5X20 0,1A 250V RITARDATO A

DTS100P

N.	4	1,0000			
.01		055	BFS250005AFA	FUSIBILE 5X20 5A 250V RAPIDO	A
N.	4	1,0000			
.01		056	BPF1	PORTAFUSIBILE 5X20 DA CS	A
N.	4	1,0000			
.01		057	BPF1	PORTAFUSIBILE 5X20 DA CS	A
N.	4	1,0000			
.01		058	BRL12VD16A011	RELE 1SC 16A B.12VDC 29X12.4X25	A
N.	4	1,0000			
.01		059	BRL12VD16A011	RELE 1SC 16A B.12VDC 29X12.4X25	A
N.	4	1,0000			
.01		060	BDH1N4007	DIODO MELF 1N4007 SMD	A
N.	4	1,0000			
.01		061	BDH1N4007	DIODO MELF 1N4007 SMD	A
N.	4	1,0000			
.01		062	BDH1N4007	DIODO MELF 1N4007 SMD	A
N.	4	1,0000			
.01		063	BTHBC817	TRANSISTOR NPN BC 817 SMD	A
N.	4	1,0000			
.01		064	BTHBC817	TRANSISTOR NPN BC 817 SMD	A
N.	4	1,0000			
.01		065	BTHBC817	TRANSISTOR NPN BC 817 SMD	A
N.	4	1,0000			
.01		066	BRH04K70W1J	RES.CHIP 0805 4K7 0.1W 5%	A
N.	4	1,0000			
.01		067	BRH04K70W1J	RES.CHIP 0805 4K7 0.1W 5%	A
N.	4	1,0000			
.01		068	BRH04K70W1J	RES.CHIP 0805 4K7 0.1W 5%	A
N.	4	1,0000			
.01		069	BRH001K0W1J	RES.CHIP 0805 1K 0.1W 5%	A
N.	4	1,0000			
.01		070	BRH001K0W1J	RES.CHIP 0805 1K 0.1W 5%	A
N.	4	1,0000			
.01		071	BDHLHR974	DIODO LED SMD 0805 ROSSO	A
N.	4	1,0000			
.01		072	BDHLHR974	DIODO LED SMD 0805 ROSSO	A
N.	4	1,0000			
.01		073	BMR110108	MORS. ESTRAIBILE P.5 8 POLI	A
N.	4	1,0000			
.01		074	BMR110112	MORS. ESTRAIBILE P.5 12 POLI	A
N.	4	1,0000			
.01		075	BMR110208	P. MORS. EST. VERT. P.5 8 POLI	A
N.	4	1,0000			
.01		076	BMR110212	P. MORS. EST. VERT. P.5 12 POLI	A
N.	4	1,0000			
.01		077	BRL12VD05A021	RELE 2SC 5A B.12VDC 29X12.4X25	A
N.	4	1,0000			
.01		078	BDH1N4007	DIODO MELF 1N4007 SMD	A
N.	4	1,0000			
.01		079	BDH1N4007	DIODO MELF 1N4007 SMD	A
N.	4	1,0000			
.01		080	BVS10LK30	MOV S10K300	A
N.	4	1,0000			
.01		081	BTF023	TRASF. 230V/12-0-12 11.5VA	A
N.	4	1,0000			
.01		082	B0	COMPONENTE DA NON MONTARE	A
N.	5	1,0000			
.01		083	BCV01L35V13LM	COND.EL.1000UF 35V 20% 85° D13 H25	A
N.	4	1,0000			
.01		084	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A
N.	4	1,0000			
.01		085	BCZ47U25V6L3M	COND. EL. SMD 47UF 25V 20%	A
N.	4	1,0000			
.01		086	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A
N.	4	1,0000			
.01		087	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805	A
N.	4	1,0000			
.01		088	BDH1N4007	DIODO MELF 1N4007 SMD	A

DTS100P					
N.	4	1,0000			
.01	089	BDH1N4007	DIODO MELF 1N4007 SMD		A
N.	4	1,0000			
.01	090	BDHBAV70	DOPPIO DIODO BAV70 SMD		A
N.	4	1,0000			
.01	091	BDHBAV70	DOPPIO DIODO BAV70 SMD		A
N.	4	1,0000			
.01	092	BDHBAV70	DOPPIO DIODO BAV70 SMD		A
N.	4	1,0000			
.01	093	BDH1N4148	DIODO MINIMELF 1N4148 SMD		A
N.	4	1,0000			
.01	094	BDHBAV70	DOPPIO DIODO BAV70 SMD		A
N.	4	1,0000			
.01	095	BDH1N4148	DIODO MINIMELF 1N4148 SMD		A
N.	4	1,0000			
.01	099	BXR00012MI33P	RISUONATORE CERAMICO 12MHZ 33PF SMD		A
N.	4	1,0000			
.01	100	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805		A
N.	4	1,0000			
.01	101	BRH001K0W1J	RES.CHIP 0805 1K 0.1W 5%		A
N.	4	1,0000			
.01	102	BRH100R0W1J	RES.CHIP 0805 100R 0.1W 5%		A
N.	4	1,0000			
.01	103	BCC0U150V805M	COND. CHIP Y5V 100NF 50V 20% 0805		A
N.	4	1,0000			
.01	104	BCHL78M05CDT	CIRCUITO INTEGRATO SMD L78M05CDT		A
N.	4	1,0000			
.01	105	BRH100R25J	RES.CHIP 1206 100R 0.25W 5%		A
N.	4	1,0000			
.01	107	BRH04K70W1J	RES.CHIP 0805 4K7 0.1W 5%		A
N.	4	1,0000			
.01	108	BRH04K70W1J	RES.CHIP 0805 4K7 0.1W 5%		A
N.	4	1,0000			
.01	109	BDHLHR974	DIODO LED SMD 0805 ROSSO		A
N.	4	1,0000			
.01	110	BIT50V0A11000	DIP SWITCH 10VIE 50V 100MA		A
N.	4	1,0000			

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 26/07/07							
.LIVELLI	SEQ	COD.PARTE	D E S C R I Z I O N E		PR		MAG				
UM	PESO U.	TP	QUANTITA'	UBIC.							

N.	0		F111809 00002	COPIA SCHEDA ALCOR N 230V 50/60HZ							
.01	111		1,00								
N.	4		1,0000								
.01	112		1,0000								
N.	4		1,0000								
.01	113		1,0000								
N.	4		1,0000								
.01	114		1,0000								
N.	4		1,0000								
.01	115		1,0000								
N.	4		1,0000								
.01	116		1,0000								
N.	4		1,0000								
.01	117		1,0000								

DTS100P

N.	4	1,0000			
.01	118	BCL01N50V805K	COND. CHIP X7R 1NF 50V 10% 0805	A	
N.	4	1,0000			
.01	119	BCL01N50V805K	COND. CHIP X7R 1NF 50V 10% 0805	A	
N.	4	1,0000			
.01	120	BRH010K0W1J	RES.CHIP 0805 10K 0.1W 5%	A	
N.	4	1,0000			
.01	121	BRH100R0W1J	RES.CHIP 0805 100R 0.1W 5%	A	
N.	4	1,0000			
.01	122	D111722 00002	MOD.RIC.TERM.DIL STAND MD433-SET	A	
N.	4	1,0000			
.01	123	BDH1N4007	DIODO MELF 1N4007 SMD	A	
N.	4	1,0000			
.01	124	BRL12VD0A5011	RELE 1SC 0.5A B.12VDC 12.7X7.6X9.7	A	
N.	4	1,0000			
.01	125	BTHBC817	TRANSISTOR NPN BC 817 SMD	A	
N.	4	1,0000			
.01	126	BRH04K70W1J	RES.CHIP 0805 4K7 0.1W 5%	A	
N.	4	1,0000			
.01	127	BMR826926-6	PIN STRIP P.2.54 6POLI STAGN. H12.4	A	
N.	4	1,0000			
.01	128	BCIALCOR8	MICROP.PROGRAM.ALCOR N		
N.	0	1,0000			
.01	129	BCSALCOR8	C.S.ALCOR N CON RICEVITORE RADIO INTEG.	A	
N.	4	1,0000			
.01	130	BRH02K20W1J	RES.CHIP 0805 2K2 0.1W 5%	A	
N.	4	1,0000			
.01	131	BRH02K20W1J	RES.CHIP 0805 2K2 0.1W 5%	A	
N.	4	1,0000			
.01	132	BCP10N0K105LK	COND. POLIEST. 10NF 100V 10% P.5	A	
N.	4	1,0000			
.01	133	BCPN330K105LK	COND. POLIEST. 330PF 100V 10% P.5	A	
N.	4	1,0000			
.01	134	BRH010K0W1J	RES.CHIP 0805 10K 0.1W 5%	A	
N.	4	1,0000			
.01	135	BRH010R0W1J	RES.CHIP 0805 10R 0.1W 5%	A	
N.	4	1,0000			
.01	136	BRH010R0W1J	RES.CHIP 0805 10R 0.1W 5%	A	
N.	4	1,0000			
.01	137	B0	COMPONENTE DA NON MONTARE	A	
N.	5	1,0000			
.01	138	BTHBC817	TRANSISTOR NPN BC 817 SMD	A	
N.	4	1,0000			
.01	139	B0	COMPONENTE DA NON MONTARE	A	
N.	5	1,0000			
.01	140	B0	COMPONENTE DA NON MONTARE	A	
N.	5	1,0000			
.01	141	B0	COMPONENTE DA NON MONTARE	A	
N.	5	1,0000			
.01	142	B0	COMPONENTE DA NON MONTARE	A	
N.	5	1,0000			
.01	143	B0	COMPONENTE DA NON MONTARE	A	
N.	5	1,0000			
.01	144	BRH04K70W1J	RES.CHIP 0805 4K7 0.1W 5%	A	
N.	4	1,0000			
.01	145	BRH02K20W1J	RES.CHIP 0805 2K2 0.1W 5%	A	
N.	4	1,0000			
.01	146	BRH022K0W1J	RES.CHIP 0805 22K 0.1W 5%	A	
N.	4	1,0000			
.01	147	BRH022K0W1J	RES.CHIP 0805 22K 0.1W 5%	A	
N.	4	1,0000			
.01	148	BRH022K0W1J	RES.CHIP 0805 22K 0.1W 5%	A	
N.	4	1,0000			
.01	149	BTHBC817	TRANSISTOR NPN BC 817 SMD	A	
N.	4	1,0000			
.01	150	BTHBC807	TRANSISTOR PNP BC 807 SMD	A	
N.	4	1,0000			
.01	151	D531081	RONDELLA D.3 ZN 6592	A	

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		DTS100P		
N.	0,0001	4	2,0000	
.01		152	D531599	RIVETTO ALLUMINIO D.3.2 X 10.4
N.		4	2,0000	
.01		153	BCPU33100V5LK	COND. POLIEST. 330NF 100V. 10% P.5
N.		4	1,0000	
.01		154	BCPU33100V5LK	COND. POLIEST. 330NF 100V. 10% P.5
N.		4	1,0000	
.01		155	BCP10N0K105LK	COND. POLIEST. 10NF 100V 10% P.5
N.		4	1,0000	
.01		156	BCP10N0K105LK	COND. POLIEST. 10NF 100V 10% P.5
N.		4	1,0000	
.01		157	B0	COMPONENTE DA NON MONTARE
N.		5	1,0000	
.01		158	BRH100R0W1J	RES.CHIP 0805 100R 0.1W 5%
N.		4	1,0000	
.01		159	BRH100R0W1J	RES.CHIP 0805 100R 0.1W 5%
N.		4	1,0000	
.01		160	BDH1N4007	DIODO MELF 1N4007 SMD
N.		4	1,0000	
.01		161	BDH1N4007	DIODO MELF 1N4007 SMD
N.		4	1,0000	

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Clause	Requirement – Test	Result - Remark	Verdict
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1. Report Form EN 61558-2-6:1997			
18	INSULATION RESISTANCE AND DIELECTRIC STRENGTH		P
18.1	Insulation resistance and dielectric strength		P
18.2	Insulation resistance test	(see appended table 18)	P
18.3	Dielectric strength test	(see appended table 18)	P
18.4	Test as specified: double voltage, double frequency for 5 min	(see appended table 18)	P
19	CONSTRUCTION		P
19.1	Requirements for input and output circuits (Cl. 18, 19 and 26)		P
19.1.1	Insulation between the input and output winding(s)		P
	Class I transformer	Incorporated transformer	N
	Class II transformer	Incorporated transformer	N
19.1.2	Intermediate metal part in Class I transformer		N
19.1.3	Insulation between the input and output windings in Class I transformer		N
19.1.4	Transformers intended for connection to the mains by means of a plug		N
19.2	Materials which burn fiercely not used		P
	Cotton, silk, paper and similar fibrous material not used		P
	Wax and similar impregnates not used		P
	Wood not used		P
19.3	Requirements for portable transformer		N
19.4	Class II transformer: provisions to prevent contact between accessible metal parts and conduits or metal sheaths of supply wiring		N
19.5	Parts of Class II transformers which might be omitted during reassembling		N
19.6	Class I and Class II transformers: wire, screw, nut, etc. become loose		N
19.7	Parts connected to accessible metal parts by resistors or capacitors		N
19.8	Resistors or capacitors connected between hazardous live parts and accessible metal parts		N
19.9	Requirements for insulating material separating input and output windings		P
19.10	Protection of hazardous live parts ensured by an insulating coating		N
19.11	Requirements for handles, operating levers, knobs, etc.		N
19.12.1	Undue displacements of winding, internal wiring, wire, external connection		P

Clause	Requirement - Test	Result - Remark	Verdict
19.12.2	Serrated tape used as insulation		N
	Cheekless bobbins		N
19.12.3	Insulation on the winding wire is used to provide basic or supplementary insulation		N
	Insulation on the winding wire is used to provide double or reinforced insulation		N
	Wire in the finished component subjected to 100% routine dielectric strength test (see K.3)		N
	Additional tests and requirements for windings giving double or reinforced insulation		N
19.13	Handles, operating levers, etc. fixed in a reliable manner		N
19.14	Covers securely fixed		N
19.15	Transformers provided with pins		N
19.16	Requirements for portable transformers		N
19.17	Transformers having a protection index	IP00	N
19.18	Transformers having a protection index higher than IPX1		N
19.19	Class I transformers designed for connection by means of a flexible cable or cord		N
19.20	Live parts of SELV and PELV circuits		N
19.20.1	Live parts of SELV circuits		N
19.20.2	Live parts of PELV circuits		N
19.21	FELV circuits		N
19.22	Class II transformers not provided with means for protective earthing		N
19.22	Class III transformers not provided with means for protective earthing		N
19.101	Portable transformers having a rated output not exceeding 630VA		N
19.102	No connection between the output winding and the body or the protective earthing circuit		P
19.103	Transformers not provided with capacitors		P
19.104	Input and output terminals for the connection of external wiring		N
26	CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH INSULATION		P
26.1	Creepage distances, clearance and distances through insulation not less than the values in table 13	See Annex 3 manufacturer's declaration	P
26.2	Creepage distances	See Annex 3 manufacturer's declaration	P
26.3	Distances through insulation	See Annex 3 manufacturer's declaration	P
	Mandrel test		N

Clause	Requirement - Test	Result - Remark	Verdict
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18.	TABLE: Insulation resistance, electric strength and voltage test			P
test insulating resistance between: (see Cl. 18.2 EN 61558-1)	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: (see Cl. 18.3 EN 61558-1)	test voltage (V)		breakdown	
Input winding and output winding	3800		No	
Input winding and the body	3800		No	
Output winding and the body	3800		No	
part: (see Cl. 18.4 EN 61558-1)	test voltage (V)	frequency (Hz)	time (min)	breakdown
Input winding	460	100	5	No

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Spett.le CMC - Centro Misure Compatibilità s.r.l.
Via dell'Electronica 12/C
36016 Thiene VI - ITALY

Schio, 14 aprile 2008

Oggetto: Dichiarazione Trasformatore Alcor N – resinatura

La presente per comunicare che in riferimento alla verifica di conformità della centrale Alcor N,
si dichiara quanto segue:

Il processo di fabbricazione dei trasformatori è tale da eliminare la possibilità della formazione di eventuali bolle d'aria tra l'isolamento primario e secondario e quindi per rispettare le distanze superficiali ed in aria prescritte dalla norma EN60335-1 e rispettive varianti.

Distinti saluti.

Zambon Francesco

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