Test Report issued under the responsibility of:

TEST REPORT
IEC 60730-2-22
Automatic electrical controls – Part 2-22: Particular requirements for thermal motor protectors

Report Number. ..... :	**CTIHEA7317**
Date of issue ..... :	**2022-10-18**
Total number of pages ..... :	**101**
Name of Testing Laboratory preparing the Report ..... :	**China Testing & Inspection Institute for Household Electric Appliances (CTIHEA)**
Applicant's name ..... :	**Baoying Saftty Electronic Technology Co. Ltd.**
Address ..... :	**Software Information Industry Park of South Industrial Concentration Zone，Anyi Town, Baoying County, Jiangsu Province, 311122, P.R.China**
Test specification:	
Standard ..... :	IEC 60730-2-22:2014 in conjunction with IEC 60730-1:2013, IEC 60730-1:2013/AMD1:2015
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
TRF template used ..... :	IECEE OD-2020-F1:2021, Ed.1.4
Test Report Form No. ..... :	IEC60730_2_22B
Test Report Form(s) Originator .... :	UL(US)
Master TRF ..... :	Dated 2021-10-15

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved IECEE Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing NCB. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description ..... :	Thermal motor protector
Trade Mark(s) ..... :	——
Manufacturer ..... :	Baoying Saftty Electronic Technology Co. Ltd.
Model/Type reference ..... :	ST11 series
Ratings ..... :	250VAC 2.5A/6.3A Temperature range: 60℃~250℃ 24VDC 40A Temperature range: 60℃~200℃ Type 3.C Automatic reset Pollution degree 2

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):				
☒	**CB Testing Laboratory:**	China Testing & Inspection Institute for Household Electric Appliances (CTIHEA)		
Testing location/ address.....:		NO.3 Boxing Balu，Beijing Economic and Technological Development Area，100176，Beijing，CHINA		
Tested by (name, function, signature).....:		Bao Jingjing	Engineer	Bao Jingjing
Approved by (name, function, signature)...:		Jia Yulin	Deputy Chief Engineer	Jiayulin
☐	**Testing procedure: CTF Stage 1:**			
Testing location/ address.....:				
Tested by (name, function, signature).....:				
Approved by (name, function, signature)...:				
☐	**Testing procedure: CTF Stage 2:**			
Testing location/ address.....:				
Tested by (name + signature) .....:				
Witnessed by (name, function, signature) .:				
Approved by (name, function, signature)...:				
☐	**Testing procedure: CTF Stage 3:**			
☐	**Testing procedure: CTF Stage 4:**			
Testing location/ address.....:				
Tested by (name, function, signature).....:				
Witnessed by (name, function, signature) .:				
Approved by (name, function, signature)...:				
Supervised by (name, function, signature) :				

List of Attachments (including a total number of pages in each attachment): N/A

Summary of testing:

Tests performed (name of test and test clause):Complete test	**Testing location:** China Testing & Inspection Institute for Household Electric Appliances (CTIHEA) NO.3 Boxing Balu，Beijing Economic and Technological Development Area，100176，Beijing，CHINA

Summary of compliance with National Differences (List of countries addressed):

☐ **The product fulfils the requirements of _____ (insert standard number and edition and delete the text in parenthesis, leave it blank or delete the whole sentence, if not applicable)**

Use of uncertainty of measurement for decisions on conformity (decision rule) :

☐ No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty (“simple acceptance” decision rule, previously known as “accuracy method”).

☐ Other:… (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)

Information on uncertainty of measurement:
The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.
IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Test item particulars.....:	
Supply Connection.....:	☒ AC Mains ☒ DC Mains ☐ External Circuit - not Mains connected
Supply Connection – Type .....:	☐ permanent connection ☐ mating connector ☒ other:_Lead connection_
Over voltage category (OVC) ..... :	☐ OVC I ☒ OVC II ☐ OVC III ☐ OVC IV ☐ other: _____
Class of equipment ..... :	☒ Class I ☐ Class II ☐ Class III
Manufacturer's specified maxium operating ambient:	__/__ °C
IP protection class ..... :	☒ IPX0 ☐ IP___
Type of operation.....:	☐ single operation; ☐ manual reset operation; ☒ Automatic Reset operation;
Control type.....:	☒ In or On winding Motor Thermal Protector ☐ Off winding Motor Thermal Protector ; ☐ In or On winding Sealed Motor Compressor Thermal Protector; ☐ Off winding Sealed Motor Compressor Thermal Protector ☐ In or On winding Motor Compressor Thermal Protector ☐ Off winding Motor Compressor Thermal Protector; ☐ other: _____
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item .....:	2022-08-29
Date (s) of performance of tests.....:	2022-08-30 — 2022-10-18
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. **Throughout this report a ☐ comma / ☒ point is used as the decimal separator.** ☐ **This report makes reference to EMC Report and Software Report. When applicable to the evaluated control, the official IEC60730_1I (SOF) and IEC60730_1I (EMC) should be used.** ☐ **This Test Report Form contains requirements according to IEC/ISO …... Standard dated ….. and includes** Corrigendum dated ……. (Note: The above text maybe removed if not applicable)	
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	☐ **Yes** ☒ **Not applicable**

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

Name and address of factory (ies) ..... : Baoying Saftty Electronic Technology Co. Ltd.
Software Information Industry Park of South Industrial Concentration Zone，Anyi Town, Baoying County, Jiangsu Province, 311122, P.R.China

General product information and other remarks:

Manufacturer：Baoying Saftty Electronic Technology Co. Ltd.
Address：Software Information Industry Park of South Industrial Concentration Zone，Anyi Town, Baoying County, Jiangsu Province, 311122, P.R.China

The products applying for certification this time are the series of motor thermal protectors produced by Baoying Saftty Electronic Technology Co. Ltd. The sensitive element is deformed by heat, and the action of the driving mechanism disconnects the contact, and then automatically resets and cools.

Type reference：

ST11		*		*
1		2		3

1. Indicates the basic model：ST11.
2. Indicates the operating temperature.

The operating temperature	The temperature deviation	The operating temperature	The temperature deviation
060	05	160	05
065	05	165	05
070	05	170	05
075	05	175	05
080	05	180	05
085	05	185	05
090	05	190	05
095	05	195	05
100	05	200	10
105	05	205	10
110	05	210	10
115	05	215	10
120	05	220	10
125	05	225	10
130	05	230	10
135	05	235	10
140	05	240	10
145	05	245	10
150	05	250	10
155	05	/	

3. Indicates the operating temperature deviation. See the table above.

Model difference:

All models of this series of motor thermal protectors have the same internal structure, material and production technology, only the electrical parameters, operating temperature and sheath are different..

Inspection model: ST11 250 10
ST11 205 10
ST11 200 05
ST11 060 05

Use ST11 250 10 as the main inspection model for all tests. Use ST11 200 05 for the tests of chapters 5, 6, 7, 12, 13, 17 and 21, and the rest of the covered models for the tests of chapters 5, 6, and 7.

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Clause	Requirement + Test	Result - Remark	Verdict
3	**GENERAL REQUIREMENTS**		P
	Controls are so designed and constructed that in normal use, they function so as not to cause injury to persons or damage to surrounding property, even in the event of such carelessness as may occur in normal use		P
5	**RATINGS**		P
5.1	Maximum rated voltage (V) .....:	AC: 250V, DC: 24V	P
6	**CLASSIFICATION**		P
6.1	Nature of supply .....:	AC, DC	—
6.2	Type of load and power factor.....:	Motor load, 0.4～0.5	—
6.3	Purpose .....:	Thermal motor Protector	—
6.4	Features of automatic action		—
6.4.2	Type 3 action		P
6.4.3.2	Micro-disconnection on operation (Type 3.B)……..:		N/A
6.4.3.3	Micro-interruption on operation (Type 3.C)……. :		P
6.4.3.8	a trip-free mechanism in which the contacts cannot be prevented from opening and which may automatically be reset to the “closed” position after normal **operation** conditions have been restored if the reset means is held in the “reset” position (Type 3.H)……..:		N/A
6.4.3.101	Thermal motor protectors are further classified according to the following constructional or operational features: – non-self-resetting (Type 3.B.H); – self-resetting (Type 3.C).	Type 3.C	P
6.5	Degree of protection provided by enclosure per IEC 60529 and control pollution situation .....….:	IP 00, Pollution degree 2	—
6.6	Method of connection. .....:	Lead connection	—
6.7	Ambient temperature limits of the switch ahead: T_{min}(°C).; T_{max} (°C) .....:		—
6.8	Protection against electric shock .....:	For Class I equipment	—
6.9	Circuit disconnection or interruption .....:	micro-interruption	—
6.10	Number of cycles of actuation (M) of each manual action.....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
6.11	Number of cycles of actuation (A) of each automatic action.....:	2 000 cycles	—
6.12	Temperature limits of the mounting surface of the control (°C or K).....:		—
6.13	Value of proof tracking index (PTI) for the insulation material used .....:		—
6.14	Period of the electrical stress across insulating parts supporting live parts, and between live parts and earthed metal (short or long period) .....:	long period	—
6.15	Construction.....:	Integrated control	—
6.16	Ageing requirements (type Y) of end-product equipment .....:		—
6.17	Use of thermistor (Annex J) .....:		—
6.18	Classes of control functions (Annex H) .....:		—
6.101	According to limited short-circuit capability (prospective current): ……..……:		---

7	**INFORMATION**		P
7.2.1	Information required for controls and the appropriate method for providing this information is as indicated in Table 1		P
	1 – Manufacturer's name or trademark (Method C).....:		P
	2 – Unique type reference (Method C) .....:	See Page 7	P
	3 – Rated voltage or rated voltage range in volts (Method D).....:	250VAC, 24VDC	P
	4 – Nature of supply (Method C).....:	AC, DC	P
	5 – Frequency, if other than for range 50 Hz to 60 Hz inclusive (Method C) .....:		N/A
	6 – Purpose of control (Method D or E).....:	Thermal motor Protector	P
	6a – Construction of control (Method X).....:	Integrated control	P
	7 – The type of load controlled by each circuit (Method C).....:	Motor load	P
	15 – Degree of protection by enclosure: (Method C).....:	IP00	P
	17 – Terminals for external conductors (Method C):		N/A
	18 – Terminals for external conductors which accept a wider range of conductor sizes, (Method D or E) .....:		N/A
	19 – Method of connection and disconnection for screwless terminals (Method D).....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	20 – Details of any special conductors which are intended to be connected to terminals for internal conductors (Method D).....:	22AWG	P
	21 – Maximum temperature of terminals for internal conductors, if higher than 85°C (Method X) .....:		N/A
	22 – Temperature limits of the switch head, if T_{min} lower than 0°C, or T_{max} other than 55°C (Method C):		N/A
	23 – Temperature limits of mounting surfaces (Ts) (Method C).....:		N/A
	24 – Classification of control according to protection against electric shock (Method X).....:	For Class I equipment	P
	25 – For Class II controls, the symbol for Class II construction (Method C).....:		N/A
	26 – Number of cycles of actuation (M) for each manual action (Method X).....:		N/A
	27 – Number of automatic cycles (A) for each automatic action (Method X) .....:	2 000 cycles	P
	28 – Ageing period (Y) for controls with Type 1M or 2M action (Method X) .....:		N/A
	29 – Type of disconnection or interruption provided by each circuit (Method X) .....:	micro-interruption	P
	30 – PTI of materials used for insulation (Method X) .....:	PTI175	P
	31 – Method of mounting controls (Method D).....:		N/A
	31a – Method of providing earthing of control (Method D).....:		N/A
	32 – Method of attachment for non-detachable cords (Method D or E) .....:		N/A
	33 – Intended transportation condition of control (Method X) .....:		N/A
	34 – Details of any limitation of operating time (Method D or E) .....:		N/A
	35 – Period of electric stress across insulating parts (Method X) .....:	long period	P
	36 – Limits of activating quality for any sensing element over which micro-disconnection is secure (Method X) .....:		N/A
	37 – Minimum and/or maximum rates of change of activating quantity, or minimum and/or maximum cycling rates for a sensing control (Method X) .....:		N/A
	38 – Values of overshoot of activating quantity for sensing controls (Method X) .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	39 – Type 1 or Type 2 action (Method D or E) .....:		N/A
	40 – Additional features of Type 1 or Type 2 actions (Method D or E) .....:		N/A
	41 – Manufacturing deviation and condition of test appropriate to deviation (Method X) .....:		N/A
	42 – Drift (Method X) .....:		N/A
	43 – Reset characteristics for cut-out action (Method D or E) .....:	Automatic reset	P
	44 – Hand-held control or control intended for hand-held equipment (Method X).....:		N/A
	45 – Limitation to the number or distribution of flat push-on receptacles (Method D or E).....:		N/A
	46 – Manufacturing deviation and drift of its operating value, operating time or operating sequence is within the declared limits (Method D or E) .....:		N/A
	47 – Extent of any sensing element (Method X) .....:		N/A
	48 – Operating value(s) or operating time (Method D).....:	Operating temperature range: 60°C -250°C	P
	49 – Control pollution degree (Method D or E).....:	Pollution degree 2	P
	50 – Control intended to be delivered exclusively to the equipment manufacturer (Method X).....:	Scheduled delivery	P
	51 – Heat and fire resistance category (Method X).:	D	P
	52 to 60 See Annex H		N/A
	61 to 65 See Annex J		N/A
	66 to 74 See Annex H		N/A
	75 – Rated impulse voltage (Method D or E) .....:		N/A
	76 – Type of printed wiring board coating (Method X)……..:		N/A
	77 – Temperature for ball pressure test (Method D).....:		N/A
	78 – Max declared torque on single brush mounting using thermoplastic material (Method D or E) .....:		N/A
	79 – Pollution situation in the micro-environment of the creepage or clearance if cleaner than that of the control (Method X) .....:		N/A
	80 – Rated impulse voltage for the creepage or clearance if different from that of the control (Method D or E) .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	81 – Values designed for tolerances of distances for which the exclusion from fault mode “short” is claimed (Method X) .....:		N/A
	82 to 84 See Annex J		N/A
	85 – For Class III controls, the symbol for Class III construction (Method C).....:		N/A
	86 – For SELV or PELV circuits, the ELV limits realized (Method X) .....:		N/A
	87 – Accessible voltage of SELV/PELV circuit, if different from 8.1.1, product standard referred to for the application of the control, in which standard(s) the accessible SELV/PELV level(s) is (are) (Method X) .....:		N/A
	88 See Annex U		N/A
	89 – Emission tests and groups as declared according to CISPR 11 (Method X) .....:		N/A
	90 – Immunity tests for protective controls for use according to IEC 60335 appliances (Method X).....:		N/A
	91 to 94 See Annex H		N/A
	95 – Maximum declared short-circuit current (Method X) .....:		N/A
	96 – Overcurrent protective device external to the CONTROL (Method D or E).....:		N/A
	97 – For INCORPORATED CONTROLS or INTEGRATED CONTROLS, whether the overload test done at control level (Method X) .....:		N/A
	98 – Maximum altitude at which the CONTROL can be used if greater than 2000m (Method X)..... :		N/A
	101 – Limited short-circuit capability in terms of prospective current, voltage and rated current and characteristic of fuse, if declared Method X) ..... :		N/A
	102 – Features of automatic actions (Method D)	3.C	P
	103 – Maximum pressure for controls located within the sealed compressor enclosure (Method D)		N/A
7.2.2	Information which is indicated as being required by marking (C) or by documentation (D, E) is provided for the testing authority..... :		P
7.2.3	For controls submitted in, on or with an equipment, the requirement for Documentation (D, E) replaced with Declaration (X)		P
7.2.4	Marking for an INTEGRATED CONTROL within a more complex control is included in the marking of the complex control		P

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Clause	Requirement + Test	Result - Remark	Verdict
7.2.5	Documentation (D, E) requirement is met by providing information by Marking (C)		P
7.2.5.1	Declaration (X) requirement is met by providing information by Documentation (D, E) or Marking (C)		P
7.2.6	Information for INTEGRATED CONTROL provided by Declaration (X)		P
	Incorporated control provided with marking of manufacturer's name or trademark and unique type reference when other required marking is provided by Documentation (D, E)		N/A
	Information for incorporated control intended for exclusive delivery to the equipment		P
7.2.7	Controls with lack of space are marked with manufacturer's name or trademark and the unique type reference, while other required marking included in Documentation (D, E)		N/A
7.2.8	Additional marking or information permitted if does not give rise to misunderstanding		P
7.2.9	Appropriate IEC symbol(s) used per 7.2.9 .....:		P
7.3	Class II symbol		N/A
7.3.1	Used only for in-line cord, free-standing, and independently mounted controls		N/A
7.3.2	Sides of the outer square are approximately twice the length of sides of the inner square		N/A
7.3.2.1	Largest dimension of the control (mm) .....:		—
	The length of the side of outer square (mm) .....:		—
7.3.2.2	Controls which include terminals for earthing continuity for functional purposes are not marked with the symbol for class II		N/A
7.4	Additional requirements for marking		N/A
7.4.1	Marking placed on the main body or on non-detachable parts	the main body	P
	Required marking is legible and durable		P
7.4.2	Terminals of controls intended for the connection of supply conductors are indicated by an arrow pointing towards the terminal		N/A
7.4.3	Terminals for neutral external conductor are indicated by letter "N"		N/A
7.4.3.1	Earthing terminals for external earthing conductors or earthing continuity, and terminals for earthing for functional purposes are identified		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	– for protective earth by the earth symbol for protective earth, IEC 60417-5019 (2006-08)		N/A
	– for functional earth by the earth symbol for functional earth, IEC 60417-5017 (2011-07)		N/A
7.4.3.2	All other terminals are suitably identified		P
7.4.4	Indication of the direction to increase or decrease response value for the controls intended to be set by the user or the equipment manufacturer is provided (ex. “+” and “-“)		N/A
	Controls intended to be set by the equipment manufacturer or the installer accompanied by documentation (D) indicating proper method for securing the setting		N/A
7.4.5	Replaceable parts destroyed during the normal operation marked to enable their identification from a Catalogue or similar document, even after they have operated		N/A
7.4.6	Controls intended to be connected only to SELV systems are marked with the graphic symbol IEC 60417-5180 (2003-02)		N/A
	This requirement does not apply where the means of connection to the supply is so shaped that it can only mate with a particularly designed SELV or PELV arrangement		N/A
	Controls designed as required for class III, but carry terminals for earthing continuity for functional purposes are not marked with the symbol for class III construction		N/A
7.4.7	Equipment carries a replaceable battery, and replacement by an incorrect type could result in an explosion		N/A
	- If the battery is intended to be replaced by the user, marking close to the battery or a statement in both the instructions for use and the service instructions are provided		N/A
	- If the battery is not intended to be replaced by the user, marking close to the battery or a statement in the service instructions are provided		N/A
7.4.8	The battery compartment of controls incorporating batteries that are intended to be replaced by the user are marked with the battery voltage and the polarity of the terminals		N/A
	If colours are used, the positive terminal is identified in red and the negative terminal in black		N/A
	Colour is not used as the only indication of polarity		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
7.4.9	The instructions for controls incorporating batteries intended to be replaced by the user include:		N/A
	- the type reference of the battery		N/A
	- the orientation of the battery with regard to polarity		N/A
	- the method of replacing batteries		N/A
	- warning against using incorrect type batteries		N/A
	- how to deal with leaking batteries		N/A
	The instructions for controls incorporating a battery that contains hazardous to the environment materials give details on how to remove the battery:		N/A
	- the battery must be removed from the control before it is scrapped		N/A
	- the control must be disconnected from the supply mains when removing the battery		N/A
	- the battery is to be disposed of safely		N/A
7.4.10	See Annex V – Information regarding charging of batteries provided		N/A
8	**PROTECTION AGAINST ELECTRIC SHOCK**		N/A
8.1.1	Adequate protection provided against accidental contact with live parts in all unfavourable positions of normal use, and after all accessible detachable parts (other than lamps behind the detachable cover) were removed		N/A
	Protection against accidental contact with live parts of the lamp provided to allow safe insertion and removal of the lamps		N/A
	SELV or PELV circuits supplied at a voltage not exceeding 24 V are considered non-hazardous..... :	Circuits identified:	N/A
	If SELV- or PELV-circuits supplied at higher than 24 volts, or higher than declared according to requirement 87 of Table 1, are accessible, the current between the accessible part(s) and either pole of the supply source of the SELV/PELV circuits comply with H.8.1.10.1		N/A
8.1.1.1	SELV/PELV circuits supplied at a different voltage value (other than 24V) considered non-hazardous :	Application: Product standard: Voltage limits:	N/A
	- The control is used in an application governed by another product standard with different limit values; and,		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- The manufacturer declares the application, product standard governing the application and level of voltage of the application		N/A
8.1.2	Class II controls and controls for Class II equipment provided with protection against accidental contact with metal parts separated from hazardous live parts only by basic insulation		N/A
8.1.3	Lacquer, enamel, paper, cotton, oxide film on metal parts, and beads and sealing compounds not relied upon for protection against accidental contact with hazardous live parts		N/A
8.1.4	For controls connected to gas or water supply mains, any metal part conductively connected to pipes is separated from hazardous live parts by double insulation or reinforced insulation		N/A
8.1.5	For Class II controls and controls for Class II equipment intended for fixed installation, protection is not impaired by the installation of control		N/A
8.1.6	For integrated and incorporated controls, tests of 8.1.8 to 8.1.9.5 applied to accessible parts when control is mounted as intended with detachable parts removed		N/A
8.1.7	For in-line and free-standing controls, tests of 8.1.8 to 8.1.9.5 applied when control is fitted with flexible cord, with detachable parts removed and hinged covers which can be opened without a tool are opened; cross-sectional area of cord(mm^2)..... :		—
8.1.8	For independently mounted controls, the tests made when control mounted as in normal use, fitted with cable or with a conduit, with detachable parts removed and hinged covers which can be opened without a tool are opened; cross-sectional area of cable (mm^2)..... :		—
8.1.9	Tests using the standard test finger and test pin:		N/A
	- The standard test finger shown in Figure 2 applied without force in every possible position		N/A
	- Apertures preventing the entry of the finger further tested by means of a straight unjointed test finger of the same dimensions applied with a force of 20 N		N/A
	If test finger entered, the finger shown in Figure 2 pushed through the aperture.		N/A
	If the unjointed test finger did not enter, the increased force of 30 N applied		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	When the guard so displaced or the aperture so distorted that the test finger in Figure 2 can be inserted without force, the test with the latter finger repeated with electrical contact indicator		N/A
8.1.9.2	Openings in insulating material and unearthed metal tested for accessibility of live parts by applying the test pin without force in every position		N/A
8.1.9.3	Hazardous live parts were not touched		N/A
8.1.9.4	For controls with double insulation construction, the metal parts were not accessible with the standard test finger, which are only separated from hazardous live parts by basic insulation		N/A
8.1.9.5	A part is regarded detachable if: - there is an instruction to remove a part during normal use or user maintenance; and, - there is no warning on the part that indicates "Disconnect from supply before removing .....:	Identified parts:	N/A
8.1.11	Between Class III and main/earth circuits, insulation external to the safety isolating transformer complies with Class II insulation		N/A
8.1.12	Live parts are hazardous if they exceed the values specified in 8.1.1 and if are not separated from the source by protective impedance and are not a PEN conductor or a part of the equipotential bonding system.....:	Identified parts:	N/A
8.1.13	Controls having battery compartments that can be opened without a tool or provided with user instructions indicating the battery may be replaced by the user, are provided with: - basic insulation between live parts and the inner surface of the battery compartment - if the control can be energized without the batteries, double or reinforced insulation is provided		N/A
8.2	Actuating members and means		N/A
8.2.1	Actuating members are not live		N/A
8.2.2	Live actuating means provided with fixed insulated actuating member		N/A
	Live actuating means not accessible when actuating member is removed		N/A
8.2.3	For controls other than Class III or for other than Class III equipment, actuating members and handles to be held in normal use are:		N/A
	- of insulating material, or		N/A
	- covered by insulating material		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	If of metal, accessible parts (likely to become live in when insulation fails) separated from their actuating means or fixings by supplementary insulation		N/A
	Controls for fixed wiring or for stationary equipment, previous requirement not applicable if parts:		N/A
	- reliably connected to an earthing terminal/contact, or		N/A
	- shielded from live parts by earthed metal		N/A
8.3	Capacitors		N/A
8.3.1	For Class II in-line cord controls and independently mounted controls, capacitors are not connected to accessible metal parts		N/A
	For controls for Class II equipment, capacitors are not connected to metal likely to be connected to accessible metal parts (control correctly mounted)		N/A
	Metal casings of capacitors separated by supplementary insulation from:		N/A
	- accessible metal parts		N/A
	- metal parts likely to be connected to accessible metal parts		N/A
8.3.2	Controls connected to the supply by means of a plug designed that there is no risk of electric shock (from capacitor) when touching the pins of the plug		N/A
8.3.2.1 – 8.3.2.4	Test method to show compliance to 8.3.2 ..... :	See attached TABLE 8.3.2	N/A
8.4	Covers and uninsulated live or hazardous parts; cover fixing screws:		N/A
	- not accessible, or		N/A
	- earthed, or		N/A
	- separated by double or reinforced insulation, or		N/A
	- not accessible after mounting in the equipment		N/A
9	**PROVISION FOR PROTECTIVE EARTHING**		N/A
9.1.1	Accessible parts other than actuating members of in-line cord, free-standing and independently mounted controls of Class 0I or Class I which may become live:		N/A
	- connected to an earthing terminal, or		N/A
	- terminated within the control, or		N/A
	- connected to an earthing contact of an equipment inlet		N/A
9.1.2	Accessible parts other than actuating members of integrated and incorporated controls for Class 0I and Class I equipment which may become live:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- have provision for earthing, or		N/A
	- earthed by the fixing means		N/A
9.1.3	Earthing terminals, terminations or contacts not electrically connected to any neutral terminal		N/A
9.2	Control of Class II or Class III:		N/A
	- no provision for protective earthing		N/A
9.3	Adequacy of earth connections		N/A
9.3.1	Connection between earthing terminal and parts to be connected is of low resistance..... :	See attached TABLE 9.3.1	N/A
9.3.2	Fixed wiring and methods X and M earthing terminals meet requirements of 10.1		N/A
9.3.3	External earthing connections not made by screwless terminals		N/A
	For attachment methods Y and Z, screwless earthing terminals complying with IEC 60998-2-2, 60998-2-3 or 60999-1		N/A
9.3.4	Size of accessible earthing terminals		N/A
	- accessible earthing terminals, range: 2.5 mm^2 to 6 mm^2		N/A
	- unable to loosen without the aid of a tool		N/A
9.3.5	Size of non-accessible earthing terminals		N/A
	- size of current -carrying terminal (mm^2) .....:		—
	- size of earthing terminal (mm^2) .....:		—
9.3.6	Earthing terminals locked against accidental loosening		N/A
9.4	Corrosion resistance		N/A
9.4.1	Material of earthing terminals, body:		N/A
	- body of earthing terminals made of brass		N/A
	- other metal not less resistant to corrosion		N/A
	- screws or nuts made of brass		N/A
	- plated steel or other resistant material		N/A
9.4.2	Precaution against risk of corrosion between copper and frames or enclosures of aluminium or its alloys		N/A
9.5.1	Detachable part with earth connection		N/A
	- placing part in position: earth contact made before current-carrying connections		N/A
	- removing part: earth contact separated after disconnection of current-carrying connections		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.5.2	Incorporated controls likely to be separated from its normal earthing means after mounting in equipment, provided with permanent earthing connection or conductor		N/A
10	**TERMINALS AND TERMINATIONS**		N/A
10.1	Terminals and terminations for external copper conductors		N/A
10.1.1	In terminals for fixed wiring and for cords using X and M attachment method connections made by screws, nuts or equally effective methods		N/A
	Use of a special purpose tool not required		N/A
10.1.1.1	Terminals or terminations for cords using Y and Z attachment method comply with clause 10.2		N/A
	Need for special purpose tools		N/A
10.1.2	Screws and nuts which clamp external conductors:		N/A
	- metric ISO thread; size..... :		—
	- ISO equivalent; size ..... :		—
	- do not serve to fix other components		N/A
	Exception: terminal also clamps internal conductors which are so arranged that they are not displaced when fitting the external conductor		N/A
10.1.3	Soldered, welded, crimped or similar terminations not used for non-detachable cords X and M attachments		N/A
10.1.4	Terminals for fixed wiring and non-detachable cords using attachment methods X or M:		N/A
	- terminal No. or identification ..... :		—
	- Current (A) carried by terminal ..... :		—
	- Flexible cord or fixed wiring ..... :		—
	-conductor cross-sectional area - smallest (mm^2) :		—
	-conductor cross-sectional area - largest (mm^2) .. :		—
10.1.4.1	Terminal designed for wider range of conductor size declared ..... :		N/A
10.1.5	Terminals for fixed wiring and non-detachable cords using attachment methods X or M securely fixed		N/A
10.1.5.1	10 times fastening and loosening conductor of largest cross-section:		N/A
	- kind of wire used ..... :		—
	- cross-sectional area (mm^2) ..... :		—
	- applied torque value (Nm)..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
	- terminals did not work loose		N/A
	- internal conductors not subjected to stress		N/A
	- creepage and clearances distances not reduced below values required in Cl. 20		N/A
10.1.6	Terminals for fixed wiring and non-detachable cords using attachment methods X or M clamp conductors between metal surfaces		N/A
	Screwless terminals for current ≤ 2 A with non-metallic surface		N/A
	No undue damage to the conductor after tightening or loosening (tests of 10.1.5)		N/A
10.1.7	Terminals for fixed wiring and non-detachable cords using attachment method X do not require special preparation of the conductor		N/A
10.1.7.1	Alternate means of connection for type X attachment		N/A
10.1.8	In terminals for fixed wiring and non-detachable cords using attachment methods X or M conductor remains secure while clamping		N/A
10.1.8.2	Terminals are fitted with conductors:		N/A
	- cross-sectional area (mm²) .....:		—
	- Flexible cord / Fixed wiring .....:		—
	- Wires of fixed wiring conductors are straightened		N/A
10.1.8.3	The wires of flexible cables and cords are twisted in one complete turn in 20 mm and conductor is inserted into the terminal		N/A
	- Torque applied on screws (Nm) .....:		—
10.1.8.4	Neither the conductor nor the wire of a stranded conductor slipped out		N/A
10.1.9	Clamping reliability of the terminals	See attached TABLE 10.1.9.1	N/A
10.1.10	Terminals did not attain excessive temperatures during the test of Clause 14 (°C).....:		N/A
10.1.11	Terminals so are located that each core contained within any fixed wiring sheath or flexible cord sheath is terminated in reasonable proximity to the other cores within the same sheath		N/A
10.1.12	Test of escaped wire for terminals with attachment methods X or M		N/A
	- An 8 mm length of insulation is removed from the end of a stranded conductor		N/A
	- Free wire of stranded conductor makes no contact with accessible metal parts		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- Free wire of stranded conductor makes no contact with metal parts of Class II controls separated from accessible parts by supplementary insulation only		N/A
	- Free wire of a conductor connected to the earthing terminal makes no contact with live parts		N/A
	- Free wire of a conductor connected to live terminals not accessible and does not short-circuit an action providing full or micro-disconnection		N/A
10.1.13	Contact pressure not transmitted via insulating material other than ceramic		N/A
	Sufficient resiliency in the appropriate metal parts to compensate for distortion of insulating material		N/A
10.1.14	Screws and threaded parts made of metal		N/A
10.1.15	In pillar and mantle type terminals adequate length of the conductor can be introduced		N/A
	In pillar and mantle type terminals conductor is beyond the edge of the screw		N/A
10.1.16	In U.S.A. and Canada flying leads are used		N/A
10.2	Terminals and terminations for internal conductors (internal conductors are considered Integrated conductors for the purpose of this part 2 standard)		N/A
10.2.1	Connection of conductors .....:	See attached TABLE 10.2.1	N/A
10.2.2	Terminals suitable for their purpose		N/A
10.2.3	In soldered terminals, soldering is not the only means to maintain conductor in position		N/A
	In soldered terminals, barriers are provided to prevent reduction in creepage and clearance		N/A
10.2.4	Flat push-on connectors		N/A
10.2.4.1	Dimension of tabs		N/A
	- measured (mm x mm).....:		—
	- compliance with Fig. 14, 15, 16 or IEC/EN 61210		N/A
	- other dimensions allowed (mm x mm) .....:		—
	- polarized acceptance of receptacles		N/A
10.2.4.2	Tabs forming part of a control consist of material appropriate to the maximum temperatures allowed		N/A
10.2.4.3	Tabs forming part of a control have adequate strength and allow the insertion and withdrawal of receptacles without damage to the control		N/A
10.2.4.4	Tabs forming part of a control are adequately spaced to allow the connection of the appropriate receptacles		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- no strain, no distortion to any of the tabs or adjacent parts		N/A
	- no reduction of creepage distance or clearances below values of Cl. 20		N/A
10.3	Terminals and terminations for integrated conductors		N/A
11	**CONSTRUCTION REQUIREMENTS**		P
11.1.1	Insulating materials		P
	Wood, cotton, silk, ordinary paper etc. not used as insulation unless impregnated		P
11.1.2	Current carrying parts other than threaded parts of terminals, if made of brass:		N/A
	- contain at least 50% copper if cast or from bar		N/A
	- contain at least 58% copper if from rolled sheet		N/A
11.1.3.1	Non-detachable cords of Class I controls provided with a green/yellow conductor insulation and properly connected		N/A
11.1.3.2	Non-detachable cords: green/yellow conductor not connected to other than earthing terminals		N/A
11.2	Protection against electric shock		N/A
11.2.1	Double insulation		N/A
	- basic insulation and supplementary insulation can be tested separately, or		N/A
	- properties of both insulations are otherwise provided		N/A
11.2.2	Infringement of double or reinforced insulation in Class II controls:		N/A
	- creepage distances and clearances not reduced below values of Cl. 20 by wear		N/A
	- creepage distances and clearances not reduced to less than 50% of values of Cl. 20 by parts becoming loose (wires, screws, nuts, etc.)		N/A
11.2.3	Integrated conductors		N/A
11.2.3.1	No reduction of creepage distances and clearances below values of Cl. 20; conductors rigid, fixed or insulated		N/A
11.2.3.2	Insulation, if any, cannot be damaged during mounting or in normal use		N/A
11.2.4	Sheath of flexible cord used as supplementary insulation:		N/A
	- not subjected to undue mechanical or thermal stresses		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- insulation properties comply with IEC 60227-1 or IEC 60245-1		N/A
11.2.5	Protective impedance .....:	See Annex H.	N/A
11.2.6	Protection against electric shock by use of SELV or PELV .....:	See Annex T.	N/A
11.2.7	Adequate measures are provided to prevent the interconnection of an integrated SELV circuit to an external PELV circuit and vice versa		N/A
	Supply from an external SELV source is only possible by a dedicated plug and socket system which cannot be fitted or interconnected with other connecting systems		N/A
11.2.8	Overcurrent protection capable of carrying the currents likely to flow in abnormal conditions for such periods of time if declared in requirement 96 of Table 1		N/A
11.3	Actuation and operation		N/A
11.3.1	Full-disconnection		N/A
	- contact separation in all poles not below values of Cl. 20 (exception: earth)		N/A
	- any subsequent action does not cause reduction of contact separation below the minimum values (Cl. 20)		N/A
	For declared all-pole disconnection contact operation in each pole substantially together		N/A
11.3.2	Micro-disconnection		N/A
	- one supply pole, at least, separated		N/A
	- separated pole meets electric strength requirements, Cl. 13		N/A
	- any subsequent action does not cause reduction of contact separation below value required by the Electric Strength Test		N/A
11.3.3	Reset buttons are so located or protected that they are not to be accidentally reset		N/A
11.3.4	Parts for setting by the manufacturer secured to prevent accidental shifting after setting. Note: sealing compounds, lock nuts and the like are acceptable.		N/A
11.3.5.1	For contacts with d.c. rating > 0.1 A operated by actuation speed of approach and separation of contacts are independent of speed of actuation.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
11.3.5.2	Systems of class C control functions include at least two switching elements to directly de-energize the safety relevant terminals		N/A
11.3.5.2.1	Measures to prevent common cause errors		N/A
	- Measures to protect against failure of two (or more) switching elements by an external short which prevent control from performing a safety shut-down. Acceptable methods are:		N/A
	- Overcurrent protection device,		N/A
	- Current limitation or		N/A
	- Internal fault detecting means		N/A
	Compliance (Short Circuit Test)		N/A
	- Safety related output terminals of the control connected to switch on short circuit current		N/A
	- With switch opened, control connected as in H.27.1.1.2 with outputs energized to simulate normal operation		N/A
	Controls with overcurrent protection devices:		N/A
	- Short-circuit current capability of power supply is at least 500A.....:		N/A
	Controls with current limitation devices		N/A
	- power supply does not limit the declared short-circuit current		N/A
11.3.5.2.1.1	Short-circuit applied between safety related output terminals		N/A
	- declared short-circuit current .....:		—
	- 1h duration or until no current flow through switch		N/A
	- if overcurrent protection device is replaceable and operated during the test, device is replaced and test is repeated two more times		N/A
	- test is repeated using same or separate sample		N/A
11.3.5.2.1.2	If internal fault detecting function of the control opens the switching elements or initiates a safety shut-down, the test is repeated two more times		N/A
	After test at least one switching element of the control de-energized the safety related output terminals, or		N/A
	- non-replaceable overcurrent protection device permanently interrupted the safety related output terminal's supply		N/A
11.3.6	Contacts for full- and micro-disconnection with d.c. rating ≤0.1 A or a.c. rating, operated by actuation can rest only in closed or open position		N/A
11.3.7	Contacts which cannot (or are not intended to) be operated on load nor arc under normal use		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
11.3.7.2	An arc not maintained by slowly opening the contacts		N/A
11.3.8	In any rest position of the actuating member		N/A
	- contacts are open or closed as intended		N/A
	- no hazard can occur within the control		N/A
11.3.9	In pull-cord actuated control the mechanism returns when pull-cord is released to allow next movement in the cycle		N/A
	- pull force vertically downwards (N): ≤ 45 N.....:		—
	- pull force 45° to vertical (N): ≤ 70 N.....:		—
	- function after release		N/A
11.4	Actions	3.C	P
11.4.1	Combined action: Control remains operative after the failure of any portion unique to the other actions		N/A
11.4.2	Type 2 action with provision for setting by the manufacturer: clearly discernible if any subsequent interference with the setting has been made		N/A
11.4.3	Type 2 action: manufacturing deviation and drift within the required limits		N/A
11.4.4	Type 1A or 2A action: operation provides full-disconnection		N/A
11.4.5	Type 1B or 2B action: operation provides micro-disconnection		N/A
11.4.6	Type 1C or 2C action: operation provides micro-interruption		N/A
11.4.7	Type 1D or 2D action: disconnection cannot be prevented and reset not possible while faults persists		N/A
11.4.8	Type 1E or 2E action: disconnection or opening of contacts cannot be prevented/inhibited by reset mechanism or against continuation of fault condition		N/A
11.4.9	Type 1F or 2F action: reset needs the aid of a tool		N/A
11.4.10	Type 1G or 2G action: reset possible under electrically loaded conditions		N/A
11.4.11	Type 1H or 2H action:		N/A
	- contacts cannot be prevented from opening		N/A
	- may reset automatically to “closed” if reset means is held in reset position		N/A
	- no automatic reset if reset means in normal position at any temperature above –35°C		N/A
11.4.12	Type 1J or 2J action:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- contacts cannot be prevented from opening		N/A
	- no automatic reset if reset means is held in reset position		N/A
	- no automatic reset at any temperature above –35°C		N/A
11.4.13	Type 1K or 2K action: declared disconnection provided in the case of break in sensing element or in part between element and switch head.		N/A
11.4.14	Type 1L or 2L action: function independent of electrical supply or auxiliary energy source		N/A
11.4.15	Type 1M or 2M action: operation provided after declared ageing procedure.		N/A
11.4.101	Type 3.B.H provides electric strength requirements specified for micro-disconnection.		N/A
11.4.102	Type 3.B.H action should be so designed that the contacts cannot be prevented from opening and may automatically reset to the closed position if the reset means is held in the reset position. With the reset means in its normally free position, the control should not reset automatically at any test ambient temperature above –5 °C.		N/A
11.4.103	Type 3.C provides circuit interruption by micro-interruption.		P
11.4.16	See Annex H		N/A
11.4.17	See Annex J		N/A
11.5	Openings in enclosures (drain holes)		N/A
	- minimum area (mm^2): .....:		—
	- maximum area (mm^2): .....:		—
	- minimum dimension (mm^2): .....:		—
11.6	Mounting of controls		P
11.6.1	Control mounted according to manufacturer's declaration: does not adversely affect compliance with this standard		P
11.6.2	Control mounted as declared, if movement or removal could adversely affect compliance with this standard:		P
	- cannot rotate or be displaced		P
	- cannot be removed without the aid of a tool		P
	- when removal (even partial) is necessary for use, requirements of clauses 8, 13, and 20 are satisfied before and after removal		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Controls, other than with rotary actuation, fixed by a nut and single bushing:		N/A
	- tightening of the nut requires a tool		N/A
	- parts have adequate mechanical strength		N/A
	Screwless fixing of an incorporated control: a tool is required before the control can be removed from the equipment		N/A
11.6.3	Mounting of independently mounted controls		N/A
11.6.3.1	Independently mounted controls (other than for panel mounting)		N/A
	- fit a standard box as declared, or		N/A
	- supplied with a conduit box (if special), or		N/A
	- suitable for surface (plane) mounting		N/A
11.6.3.2	If special conduit box required, it is delivered with the control		N/A
	- box provided with entries for conduits specified in IEC 60423		N/A
11.6.3.3	Controls for surface mounting for buried installation (concealed wiring) provided with suitable holes on the backside.		N/A
11.6.3.4	Controls for surface mounting for exposed wiring provided with entries, knock-outs or glands.		N/A
11.6.3.5	Terminals (for external conductors) of controls or sub-bases accessible and usable when control is fixed and cover or the control is removed		N/A
11.6.3.6	In controls for mounting on an outlet box, wiring terminals, live parts and sharp edged metal parts located or protected to prevent from being forced against wiring		N/A
11.6.3.7	Back wiring terminals: recessed or protected to prevent contact with wiring installed in the box		N/A
11.7	Attachment of cords		N/A
11.7.1.1	In-line and free-standing controls, flexible cords withstand flexing during normal use		N/A
	Cords with attachment method X: cord-guard (if provided) not integral with flexible cord		N/A
11.7.1.2	Flexing Test for flexible cords .....:	See attached TABLE 11.7.1.2.1	N/A
11.7.2	Cord anchorages		N/A
11.7.2.1	Controls, other than integrated or incorporated, intended to be connected by non-detachable cords provided with cord anchorage so designed that:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- conductor relieved from strain		N/A
	- conductor relieved from twisting		N/A
	- conductors covering protected from abrasion		N/A
11.7.2.2	Cord anchorages of Class II controls		N/A
	- made of insulating material		N/A
	- insulated from accessible metal parts by supplementary insulation		N/A
11.7.2.3	Cord anchorages of controls other than Class II:		N/A
	- made of insulating material, or		N/A
	- provided with insulating lining, if an insulation fault on the cord could make accessible metal parts live		N/A
	- provided with lining fixed to the cord anchorage (exception: bushing which forms part of a cord guard)		N/A
11.7.2.4	Cord anchorage design		N/A
	- cord cannot touch clamping screws of anchorage, if screws are accessible metal parts		N/A
	- cord not clamped by metal screws bearing directly on the cord		N/A
	- attachment method X or M: at least one part securely fixed to the control		N/A
	- attachment method X or M: replacement of cord does not require a special purpose tool		N/A
	- attachment method X: suitable for the different connectable cords		N/A
	- attachment method X: design and location make replacement of the cord easily possible		N/A
11.7.2.5	For other than attachment method Z: cord anchorage not made by make-shift methods		N/A
11.7.2.6	Attachment method X: in-line cord controls		N/A
	- glands not used as cord anchorage, unless		N/A
	- provision exists for clamping all types of cords		N/A
11.7.2.7	Screws to be operated when replacing the cord		N/A
	- not fixing other components, or		N/A
	- control is inoperable or manifestly incomplete if components are omitted or incorrectly mounted, or		N/A
	- component cannot be removed without the aid of a tool		N/A
11.7.2.9	Push test for control fitted with flexible cord(s) .....:	See attached TABLE 11.7.2.9	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Screws of cord anchorage tightened 2/3 torque of cl. 19.1(Nm) .....:		N/A
11.7.2.10	Push causes no damage		N/A
11.7.2.11	Pull test for control fitted with flexible cord(s) .....:	See attached TABLE 11.7.2.11 and 11.7.2.12	N/A
	Free-standing control, weight (kg) .....:		—
	In-line cord controls (all others).....:	Force: _ Pulls: _	N/A
	No displacement		N/A
11.7.2.12	Torque Test on cable, torque (Nm) .....:		N/A
11.7.2.13	Attachment method X		N/A
	- test with lightest cord: smallest cross-section used in 10.1.4: diameter (mm) .....:		N/A
	- test with next heavier type with largest cross-section: diameter (mm) .....:		N/A
11.7.2.14	After test cord not damaged, and		N/A
	- measured longitudinal displacement (≤2 mm) of cord (mm).....:		N/A
	- conductors have not moved in the terminals over a distance > 1 mm		N/A
	- no appreciable strain at the connection		N/A
	- creepage distances and clearances not reduced below values of Cl. 20		N/A
11.8	Size of non-detachable cords		N/A
11.8.1	- rubber sheathed, not lighter than 60245; type ....:		N/A
	- PVC sheathed, not lighter than 60227; type .....:		N/A
	Exception: if specified in particular equipment standard or for connection to external SELV devices .....:		N/A
11.8.2	Size of conductors in non-detachable cords:		N/A
	- nominal current (A) .....:		—
	- required cross-sectional area (mm²).....:		—
	- measured cross-sectional area (mm²).....:		—
11.8.3	Space inside the control for flexible cords:		N/A
	- connecting cords of largest cross-section (10.1.4) (mm²) .....:		—
	- adequate space for easy introduction and connection		N/A
	- possibility to check the correct connection		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- cover can be fitted without risk of damage to the conductors		N/A
11.9	Inlet openings		N/A
11.9.1	Inlet openings for flexible external cords		N/A
	- designed to prevent damage of the covering of the cord when introducing connectors		N/A
	- provided with inlet bushing		N/A
11.9.1.1	Conduit entries and knock-outs of independently mounted controls designed and located that the introduction does not affect protection against electric shock or reduces distances and clearances		N/A
11.9.2	Inlet openings without inlet bushing made of insulating material		N/A
11.9.3	Inlet bushing		N/A
	- made of insulating material		N/A
	- shaped to prevent damage to the cord		N/A
	- reliably fixed		N/A
	- not removable without the aid of a tool		N/A
	- not integrated with the cord in case of attachment method X		N/A
11.9.4	Inlet bushing not made of rubber		N/A
	Exception: For attachment methods M, Y or Z, for Class 0, 0I or I controls, bushing integral with sheath of a cord of rubber		N/A
11.9.5	Enclosures of independently mounted controls (for permanent connection to fixed wiring) provided with cable/conduit entries, knock-outs or glands allowing correct connection of the appropriate cable or cord		N/A
11.10	Equipment inlets and socket-outlets		N/A
11.10.1	Engagement with connecting devices of other systems not possible		N/A
	Engagement causes no danger or damage		N/A
11.10.2	In-line cord controls with inlet or socket-outlets		N/A
	- unintended overloading of control cannot occur, rating of the control accordingly		N/A
	- protected against overload, protection means .....:		N/A
11.10.3	Controls with pins to be introduced into fixed socket-outlets comply with requirements of the socket-outlet system		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For in-line cord controls provided with a plug and a socket outlet, where the plug can be connected to a socket outlet rated for a higher load current than the control, the control provided with an incorporated fuse or a protective device to limit the current to the control's rating		N/A
	The plug and socket outlet part of the control complies with the appropriate standard for the plug and socket system		N/A
11.11	Requirements during mounting, maintenance and servicing		N/A
11.11.1	Covers and their fixing		N/A
11.11.1.1	Removal of covers does not affect setting of the controls other than integrated		N/A
11.11.1.2	Covers		N/A
	- cannot be displaced or replaced incorrectly		N/A
	- fixing of covers to be removed for mounting etc., does not serve to fix any parts other than actuating members or gaskets		N/A
11.11.1.3	Covers of enclosures giving access to fuses or any overload protective devices (Canada and U.S.)		N/A
11.11.1.4	Glass covering an opening (Canada and U.S.)		N/A
11.11.1.5	Non-detachable parts which provide protection against electric shock or contact with moving parts:		N/A
	- fixed in a reliable manner		N/A
	- withstand mechanical stress		N/A
	-snap-in devices have a locked position		N/A
11.11.1.5.1	Parts likely to be removed for installation or during servicing disassembled and assembled ten times		N/A
11.11.1.5.3	Control subjected to 50 N push force test .....:		N/A
	- pull force (N) .....:		N/A
	- finger nail pull force (N) .....:		N/A
	- if cover subjected to twisting force, torque applied		N/A
11.11.1.5.4	After push / pull test, parts remain locked in position and not detached.		N/A
11.11.1.6	Cover removable with one hand, not released when subjected to squeezing and pull force.		N/A
11.11.2	Fixing screws of covers which need to be removed for mounting etc., captive		N/A
11.11.3	Actuating member		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
11.11.3.1	Control not damaged by mounting or removal of actuating member		N/A
11.11.3.2	For Type 2 action with max/min. setting limited by means of the actuating member, the actuating member not removable without use of a tool		N/A
11.11.3.3	Actuating member cannot be fixed in an incorrect position for Type 1 action (actuating member providing OFF position) or Type 2 action (actuating member indicating condition of the control)		N/A
11.11.4	Parts forming supplementary or reinforced insulation and which might be omitted during re-assembly:		N/A
	- fixed and cannot be removed without being damaged, or		N/A
	- if omitted, control is inoperable or manifestly incomplete		N/A
11.11.5	Sleeving as supplementary insulation on integrated conductors: retained in position by a positive means		N/A
11.11.6	Pull-cords		N/A
	- insulated from live parts		N/A
	- fitting and replacement possible without live parts becoming accessible		N/A
11.11.7	Insulating linings, barriers etc.		N/A
	- adequate mechanical strength		N/A
	- secured in a reliable manner		N/A
11.12	Controls using software.....:	See Annex H	N/A
11.13	Protective controls and components of protective control system		N/A
11.13.1	- protective controls designed and constructed to be reliable and suitable for their intended duty		N/A
	- protective controls are independent of other functions		N/A
	- protective controls comply with appropriate design principles in order to obtain suitable and reliable protection		N/A
	Operating controls are not used as protective controls		N/A
11.13.2	The pressure of the limiting devices does not permanently exceed the maximum allowable pressure of the controlled application		N/A
	A short duration pressure surge of the limiting devices does not exceed 10% of the pressure surge		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
11.13.3	The temperature monitoring devices have an adequate response time on safety grounds, consistent with measurement function		N/A
11.13.4	Batteries		N/A
11.13.4.1	Controls containing batteries are designed to reduce the risk of fire, explosion and chemical leaks		N/A
	- under normal operation		N/A
	- under after a single fault in the control		N/A
	Controls containing user-replaceable batteries are designed to reduce likelihood of reverse polarity if results in a hazard		N/A
11.13.4.2	Battery circuits designed for total battery capacity > 1000 mAh are designed so that		N/A
	-output characteristics of battery charging circuit compatible with rechargeable battery		N/A
	- Non-chargeable batteries: discharging rate exceeding battery manufacturer's recommendation and unintentional charging are prevented.		N/A
	- Rechargeable batteries: charging/discharging rate exceeding battery manufacturer's recommendation and reverse charging are prevented.		N/A
	- Replaceable batteries:		N/A
	- Have contacts that cannot be shorted with test finger (Figure 2); or		N/A
	- Inherently protected to avoid creating a hazard		N/A
11.13.4.3	If battery capacity > 1000 mAh contains liquid or gel electrolyte, a battery tray is provided		N/A
11.13.4.3.1	If battery tray is required, tray capacity is equal to volume of electrolyte		N/A
	- for all cells of the battery, or		N/A
	- for a single cell if battery design is such that simultaneous leakage from multiple cells is unlikely		N/A
11.13.4.4.1	Unintentional charging of non-rechargeable battery		N/A
	- single component failure .....:		N/A
	- duration: 7 h.....:		N/A
11.13.4.4.2	Excessive discharging rate:		N/A
	- open/short circuit a current/voltage limiting component .....:		N/A
11.13.4.4.3	See Annex V		N/A
11.13.4.4.4	Compliance after the tests of 11.13.4.4.1 and 11.13.4.4.2:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	-No chemical leaks caused by cracking, rupturing or bursting of the battery jacket		N/A
	-No spillage of liquid from any pressure relief device in the battery		N/A
	-No explosion of the battery, if such explosion could result in injury to a user		N/A
	-No emission of flame or expulsion of molten metal to the outside of the control enclosure		N/A
11.13.4.5	Electric Strength (13.2)		N/A
11.13.5	Smart Enabled Controls		N/A
11.13.5.1	So designed that external communication signals do not unintentionally override the operating parameters of a Type 2 Action Control nor interfere with any protective function		N/A
	Permitted to alter the operating parameters of a Type 2 control within defined limits so long the protective functions remain intact		N/A
11.13.5.2	Control that integrates operating and protective functions evaluated as a Protective Control		N/A
11.13.5.3	Transmitter or communication module external to control acting as the interface between control and telecommunication network comply with IEC 62151 or IEC 62368-1 and ensure protection against electric shock		N/A
11.13.5.4	Any transmitter or communication module part of the smart enabled control complies with the requirements		N/A
12	**MOISTURE AND DUST RESISTANCE**		P
12.1.1	Protection against ingress of water and dust IP Classification of the product.....:	IP00	—
12.1.2	Electric Strength Test of 13.2 after preparation in accordance with 12.1.3-12.1.6 followed by tests according to IEC 60529.....:		N/A
	Entered water does not impair compliance with this standard		N/A
	No reduction of creepage distances and clearances below values of Cl. 20		N/A
12.1.6	Sealing means aged suspending freely in a heating cabinet, ventilated by natural circulation		N/A
	- aging temperature (°C), 70 ± 2°C.....:		—
	- aging time (h), 240h .....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
12.1.6.2	Immediately after ageing, the parts were taken out of the cabinet and left at room temperature, avoiding direct daylight		N/A
	- time before reassembly (h), 16h.....:		—
	- sealing means are then tightened with a torque equal to two-thirds of that given in Table 20		N/A
12.2	Protection against humid conditions		P
12.2.1	Controls withstood simulated, normal use humid conditions		P
12.2.3	Electric Strength Test of 13.2 is conducted immediately after the humidity treatment		N/A
12.2.4	Control shows no damage		P
12.2.5	Cable inlet openings, and drain holes are left open		N/A
12.2.6	Detachable parts are removed and tested with the main part		N/A
12.2.7	2 days (48 h) Humidity Test for IPx0 controls	48 h	P
	7 days (168 h) Humidity Test for other controls		N/A
12.2.8	Relative humidity (%): 91-95% .....:	93%	—
	Temperature (°C): (20 - 30 ± 1) °C .....:	25°C	—
12.2.9	Tests executed immediately after the humidity treatment (after the reassembly of detached parts)		P
	- in-line, free-standing and independently mounted controls according to Insulation Resistance (13.1)		N/A
	- Electric Strength (13.2)		P
	- integrated and incorporated controls according to Electric Strength (13.2)		N/A
12.3	Leakage current test for in-line cord and free - standing controls		N/A
12.3.3	Measuring circuits used the figure number .....:		—
12.3.4	During measurement all control circuits closed except controls tested to Figs. 26, 29, 30 checked with switch S1 in the open and closed position		N/A
12.3.5	Impedance of measuring circuits (Ω).....:		—
	Time constant (μs).....:		—
12.3.6	Error and accuracy of measuring circuit ≤5% .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
13	**ELECTRIC STRENGTH AND INSULATION RESISTANCE**		P
13.1	Insulation resistance of in-line cord, free-standing and independently mounted controls		N/A
13.1.2	Reinforced or supplementary insulation measured to non-metal parts covered with metal foil		N/A
13.1.3	Test voltage applied for 1 min (V dc) .....:		—
13.1.4	Insulation resistance measured		N/A
	- basic insulation ≥ 2 MΩ .....:		N/A
	- supplementary insulation ≥ 5 MΩ .....:		N/A
	- reinforced insulation ≥ 7 MΩ .....:		N/A
13.2	Electric Strength Test ..... : Note: The suitability of the test in Clause 13 can depend upon the method of mounting the **thermal motor protector** in the equipment. If the results of the tests in Clause 13 are not likely to be representative of the results obtained when the **thermal motor protector** is mounted in the equipment, then these tests would normally be carried out in the equipment.	See attached TABLE 13.2	P
13.2.2	Insulating surfaces covered with metal foil		N/A
13.2.3	50 or 60 Hz test voltage applied for 1 min. .....:	50Hz, 1min	P
13.3	Leakage current of in-line cord and free-standing controls after the tests of 13.1 or 13.2 for the sample that was subjected to the tests of 12.3		N/A
13.3.1	A test voltage, was applied between any live part and accessible metal parts, or		N/A
	– any live part & metal foil in contact with accessible surfaces of insulating material, connected together		N/A
	For control with a grounding pin or conductor, the grounding conductor was disconnected at the supply source		N/A
13.3.2	Test voltage (V)……..:		—
13.3.3	The leakage current was measured within 5 s after the application of the test voltage ..... :	See attached TABLE 13.3.3	N/A

14	**HEATING**		N/A
14.1	Controls and their supporting surfaces did not exceed normal use temperatures Note: For thermal motor protectors for motor compressor only, successful completion of the test of IEC 60335-2-24 or the appropriate IEC standard is deemed to be sufficient.		N/A
14.1.2	Temperatures recorded during Heating Test did not exceed the values in Table 13		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
14.2	Terminals fitted with external conductors of the intermediate cross-sectional area (mm²) .....:		—
14.2.1	Attachment method M, Y or Z: cords as declared or supplied (mm²).....:		—
14.2.2	Terminals for flexible and fixed conductors: appropriate flexible cord (mm²) .....:		—
14.2.3	Terminals not for external conductors: conductors of minimum cross-sectional area or as declared in Clause 7.2 (mm²).....:		—
14.3	In-line cord controls tested on a dull, black painted plywood		N/A
14.3.1	Independently mounted controls tested as in normal use		N/A
14.4	Electrical conditions		N/A
	- voltage (V): most unfavourable value between 0.94 and 1.06 times UR .....:		—
	- voltage (V) if circuit not voltage sensitive: min. 10% of UR .....:		—
	- current (A): most unfavourable value between 0.94 and 1.06 times I R .....:		—
14.4.1	For circuits and contacts other than for external loads, load(s) as specified by the manufacturer: voltage (V); current (A) .....:		—
14.4.2	Actuating members placed in most unfavourable position		N/A
14.4.3	Contacts initially closed at rated current and voltage		N/A
14.4.3.1	Temperature sensing controls:		N/A
	- temperature of sensing element is raised or lowered (5 ± 1) °C from operating temperature such that contacts are then in closed position		N/A
	- operating temperature (°C) .....:		—
	- temperature for heating test (°C) .....:		—
14.4.3.2	For controls other than temperature sensing, sensing element maintained as near to the point of opening as practical		N/A
14.4.3.4	The most arduous operating sequence or segment selected for other automatic controls		N/A
14.5	Controls were tested in an appropriate heating and/or refrigerating apparatus		N/A
14.5.1	Temperature of the switch head between T_{max} and (T_{max} + 5)°C, or T_{max} and 1.05 times T_{max} (whichever is greater) (°C) .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Mounting surface of the switch head maintained between T_s max and (T_s max+ 5)°C, or T_s max and 1.05 times T_s max (whichever is greater) (°C) .....:		N/A
14.5.2	In-line cord controls, independently mounted controls and parts of these controls accessible when control is mounted, tested at room temperature between 15 and 30 C (measured temperature corrected to a 25 °C reference value); measured temperature (°C) .....:		N/A
14.6	The temperatures specified for the switch head, the mounting surfaces and sensing element were attained in approximately 1 h		N/A
14.6.1	Electrical and thermal conditions maintained for 4 h, or for 1 h after steady state (h).....:		N/A
14.6.2	For controls designed for short-time or intermittent operation, the resting time(s) declared in Table 1, requirement 34, were included in the 4 h		N/A
14.7	The temperature of the medium in which the switch head is located, and the value of the activating quantity to which the sensing element is exposed, was measured approx. 50 mm from the control		N/A
14.7.1	The temperature was determined by means of fine wire thermocouples or other equivalent means, so chosen and positioned that they have the minimum effect on the temperature of the part under test		N/A
14.7.3	Temperature on parts which are gripped in normal use other than actuating members		N/A
14.7.4	The temperature of electrical insulation is determined on the surface of the insulation.....:	See attached TABLE 14.6 & 14.7	N/A

15	**MANUFACTURING DEVIATION AND DRIFT**		N/A
15.1	Adequate consistency of declared operating value etc. required for parts of controls providing Type 2 actions (applicable to controls where the output of the control is dynamic with respect to the activating quantity, e.g. Electromechanical thermostat)		N/A
15.2	Measurement of deviation and drift..... :	See attached TABLE 15.2 a) and 15.2 b)	N/A

16	**ENVIRONMENTAL STRESS**		P
16.1	Control can withstand the level of stress likely to occur in transportation and storage		P
16.2	Environmental stress of temperature		P

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Clause	Requirement + Test	Result - Remark	Verdict
16.2.1	Entire control (not energized) maintained for 24h at a temperature of (-10 ± 2)°C or as declared.....:	-10 ℃, 24h	P
	Entire control (not energized) maintained for 4h at a temperature of (60 ± 5)°C or as declared.....:	60 ℃, 4h	P
16.2.2	The control was not energized during testing		P
16.2.3	Control capable of being actuated at room temperature to provide disconnection as declared (without dismantling)		N/A
	The control was held at room temperature for 8 h prior to actuation		N/A
16.2.4	For controls with type 2 actions, the appropriate test of Clause 15 were repeated		N/A

17	**Endurance**		**P**
17.101	Limited short-circuit capability for thermal protectors classified under 6.101		P
17.101.1	Thermal motor protector classified under 6.101 subjected to short-circuit current test		P
17.101.1.1	Limited short-circuit test performed:		P
	- on the protector alone		P
	-on the protector installed as intended.		N/A
17.101.1.2	Compliance: -No ignition of cotton -accessible metal parts not live		P
17.101.1.3	Thermal motor protector connected to the common point of a star-connected three-phase motor not subjected to limited short-circuit test		N/A
17.101.1.4	Manual reset protector subjected to one test in which the short-circuit is closed on the protector.		N/A
17.101.1.5	Thermal motor protectors tested in motors are connected to the motor windings.		N/A
17.101.2	Limited short-circuit test		P
17.101.2.1	Three samples tested……:	2#-4#, 12#-14#	P
17.101.2.1.1	Tested within the motor		N/A
	Tested between two copper bars		P
17.101.2.1.2	Test circuit as shown in Fig 101		P
	Fuse rating……..:	20A	P
	Fuse according to IEC 60269-3 or equivalent		P
	Prospective current……:	1000A, 3500A	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Maximum voltage applied……:	250VAC,24VDC	P
	Power factor (＞0,9) ……..:	cosφ=0.95	P
17.101.2.1.3	Cross-sectional area of copper wire ……..:	2.5 mm^2	P
17.101.2.1.4	Cotton used to surround all openings of the motor or thermal motor protector. Cotton in compliance with the requirements of Annex C		P
17.101.2.1.5	Protector cycled during the test and the cotton did not ignite. Test continued until:		P
	-protector permanently opened the circuit; or,		
	-series fuse opened		
	Protector continued to cycle for 300 hr without damage – test discontinued.		N/A

18	**MECHANICAL STRENGTH**		**P**
18.1.1	Control constructed to withstand mechanical stress		P
18.1.2	Actuating members of class I and class II controls or for class I and class II equipment:		N/A
	- adequate mechanical strength, or		N/A
	- protection against electric shock is maintained if actuating member is broken		N/A
18.1.3	For integrated and incorporated controls impact resistance (18.2) to be tested by the equipment standard	Integrated control	P
18.1.3.101	Protectors located within the sealed motor compressor enclosure are subjected to the tests of 18.1.3.101.1 – 18.1.3.101.4.		N/A
18.1.3.101.1	Two samples exposed to external pressure, as declared; without:		N/A
	– collapsing, bending, warping or distorting the protective device to reduce the creepage and clearance distance between electrical parts		N/A
	-Short-circuiting the housing to internal current-carrying parts of the protective device; and		N/A
	-affecting electrical continuity between terminals of the protective device.		N/A
	Test pressure ……..:	Bars(psi)	N/A
18.1.3.101.2	Or, 60% of the test pressure declared by the manufacturer provided that the protector fulfils the requirements of the calibration test of 18.1.3.101.4 Test pressure ……..…:	Bars(psi)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	IN Canada and USA, higher or lower pressures declared……:		N/A
18.1.3.101.3	Pressure test medium……..:		N/A
	Hydraulic or hydrostatic system used		N/A
	Pressure increased gradually to the test pressure and maintained for 1 minute.		N/A
18.1.3.101.4	Samples mounted in air oven having forced air circulation at a velocity of at least 0,5 m/s Velocity of air in oven……:	m/s	N/A
	Thermocouples placed either:		N/A
	-On adjacent protector device		N/A
	-Located in air adjacent to the protector device		N/A
	Detection current of low-energy continuity-indicating circuit (mA/uA) ……..:		N/A
	Prior to cut-out or cut-in, temperatures of all parts of the protector maintained at 11K below the operating temperature and 11K above the reset temperature		N/A
	Rate of increase/decrease of temperature, no greater than 0,5 K/min Rate of increase/decrease of temperature ……..:	K/min	N/A
	Compliance:	See table 18.1.3.101.4 for data	N/A
	Difference in measured temperature within 5 K or 5%, whichever is greater, of the temperature measured prior to the pressure test. Calculated difference: ……..:	K / %	N/A

19	**THREADED PARTS AND CONNECTIONS**		**N/A**
19.1	Threaded parts to be moved during mounting or servicing		N/A
19.1.1	Treaded parts, electrical or otherwise which are likely to be operated while the control is being mounted or during servicing, withstand the mechanical stresses occurring in normal use.		N/A
19.1.2	Threaded parts: easily replaceable if completely removed		N/A
19.1.3	Thread		N/A
	- metric ISO thread or thread of equivalent effectiveness		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
19.1.4	Screw generating a thread:		N/A
	- thread cutting type screw not used		N/A
	- thread forming (swaging) type screws		N/A
19.1.5	Space threaded type screws: provided with means to prevent loosening		N/A
19.1.6	Threaded parts of non-metallic material not used if replacement by a dimensionally similar metal screw could impair compliance with Cl. 13 or 20:		N/A
19.1.7	Threaded parts: not of soft material or material liable to creep		N/A
19.1.8	Screws operating in a non-metallic thread: correct introduction of the screw into its counterpart ensured		N/A
19.1.9	In-line cord controls, threaded parts transmitting contact pressure:		N/A
	- diameter < 3 mm: threaded part of metal		N/A
	- diameter ≥ 3 mm: non-metallic allowed, but not used for electrical connection		N/A
19.1.10	Compliance was checked by Clauses 19.1.1 to 19.1.9 inclusive by inspection and by the test of Clauses 19.1.11 to 19.1.15		N/A
19.1.11	Threaded parts tightened and loosened:		N/A
	- one of threaded parts non-metallic material: 10 times		N/A
	- both parts of metallic material: 5 times		N/A
19.1.12	Screws in thread of non-metallic material: completely removed and reinserted each time		N/A
	Terminal screws and nuts: conductor fitted in the terminal (used in 10.1.4 or 10.2.1); cross-sectional area (mm^2) .....:		—
19.1.14	Conductor moved each time the threaded part is loosened		N/A
	- no damage impairing the further use of the threaded part		N/A
	- no breakage of screws		N/A
	- no damage to the slot head or washers		N/A
19.1.15	Torque test was made by means of a suitable test screwdriver, spanner or key, applying a torque without jerks according to Table 20 .....:	See attached TABLE 19.1.15	N/A
19.2	Current-carrying connections		N/A
19.2.1	- Not disturbed by mounting or servicing capable of withstanding the stresses in normal use.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
19.2.2	- subjected to torsion in normal use locked against movement		N/A
19.2.3	Contact pressure:		N/A
	- not transmitted through non-metallic material, or		N/A
	- sufficient resilience in the metallic part		N/A
19.2.4	Space threaded screws:		N/A
	- screws clamp current-carrying parts directly in contact with each other		N/A
	- provided with means of locking		N/A
19.2.4.1	- used to provide earthing continuity: at least two screws used for each connection		N/A
19.2.5	Thread cutting screws: screws produce a full-form standard machine screw thread		N/A
19.2.5.1	Thread cutting screws used to provide earthing continuity: at least two screws used for each connection		N/A
19.2.6	Current-carrying connection whose parts rely on pressure for correct function: resistant to corrosion (not inferior to that of brass)		N/A
	If not plated, e.g. bimetallic blades: parts are clamped into contact with parts resistant to corrosion		N/A
20	**CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH INSULATION**		N/A
	PCB: coating conforming requirement of IEC 60664-3 for type 2:		N/A
	PCB: coating meets requirements of 20.3		N/A
	PCB: creepage and clearance between conductors prior to coating does not exceed permissible values in Table 1 of IEC 60664-3:2003 (see Annex Q)		N/A
	Creepage and clearance between terminals for the connection of external conductors used for factory attachment or connection to ELV circuits is not less than 2 mm		N/A
	Creepage distances, clearances and distances through solid insulation in switch mode power supplies and other high frequency switching circuits where the fundamental frequency is above 30 kHz and less than 10 MHz are dimensioned in accordance with IEC 60664-4		N/A
20.1	Clearances		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Clearances are not less than case A from Table 22 taking into account the pollution degree and the rated impulse voltage required to serve the overvoltage categories of Table 21.....:	See attached Table 20	N/A
	Smaller distances used for basic insulation and functional insulation meet the impulse withstand requirement of Cl. 20.1.12; being rigid and construction is such that there is no likelihood of the distances being reduced by distortion or by movement of the parts; but the clearance is not less than the values for case B from Table 22		N/A
20.1.1	Basic Insulation - case A from Table 22 applies except as permitted in Cl. 20.1.7 .....:	See attached Table 20	N/A
20.1.1.1	Supplied from dedicated battery which has no provision for charging an external mains supply		N/A
20.1.2	Functional Insulation - case A from Table 22 applies except as permitted in Cl. 20.1.7, or .....:	See attached Table 20	N/A
	For electronic controls Cl. H27.1.3 met		N/A
20.1.3	Methods of measurement: Annex B and Fig. 17		N/A
20.1.3.1	Controls with equipment inlet and/or socket-outlet with connector / plug inserted and without		N/A
20.1.3.2	Controls with terminals for external conductors: without conductors and with conductors of largest cross-sectional area (mm²) (Cl. 10.1.4) .....:		—
20.1.3.3	Controls with terminals for internal conductors: without conductors and with conductors for minimum cross-sectional area (mm²) (Cl. 10.2.1) .:		—
20.1.4	Distances through slots or openings of insulating material measured to metal foil in contact with the surface, foil pushed into corners with test finger shown in Figure 2		N/A
20.1.5	Standard test finger applied to apertures as specified in Cl. 8.1: distances between live parts and metal foil not reduced below required values		N/A
20.1.6	Force (standard test finger) applied in an endeavour to reduce distances:		N/A
20.1.6.1	- 2 N force applied by standard test finger to any point on bare live parts accessible before control is mounted .....:		N/A
	- 30 N force applied by standard test finger to accessible surfaces after control mounted .....:		N/A
20.1.7	For basic and functional insulation, smaller distances permitted but no less than values specified in Case B of Table 22, provided that:		N/A
	- control meets the impulse test, Clause 20.1.12 and all parts are rigid and secure		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- no likelihood of the distance being reduced by distortion, by movement of the parts, or during assembly		N/A
	Impulse voltage applied across clearance of functional insulation		N/A
20.1.7.1	For micro-disconnection and micro-interruption:		N/A
20.1.7.2	Full disconnection – values from Table 22, case A applies to parts separated by switching element including contacts .....:	See attached Table 20	N/A
20.1.8	Clearances of supplementary insulation: not less than basic insulation, Table 22, case A .....:	See attached Table 20	N/A
20.1.9	Clearances of reinforced insulation: not less than those in Table 22, case A using the next higher step for rated impulse voltage .....:	See attached Table 20	N/A
20.1.10	Clearances of functional and basic insulation on secondary side in controls supplied from a double insulated transformer comply with Table 21 based on the secondary voltage .....:	See attached Table 20	N/A
	Clearances in controls supplied from a transformer without separate windings; rated impulse determined from Table 21 .....:	See attached Table 20	N/A
20.1.11	ELV circuits derived from supply using protective impedance, clearance of functional insulation determined from Table 21 and based on maximum working voltage in the ELV circuit .....:	See attached Table 20	N/A
20.1.12	Impulse voltage test, Cl 6.1.2.2.1 of IEC 60664-1:2007 applied between live parts and metal separated by basic or functional insulation (V).....:		N/A
20.1.13	For earthed secondary winding of a transformer, (or an earthed screen between windings) clearances on the secondary side: basic insulation > limits in Table 22 but using the next lower step for rated impulse voltage.....:	See attached Table 20	N/A
	For circuits supplied with a voltage lower than rated voltage, clearances of functional insulation are based on the working voltage .....:	See attached Table 20	N/A
20.2	Creepage distances		N/A
20.2.1	Creepage distances for basic insulation, per Table 23 for the rated voltage and based on material group and pollution degree		N/A
	- measurements.....:	See attached Table 20	N/A
	- 2 N force applied by standard test finger to bare conductors		N/A
	- 30 N force applied to accessible surfaces applied by standard test finger		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
20.2.2	Creepage distance for functional insulation, per Table 24 for working voltage and based on material group and pollution degree		N/A
	- measurements.....:	See attached Table 20	N/A
	- 2 N force applied by standard test finger to bare conductors		N/A
	- 30 N force applied to accessible surfaces applied by standard test finger		N/A
20.2.3	Creepage distance for supplementary insulation: not less than basic insulation - based on material group and pollution degree .....:	See attached Table 20	N/A
20.2.4	Reinforced insulation: double the value of basic insulation - based on material group and pollution degree		N/A
20.3	Solid Insulation		N/A
	Solid insulation is capable of durably withstanding electrical and mechanical stresses as well as possible thermal and environmental influences		N/A
20.3.2	For working voltages ≤ 300V, supplementary and reinforced insulation between metal parts		N/A
	- minimum 0.7mm thick; measured (mm).....:		N/A
20.3.2.1	Insulation is applied in thin sheet form, other than mica or similar scaly material		N/A
	- the supplementary insulation consists of at least two layers and each layer complies with Cl. 13.2 for supplementary insulation		N/A
	- the reinforced insulation consists of at least three layers and any two layers complies with Cl. 13.2 for reinforced insulation		N/A
20.3.2.2	The supplementary insulation or reinforced insulation is inaccessible and meets one of the following:		N/A
	- maximum temperature measured per Cl. 27 and H.27 doesn't exceed permissible values in Table 13		N/A
	- conditioned insulation complies with Cl. 13.2 at the oven and room temperatures.....:	See attached TABLE 13.2	N/A
	For optocouplers, the conditioning procedure carried out at a temperature of 25 K in excess of the maximum temperature measured on the optocoupler during the tests of Clauses 14, 27 and H.27 while operated under the most unfavourable conditions which occur during these tests		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
21	**RESISTANCE TO HEAT, FIRE AND TRACKING**		P
21.1	All non-metallic parts of the control were resistant to heat, fire and tracking.		N/A
21.2	Integrated, incorporated and in-line cord controls		N/A
21.2.1	Accessible parts (control correctly mounted):		N/A
	- ball-pressure test 1 (G.5.1) at temperature (°C)...:		—
	diameter of the impression ≤ 2.0mm (mm) .....:	See attached TABLE 21	N/A
	- glow-wire test (G2.) at 550 °C.....:	See attached TABLE 21	N/A
21.2.2	Parts retaining current-carrying parts in position (other than electrical connections):		N/A
	- ball-pressure test 2 (G.5.2) at temperature (°C)...:		—
	diameter of the impression ≤ 2.0mm (mm) .....:	See attached TABLE 21	N/A
	- glow-wire test (G2.) at 550°C..... :	See attached TABLE 21	N/A
21.2.3	Parts maintaining or retaining electrical connections in position:		P
	- ball-pressure test 2 at temperature (°C) .....:	See attached TABLE 21	—
	diameter of the impression ≤ 2.0mm (mm) .....:	See attached TABLE 21	P
	Glow-wire temperature levels according to IEC 60695-2-11		N/A
	- glow-wire test (G2.) at 650 °C.....:	See attached TABLE 21	N/A
	- glow-wire test (G2.) at 750 °C.....:	See attached TABLE 21	N/A
	- glow-wire test (G2.) at 850 °C.....:	See attached TABLE 21	P
21.2.4	Other parts (except small parts unlikely to be ignited):		P
	- glow-wire test (G2.) at 550 °C..... :	See attached TABLE 21	P
21.2.7	Resistance to tracking:		P
	Test procedure, see Annex G, Cl. G4; applied voltage corresponding to the PTI value declared Table 1, requirement 30 .....:	See attached TABLE 21	P
	Controls designed for operation at ELV levels were not subjected to a tracking test.		N/A
21.3	Independently-mounted controls		N/A
21.3.1	Preconditioning		N/A
	Controls without T rating:		N/A
	- circuit of switching part and driving mechanism not connected, detachable parts (covers) removed		N/A
	- temperature (°C): (80 ± 2) °C, 1 x 24 h.....:		—
	Controls with T rating up to 85°C:		N/A
	- switching circuit and driving mech.- not connected, without covers: temperature (°C): (80 ± 2)°C, 1 x 24 h .....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	- switching circuit and driving mech. Connected, with covers: temperature (°C): (Tmax ± 2) K, 6 x 24 h .....:		—
	Controls with T rating higher than 85 °C:		N/A
	- switching circuit and driving mech. Connected, with covers: temperature (°C): (Tmax ± 2) K, 6 x 24 h .....:		—
21.4	Controls with mercury-tube switch, subjected to short-circuit test:		N/A
	- working voltage, ac/dc .....:		—
	- maximum power rating (VA) .....:		—
	- short-circuit current (A) .....:		—
	- fuse rating (A) .....:		—
	- no ignition of cotton placed around openings		N/A
	- no emission of flame or molten metal (except mercury from the enclosure housing the switch)		N/A
	- wiring not damaged except tube leads		N/A
22	**RESISTANCE TO CORROSION**		N/A
22.1.1	Ferrous parts protected against corrosion Note: No test is required for component parts within hermetically sealed enclosures.		N/A
22.1.2	Test not required on temperature sensing elements and other component parts adversely affected by protective treatment		N/A
22.1.4	Control or parts stored in a humidity cabinet for 14 days:		N/A
	- temperature (°C): (40 ± 2) °C .....:		—
	- relative humidity (%): 93-97% .....:		—
22.1.5	Control or parts dried in a heating cabinet: for 10 min:		N/A
	- Temperature (°C): (100 ± 5) °C .....:		—
	After parts were dried: no evidence of corrosion on surfaces		N/A
22.1.6	Traces of rust on sharp edges and yellowish film that was removable by rubbing were ignored		N/A
23	**ELECTROMAGNETIC COMPATIBILITY (EMC) REQUIREMENTS – EMISSION**		N/A
23.1	Free-standing and independently mounted controls, which cycle during normal operation, are so constructed that they do not generate excessive radio interference and were evaluated to:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- CISPR 14-1 (in 4.2.3.3 of CISPR 14-1:2005, the value of 200 ms is replaced by 20 ms) and/or CISPR 22, class B or		N/A
	- to clauses 23.1.1 and 23.1.2 or		N/A
	- to show minimum time between contact operations during normal operation < 10 minutes		N/A
23.1.1	Electrical and thermal conditions for EMC test as specified in 17.2 and 17.3:		N/A
	- for sensing controls: rate of change is α_1 and β_1		N/A
	- For non-sensing controls: operated at the lowest contact operating speed.		N/A
	- inductive loads – pf 0.6; resistive loads – pf 1		N/A
23.1.2	Control operated for 5 cycles		N/A
	- duration of radio interference; < 20ms.....:		N/A
23.2	Controls for ISM (Industrial, Scientific and Medical) equipment and free-standing, independently mounted and in-line cord controls for use with ISM equipment's comply with CISPR 11		N/A
24	**COMPONENTS**		N/A
24.1	Transformers intended to supply power to a SELV-circuit or PELV-circuit are of the safety isolating type and comply with the relevant requirements of IEC 61558-2-6		N/A
	Capacitors connected between two line conductors for between a line conductor and the neutral or between hazardous live parts and protective earth are in accordance with IEC 60384-14 and used in accordance with its rated values		N/A
	Fuses comply with requirements of IEC 60127-1 or IEC 60269-1		N/A
24.1.1	Controls that incorporate a transformer as the source of supply to a SELV-circuit or PELV-circuit were subjected to an output test with the primary energized at the upper limit of the rated voltage		N/A
	Switch mode power supplies or transformers used in converters comply with the requirements of IEC 61558-2-16		N/A
	Under any non-capacitive conditions of loading (from no load to the short-circuiting of any or all secondary SELV- or PELV-circuit terminals) and without disturbing internal connections, the secondary output voltage did not exceed limits specified in 2.1.5		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The secondary output power at the terminals to an isolated limited secondary circuit did not exceed 100 VA and the secondary output current did not exceed 8 A after 1 min of operation with overcurrent protection .....:	See attached TABLE 24.1	N/A
24.2	Components other than those of 24.1: checked when carrying out the tests of this standard or/and complies with appropriate safety standard .....:	See attached TABLE 24.1 / 24.2	N/A
24.3	Annex U is not applicable to relays used as components in a control. ..... :		N/A
24.4.1	Overload test for switch mode power supplies not covered under 24.2.1		N/A
24.4.1.1	Each output winding, or section of a tapped winding, is overloaded in turn, one at a time, while the other windings are kept loaded or unloaded, whichever load conditions of normal use is the least favourable		N/A
24.4.1.2	The overload is carried out by connecting a variable resistor (or an electronic load) across the winding or the rectified output		N/A
	The resistor is adjusted as quickly as possible and readjusted after 1 min to maintain the overload		N/A
	No further readjustments are done after that		N/A
24.4.1.3	Any protective devices such as a fuse, manual reset circuit protector, thermal protector, etc. remained in the circuit		N/A
24.4.1.4	When overcurrent protection is provided by a current-breaking device, the overload test current is the maximum current which the overcurrent protection device is just capable of passing for 1 h		N/A
24.4.1.5	When no overcurrent protection is provided, the maximum overload is the maximum power output obtainable from the power supply		N/A
24.4.1.6	In case of voltage fold-back, the overload was slowly increased to the point where the output voltage drops by 5 %. The overload is then established at the point where the output voltage recovers and held for the duration of the test..... :	See attached TABLE 24.4.1.6	N/A
24.4.1.7	The duration of the test was 1 h or until ultimate results are reached, (h) .....:		N/A
24.4.1.8	The maximum open-circuit voltage of each winding (directly at the winding of the transformer) and the maximum load current are measured and recorded such that the maximum output power may be determined.....	See attached TABLE 24.4.1.8-24.4.1.10	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
24.4.1.9	The maximum open circuit voltage measurements was made during normal operation and under single component failure .....:	See attached TABLE 24.4.1.8-24.4.1.10	N/A
24.4.1.10	For SELV applications, where the maximum open circuit voltage measured directly at the secondary of the transformer exceeds the limits specified in 2.1.5, the measurement of the maximum output voltage of each winding may be made after certain protective impedances .....:	See attached TABLE 24.4.1.8-24.4.1.10	N/A
24.4.1.11	While still in heated condition, the transformer was subjected to electric strength test of 13.2		N/A
24.5	Annex J is not applicable to thermistors used in controls that are declared to be Type 1 action, SELV/PELV and low power specified in H.27.1.1.1		N/A
25	**NORMAL OPERATION**		N/A
	Meets requirements per annex H .....:	See annex H	N/A
25.2	Over-voltage and under-voltage test (for controls incorporating electro-magnets) .....:	See attached TABLE 25.2	N/A
26	**ELECTROMAGNETIC COMPATIBILITY (EMC) REQUIREMENTS – IMMUNITY**		N/A
	Meets requirements per Cl. H.26 .....:	See clause H.26	N/A
27	**ABNORMAL OPERATION**		N/A
27.2	Burnout test (for controls incorporating electro-magnets)		N/A
27.2.1	Control mechanism blocked in position when control is de-energized:		N/A
	- energized at rated frequency and rated voltage (17.2.2, 17.2.3 and 17.2.3.2)		N/A
	- duration: 7 h or until burnout .....:		N/A
27.2.2	Compliance (burnout test):		N/A
	- no emission of flame or molten metal after test		N/A
	- no evidence of damage impairing compliance with this standard		N/A
	- no evidence of dielectric breakdown (Cl. 13.2)		N/A
27.2.3	Blocked mechanical output test (abnormal temperature test)		N/A
	During blocked output test: Temperatures did not exceed indicated limits in Table 26 .....:	See attached TABLE 27.2.3	N/A
	Test not required on controls, if no protective device cycles and temperatures exceed limits in Table 13		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Test carried out at room-temperature and rated voltage (V) for 24h .....:		N/A
27.2.3.2	The average temperature was within the limits during both the second and the twenty-fourth hours of the test		N/A
27.2.3.3	During the test, power was continually supplied to the motor		N/A
27.2.3.4	Immediately upon completion of the test, the motor was capable of withstanding the electric strength test (Clause 13)		N/A
27.5	Overload tests		N/A
	Controls without protective devices and without incorporated fuses loaded for 1 h with the conventional tripping current for the fuse, anticipated during installation.....:	See attached TABLE 27.5	N/A
	Controls protected by protective devices (including fuses) loaded such that an overload current of 0.95 times the protective device rating flows through the circuit for 4 hours or until temperatures stabilize, whichever is shorter.....:	See attached TABLE 27.5	N/A
	Controls protected by incorporated fuses -fuses shunted by links of negligible impedance -control loaded to 2.1 times the rated current of the fuse - temperature rise measured after the control has been loaded for 30 min. - values 2,1 times can be de-rated by 0,5 %K if test is carried out at a higher temperature compared to normal room temperature.....:	See attached TABLE 27.5	N/A
	Controls protected both by incorporated fuses and by protective devices loaded to the lowest load (most onerous) of either test method.....:	See attached TABLE 27.5	N/A
	Controls protected by protective devices which will short-circuit only in case of overload are tested both as controls with protective devices and as controls without protective devices .....:	See attached TABLE 27.5	N/A
27.5.2	Overload tests carried out on in-line cord controls as indicated in 11.10.2 and provided with a plug and socket outlet		N/A
27.5.3	For controls not covered by 27.5.2		N/A
27.6	Battery short-circuit test		N/A
	Batteries that can be removed without the aid of a tool and terminals that can be short-circuited by a thin straight bar are subjected to a short-circuit condition across its terminals with the battery being fully charged, for 1 h or ultimate condition exists.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
27.6.1	Compliance: - no emission of flame or molten metal and no evidence of damage to the control - requirements of 13.2 met		N/A
28	**GUIDANCE ON THE USE OF ELECTRONIC DISCONNECTION**		N/A
	Meets requirement per annex H .....:		N/A
A	**ANNEX A – INDELIBILITY OF MARKING**		P
A.1	Classification of markings		P
A.1.1	Markings which are not mandatory		N/A
A.1.2	Markings which are mandatory but not accessible to the final user		P
A.1.3	Markings which are mandatory and accessible to the final user		N/A
A.1.4	Permanence of marking test		N/A
	- solvents: neutral liquid detergent or 2% deionized (distilled) water with specified solvent.....:		—
	- solvents: n-hexane .....:		—
	- solvents: deionized (distilled) water .....:		—
A2	Test of indelibility of markings classified in A1.2		N/A
A2.1	Drops of detergent standing on the marked surface, duration (h): 4 h .....:		—
	Drops removed by fine spray of warm water (40 ± 5 °C) or by lightly wiping .....:		—
A2.2	Allowed to dry completely at (25 ± 5) °C.....:		—
A2.3	Rubbed in the apparatus (Fig. 8) with dry lint, weight 250 g, duration (s): 15 s		N/A
A2.4	Rubbed in the apparatus (Fig. 8) with water-soaked lint, weight 250 g, duration (s): 15 s		N/A
A2.6	Marking after these tests still legible		N/A
A3	Test of indelibility of markings classified A.1.3		N/A
A3.1	Rubbed in the apparatus (Fig. 8) with dry lint, weight 750 g, duration (s): 15 s		N/A
A3.2	Rubbed in the apparatus (Fig. 8) with water-soaked lint, weight 750 g, duration (s): 15 s		N/A
A3.3	Drops of detergent standing on the marked surface: duration (h): 4 h .....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Then removed by fine spray of warm water (40 ± 5 °C) or by lightly wiping .....:		—
A3.4	After sample was dried, marking rubbed (apparatus Fig. 8) with detergent soaked lint, weight 750 g, duration (s): 15 s		N/A
A3.5	Marking rubbed in apparatus with petroleum spirit soaked lint, weight 750 g, duration (s): 15 s		N/A
A3.7	Marking after these tests still legible		N/A
D	**ANNEX D – HEAT, FIRE AND TRACKING**		N/A
	Canada and USA national difference		N/A
G	**ANNEX G – HEAT AND FIRE RESISTANCES TESTS**		P
G.2	Glow-wire test: Performed in accordance with IEC 60695-2-10 and IEC 60695-2-11.		P
G.4	Proof tracking test: Performed in accordance with IEC 60112.		P
G.5	Ball pressure test: Performed in accordance with IEC 60695-10-2.		P
G.5.1	Ball-pressure test 1		N/A
	Temperature during ball pressure, the higher of:		N/A
	- 20 °C ± 2 K in excess of the maximum temperature during test Cl. 14 (°C), or.....:	See attached TABLE 21	—
	- 75 ± 2°C, or .....:	See attached TABLE 21	—
	- as declared (°C) .....:	See attached TABLE 21	—
G.5.2	Ball-pressure test 2		P
	Temperature during ball pressure test is Tb ± 2 °C where Tb is equal to the higher of:		P
	- Tb (°C): 100 °C if Tmax = 30-54 °C .....:	See attached TABLE 21	—
	- Tb (°C): 125 °C if Tmax = 55-84 °C.....:	See attached TABLE 21	—
	- Tb (°C): (Tmax + 40) °C if Tmax ⟨ 85 °C .....:	See attached TABLE 21	—
	- Tb (°C): 20 K in excess of the max. temperature during tests of Cl. 14 (°C), if higher.....:	See attached TABLE 21	—
H	**ANNEX H – REQUIREMENTS FOR ELECTRONIC CIRCUITS**		N/A
H.6	Classification, additions:		—
H.6.4.3.13	- electronic disconnection on operation (Type 1.Y - 2.Y) .....:		—
H.6.9.5	- electronic disconnection		N/A
H.6.18	Class of control function (A, B, C).....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
H.7	**Information in addition to Table 1 provided**		N/A
	36 - Replacement: limits of activating quantity for any sensing element over which electronic or micro-disconnection is secure; clause: 11.3.2, H11.4.16, H17.14, H18.1.5, H27.1.1, H.28; (Method: X) .....:		N/A
	52 - The minimum parameters of any heat dissipater (e.g. heat sink) not provided with an electronic control but essential to its correct operation; clause: 14; (Method: D).....:		N/A
	53 - Type of output waveform if other than sinusoidal; clause: H25; (Method: X) .....:		N/A
	54 - Details of the leakage current waveform produced after failure of the basic insulation; clause: H27; (Method: X).....:		N/A
	55 - The relevant parameters of those electronic devices or other circuit components considered as unlikely to fail (see paragraph 1 of H27.1.1.4); clause: H27; (Method: X).....:		N/A
	56 - Type of output waveform(s) produced after failure of an electronic device or other circuit component (see item g) of H27.1.1.3); clause: H27; (Method: X) .....:		N/A
	57 - The effect on controlled output(s) after electronic circuit component failure if relevant (item c) of H27.1.1.3); clause: H27; (Method: X)....:		N/A
	58a - For integrated and incorporated electronic controls, if any protection against mains borne perturbations, magnetic and electro-magnetic disturbances is claimed, which of the tests of Cl. H26 must be performed and the effect on controlled output(s) and function after a failure to operate as a result of each test; clause: H26.2, H26.15; (Method: X) .....:		N/A
	58b - For other than integrated and incorporated electronic controls, the effect on controlled output(s) and function after a failure to operate as a result of the tests of Cl. H26; clause: H26.2, H26.15; (Method: X) .....:		N/A
	59 - Any component on which reliance is placed for electronic disconnection which is disconnected as required by footnote n to Table 12; clause: 13.2, H27.1; (Method: X) .....:		N/A
	60 - Category (surge immunity); clause: H26.8.2, Annex R; (Method: X).....:		N/A
	66 - Software sequence documentation; clause: H11.12.2.9; (Method: X) .....:	See IEC 60730-1 Software Report	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	67 - Program documentation; clause: H11.12.2.9, H11.12.2.12; (Method: X) ..... :	See IEC 60730-1 Software Report	N/A
	68 - Software fault analysis; clause: H11.12, H27.1.1.4; (Method: X) ..... :	See IEC 60730-1 Software Report	N/A
	69 - Software class(es) and structure; clause: H.11.12.2, H.11.12.3, H.27.1.2.2.1, H.27.1.2.3.1; (Method: D) ..... :	See IEC 60730-1 Software Report	N/A
	70 - Analytical measures and fault/error control techniques employed; clause: H.11.12.1.2, H.11.12.2.2, H.11.12.2.4; (Method: X) ..... :	See IEC 60730-1 Software Report	N/A
	71 - Software fault/error detection time(s) for controls with software Classes B or C; clause: H2.17.10, H11.12.2.6; (Method: X) ..... :	See IEC 60730-1 Software Report	N/A
	72 - Control response(s) in case of detected fault/error; clause: H.11.12.2.7; (Method: X) ..... :	See IEC 60730-1 Software Report	N/A
	73 - Controls subjected to a second fault analysis and declared condition as a result of the second fault; clause H.27.1.2.3; (Method: X) ..... :		N/A
	74 - External load and emission control measures to be used for test purposes; clause H.23.1.1; (Method: X) ..... :		N/A
	91 - Fault reaction time; cl. H.2.23.2, H.27.1.2.2.2, H.27.1.2.2.3, H.27.1.2.3.2, H.27.1.2.3.3 , H.27.1.2.4.2, H.27.1.2.4.3; (Method: X) ..... :		N/A
	92 - Class or classes of control function(s); clause H.6.18, H.27.1.2.2, H.27.1.2.3; (Method: X) ..... :		N/A
	93 – Maximum number of reset actions within a time period; H.11.12.4.3.6, H.11.12.4.3.6; (Method: D) ..... :		N/A
	94 – Number of remote reset actions; H.17.1.4.3; (Method: X) ..... :		N/A
H.8	**Protection against electric shock**		N/A
H.8.1.10	Accessible parts separated from the supply by protective impedance; identification of circuit ..... :		—
H.8.1.10.1	Maximum current between accessible parts and the protective earth conductor in normal configuration and with supply poles interchanged:		N/A
	- 0.7 mA (peak value) a.c.; current (mA) ..... :		N/A
	- 2 mA d.c.; current (mA) ..... :		N/A
	- if frequency f > 1 kHz: current (mA): 0.7 x f (kHz) < 70 mA; f (kHz) ..... :		N/A
	Maximum capacitance		N/A
	- peak value (V) ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- 42.4 V < V ≤ 450 V capacitance C (μF): ≤ 0.1 μF .....:		N/A
	- 450 V < V ≤15 kV: capacitance C (μF): C x V ≤ 45 μC; calculated C_{max} (μF) .....:		N/A
	- V > 15 kV: capacitance C (μF): C x V^2 ≤ 350 μJ; calculated C_{max} (μF) .....:		N/A
H.11	**Constructional requirements**		N/A
H.11.2.5	Protection against electric shock – protective impedance (chain):		N/A
	- consists of at least 2 impedances in series		N/A
	- connected between live and accessible parts		N/A
	- consists of components in which the probability of a reduction in impedance during life can be ignored and the possibility of a short circuit is negligible		N/A
	- type of resistors (Table H.24 footnote c)		N/A
	- resistors comply with IEC 60065:2001, Amendment 1:2005, cl. 14.1		N/A
	- capacitors comply with IEC 60384-14, class Y		N/A
	Requirements of H.8.1.10 still met: leakage current (mA) .....:		N/A
H.11.4	Actions:		N/A
H.11.4.16	- Type 1.Y and 2.Y action provides electronic disconnection.		N/A
H.11.4.16.1	Test carried out with control:		N/A
	- connected to maximum load		—
	- supplied with rated voltage (V) .....:		—
	- at temperature T_{max} (°C) .....:		—
H.11.4.16.2	Current through electronic disconnection not exceeding the lower of:		N/A
	- 5 mA (mA) .....:		N/A
	- 10% of the rated current (mA) .....:		N/A
H.11.12	**Controls using software** .....:	See IEC 60730-1 Software Report	N/A
H.17	**Endurance**		N/A
H.17.1	General requirements		N/A
H.17.1.4	Electronic controls with Type 1 action: no endurance test (unless necessary for testing of associated components)		N/A
H.17.1.4.1	Electronic controls with Type 2 action: thermal cycling test (H.17.1.4.2) executed		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
H.17.1.4.2	Thermal cycling test: conditions forming the basis of the test:		N/A
	a) Duration (h) .....:		—
	b) Electrical conditions:		—
	- loaded, according to manufacturer's declaration .:		—
	- voltage (V): 1.1 times Vr.....:		—
	- for 30 min. of each 24 h period: voltage (V): 0.9 times Vr .....:		—
	- during each 24 h period: duration of supply switched off (s); 30 s .....:		—
	- change of voltage not synchronized with change of temperature		—
	c) Thermal conditions: temperature (ambient and/or mounting surface) varied between:		—
	- T_{max} (T_s max) (°C) .....:		—
	- T_{min} (T_s min) (°C) .....:		—
	- rate of change: 1 °C/min		—
	- extremes maintained: 1 h		—
	d) Rate of operation: cycled at the fastest rate possible, max. 6 cycles/min) (cycles/min) .....:		—
	If operational mode to be set by the user:		N/A
	- 1/3 test period: maximum setting		N/A
	- 1/3 test period: intermediate setting		N/A
	- 1/3 test period: minimum setting		N/A
	According to these requirements:		—
	- duration of heating period (h) .....:		—
	- duration of maintaining max.temperature (h) .....:		—
	- duration of cooling period (h) .....:		—
	- duration of maintaining min. temperature (h) .....:		—
	- duration of 1 complete cycle (h) .....:		—
	- total number of cycles executed .....:		—
H.17.1.4.3	Controls with remote reset actions		N/A
	Independently mounted devices: test for a minimum 1000 reset actions .....:		N/A
	Integrated/Incorporated devices: minimum reset cycles as declared by the manufacturer .....:		N/A
	After the test, the reset device can rest the system as intended		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Unintended resets did not occur.		N/A
H.17.14	Evaluation of compliance: For types 1.Y and 2.Y controls, Clause H.11.4.16 met		N/A
H.18	**Mechanical Strength**		N/A
H.18.1.5	For controls providing electronic disconnection (type 1.Y or 2.Y), the requirements of H.11.4.16 were met		N/A
H.20	**Creepage distances, clearances and distances through insulation**		N/A
H.20.1.15	Electronic controls		N/A
H.20.1.15.1	Spacing between live parts (supply) and accessible surfaces and parts		N/A
H.20.1.15.2	Across protective impedances: double or reinforced insulation		N/A
	Across each component: supplementary insulation		N/A
H.20.1.15.3	Providing functional insulation		N/A
H.23	**Electromagnetic compatibility (EMC) requirements – Emission**		N/A
H.23.1	Electronic controls do not emit excessive electric or electromagnetic disturbances		N/A
H.23.1.1	Low frequency emission, disturbances in supply systems: controls other than integrated or incorporated that directly control an external load except pilot duty: comply with IEC 61000-3-2 and IEC 61000-3-3.		N/A
H.23.1.2	Radio frequency emission: free-standing, independently mounted and in-line cord controls using software, oscillating circuits etc comply with CISPR 14-1 and/or CISPR 22, Class B, as indicated in Table H.12		N/A
	Free-standing, independently mounted and in-line cord controls for use with ISM equipment comply with CISPR 11		N/A
H.25	**Normal operation**		N/A
H.25.1	The output waveform of electronic controls was as declared		N/A
	The output waveform of the control was examined under all normal operating conditions and was either sinusoidal or as declared in Table 1, requirement 53		N/A
H.26	**Electromagnetic compatibility (EMC) requirements – Immunity**		N/A
	Electromagnetic compatibility (EMC) requirements	See Immunity Test Report	N/A
H.27	**Abnormal operation**		N/A
H.27.1	Electronic controls – assessment against internal faults		N/A
H.27.1.1.1	Fault conditions in H.27.1.1.5 not applied if:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- electronic circuit is a low-power circuit and		N/A
	- protection against electric shock, fire hazard or dangerous malfunction does not rely on the correct functioning of the electronic circuit		N/A
	- measurement of low-power circuit according to Cl. H.27.1.1.1 ..... :	See attached TABLE H.27.1.1.1	N/A
	- circuit under evaluation .....:		—
	- max. power consumed by the variable resistor (W): ≤ 15 W, 5 s .....:		—
	Electronic circuits operating to ensure compliance with Cl. H.27: relevant test to be repeated with a single fault simulated as indicated in H.27.1.4, items 1) to 5)		N/A
H.27.1.1.2	Operating conditions:		N/A
	a) at most unfavourable voltage (V): range: 0.9-1.1 times VR .....:		—
	b) load producing the most onerous effect: kind of load; significant values .....:		—
	c) ambient temperature (°C): (20 ± 5) °C or other .:		—
	d) fuse (supply), rating (A) such that test result not influenced by operation of the fuse .....:		—
	e) actuating member in the most unfavourable position .....:		—
H.27.1.1.3	Requirements, evaluation of compliance:		N/A
	a) no emission of flames or hot metal or hot plastics		N/A
	b) temperature of supplementary and reinforced insulation:		N/A
	- not exceeding 1.5 times value specified in Cl. 14		N/A
	- exception: thermoplastic material		N/A
	c) change in the output as declared in Table 1, requirement 57		N/A
	d) control continuous to comply with requirements of Cl. 8 and Cl. 13.2 for basic insulation		N/A
	e) no deterioration of parts that would result in failure to comply with requirements of Cl. 20		N/A
	f) no rupture of fuse use supply, or		N/A
	- rupture with operation of an internal protecting device		N/A
	Internal protecting device not required since sample, after replacement of the fuse in the supply, complied:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- with a), b) and d) of H.27.1.1.3		N/A
	- with requirements of Cl. 20 for accessible distances from active parts to accessible surfaces (control mounted as for its intended use)		N/A
	g) output waveform as declared in Table 1, requirement 56		N/A
H.27.1.1.5	Electronic circuit fault conditions per table H.24.....:	See attached TABLE H27.1	N/A
H.27.1.1.6	Motor load, if failure or malfunction causes change in the supply waveform to the controlled motor:		N/A
	1) load (normal waveform) adjusted to 6 times rated load, or		N/A
	- locked rotor rating declared		N/A
	2) fault conditions introduced		N/A
	3) test conditions per H.27.1.2		N/A
	a) unfavourable voltage (V) .....:		—
	c) ambient temperature (°C) .....:		—
	d) fuse rating (A) .....:		—
	e) actuating member .....:		—
	evaluation of compliance per H.27.1.3 a) to e)		N/A
H.27.1.2	Protection against internal faults to ensure functional safety		N/A
H.27.1.2.1	Design and construction requirements		N/A
H.27.1.2.1.1	Fault avoidance and fault tolerance		N/A
	Controls incorporating control functions of class B or C are designed according to H.27.1.2 taking into account the failure modes of Table H.24 and H.11.12 for software, if applicable		N/A
	The system configuration is either: • inherently failsafe or		N/A
	• components with direct safety-critical functions are guarded by safeguards in accordance to H.11.12 software class B or C		N/A
	- safeguards are built into hardware and can be supplemented by software		N/A
	- safeguards can cause a completely independent safety-shut-down		N/A
	Time slot monitoring is sensitive to both an upper and a lower limit of the time interval.		N/A
	In a class C control function if a single fault in a primary safeguard can render the safeguard inoperative, a secondary safeguard is provided		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The reaction time of the secondary safeguard is in accordance with Clause H.27.1.2.3.		N/A
	Components are dimensioned on the basis of the worst-case conditions which can arise in the control, as stated by the manufacturer		N/A
H.27.1.2.1.2	Documentation		N/A
	The documentation is based on H.11.12.3.2		N/A
	The functional analysis of the control and the safety related programs under its control are documented in a clear hierarchical way in accordance with the safety philosophy and the program requirements		N/A
	Minimum documentation provided for assessment:		N/A
	• A description of the system philosophy, the control flow, data flow and timings.		N/A
	• A clear description of the safety philosophy of the system with all safeguards and safety functions clearly indicated. Sufficient design information is provided to enable the safety functions or safeguards to be assessed		N/A
	• Documentation for any software within the system		N/A
	Programming documentation is supplied in a programming design language declared by the manufacturer.....:		N/A
	Safety related data and safety related segments of the operating sequence are identified and classified according to H.11.12.3.2		N/A
	There is a clear relationship between the various parts of the documentation		N/A
H.27.1.2.2	Class B control function		N/A
H.27.1.2.2.1	Design and construction requirements		N/A
	A class B control function is designed such that under single fault conditions it remains in or proceeds to the defined state.		N/A
	Software complies with software class B		N/A
	The assessment is performed according to H.27.1.2.2.2 and H.27.1.2.2.3 and under the test conditions and criteria of H.27.1.2.5		N/A
H.27.1.2.2.2	First fault		N/A
	Any first fault (see Table H.24) in any one component or any one fault together with any other fault arising from that first fault results in either:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	a) the control becomes inoperative with all safety related output terminals de-energized or assumes a status in which they ensure a safe situation; or		N/A
	b) the control reacts within the fault reaction time (see Table 1, requirement 91) by proceeding to a defined state, provided that subsequent reset from the defined state under the same fault condition results in the system returning to the same defined state; or		N/A
	c) the control continuous to operate, the fault is identified during the next start-up sequence, the result is a) or b); or .....:		N/A
	d) the control remains operational in accordance with the safety related functional requirements of the relevant part 2		N/A
H.27.1.2.2.3	Fault introduced during defined state		N/A
	Any first fault (together with any other fault arising from that fault) in any one component (see Table H.24), induced while the control stays in the defined state, results in either:		N/A
	a) The control remains in defined state, safety related output terminals remaining de-energized; or		N/A
	b) The control becomes inoperative with all safety related output terminals remaining de-energized; or		N/A
	c) the control comes again in operation resulting in a) or b) as mentioned in this clause under the condition that the safety related output terminals are energized not longer than the fault reaction time (see Table 1, requirement 91)		N/A
	If the cause of the original defined state condition no longer remains and the control comes in operation again, it operates in accordance with the safety related functional requirements of the relevant part 2		N/A
	The relevant part 2 specifies the fault reaction time as well as the applicability of c).....:		N/A
H.27.1.2.3	Class C control function		N/A
H.27.1.2.3.1	Design and construction requirements		N/A
	A class C control function is designed such that under first and second fault conditions it remains in or proceeds to the defined state.		N/A
	Software complies with software class C		N/A
	The assessment is performed according to H.27.1.2.3.2, H.27.1.2.3.3 and H.27.1.2.4 and under the test conditions and criteria of H.27.1.2.5.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
H.27.1.2.3.2	First fault		N/A
	Any first fault (see Table H.24) in any one component or any one fault together with any other fault arising from that first fault results in either:		N/A
	a) the control becomes inoperative with all safety related output terminals de-energized or assumes a status in which they ensure a safe situation;		N/A
	b) the control reacts within the fault reaction time (see Table 1, requirement 91) by proceeding to a defined state, providing that subsequent reset from the defined state condition under the same fault condition results in the system returning to the defined state;		N/A
	c) the control continuous to operate, the fault is identified during the next start-up sequence, the result is a) or b); .....:		N/A
	d) the control remains operational in accordance with the safety related functional requirements of the relevant part 2		N/A
	The relevant part 2 specifies the fault reaction time as well as the applicability of c) .....:		N/A
H.27.1.2.3.3	Second fault		N/A
	Any further independent fault considered together with the first fault results in either H.27.1.2.3.2 a), b), c) or d). During assessment, the second fault has only to be considered to occur:		N/A
	a) Either when a start-up sequence has been performed between the first and the second fault, or		N/A
	b) 24 h after the first fault.		N/A
	The relevant part 2 specifies the applicability of a) or b) and the fault reaction time (see Table 1, requirement 91) .....:		N/A
H.27.1.2.4	Faults during defined state		N/A
H.27.1.2.4.2	First fault introduced during defined state		N/A
	Any first fault (together with any other fault arising from that fault) in any one component (see Table H.24), induced while the control is staying in the safety-shut-down position, results in either:		N/A
	a) The control remaining in a defined state, safety related output terminals remaining de-energized or in a status in which they ensure a safe situation;		N/A
	b) The control becoming inoperative with all safety related output terminals remaining de-energized or assuming a status in which they ensure a safe situation;		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	c) The control comes again in operation resulting in a) or b) under the condition that the safety related output terminals are energized no longer than the fault reaction time (see Table 1, requirement 91)		N/A
	If the cause of the original safety shut-down condition no longer remained and the control came again in operation, it operated according to the safety related functional requirements of relevant Part 2 and the second fault assessment was carried out in accordance with H.27.1.2.3.3.		N/A
H.27.1.2.4.3	Second fault introduced during defined state		N/A
	Any second fault (together with any other fault arising from that fault) in any one component (see Table H.24), induced while the control is staying in the defined state, results in either H.27.1.2.4.2 a), b) or c) .....:		N/A
	Fault reaction time specified in relevant part 2 .....:		N/A
	It may specify a different time span in which the second fault does not occur, if different from 24 h .:		N/A
H.27.1.2.5	Circuit and construction evaluation		N/A
H.27.1.2.5.1	Test conditions		N/A
	The fault is considered to have occurred at any stage in the control program sequence.		N/A
	The control is operated or considered to operate under the following conditions:		N/A
	a) at the most unfavourable voltage in the range 85 % to 110 % of the rated supply voltage (V) .....:		—
	b) loaded with the most unfavourable load declared by the manufacturer.....:		—
	c) in an ambient temperature of (20 ± 5) °C, unless there are significant reasons for conducting the test at another temperature within the manufacturer's declared range; (°C) .....:		—
	d) with any actuating member placed in the most unfavourable position;		N/A
	e) with tissue paper placed on the supporting surface(s) of the control;		N/A
	f) with sparks of about 3 mm in length and having an energy of not less than 0,5 J applied to those components which are likely to liberate flammable gases during the test		N/A
H.27.1.2.5.2	Test criteria		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	During the appraisal, it is verified that under the conditions described above, the following criteria are satisfied.		N/A
	a) The control does not emit flames, hot metal or hot plastics, the tissue paper does not ignite, no explosion results from the liberation of flammable gases and any flame produced does not continue to burn for more than 10 s after switching off the spark generator		N/A
	When a control is incorporated with any appliance, any enclosure afforded by the appliance is taken into consideration		N/A
	b) If the control continues to function, it complies with Clauses 8 and 13 or Clauses 8 and 13 of the relevant part 2.		N/A
	If it ceases to function, it still continues to comply with Clause 8 or Clause 8 of the relevant part 2		N/A
	c) There is no loss of protective function		N/A
	After tests there is no deterioration of the various parts of the control that result in failure to comply with Clause 20 or Clause 20 of the relevant part 2.		N/A
H.27.1.2.5.3	Assessment		N/A
	A thorough appraisal of the circuit is carried out to determine its performance under the specified fault conditions. (This appraisal includes theoretical analysis and a component failure simulation test)		N/A
	Fault simulations may also be carried out to simulate faults within complex devices, e. g. EPROM emulation tests.		N/A
	Only the safety related software (software class B and C) as identified according to H.27.1.2.1.2 are subjected to further assessment. (For class identification a fault tree analysis may be used)		N/A
H.27.4	Electronic disconnection: withstands abnormal overvoltage conditions		N/A
H.27.4.1	- control loaded as indicated in Cl. 17.2; rated voltage (V) .....:		—
	- control subjected to 1,15 x VR for 5 s during electronic disconnection; test voltage (V) .....:		—
H.27.4.2	- control provides electronic disconnection as determined by the test of H.11.4.16.2		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
J	**ANNEX J – REQUIREMENTS FOR CONTROLS USING THERMISTORS**		N/A
J.4.2.5	Unless otherwise specified, representative samples as indicated in Table J.3 are subjected to the tests specified in J.17.8.		N/A
	New samples are used for all tests other than the overload and endurance test.		N/A
J.4.3.2	The rated voltage (Vr) of a thermistor is the input voltage of a thermistor as declared by the manufacturer.		N/A
J.4.3.2.11	The electrical and thermal ratings of a thermistor are in accordance with Table J.4 and based on its intended application.		N/A
J.4.3.5.4.	Type 1 controls using thermistors as temperature sensing devices where self-heating is negligible are not subjected to the tests for thermistors.		N/A
J.4.3.5.4.1	Thermistors used in type 1 action controls that comply with IEC 60738 or IEC 60539 are subjected to the thermal runaway test of J.17.18.5 only.		N/A
	Compliance to IEC 60738-1 or IEC 60539 not required if thermistors comply with requirements of Annex J		N/A
J.6.4.3.3	According to features of automatic action provide the equivalent of electronic disconnection and are classified as type 1.YJ or 2.YJ action.		N/A
J.6.15	According to construction, addition:		N/A
J.6.15.6	- control using NTC or PTC thermistors		N/A
J.6.15.7	Ceramic element		N/A
J.6.15.8	Polymer element		N/A
J.6.17	According to use of the thermistor, addition:		N/A
J.6.17.1	- thermistor control element		N/A
J.6.17.1.1	PTC current limiter		N/A
J.6.17.1.2	PTC motor starter		N/A
J.6.17.1.3	PTC degausser		N/A
J.6.17.1.4	NTC inrush current limiter		N/A
J.6.17.2	- self-controlled heater		N/A
J.6.17.3	- thermistor sensing element		N/A
J.6.17.3.1	PTC sensor		N/A
J.6.17.3.2	NTC sensor		N/A
J.7	Information, addition to Table 1		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	J61 - according to the use of a thermistor; clause: J6.7; (Method: X) .....:		N/A
	J62 - resistance/temperature characteristics; clauses: J15.7, J17.17.1, J12.2.1; (Method: X) .....:		N/A
	J63 - resistance/temperature characteristics drift; clause: J17.18.2; (Method: X) .....:		N/A
	J64 - Number of cycles; clause: J17.18.2; (Method: X) .....:		N/A
	J65 - Method of resistance/temperature measurements; clauses: J15.7, J17.18.1; (Method: X) .....:		N/A
	J82 – PTC current limiters where the maximum current is reduced to less than or equal to 8 A in less than or equal to 5 s; clauses: J15.7.6.1.1; (Method: X) .....:		N/A
J.11.3.10	Thermistors used in controls to provide functional safety or as controls to provide functional safety for a controlled application provide type 2 action (type 2.YJ), or		N/A
	- for other applications at least type 1.YJ		N/A
J.11.4.17	Type 1.YJ or 2.YJ action: operation provides an inherent change in resistance……...:	Type of action:	—
J.15.7	Calibration tests for PTC thermistors		N/A
J.15.7.1	Sequence of calibration tests of J.15.7.4 to J.15.7.8		N/A
	-ceramic thermistors (J.15.7.4 to J.15.7.8)		N/A
	-polymeric thermistors (J.15.7.5, J.15.7.6, J.15.7.7, J.15.7.8 and J.15.7.4)		N/A
J.15.7.2	In the “as-received” condition, each PTC thermistor		N/A
	- subjected to the tests specified in Table J.6		N/A
	- Compliance to Table J.6		N/A
J.15.7.3	Following the tests described in J.17.17 a), the same PTC samples:		N/A
	-subjected to the tests in table J.6		N/A
	-compliance to Table J.6 for each test		N/A
	For PTC sensors: -compliance with table J.7 for each test		N/A
J.15.7.4	R/T measurement for PTC thermistors.....:	See attached data	N/A
J.15.7.5	Hold current test for PTC current limiters .....:	See attached data	N/A
J.15.7.6	Time-to-trip test for PTC current limiters.....:	See attached data	N/A
J.15.7.6.1	Thermistor with multiple trip current and times		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	-tested at the maximum current		N/A
	-tested at the minimum current		N/A
	-current not to exceed the maximum current point on the time-to-trip versus current curve		N/A
J.15.7.6.1.1	Thermistor declared in item 82 of Table J.5 tripped at the declared trip current and corresponding rated voltage within the specified time-to-trip		N/A
J.15.7.7	Surface temperature of PTC thermistors other than current limiters		N/A
	- temperature measured at maximum voltage and steady-state current.....:		N/A
J.15.7.7.1	Surface temperature of current limiting thermistor:		N/A
	a)operating condition in hold state at rated maximum voltage and hold current.....:	See attached data	N/A
	b)operating condition in tripped state at rated maximum voltage and steady-state current .....:	See attached data	N/A
J.15.7.8	Inrush current measurement		N/A
J.15.7.8.1	PTC thermistors used as self-controlled heaters, motor starters and degaussers, inrush current of thermistor measured by oscilloscope at maximum voltage under rated load.....:	See attached data	N/A
J.15.8	Calibration tests for NTC thermistors		N/A
J.15.8.1	In the “as-received” condition, each NTC thermistor		N/A
	- subjected to the tests specified in Table J.8		N/A
	- Compliance to Table J.8		N/A
J.15.8.2	Following the tests described in J.17.17 b), the same NTC samples:		N/A
	-subjected to the tests in table J.8		N/A
	-compliance to Table J.8 for each test.		N/A
	For NTC sensors:		N/A
	-compliance with table J.9 for each test.		N/A
J.15.8.3	R/T measurement for NTC thermistors .....:	See attached data	N/A
J.15.8.4	Surface temperature test (Inrush current limiting)		N/A
J.15.8.4.1	Surface temperature measured while thermistor		N/A
	-operating at maximum voltage and current with rated capacitance in parallel with the load		N/A
	-temperature within manufacturer’s specified limits		N/A
J.15.8.5	Inrush current measurement (inrush-current limiting)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
J.15.8.5.1	Inrush-current of thermistor measured using oscilloscope at max. voltage and current with the rated capacitance value in parallel with the load.....:	See attached data	N/A
J.15.8.6	Resistance and beta value for NTC thermistors		N/A
J.15.8.6.1	Beta value within limits specified by the manufacturer		N/A
	-Resistance at 25 degree C……:	See attached data – (multiple models)	N/A
	-Resistance at R_1 @ T_1.....:	See attached data – (multiple models)	N/A
	-Resistance at R_2 @ T_2……..…:	See attached data – (multiple models)	N/A
J.17.17	Endurance		N/A
	a) sequence of tests for PTC thermistors		N/A
	b) sequence of tests for NTC thermistors		N/A
J.17.17.1	After the tests of J.17.18.1 to J.17.8.4, the performance of the control is checked by the tests of J.15.7 or J.15.8		N/A
J.17.17.2	After the appropriate tests of J.17.18		N/A
	-the control complies with clauses 8 and 13		N/A
	-no emission of flames or expulsion of particles		N/A
J.17.18	Conditioning tests		N/A
J.17.18.1	Heat-cold-humidity		N/A
	Following the conditioning specified in J.17.18.1.1, thermistor complies with tables J.6, J.7. J.8 or J.9		N/A
J.17.18.1.1	Indoor temperature use:		N/A
	1) 24 h at measured surface temperature or max declared operating temperature but not less than 70 deg C .....:		N/A
	2)168 h in a non-condensing atmosphere having a relative humidity of 90% to 95% at 40 deg C .....:		N/A
	3)8 h at 0 deg C or manufacturer's specified ambient temperature, whichever is lower .....:		N/A
	Outdoor temperature use:		N/A
	1) 4 h immersed in water at 25 deg C		N/A
	2) 8 h, at minus 35 deg C or at the manufacturer's specified ambient temperature, whichever is lower:		N/A
	3) 24 h, at measured surface temperature or max declared operating temperature but not less than 70 deg C.....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	4) 168 h, in a non-condensing atmosphere, having a relative humidity of 90% to 95% at 40 deg C .....:		N/A
J.17.18.2	Extended cycling (PTC)		N/A
J.17.18.2.1	Overload		N/A
J.17.18.2.1.1	Following the tests specified in J.17.18.2.1.2, J.17.18.2.1.3 or J.17.18.2.1.4 and J.17.18.2.2.1, a thermistor complied with Table J.6 or Table J.7, as appropriate		N/A
J.17.18.2.1.2	For self-controlled heater, 50 cycles at:		N/A
	-120% of maximum voltage.....:		N/A
J.17.18.2.1.3	For a control thermistor, 50 cycles at:		N/A
	a)120% of rated maximum current (I_{max}) .....:		N/A
	b)120% of rated short-circuit current (I_{sc}).....:		N/A
J.17.18.2.1.4	For a sensing thermistor, 50 cycles at:		N/A
	-120% of maximum sensing temperature.....:		N/A
J.17.18.2.2	Endurance		N/A
J.17.18.2.2.1	Following the overload test, the three samples were operated at the conditions specified in a), b) or c) for the number of cycles in Table J.10		N/A
	a)self-controlled heater @V_{max} or I_{max}.....: Number of cycles.....:		N/A
	b)control – V_{max} and the following currents.....:		N/A
	1) Current limiter - ≥I_t or I_{fun}.....: Number of cycles.....:		N/A
	2) Degausser - I_{max} .....: Number of cycles.....:		N/A
	3) Motor Starter – I_{max} .....: Number of cycles.....:		N/A
	c) sensing – between 25 deg C to maximum operating temperature.....:		N/A
J.17.18.3	Thermal conditioning		N/A
J.17.18.3.1	Passive ageing		N/A
	Following the conditioning specified in J.17.18.3.1.1 and J.17.18.3.2.1, the thermistors complied with Tables J.6, J.7, J.8 or J.9 as appropriate.		N/A
J.17.18.3.1.1	For all types except sensors:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Test temperature – 30K above T_s but not less than 70 deg C; Duration – 1000 hours.....:		N/A
	For sensors:		N/A
	Test temperature – 30K above the maximum sensing temperature, Duration – 1000 hours.....:		N/A
J.17.18.3.2	Active ageing		N/A
	In addition to J.17.18.3.1.1, a current limiter is energized in its tripped state at maximum voltage and carrying steady-state current for 1000 hours	Max voltage: Steady-state current:	N/A
J.17.18.4	Cold operational cycling (PTC)		N/A
J.17.18.4.1	Following the test specified in J.17.18.4.2, the thermistor complied with Table J.6		N/A
J.17.18.4.2	3 samples of a thermistor are subjected to 1000 cycles of operation at an ambient temperature of 0°C or at the manufacturer's specified ambient, whichever is lower (°C).....:		N/A
	Self-controlled heater – specified in J.17.18.2.2.1 a)		N/A
	Control thermistor – as specified in J.17.18.2.2.1 b)		N/A
J.17.18.5	Thermal runaway		N/A
	Thermistors are energized and operated under maximum rated conditions, initially		N/A
	Voltage increased until breakdown occurs or		N/A
	Test voltage is 2 x working voltage.....:		N/A
J.17.18.6	Cold thermal cycling		N/A
J.17.18.6.1	After the cycling specified in J.17.18.6.1.1, the thermistors complied with tables J.7 or J.9, as appropriate.		N/A
J.17.18.6.1.1	Sensing thermistors subjected to:		N/A
	-1000 cycles of cold thermal cycling		N/A
	-each cycle starts at 0^oC or at the manufacturer's specified ambient, whichever is lower to the maximum sensing temperature.		N/A
	Test range.....:		N/A
J.17.18.7	Extended cycling (NTC)		N/A
J.17.18.7.1	Overload		N/A
J.17.18.7.1.1	Following the tests specified in J.17.18.7.1.2 or J.17.18.7.1.3 and J.17.18.7.2.1, thermistors are checked for compliance with table J.8		N/A
J.17.18.7.1.2	For an inrush current limiter:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	-50 cycles of operation at V_{max} and 120% I_{max}		N/A
J.17.18.7.1.3	For a sensing thermistor:		N/A
	-50 cycles of operation starting at 25°C ± 5K and increasing the temperature to 120% of maximum sensing temperature.....:		N/A
J.17.18.7.2	Endurance		N/A
J.17.18.7.2.1	Samples subjected to overload test, J.17.18.7.1 are operated at the conditions specified in a) or b) for the number of cycles specified in Table J.12		N/A
	a)inrush-current limiting – tested at V_{max} and I_{max} with rated capacitance value in parallel with the load		N/A
	V_{max} .....:		N/A
	I_{max} .....:		N/A
	Number of cycles.....:		N/A
	b) Sensing – cycled between 25°C ± 5K and the maximum operating temperature.		N/A
	Maximum sensing temperature.....:		N/A
	Number of cycles.....:		N/A
J.17.18.8	Cold operational cycling (for inrush current-limiting NTC thermistors)		N/A
J.17.18.8.1	Following the cycling specified in J.17.18.8.2, thermistors checked for compliance with Table J.8		N/A
J.17.18.8.2	Three samples subjected to 1000 cycles of operation at V_{max} conducting I_{max} of current, at an ambient temperature of 0°C or at manufacturer's specified temperature, whichever is lower.....:		N/A
	Each cycle covered that portion of the R/T curve from the starting temperature to steady-state conditions		N/A
J.20	Creepage distances, clearances and distances through insulation		N/A
J.20.1.14	Clearance		N/A
J.20.1.14.1	Clearance between live parts connected electrically to the mains supply and accessible surfaces or parts in compliance with requirements of 20.1		N/A
J.20.1.14.2	Clearance between live parts providing functional insulation in compliance with requirements of 20.1		N/A
J.20.2.5	Creepage distance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
J.20.2.5.1	Creepage distance between live parts connected electrically to the mains supply and accessible surfaces or parts were in compliance with the requirements of 20.2		N/A
J.20.2.5.2	Creepage distance between live parts providing functional insulation was in compliance with the requirements of 20.2.		N/A
J.24	Components		N/A
J.24.2.1	Subclause J.24.2.1 was applicable to thermistors previously tested under IEC 60738-1, IEC 60738-1-1 or IEC 60539.		N/A
J.27	Abnormal operation		N/A
J.27.1	Consideration of fault modes made in accordance with Table H.24 for thermistors used in protective controls		N/A
L	**ANNEX L (NORMATIVE) – OVERVOLTAGE CATEGORIES**		N/A
N	**ANNEX N (NORMATIVE) – POLLUTION DEGREES**		P
P	**ANNEX P (NORMATIVE) – PRINTED CIRCUIT BOARD (PCB) COATING PERFORMANCE TEST**		N/A
P.2	PCB base material complies with IEC 61249 series		N/A
P.3	Electric strength of coating		N/A
	- test conducted after conditioning - Clauses P.3.3 and P.3.4		N/A
	- based on functional insulation		N/A
	- test voltage per table 12.....:		—
P.3.2	Ageing test:		N/A
	- five samples subjected to 130° C ± 2°C.....:		—
	- duration: 1000 hours		N/A
P.3.3	Humidity Conditioning:		N/A
	- performed on same samples used in Cl. P.3.2		N/A
	- conditioned in humidity chamber at a temperature of (35 ± 1)^{o}C and (90 ± 5)% relative humidity		N/A
	- duration: 48 hours		N/A
	After conditioning, each sample was subjected to the electric strength test with complying test results.		N/A
P.3.4	Environmental cycle conditioning:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- five samples subjected to three complete cycles of conditioning per table P.1		N/A
	After conditioning, each sample was subjected to the electric strength test with complying test results.		N/A
P.3.5	After conditioning, each sample wrapped in aluminium foil was subjected to the electric strength test, Cl. P.3.1 between:		N/A
P.3.6	- leads A, B, and C individually and common lead (figure P.1)		N/A
	- no evidence of flashover or breakdown		N/A
Q	**ANNEX Q (NORMATIVE) – PRINTED CIRCUIT BOARD COATING PERFORMANCE TEST**		N/A
Q.1	Printed wiring board conforming to requirements for type 1 coating (IEC 60664-3): complies with creepage requirements of Cl. 20, pollution degree 1		N/A
Q.2	Printed wiring board conforming to requirements for type 2 coating (IEC 60664-3): complies with requirements for solid insulation, Cl. 20.3		N/A
Q.3	Samples: production printed boards or standard test boards (figs. Q.1 and Q.2) used:		N/A
	- Thirteen (13) samples for type 1		N/A
	- Seventeen (17) samples for type 2		N/A
Q.4 + Q5	Compliance for type 1 or 2 coating: checked by tests of IEC 60664-3:2003, Amendment 1:2010, Cl. 5 with test levels or conditions specified in Cl. Q.5		N/A
T	**ANNEX T (NORMATIVE) - REQUIREMENTS FOR SELV AND PELV**		N/A
T.2	Protection against electric shock by SELV or PELV		N/A
T.2.1	SELV - Protection against electric shock is provided by the following measures:		N/A
	– limitation of voltage, ELV according to T.3.1 in a circuit (the SELV-system), and		N/A
	– protective-separation, according to T.3.2, of the SELV-system from all circuits other than SELV and PELV, and		N/A
	– simple-separation, according to T.3.3, of the SELV-system from other SELV-systems, from PELV-systems and from earth		N/A
	Intentional connection of exposed-conductive-parts of the control to a protective conductor or to an earth-conductor is not permitted		N/A
	In special locations where SELV is required and where protective screening according to T.3.2.1 is applied,		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Separation between protective screen and every circuit by basic insulation rated for the highest voltage present.		N/A
	Requirements for the elements of SELV are given in Clause T.3.		N/A
T.2.2	PELV - Protection against electric shock is provided by the following measures:		N/A
	– limitation of voltage, ELV according to T.3.1 in a circuit which may be earthed and/or the exposed-conductive-parts of which may be earthed (the PELV-system), and		N/A
	– protective separation according to T.3.2 of the PELV-system from all circuits other than SELV and PELV		N/A
	It is not necessary to provide basic insulation between the protective screen and the PELV-system.		N/A
	Where live parts of the PELV-system are accessible (touchable) simultaneously with conductive parts which, in case of a fault, could assume the potential of the primary circuit, protection against electric shock depends on protective-equipotential-bonding (T.3.4) of all such conductive parts. Such parts are bonded to the protective earthing terminal or termination of the control		N/A
	Requirements for the elements of PELV are given in Clause T.3.		N/A
T.3	ELV, protective separation, simple separation, protective bonding as elements of SELV and PELV		N/A
T.3.1	Limitation of voltage provides that the voltage between simultaneously accessible parts does not exceed relevant ELV limits as specified in 2.1.4 and as specified in 8.1.1.		N/A
T.3.2	Protective separation between a SELV/PELV-circuit and other live circuits is achieved by means of:		N/A
	– basic insulation and supplementary insulation, each rated for the highest voltage present, i.e. double insulation, or		N/A
	– reinforced insulation rated for the highest voltage present, or		N/A
	– protective screening according to T.3.2.1 with the protective screen being separated from		N/A
	each adjacent circuit by basic insulation rated for the highest adjacent circuit voltage (see also T.2.1, last paragraph), or		N/A
	– a combination of these provisions		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	If conductors of different circuits are contained in a multi-conductor cable or other conductors grouping, they are insulated for the highest voltage present to achieve double insulation or reinforced insulation		N/A
	If any component is connected between the separated circuits, that component complies with the requirements for protective impedance.		N/A
	When the supply of SELV or PELV circuits is obtained from supply mains of higher voltages, it is either		N/A
	– through a safety isolating transformer, or		N/A
	– a converter with separate windings providing equivalent insulation, and		N/A
	Control declared IPX7 subjected to second fault analysis (item 73 of Table 1) for the circuits and insulation between windings of the converter; as result of second fault the ELV value of 0 V was not exceeded. The current between the poles of the output complied with H.8.1.10.		N/A
	Compliance is checked by inspection, measurement and when performing the appropriate test(s) in the order of this standard.		N/A
T.3.2.1	Protective screening consists of a conductive screen interposed between hazardous-live-parts of the control, installation, or system and the protected part (e.g. a SELV-circuit or a PELV circuit).		N/A
	The protective screen permanently connected to the protective earthing and the connection complies with Clause 9; and		N/A
	– itself complies with the requirements of Clause 9		N/A
T.3.3	Basic insulation is required between SELV- / PELV-circuits and other SELV-/ PELV-systems or earth and is rated for the highest voltage present		N/A
	Component connected between the separated circuits withstands the electric stresses specified for the insulation which it bridges and its impedance limits the prospective current flow through the component to the steady-state current indicated in H.8.1.10 and H.11.2.5 for protective impedance.		N/A
T.3.4	Protective bonding		N/A
	The requirements for protective bonding - see clause 9 of this standard		N/A
	For the installation of controls which consist of parts of the fixed electrical installation of a building, the requirements for protective bonding in IEC standards for installation of buildings apply.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

U	**ANNEX U - REQUIREMENTS FOR RELAYS WHEN USED AS CONTROLS IN IEC 60335 APPLIANCES**		N/A
U.6	Classification		N/A
U.6.3	According to their purpose		N/A
U.6.6	According to method of connection		N/A
U.6.8	According to protection against electric shock		N/A
U.6.8.5	For a relay: insulation between coil and contact circuits:		N/A
U.6.8.6	For a relay: insulation between live parts and test function, manual action actuating member		N/A
U.7	Information		N/A
	3 - Rated voltage for both coil and contacts (method C) .....:		N/A
	4 - Nature of supply for both coil and contacts (method C) .....:		N/A
	88 – Max. intended click rate U.23 (method D) .....:		N/A
U.14	Heating		N/A
	Replacement of sub-clause:		N/A
U.14.4	Tests conducted under the following conditions:		N/A
	U_{Coil} × 0,9 + contacts loaded or I_{Coil} × 0,9 + contacts loaded		N/A
	U_{Coil} × 1,1 + contacts loaded or I_{Coil} × 1,1 + contacts loaded		N/A
	I_{Coil} =0 + contacts loaded (N.C. contacts).		N/A
	Relays were mounted as specified		N/A
	– PWB connected relays were mounted to PWB if submitted with relays to be tested.		N/A
	If not, relays were mounted to plain PWB material; conductors per Table 6 soldered to PWB pins		N/A
U.17	Endurance		N/A
U.17.14	Evaluation of compliance		N/A
	Replace the second list item as follows:		N/A
	– The requirements of Cl. 14, under the conditions stated by U.14.4, for terminals, current carrying parts, and supporting surfaces are met		N/A
U.17.16	Test for particular purpose controls		N/A
	Relays were endurance tested according to the following schedule:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Ageing test of 17.6		N/A
	Over-voltage test of automatic action of 17.7		N/A
	Test of automatic action at accelerated rate of 17.8		N/A
	Test of automatic action at slow rate of 17.9		N/A
	Overcurrent test of manual action at accelerated speed of 7.10		N/A
	Test of manual action at slow speed of 7.11		N/A
	Test of manual action at high speed of 17.12		N/A
	Test of manual action at accelerated speed of 17.13		N/A
U.20	Creepage distances, clearances and distances through solid insulation		N/A
	Assessment was conducted with relay energized, de-energized, and manually operated		N/A
U.23	Electromagnetic compatibility (EMC) requirements – emission		N/A
	Consideration must be given as to whether EMC requirements are applicable to relays.		N/A
U.24	Components		N/A
	Relays incorporating electronic components were assessed according to Annex H.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

8.3.2	**TABLE: Risk of electric shock test**		N/A
	Total (V_{TOTAL}) (V) .....:		—
	Average (V_{TOTAL}/10) .....:		—
	Capacitance (µF) >0.1µF .....:		—
test #	Measured voltage between pins (V_{RMS})	Average voltage (V): < 34 V	
Supplementary information:			

9.3.1	**TABLE: Connection between earthing terminal and parts is of low resistance**			N/A
	Rated current, Ir (A) .....:			—
	No-load voltage (V) .....:			—
	Test current, 1.5* Ir, but not <25A (A) .....:			—
terminal No.	Duration, until steady conditions (min)	Measured potential drop (V)	calculated resistance (Ω): ≤0.1 Ω	
Supplementary information:				

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Clause	Requirement + Test	Result - Remark	Verdict

10.1.9.1	**TABLE: Clamping reliability of the terminals**		N/A
	Applied torque, 2/3 of values in Table 20 (Nm)..... :		—
	Pull force (N) ..... :		—

terminal No.	fixed wiring		flexible conductor		Conductor movement
	smallest (mm)	largest (mm)	smallest (mm)	largest (mm)	

Supplementary information:

10.2.1	**TABLE: Connection of conductors**	N/A
terminal No.	nominal current (A)	cross-sectional area (mm^2)

Supplementary information:

10.2.4.3	**TABLE: Axial push and pull test**			N/A
Tab identification	size (mm x mm)	axial push (N)	axial pull (N)	result code

Supplementary information:

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Clause	Requirement + Test	Result - Remark	Verdict

11.7.1.2.1	**TABLE: Flexing test**					N/A
flexible cords used in product	No. of conductors in cord	rated current (A)	rated voltage (V)	No. of flexings	rate of flexings per min.	% broken
Supplementary information:						

11.7.2.9	**TABLE: Push test (option –T /-TP)**		N/A
Cord identification	Cross-sectional area (mm^2)	Torque applied on terminals (Nm)	Comments
Supplementary information:			

11.7.2.11+11.7.2.12	**TABLE: Pull test**			N/A
Control type	Pull (N)	No. of pulls applied	Torque (Nm)	Comments
Supplementary information:				

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Clause	Requirement + Test	Result - Remark	Verdict

12.3	**TABLE: Leakage current test (for in-line cord and free -standing controls)**		N/A
	Supply voltage; 1.06 Vr (V) ..... :		—
	Max. rated current (A) ..... :		—
	Max. declared ambient temperature, °C ..... :		—
	Max. leakage current from 13.3.4 (mA)..... :		—

Circuit identification	Position of switch S1	Class of control	Measured leakage current, (mA)
Supplementary information:			

13.2	**TABLE: Electric strength test**				P
Test location/circuit	Type of insulation	Type/model	Working voltage, (V)	Test voltage (V)	Flashover/breakdown (Yes/No)
Between lead and tube	Basic insulation	ST11 250 10	250	1450	No flashover
Between lead and tube	Basic insulation	ST11 200 05	250	1450	No flashover
Supplementary information:					

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Clause	Requirement + Test	Result - Remark	Verdict

13.3.3	**TABLE: Leakage current test (for in-line cord and free -standing controls)**		N/A
	Supply voltage; 1.06 Vr (V) ..... :		—
	Max. leakage current from 13.3.4 (mA) ..... :		—

Circuit identification	Position of switch S1	Class of control	Measured leakage current, (mA)
Supplementary information:			

14.6 + 14.7	**TABLE: Heating test**		N/A
thermocouple locations	max. temperature measured, (^{o}C)	temperature limit, (^{o}C)	Verdict
Supplementary information:			

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Clause	Requirement + Test	Result - Remark	Verdict

15.2 a)	**TABLE: Manufacturing deviation**	**Only testing operating temperature**	P

Condition	Sample Nos.	Declared values		Measured values	
		open	close	open	close
ST11 250 10	2#	250	/	234.9	/
	3#	250	/	237.2	/
	4#	250	/	235.6	/
ST11 200 05	12#	200	/	189.4	/
	13#	200	/	191.0	/
	14#	200	/	191.5	/

Supplementary information:

15.2 b)	**TABLE: Manufacturing drift**	N/A

Condition	Sample No.	Measured values (deviation) from as received condition		Measured values (drift)	
		open	close	open	close
After Environmental Stress test					
After Endurance test (T_{max})					
After Endurance test (T_{min})					

Supplementary information:

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Clause	Requirement + Test	Result - Remark	Verdict

17.2.1	**TABLE: Circuits loaded according to declared ratings**				N/A
circuits	a.c./d.c.	Voltage U_R (V)	Current (A)	Time constant (ms) / power factor (cos phi)	Verdict
substantially resistive (6.2.1), making and breaking					
resistive or inductive (6.2.2), making					
resistive or inductive (6.2.2), breaking					
declared specific load (6.2.3), making					
declared specific load (6.2.3), breaking					
20 mA load (6.2.4), making & breaking					
declared motor load (6.2.5), making					
declared motor load (6.2.5), breaking					
pilot duty load (6.2.6), making					
pilot duty load (6.2.6), breaking					
Supplementary information:					

17.5.1	**TABLE: Dielectric strength**			N/A
Insulation or disconnection tested	Test potential applied between the following circuits	Test voltage applied (V)	Flashover/ breakdown	
Supplementary information:				

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Clause	Requirement + Test	Result - Remark	Verdict

18.2.1	**TABLE: Impact resistance**		N/A
Impacts per surface	Surface tested	Impact energy (Nm)	Verdict
Supplementary information:			

19.1.15	**TABLE: Threaded part torque test**			N/A
Threaded part identification	Diameter of thread (mm)	Column number (I, II, or III)	Torque (Nm)	Verdict
Supplementary information:				

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Clause	Requirement + Test	Result - Remark	Verdict

20	**TABLE: Creepage distance and clearance measurements**		Verdict
	Requirements creepage distance and clearance met		N/A
	Supply working voltage (V) .....:		—
	Overvoltage category .....:		—
	Rated impulse voltage according to table 20.1(V) .....:		—
	Requirements for case B (20.1.7, 20.1.12) met (cl 20.1 Note 2)...:		

Creepage distance Cd and clearance Cl across (type of insulation)	Nominal Volt, (V)	Pollution degree	Required Cd, (mm)	Cd measured (mm)	Required Cl (mm)	Cl measured (mm)
full disconnection						
micro-disconnection						
electronic disconnection						
Supplementary information: Abbreviations for types of insulation: F - functional, B - basic, S – supplementary, R - reinforced						

21A	**TABLE: Ball Pressure Test and Tracking Test**					P
Ball Pressure max. allowed impression diameter (mm) ..... :				2.0		—
Test sample description		Ball Pressure test		Tracking test		
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	Proof tracking index (PTI)	Voltage, (V)	Result
Epoxy resin	201A-6303/201B-6303	240	1.8	PTI175	175	P
Supplementary information:						

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Clause	Requirement + Test	Result - Remark	Verdict

21A	**TABLE: Resistance to heat and fire - Glow wire tests**							**P**
Object/ Part No./ Material	**Manufacturer/ trademark**	**Glow wire test (GWT); (°C)**						**Verdict**
		550	**650**		**750**		**850**	
			te	**ti**	**te**	**ti**		
Insulating paper	Nomex paper	✓	/	/	/	/	/	P
Tube	Teflon	✓	/	/	/	/	/	P
PI membrane	Polyimide Film	✓	/	/	/	/	/	P
Epoxy resin	201A-6303/201B-6303	/	/	/	/	/	✓	P

Object/ Part No./ Material	**Manufacturer/ trademark**	**Glow-wire flammability index (GWFI), °C**				**GW ignition temp. (GWIT), °C**		**Verdict**
		550	**650**	**750**	**850**	**675**	**775**	

The test specimen passed the glow wire test (GWT) with no ignition [(t_e – t_i) ≤ 2s] (Yes/No):	
If no, then surrounding parts passed the needle-flame test of annex E (Yes/No)..... :	
The test specimen passed the test by virtue of most of the flaming material being withdrawn with the glow-wire (Yes/No)?..... :	
Ignition of the specified layer placed underneath the test specimen (Yes/No)..... :	

Supplementary information:

550 °C GWT not relevant (or applicable) to parts of material classified at least HB40 or if relevant HBF
The GWIT pre-selection option, the 850 °C GWFI pre-selection option, and the 850 °C GWT are not relevant (or applicable) for attended appliances.

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Clause	Requirement + Test	Result - Remark	Verdict

24.1	**TABLE: Transformers supplying external SELV circuit**	N/A

secondary winding tested	maximum output voltage (V)	maximum output current (A)	maximum power (VA)

Supplementary information:

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Clause	Requirement + Test	Result - Remark	Verdict

24.1 / 24.2	**TABLE: List of critical components**				N/A
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity[1]
- Description[2] :					
- Description[2] :					
- Description[2] :					
- Description[2] :					
- Description[2] :					

Supplementary information:

[1] Provided evidence ensures the agreed level of compliance. See OD-CB2039.

[2] Description line content is optional. Main line description needs to clearly detail the component used for testing

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Clause	Requirement + Test	Result - Remark	Verdict

24.4.1.6	**TABLE: Switch mode power supply overload test**	N/A

Winding	Winding T, (°C)	Overload (Measured) values			a) No flames	b) 1.5 x max temp. of Cl. 14	c) as declared (T1,57)	d) Clause 8 and 13.2 for BI	e) creepage and clearance	f) no rupture of ext. fuse
		Max Voltage (V) peak	Max overload current	Max Power (W)						
Supplementary information:										

24.4.1.8-24.4.1.10	**TABLE: SELV output measurement test**	N/A

Winding	Max. Voltage (V peak/DC)		Protective impedance	SELV measurement (V)
	Normal Operation	Single component fault		
Supplementary information:				

25.2	**TABLE: Over-voltage and under-voltage test**	N/A

test	operating condition	rated voltage (V)	test voltage 85/110% (V)	temperature (^{o}C)	Observation
Over-voltage transformer	T_{max}				
Under-voltage transformer	T_{max}				
Over-voltage valve	T_{min}				
Under-voltage valve	T_{min}				
Supplementary information:					

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Clause	Requirement + Test	Result - Remark	Verdict

27.2.3	**TABLE: Blocked output test**			N/A
Thermocouple locations	Max. temperature measured, (^{o}C)		Temperature limit (°C)	Verdict
	2nd hour	24th hour		
Supplementary information:				

27.5	**TABLE: Overload Heating test**		N/A
thermocouple locations	Max. temperature measured, (°C)	Temperature limit, (°C)	Verdict
Supplementary information:			

H.27.1.1.1	**TABLE: Low power point determination**	N/A
Component or Circuit Under Evaluation	Measured Wattage (W)	
Supplementary information:		

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Clause	Requirement + Test	Result - Remark	Verdict

H27.1	**TABLE: Electrical / electronic component fault modes**	N/A

Component	short circuiting	open circuit	a) No flames	b) 1.5 x max temp. of Cl. 14	c) as declared (H57)	d) protect. against el. shock	d) electric strength, basic insulation	e) creepage and clearance	f) no rupture of ext. fuses or	f) complies with a), b) and d)	g) as declared in H58	Observations

Supplementary information:

List of test equipment used:

A completed list of used test equipment shall be provided in the Test Reports when a Customer's Testing Facility according to CTF stage 1 or CTF stage 2 procedure has been used.
Note: This page may be removed when CTF stage 1 or CTF stage 2 are not used. See also clause 4.8 in OD 2020 for more details.

Clause	Measurement / testing	Testing / measuring equipment / material used, (Equipment ID)	Range used	Last Calibration date	Calibration due date

Statement of Measurement Uncertainty

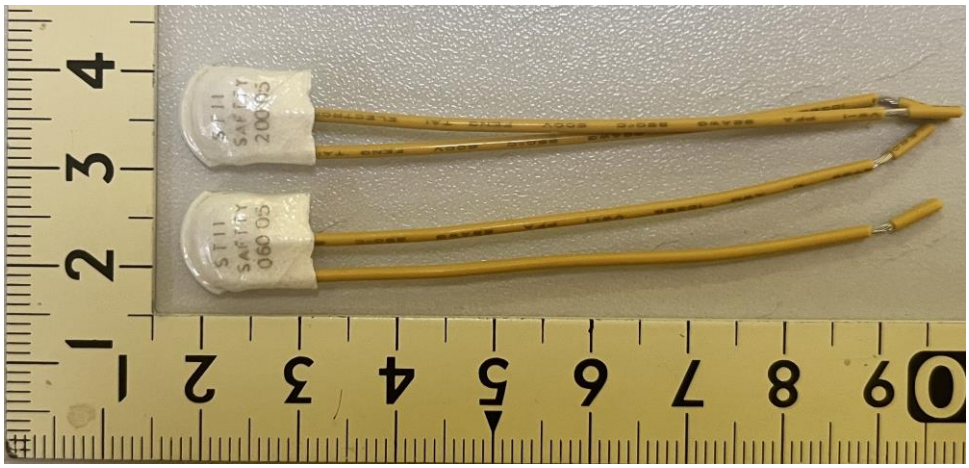
The Test Report shall include a statement concerning the uncertainty of the measurement systems used for the tests conducted when it is required by the standard, client or other authorities.
In such cases, the table below may be used for reporting U of M.

(This page may be removed from the final Test Report when not required. See also clause 4.8 in OD 2020 for more details.)

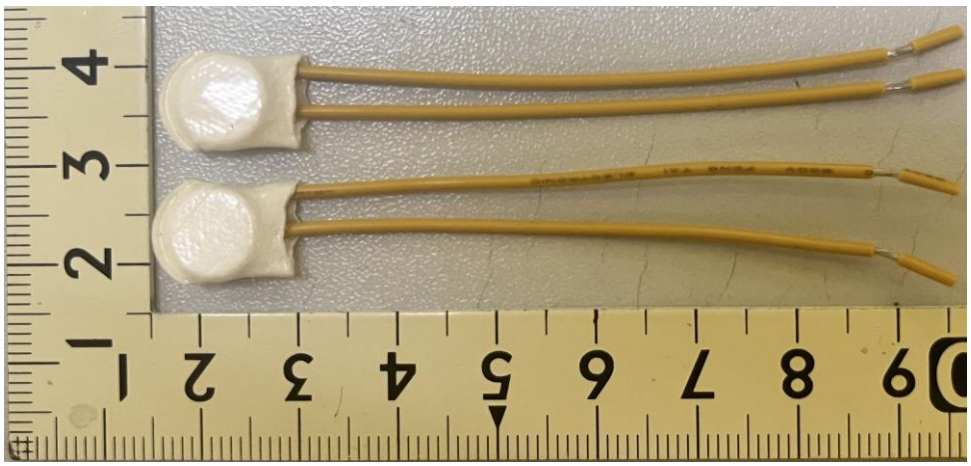
Clause #	Parameter/ Measurement / test method	Requirement % or k	Calculated U of M*

*Note: Calculations leading to the reported value are on file with the NCB

Remarks

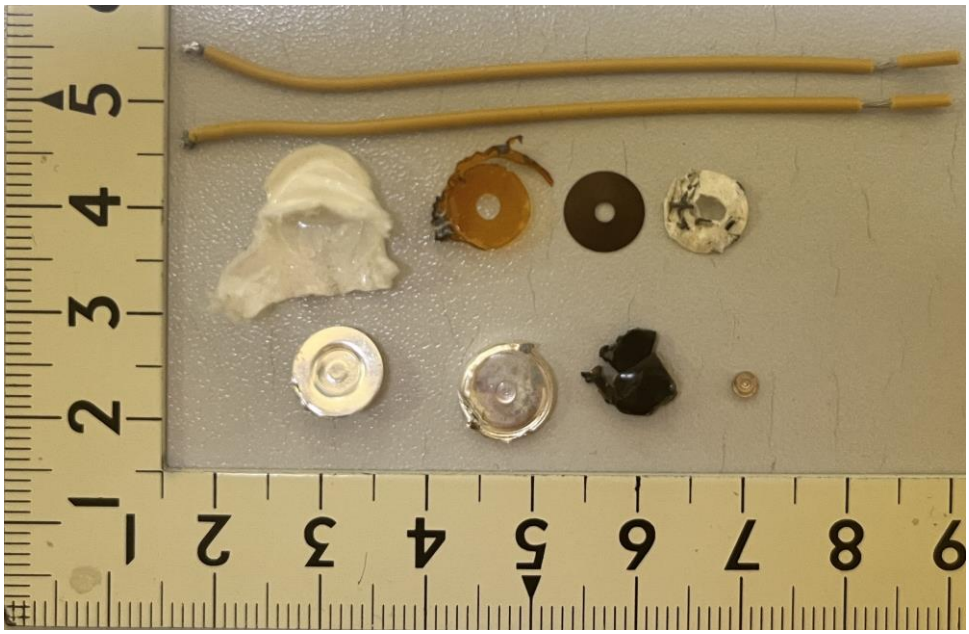


ST11 200 05 and ST11 060 05 appearance of the motor protectors

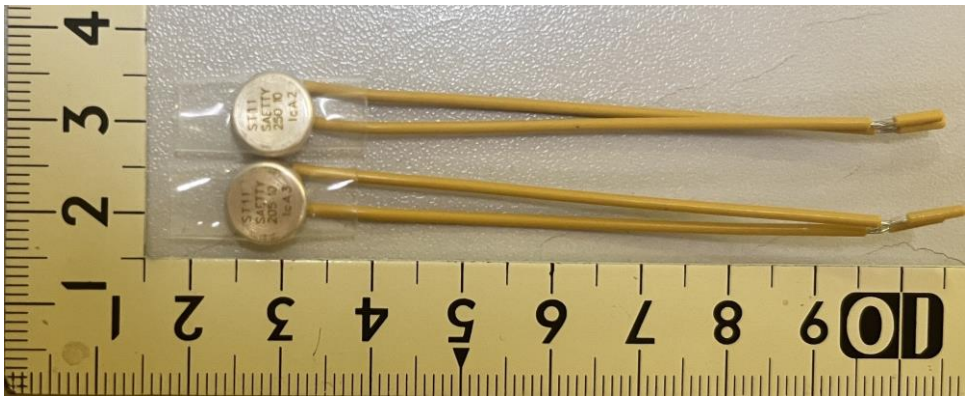


ST11 200 05 and ST11 060 05 appearance of the motor protectors

Remarks



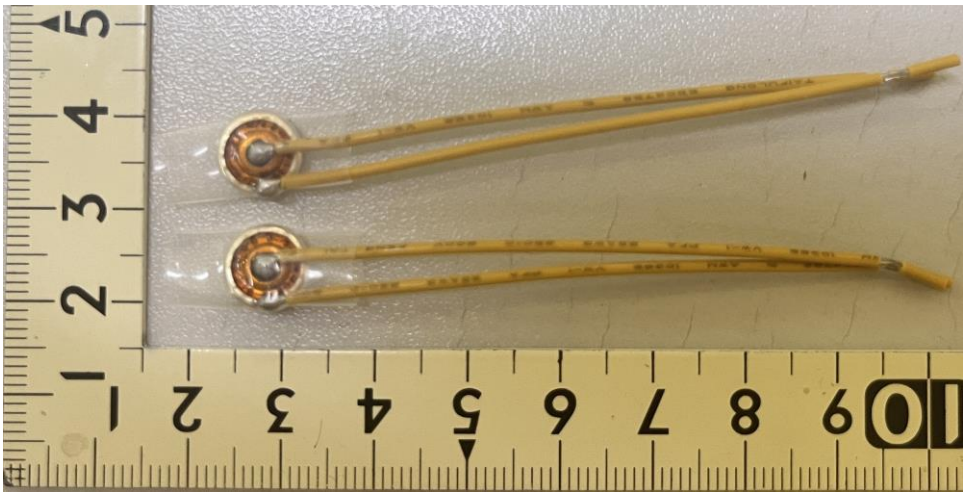
ST11 200 05 and ST11 060 05 internal structure of the motor protectors



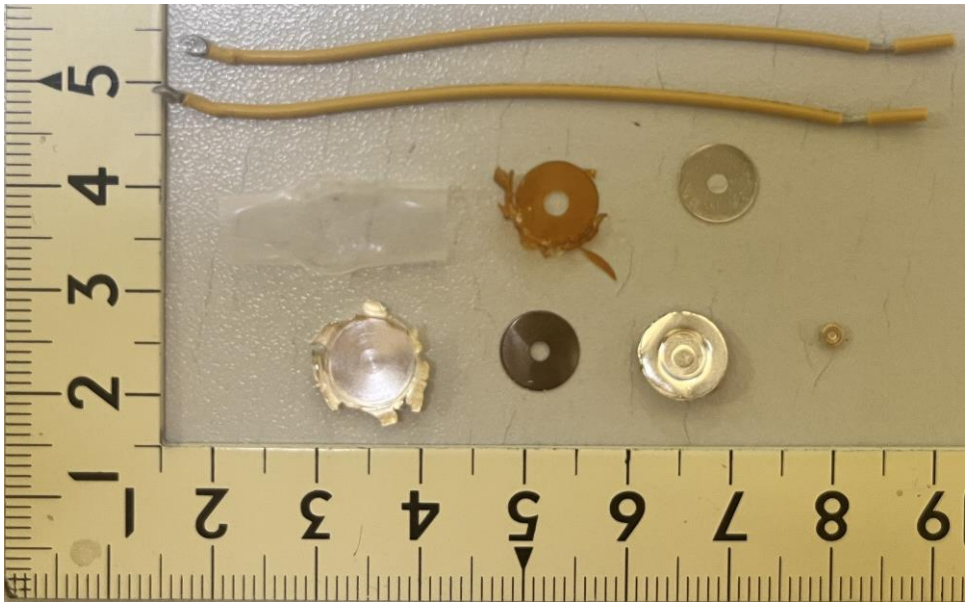
ST11 250 10 and ST11 200 10 appearance of the motor protectors

IEC 60 730-1

Remarks



ST11 250 10 and ST11 200 10 appearance of the motor protectors



ST11 250 10 and ST11 200 10 internal structure of the motor protectors