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TEST REPORT

IEC 60730-2-9

Automatic electrical controls for household and similar use

Part 2: Particular requirements for temperature sensing controls

Report reference No. ..... :	180702434SHA-001
Date of issue ..... :	2018-10-16
Total number of pages ..... :	101
Testing Laboratory Name ..... :	Intertek Testing Services Shanghai
Address ..... :	Building No.86, 1198 Qinzhou Road (North), Shanghai 200233, China
Applicant's Name ..... :	Ningbo Tongbao Huashuo Temp Controller Co., Ltd.
Address ..... :	No. 388 Ningfeng north road, Changhe Town, Cixi City, Zhejiang Province, P.R.China
Test specification	
Standard ..... :	IEC 60730-2-9:2008 (Third Edition) in conjunction with IEC 60730-1:1999(Third Edition) + A1:2003+ A2:2007
Test procedure ..... :	S mark
Non-standard test method ..... :	N/A
Test Report Form	IEC60730_2_9F
TRF originator. ..... :	CQC
Master TRF (date) ..... :	Dated 2009-03

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Test item description ..... :	temperature limiter for appliances
Trade Mark ..... :	, NBTB
Manufacturer ..... :	Same as applicant
Model /Type reference ..... :	KSD301
Ratings ..... :	10A 250V~

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Testing procedure and testing location:	
☒ **Testing Laboratory**:	Intertek Testing Services Shanghai
Testing location/ address.....:	Building No.86, 1198 Qinzhou Road (North), Shanghai 200233, China
☐ **Associated CB Test Laboratory:**	
Testing location/ address.....:	
Tested by (name + signature).....:	(Project Engineer) Lorry Tan
Approved by (+ signature).....:	(Mandated Reviewer) Kent Wu
☐ Testing procedure: TMP	
Tested by (name + signature).....:	
Approved by (+ signature).....:	
Testing location/ address.....:	
☐ Testing procedure: WMT	
Tested by (name + signature).....:	
Witnessed by (+ signature).....:	
Approved by (+ signature).....:	
Testing location/ address.....:	
☐ Testing procedure: SMT	
Tested by (name + signature).....:	
Approved by (+ signature).....:	
Supervised by (+ signature).....:	
Testing location/ address.....:	
☐ Testing procedure: RMT	
Tested by (name + signature).....:	
Approved by (+ signature).....:	
Supervised by (+ signature).....:	
Testing location/ address.....:	

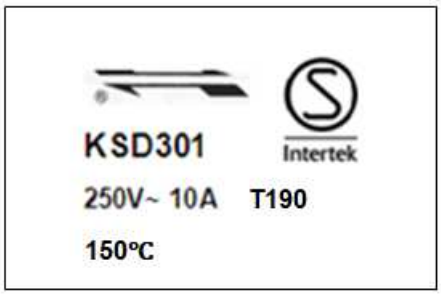
Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
1. Full tests performed. 2. Determination of the test result includes consideration of measurement uncertainty from the test equipment and methods. 3. We conclude that the products presented in this test report comply with the standard according to the test results on the submitted samples.	INTERTEK TESTING SERVICES SHANGHAI

Summary of compliance with National Differences:

See national differences from page 86 to page 97.

Copy of marking plate:



Note 1. The operating temperature is between 50 ºC ~150 ºC.

Note 2. The trademark can be replaced by NBTB.

Test items particulars :	
Classification of installation and use..... :	incorporated
Supply Connection ..... :	Internal conductors, tab terminals 4.8x0.5 or 4.8x0.8 or 6.3x0.8 mm.
Possible test case verdicts :	
Test case does not apply to the test object.....:	N/A
Test item does meet the requirement .....:	P(Pass)
Test item does not meet the requirement .....:	F(Fail)
Testing	
Date of receipt of test item .....:	2018-07-25
Date(s) of performance of test.....:	2018-07-25~2018-10-10

General remarks

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The test results presented in this report relate only to the object tested.
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"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

Throughout this report a point is used as the decimal separator.

General product information:

The device under evaluation is a temperature limiter for appliances of type KSD301, with two alternative reset button structures.

Factory information:

Ningbo Tongbao Huashuo Temp Controller Co., Ltd

No. 388 Ningfeng north road, Changhe Town, Cixi City, Zhejiang Province, P.R.China.

IEC 60730-2-9			
Clause	Requirement + Test	Result – Remark	Verdict
3	GENERAL REQUIREMENTS		—
	Control designed and constructed in such a fashion not to cause injury to persons or damage to property	OK	P
5	RATINGS		—
5.1	Maximum rated voltage (V).....:	250	P
	Maximum rated current (A)..... :	10	P
6	CLASSIFICATION		—
6.1	Nature of supply .....:	~	P
6.2	Type of load and power factor..... :	Resistive	P
6.3	Purpose .....:	Temperature limiter	P
6.4	Features of automatic action		—
	Features of automatic action, Type 1 or Type 2 .....:	Type 1	P
6.4.3	Additional subclauses		—
6.4.3.101	for sensing actions, leakage from the sensing element or from parts connecting sensing element to switch head (type 2.N): no increase in the operating value: (IEC60730-2-9:08)	-	N/A
6.4.3.102	an action operating after the thermal cycling test 17.101 (type 2.P): (IEC60730-2-9:08)	-	N/A
6.4.3.103	an action which is initiated only after a push-and turn or pull-and turn actuation and in which only rotation is required to return the actuating member to the off or rest position (type 1.X or 2.X): (IEC60730-2-9:08)	-	N/A
6.4.3.104	an action which is initiated only after push-and turn or pull-and turn actuation (type 1.Z or 2.Z): (IEC60730-2-9:08)	-	N/A
6.4.3.105	an action which cannot be reset under eletrically loaded conditions (type 1.AK or 2.AK): (IEC60730-2-9:08)	-	N/A
6.4.3.106	– an action which operates after declared agricultural environmental exposures (Type 1.AM or 2.AM) (IEC60730-2-9:08)	-	N/A
6.5	Degree of protection and control pollution provided by an environmental enclosure per IEC 60529.....:	IP00	P
6.6	Method of connection.....:	Tab receptacles	P
6.7	Ambient temperature limits of the switch ahead: Tmin(°C).; Tmax (°C) .....:	T190	P
6.7.101	Controls for use in cooking appliances (IEC60730-2-9:08)	-	N/A

IEC 60730-2-9			
Clause	Requirement + Test	Result – Remark	Verdict
6.7.102	Controls for use in or on ovens of the self-cleaning type (IEC60730-2-9:08)	-	N/A
6.7.103	Controls for use in or on food-handling appliances (IEC60730-2-9:08)	-	N/A
6.8	Protection against electric shock .....:	Class I	P
6.8.3	For an in-line cord control, a free standing control, an independently mounted control or a control integrated or incorporated in an assembly utilizing a non-electrical energy source (IEC60730-2-9:08)		—
6.9	Circuit disconnection or interruption .....:	Micro-disconnection	—
6.10	Number of cycles of actuation (M) of each manual action .....:	6000	—
6.11	Number of cycles of actuation (A) of each automatic action .....:	1000	—
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 .....:	175	—
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	According to construction	Incorporated	—
6.15.101	controls having parts containing liquid metal (IEC60730-2-9:08)	-	—
6.16	Ageing requirements (type Y) of end-product equipment.....:	-	—
6.17	Use of thermistor (Annex J) .....:	-	—
6.18	Use of software class (Annex H) .....:	-	—

7	INFORMATION		—
7.2.1	Information provided by one or more of the methods specified in Table 7.2	OK	P
	1 – Manufacturer's name or trademark (Method C)..... :	See page 1	P
	2 – Unique type reference (Method C) .....:	KSD301	P
	3 – Rated voltage or rated voltage range in volts (Method C).....:	250 V	P
	4 – Nature of supply (Method C).....:	~	P
	5 – Frequency, if other than for range 50 Hz to 60 Hz inclusive (Method C).....:	-	N/A
	6 – Purpose of control (Method D) .....:	Temperature limiter	P
	6a – Construction of control (Method D) .....:	Incorporated	P

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Clause	Requirement + Test	Result – Remark	Verdict
	7 – The type of load controlled by each circuit (Method C).....:	10 A	P
	15 – Degree of protection provided 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).....:	-	N/A
	19 – Method of connection and disconnection for screwless terminals (Method D) .....:	-	N/A
	20 – Details of any special conductors which are intended to be connected to terminals for internal conductors (Method D).....:	Tab receptacles	P
	21 – Maximum temperature of terminals for internal conductors, if higher than 85°C (Method X) .....:	400 °C (tabs)	P
	22 – Temperature limits of the switch head, if T_{min} lower than 0 °C, or T_{max} other than 55 °C (Method C):	T190	P
	23 – Temperature limits of mounting surfaces (T_s) if more than 20 K above T_{max} (Method C) .....:	-	N/A
	24 – Classification of control according to protection against electric shock (Method X).....:	Class I	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).....:	6000	P
	27 – Number of automatic cycles (A) for each automatic action (Method X).....:	1000	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-disconnection	P
	30 – PTI of materials used for insulation (Method X).....:	175	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).....:	-	N/A
	33 – Intended transportation condition of control (Method X).....:	Nothing declared	P
	34 – Details of any limitation of operating time (Method D).....:	Continuous	P

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Clause	Requirement + Test	Result – Remark	Verdict
	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
	39 – Type 1 or Type 2 action (Method D)..... :	Type 1	P
	40 – Additional features of Type 1 or Type 2 actions (Method D)..... :	B	P
	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)..... :	-	N/A
	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) ..... :	-	N/A
	46 - Operating sequence for controls with more than one circuit (Method D)..... :	-	N/A
	47 - Extent of any sensing element (Method D)..... :	Bi-metallic element	P
	48 - Operating value(s) or operating time (Method D):	50 °C to 150 °C	P
	49 - Control pollution degree (Method D) ..... :	Pollution degree 2	P
	50 - Control intended to be delivered exclusively to the equipment manufacturer (Method X)..... :		N/A
	51 - Heat and fire resistance category (Method D)..... :	Category D	P
	75 - Rated impulse voltage (Method X)..... :	2.5 K	P
	76 - Type of printed wiring board coating, (Method X):	-	N/A
	77 – Temperature for ball pressure test (Method D)..... :	OK	P
	78 – Maximum declared torque on single bush mounting using thermoplastic material (Method D) ..:	-	N/A
	79 – Pollution situation in the micro-environment of the creepage or clearance if cleaner than that of the control, and how this designed (Method D) :	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	80 – Rated impulse voltage for the creepage or clearance if different from that of the control (Method D).....:	-	N/A
	81 – Values designed for tolerances of distances for which the exclusion from fault mode “short” is claimed (Method D).....:	-	N/A
	82 to 84 See Annex J	-	N/A
	85 Class III controls, the symbol for Class III construction (Method C).....	-	N/A
	86 SELV or PELV circuits, the ELV limits realized (Method D).....	-	N/A
	87 Value of 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) given(Method D)	-	N/A
	88 See Annex U	-	N/A
7.2	Methods of providing information		—
	Addition to table 7.2(IEC60730-2-9:08)		—
	101 - maximum sensing element temperature (other than relevant to requirement 105); (Method: X)	-	N/A
	102 - time factor; method: (Method: X)	-	N/A
	103 - bi-metallic SOD reset temperature (either -35°C or 0°C; (Method: X)	-	N/A
	104 - number of cycles for bi-metallic single-operation devices with 0°C reset; (Method: X)	-	N/A
	105 - maximum temperature for the sensing element for the test of 17.16.107; (Method: D)	-	N/A
	106 - controls having parts containing liquid metal; (Method: D)	-	N/A
	107 - tensile yield strength; (Method: X)	-	N/A
	108 - min. current for the test according to clause 23.101; (Method: D)	-	N/A
	109 - T_{Max1} max. ambient temp. in which control may continuously remain in operated condition so that Table 14.1 temperatures are not exceeded ; (Method: D)	-	N/A
	110 - Time period, t_1: max. time during which ambient temp. can be higher than T_{Max1} after the control has operated; (Method: D)	-	N/A
	111 - Temp. limit above which automatic reset of a manual reset thermal cut-out or a voltage maintained thermal cut-out shall not occur (not higher than –20 °C); (Method: X)	-	N/A
	112 - For Type 2.P controls, the method of test; (Method: X)	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	113 - The click rate N or switching operations per minute for the purposes of testing to CISPR 14-1; (Method: X)	-	N/A
	114 - Rated functioning temperature (T_f); (Method: C)	-	N/A
	115 - Holding temperature (T_c); (Method: D)	-	N/A
	116 - Maximum temperature limit (T_m) ; (Method: D)	-	N/A
	117 - Agricultural thermostat; (Method: D)	-	N/A
7.2.3	For integral/separate controls Documentation (D) replaced with Declaration (X)	-	N/A
7.2.4	Marking for the integral control within the complex control included in the marking of the complex control	-	N/A
7.2.5	Documentation (D) satisfied by similar information in Marking (C).	OK	P
7.2.5.1	Declaration (X) satisfied by similar information in Documentation (D) or Marking (C)	OK	P
7.2.6	Information for Integrated control provided by Declaration (X).	-	N/A
	Incorporated control provided with manufacturers name or trademark and unique type reference when other required marking provided by Documentation (D)	OK	P
	Information for incorporated control intended for exclusive delivery to the equipment manufacturer.	OK	P
7.2.7	Controls with limited space marked with manufacturer's name or trademark and the unique type reference while other required marking included in Documentation (D)	-	N/A
7.2.8	Additional pertinent information permitted if does not rise misunderstanding .....:	-	N/A
7.2.9	Appropriate IEC symbols used per 7.2.9.....:	OK	P
7.3	Class II symbol		—
7.3.1	Used only for in-line cord, free-standing, and independently mounted controls	-	N/A
7.3.2	Outer square is approximately twice the size of the inner square	-	N/A
7.3.2.1	Largest dimension of the control (mm).....:	-	N/A
	Side dimension of outer square (mm) .....:	-	N/A
7.3.2.2	Controls providing protection against electric shock as required for class II including terminals for earthing continuity not be marked with the symbol for class II construction	-	N/A
7.4.1	Marking placed on the main body, on non-detachable parts	OK	P

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Clause	Requirement + Test	Result – Remark	Verdict
	Required marking legible and durable.....:	OK	P
7.4.2	An arrow pointing towards the terminal identifies terminals of control intended for connection of supply conductors	Self-evident	N/A
	Additional markings required by the National Wiring Codes provided .....:	-	N/A
7.4.3	Terminals for neutral external conductor identified by letter "N" In United Kingdom terminals exclusively for live external conductor marked L not used other ways	-	N/A
7.4.3.1	External earthing and continuity terminals and continuity terminals for functional purpose:	-	N/A
	Identified by protective earth symbol:	-	N/A
	Identified by functional earth symbol:	-	N/A
7.4.3.2	All other terminals appropriately identified	Self-evident	N/A
	For use in Canada and the U.S.A, terminal intended for grounded supply conductor provided in white/grey colour.	-	N/A
	For use in Canada and the U.S.A, the wire binding screw intended for equipment earthing conductor is slotted/ hexagonal green-coloured head. Location is such that it is unlikely to be removed during servicing.	-	N/A
	For use in Canada and the U.S.A, the pressure wire connector intended for equipment earthing conductor is marked GROUND, GROUNDING, EARTH, or by a marking on the wiring diagram shipped with the control. Location is such that it is unlikely to be removed during servicing of control.	-	N/A
	Additional markings required by National Wiring Codes of Canada and U.S.A provided .....:	-	N/A
7.4.4	Symbols “+” and “-“ provided to indicate the direction to increase or decrease response value for the controls to be set by the user or the equipment manufacturer.	-	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 operated.	-	N/A
7.4.6	Controls intended to be connected only to SELV systems marked with the graphic symbol:	-	N/A
	class III controls with earthing continuity terminals for functional purposes not be marked with the symbol for class III construction	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
8	PROTECTION AGAINST ELECTRIC SHOCK		—
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.	OK	P
	Protection against accidental contact with live parts of the lamp provided to allow safe insertion and removal of the lamps.	-	N/A
	Live parts connected to a SELV or PELV-circuits supply not exceeding 24 V considered to be non-hazardous.	-	N/A
	SELV- or PELV-circuits supplied at higher voltages 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
	The value of the voltage of SELV/PELV circuits considered to be not hazardous be specified at a different value:	-	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 by only 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.	OK	P
	Self-hardening sealing compounds exempted from the above requirements.	-	N/A
8.1.4	For controls connected to gas or water supply mains any metal part electrically connected to pipes is separated from hazardous live parts by double insulation or reinforced insulation.	-	N/A
8.1.5	Class II controls and controls for Class II equipment for fixed installation: protection not impaired by the installation of control / equipment	-	N/A
8.1.6	Integrated and Incorporated controls: tests made to accessible parts when control is mounted as intended with detachable parts removed.	No accessible parts after mounting	P
8.1.7	In-line and free-standing controls: tests are made when control fitted with cord; cross-sectional area of cord (mm²) .....:	-	N/A
8.1.8	Independently mounted controls: tests are made when control mounted as in normal use, fitted with cable or with a conduit; cross-sectional area of cable (mm²) .....:	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
8.1.9	Tests using the standard test finger and test pin:		—
	- not permissible to touch bare live parts.	-	N/A
	- controls with double insulation: not permissible to touch metal parts with test finger which are separated from live parts by basic insulation.	-	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 it are not separated from the source by protective impedance and are not a PEN conductor or a part of the equipotential bonding system.	-	N/A
8.2	Actuating members and means		—
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	Controls other than Class III or for other than Class III equipment: actuating members and handles to be held in normal use are:		—
	- of insulating material, or	-	N/A
	- covered by insulating material	-	N/A
	If of metal: accessible parts (if likely to become live in the event of an insulation fault) 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:		—
	- reliably connected to an earthing terminal/contact, or	-	N/A
	- shielded from live parts by earthed metal	-	N/A
	- separated from live parts by double or reinforced insulation.		
8.3	Capacitors		—
8.3.1	Class II in-line cord controls and independently mounted controls: capacitor not connected to accessible metal parts	-	N/A
	Controls for Class II equipment: capacitors 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:		—
	- accessible metal parts	-	N/A
	- metal parts likely to be connected to accessible metal parts	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
8.3.2	Controls connected to the supply by means of a plug: no risk of electric shock (from capacitor) when touching the pins of the plug	-	N/A
	Capacitance (µF) >0.1µF .....:	-	N/A
	Average voltage (V) < 34 V.....:	-	N/A
8.4	Covers and uninsulated live or hazardous parts; cover fixing screws:		—
	- 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		—
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:		—
	- 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:		—
	- 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	OK	P
9.2	Control of Class II or Class III:		—
	- no provision for protective earthing	-	N/A
	- interconnection terminal for earthing, if any, separated from live parts by double insulation or reinforced insulation	-	N/A
9.3	Adequacy of earth connections		—
9.3.1	Connection between earthing terminal and parts to be connected is of low resistance:		—
	- test current (A): 1.5 times rated current (min. 25 A) .....:	-	N/A
	- duration (h): until steady conditions .....:	-	N/A
	- voltage drop (V), integrated conductors included, external or internal conductors excluded .....:	-	N/A
	- calculated resistance (Ω):≤0.1 Ω.....:	-	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

IEC 60730-2-9			
Clause	Requirement + Test	Result – Remark	Verdict
9.3.4	Size of accessible earthing terminals		—
	- 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		—
	- 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		—
9.4.1	Material of earthing terminals, body:		—
	- body of earthing terminals made of brass	-	N/A
	- other metal not less resistant to corrosion .....:	Anticorrosive aluminium (the metal cap)	P
	- 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:		—
	- 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
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		—
10.1	Terminals and terminations for external copper conductors		—
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	No external copper conductors	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:		—
	- metric ISO thread; size .....:	-	—
	- ISO equivalent; size .....:	-	—
	- do not serve to fix other components	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	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:		—
	- terminal No. or identification .....:	-	—
	- Current (A) carried by terminal .....:	-	—
	- Flexible cord or fixed wiring .....:	-	—
	-conductor cross-sectional area - smallest (mm²) :	-	—
	-conductor cross-sectional area - largest (mm²) ..:	-	—
10.1.4.1	Terminal designed for wider range of conductor size declared .....:		—
10.1.4.2	Creepage and clearances between terminals for fixed wiring and between terminals and metal parts required in Canada and the USA	-	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:		—
	- kind of wire used .....:	-	—
	- cross-sectional area (mm²) .....:	-	—
	- applied torque value (Nm) .....:	-	—
	- 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:		—
	- no special preparation of conductor required	-	N/A
10.1.7.1	- alternative means of connection applied	-	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 fitted with conductors:		—
	- cross-sectional area (mm²) .....:	-	—

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Clause	Requirement + Test	Result – Remark	Verdict
	- Flexible cord / Fixed wiring .....:	-	—
10.1.8.3	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		—
10.1.9.1	Appropriate conductors fitted; torque applied on screws (Nm): 2/3 of values in Table 19.1	-	N/A
10.1.9.2	Pull-out force applied for 1 min to the conductor:		—
	- adjacent to the terminal, or	-	N/A
	- near the crimping or clamping device holding the conductor.	-	N/A
10.1.9.3	Conductor did not move appreciably after pull-out test	-	N/A
10.1.11	Location of terminals in reasonable proximity	-	N/A
10.1.12	Test of escaped wire for terminals with attachment methods X or M	-	N/A
	Free wire of stranded conductor makes no contact with accessible metal parts	-	N/A
	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 passes beyond the edge of the screw	-	N/A
10.1.16	Flying Leads used in U.S.A. and Canada	-	N/A
10.2	Terminals and terminations for internal conductors		—
10.2.1	Connectable conductors	OK	P
10.2.2	Terminals suitable for their purpose	OK	P
10.2.3	In soldered terminals: soldering is not the only means to maintain conductor in position	-	N/A
	In soldered terminals: barriers provided to prevent reduction in creepage and clearance.	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
10.2.4	Flat push-on connectors		—
10.2.4.1	Dimension of tabs:		—
	- measured (mm x mm) .....:	4.8x0.5 or 4.8x0.8 or 6.3 x 0.8	P
	- compliance with Fig. 14, 15, 16 or IEC/EN 61210	OK	P
	- other dimensions allowed (mm x mm) .....:	-	N/A
	- polarized acceptance of receptacles allowed.	-	N/A
10.2.4.2	Tabs forming part of a control consist of material appropriate to the maximum temperatures allowed (table 10.2.4.2)	OK	P
10.2.4.3	Mechanical strength of tabs.	OK	P
10.2.4.4	Space between tabs; applying appropriate receptacles on each tab:		—
	- no strain, no distortion to any of the tabs or adjacent parts	OK	P
	- no reduction of creepage distance or clearances below values of Cl. 20	OK	P
10.3	Terminals and terminations for integrated conductors	-	N/A

11	CONSTRUCTION REQUIREMENTS		—
11.1.1	Insulating materials		—
	USA: Requirements for insulating materials see Annex D.		—
	Wood, cotton, silk, ordinary paper etc. not used as insulation unless impregnated, or	OK	P
11.1.2	Current carrying part other than threaded parts of terminals, if made of brass:		—
	- contain at least 50% copper if cast or from bar	-	N/A
	- contain at least 58%copper if from rolled sheet	OK	P
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
11.1.101	Parts containing liquid metal (IEC60730-2-9:08)		—
	for control declared under req. 106 of table 7.2, parts containing Hg, Na or Ka, shall be constructed of metal that has a tensile strength at least 4 times the circumsferential or other stress on the parts at the temperature 1.2 x max. temperature of the sensing element: (IEC60730-2-9:08)	-	N/A
	test by inspection of manufacturer's declaration and test acc. to clause 18.102: (IEC60730-2-9:08)	-	N/A
11.2	Protection against electric shock		—
11.2.1	Double insulation:		—

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Clause	Requirement + Test	Result – Remark	Verdict
	- basic insulation and supplementary insulation can be tested separately, or	-	N/A
	- properties of both insulations are otherwise provided	-	N/A
11.2.1.1	Insulation regarded as reinforced insulation if requirements of 11.2.1 not met	-	N/A
11.2.2	Infringement of double or reinforced insulation in Class II controls:		—
	- 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:		—
	- not subjected to undue mechanical or thermal stresses	-	N/A
	- insulation properties comply with IEC 60227 (EU: H05 VV-F) or IEC 60245 (EU: H05 RR-F)	-	N/A
11.2.6	Protection against electric shock by use of SELV or PELV(Annex T)	-	N/A
11.2.7	Adequate measures shall be provided to prevent the interconnection of an integrated SELV circuit to an external PELV circuit and vice versa	-	N/A
	The supply of a Class III control from an external SELV source by means of a separable connection by means of a dedicated plug and socket system which cannot be fitted or interconnected with other connecting systems	-	N/A
11.3	Actuation and operation		—
11.3.1	Full-disconnection:		—
	- 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:		—
	- one supply pole, at least, separated	OK	P

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Clause	Requirement + Test	Result – Remark	Verdict
	- separated pole meets electric strength requirements, Cl. 13	OK	P
	- any subsequent action does not cause reduction of contact separation below value required by the Electric Strength Test	OK	P
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	-	N/A
11.3.5	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
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	OK	P
11.3.7	Contacts which cannot (or are not intended to) be operated on load nor arc under normal use	-	N/A
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		—
	- contacts are open or closed as intended	OK	P
	- 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		—
	- pull force vertically downwards (N): ≤ 45 N .....:	-	N/A
	- pull force 45° to vertical (N): ≤ 70 N .....:	-	N/A
	- function after release	-	N/A
	The second explanatory paragraph is not applicable to controls classified as Type 1.X or 2.X or Type 1.Z or 2.Z (IEC60730-2-9:08)	-	N/A
11.4	Actions		—
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
	type 2 actions (additional subclauses) (IEC60730-2-9:08)	-	N/A
11.4.3.101	thermal cut out: capacitors not connected across the contacts (except in Canada and USA): (IEC60730-2-9:08)	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
11.4.3.102	Constructions requiring a soldering operation to reset thermal cut-outs are not permitted (IEC60730-2-9:08)	-	N/A
	thermal cut out: soldering operation to reset not permitted: (IEC60730-2-9:08)	-	N/A
11.4.3.102	thermal cut out: soldering operation to reset not permitted: (IEC60730-2-9:08)	-	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.	1.B	P
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
	- 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	Replacement: type 2.K action (IEC60730-2-9:08)		—
11.4.13.101	Type 2.K action: event of break (sensing element and switch head): declared disconnection/ interruption provided before declared operating value plus drift is exceeded:	-	N/A
	Test:		—
	Breaking the sensing element:	-	N/A
	Control heated within 10K of operating temperature; temperature [°C]:	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	Temperature increased 1K/min; rising degree [K/min]:	-	N/A
	Contacts open before declared operating temperature plus drift is exceeded; temperature [°C]:	-	N/A
11.4.13.102	Also achieved by compliance a), b) or c)	-	N/A
	a) two sensing elements operating independently actuating one switch head:	-	N/A
	b1) bi-metallic sensing elements: with exposed elements attached with at least double spot welding of the bimetal at both of its end:	-	N/A
	b2) bi-metallic sensing elements: so located/ installed in a control of such construction that the bimetal is not likely to be physically damaged during installation and use	-	N/A
	c) if loss of fluid fill causes the contacts to remain closed: test with impact tool, fig. 11.4.13.102, dropped once, height 0.6m, tapered end, capillary on concrete surface:	-	N/A
	No damage to the bulb or capillary:	-	N/A
	No escape of any of the fill:	-	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
11.4.16	Type 1Y or 2Y action(Annex H)	-	N/A
11.4.17	Type 2.AL action (Annex J)	-	N/A
11.4.101	Type 2.N action: event of leak (sensing element or part between sensing element and switch head): declared disconnection or interruption provided before declared operating value plus drift is exceeded: (IEC60730-2-9:08)	-	N/A
	Operating value (conditions acc. to part 1, clause 15); measured [°C]: (IEC60730-2-9:08)	-	N/A
	If means for setting: set to highest value: (IEC60730-2-9:08)	-	N/A
	A hole is produced in the sensing element: (IEC60730-2-9:08)	-	N/A
	Measurement of operating value repeated; measured [°C]: (IEC60730-2-9:08)	-	N/A
	no positive drift above declared value; declared value [°C]; measured [K]: (IEC60730-2-9:08)	-	N/A
	test replaced by theoretical computation of the physical mode of operation: (IEC60730-2-9:08)	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	Canada and USA type 2.N tested acc 11.4.13.102 c) (IEC60730-2-9:08)	-	N/A
11.4.102	type 2.P action: operates in its intended manner after thermal cycling test according to clause 17.101: (IEC60730-2-9:08)	-	N/A
11.4.103	bi-metallic single operation device doesn't reset above the declared reset value (requirement 103 of table 7.2), test according to clause 17.15: (IEC60730-2-9:08)	-	N/A
11.4.104	type 1.X or 2.X action so designed that turn action can only be accomplished after the completion of a push or pull action. Only rotation shall be required to return the actuation member of the control to the off or rest position, test according to clause 18.101 (IEC60730-2-9:08):	-	N/A
11.4.105	type 1.Z or 2.Z action so designed that turn action can only be accomplished after the completion of a pull or push action, test according to clause 18.101: (IEC60730-2-9:08)	-	N/A
11.4.106	A voltage maintained thermal cut-out shall be so designed that it does not reset above the reset value declared in table 7.2, item 111.; value: (IEC60730-2-9:08)	-	N/A
11.4.107	Type 1.AM or 2.AM action shall be so designed that it operates in its intended manner after the declared agricultural environmental exposures. Tests according to Annex DD. (IEC60730-2-9:08)	-	N/A
11.5	Openings in enclosures (drain holes)		—
	- minimum area (mm^2): .....:	-	N/A
	- maximum area (mm^2): .....:	-	N/A
	- minimum dimension (mm^2): .....:	-	N/A
11.6	Mounting of controls		—
11.6.1	Control mounted according to manufacturer's declaration: does not adversely affect compliance with this standard	OK	P
11.6.2	Control mounted as declared, if movement or removal could adversely affect compliance with this standard:		—
	- cannot rotate or be displaced	OK	P
	- cannot be removed without the aid of a tool	-	N/A
	- when removal (even partial) is necessary for use, requirements of clauses 8, 13, and 20 are satisfied before and after removal.	-	N/A
	Controls, other than with rotary actuation, fixed by a nut and single bushing:		—
	- tightening of the nut requires a tool	-	N/A
	- parts have adequate mechanical strength	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	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		—
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 is required:		—
	- box 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
11.6.3.101	For agricultural thermostats declared in Table 7.2, item 117, the mounting method shall be such that the integrity of the protection by the enclosure is not compromised. (IEC60730-2-9:08)	-	N/A
11.7	Attachment of cords		—
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	-	N/A
11.7.2	Cord anchorages		—
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
	- conductor relieved from strain	-	N/A
	- conductor relieved from twisting	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	- conductors covering protected from abrasion	-	N/A
11.7.2.2	Cord anchorages of Class II controls:		—
	- 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:		—
	- 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:		—
	- 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:		—
	- 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:		—
	- 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)	-	N/A
11.7.2.11	Pull test for control fitted with flexible cord(s)	-	N/A
11.7.2.12	Torque Test	-	N/A
	Free-standing control, weight (kg) .....:	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	In-line cord controls	-	N/A
11.7.2.13	Attachment method X:		—
	- 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	Test results:		—
	- cord not damaged	-	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		—
11.8.1	- rubber sheathed, not lighter than 60245; type (EN 60730-1: H05 RR-F) type : .....:	-	N/A
	- PVC sheathed, not lighter than 60227; type (EN 60730-1: H05 VV-F); type .....:	-	N/A
	- exception: if specified in particular equipment standard.....:	-	N/A
	- exception: for connection to external SELV devices (sensors/units)	-	N/A
11.8.2	Size of conductors in non-detachable cords:		—
	- nominal current (A) .....:	-	N/A
	- required cross-sectional area (mm²) .....:	-	N/A
	- measured cross-sectional area (mm²) .....:	-	N/A
11.8.3	Space inside the control for flexible cords:		—
	- connecting cords of largest cross-section (10.1.4) (mm²) .....:	-	N/A
	- adequate space for easy introduction and connection	-	N/A
	- possibility to check the correct connection	-	N/A
	- cover can be fitted without risk of damage to the conductors	-	N/A
11.9	Inlet openings		—
11.9.1	Inlet openings for flexible external cords:		—
	- designed to prevent damage of the covering of the cord when introducing connectors	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	- provided with inlet bushing	-	N/A
11.9.1.1	Conduit entries and knock-outs of independently mounted controls designed and located that introduction does not affect protection against electric shock or reduces distances and clearances (Cl. 20)	-	N/A
11.9.2	Inlet openings without inlet bushing made of insulating material	-	N/A
11.9.3	Inlet bushing:		—
	- 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		—
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:		—
	- 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
11.11	Requirements during mounting, maintenance and servicing		—
11.11.1	Covers and their fixing		—
11.11.1.1	Removal of covers does not affect setting of the controls other than integrated	-	N/A
11.11.1.2	Covers:		—
	- cannot be displaced or replaced incorrectly	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	- 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:		—
	- 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
	- 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		—
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:		—
	- 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:		—
	- insulated from live parts	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	- fitting and replacement possible without live parts becoming accessible	-	N/A
11.11.7	Insulating linings, barriers etc.:		—
	- adequate mechanical strength	-	N/A
	- secured in a reliable manner	-	N/A
11.12	Controls using software.....:	See annex H	—
11.13	Protective controls and components of protective control system		—
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
11.13.3	The temperature monitoring devices have an adequate response time on safety grounds, consistent with measurement function	-	N/A
11.101	If time factor declared: checked by one of the methods in annex BB: (IEC60730-2-9:08)	-	N/A

12	MOISTURE AND DUST RESISTANCE		—
12.1.1	Protection against ingress of water and dust IP Classification of the product .....:	IP00	N/A
12.1.2	Electric Strength Test, 13.2 after 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 in heating cabinet at temperature (°C): (70 ± 2) °C for duration (h): 10 days (240 h)		—
12.1.6.2	Parts then left at room temperature, duration (h): > 16 h .....:	-	N/A
12.2	Protection against humid conditions		—
12.2.6	Detachable parts: removed and tested with main part, if necessary	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
12.2.7	2 days (48 h) Humidity Test for IPx0 controls	OK	P
	7 days (168 h) Humidity Test for other controls	-	N/A
12.2.8	Relative humidity (%): 91-95% .....:	93%	P
	Temperature (°C): (20 - 30 ± 1) °C .....:	25 °C	P
12.2.9	Tests executed immediately after the humidity treatment (after the reassembly of detached parts)		—
	- in-line, free-standing and independently mounted controls according to Insulation Resistance (13.1)	-	N/A
	- Electric Strength (13.2)	-	N/A
	- integrated and incorporated controls according to Electric Strength (13.2)	OK	P
12.3	Leakage current test for in-line cord and free -standing controls		—
12.3.1	Supply voltage; 1.06 V_r (V) .....:	-	N/A
	Max. rated current (A) .....:	-	N/A
	Max. declared ambient temperature, °C .....:	-	N/A
12.3.2	Leakage current measured between live and accessible parts	-	N/A
12.3.3	Measuring circuits used: figure number .....:	-	N/A
12.3.4	During measurement all control circuits closed except controls tested to Figs. 26, 29 and 30 checked with switch S1 in the open and closed position	-	N/A
12.3.5	Impedance of measuring circuits (Ω).....:	-	N/A
	Time constant (µs).....:	-	N/A
12.3.6	Error and accuracy of measuring circuit ≤5% .....:	-	N/A
12.3.7	Max. leakage current	-	N/A
12.101	Refrigeration controls(IEC60730-2-9:08)		—
12.101.1	Tests according to 12.101.2 up to 12.101.6:	-	N/A
12.101.2	Controls using potting compound, softening test:		—
	Two samples stored 16h at max. operating temperature plus 15°C in climatic cabinet:	-	N/A
	Potting material not unduly soften distort, crack or deteriorate:	-	N/A
12.101.3	Heating-freezing cycle test:		—
	The two samples of 12.101.2 plus one untested sample placed in water 90°C±5°C, 2h; temperature [°C]:	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	Then transferred to water below 5°C, and afterwards stored for 2h in a climatic cabinet at -35°C; temperature of the water [°C]; temperature of the climatic cabinet [°C]:	-	N/A
	10 cycles executed:	-	N/A
12.101.4	Consecutive heating-freezing cycles:		—
	Two cycles in one working day:	-	N/A
	Ten cycles in five working days:	-	N/A
	Storage of the samples between the cycles, over the night in water at room temperature:	-	N/A
12.101.5	After the last freezing period:		—
	Samples thawed in water at room temperature:	-	N/A
	Insulation resistance has to be measured:	-	N/A
	Current carrying parts – grounded parts; required; measured:	50k; k	N/A
	Current carrying parts – surface of potting material and/ or insulation material; required; measured:	50k; k	N/A
12.101.6	Samples still moist:		—
	Electric strength test (2 x Vr + 1000V):	-	N/A
	Current carrying parts – grounded parts; required; measured:	-	N/A
	Current carrying parts – surface of potting material and/ or insulation material; required; measured:	-	N/A
	-no flashover or breakdown occurs:	-	N/A

13	ELECTRIC STRENGTH AND INSULATION RESISTANCE		—
	for USA and Canada: independently mounted room thermostats for direct control of an electric space-heating equipment with resistance load	-	N/A
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 (Vdc) .....:	-	N/A
13.1.4	Insulation resistance measured		—
	- basic insulation`≥ 2 MΩ .....:	-	N/A
	- supplementary insulation ≥ 5 MΩ.....:	-	N/A
	- reinforced insulation ≥ 7 MΩ .....:	-	N/A
13.2	Electric strength of (all) controls (IEC60730-2-9:08)		—
A	-for USA and Canada: control-voltage over 50V dielectric strength 900V for 1minute		—

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Clause	Requirement + Test	Result – Remark	Verdict
	-same sample as for cl. 17.16.102 (sample 1)	OK	P
	Test voltage:	See 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	P
13.3	Leakage current of in-line cord and free-standing controls after the tests of 13.1 or 13.2		—
	Test voltage (V) .....:	-	N/A
13.3.3	Leakage current measured.	-	N/A

14	HEATING		—
14.1.2	Temperatures recorded during Heating Test did not exceed the values in Table 14.1	-	N/A
14.2	Terminals fitted with external conductors of the intermediate cross-sectional area (mm²) .....:	-	N/A
14.2.1	Attachment method M, Y or Z: cords as declared or supplied (mm²) .....:	-	N/A
14.2.2	Terminals for flexible and fixed conductors: appropriate flexible cord (mm²) .....:	-	N/A
14.2.3	Terminals not for external conductors: conductors of minimum cross-sectional area or as declared in 7.2 (mm²) .....:	1.0	P
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:		—
	- voltage (V): most unfavourable value between 0.94 and 1.06 times U_R .....:	-	N/A
	- voltage (V) if circuit not voltage sensitive: min. 10% of U_R .....:	30	P
	- current (A): most unfavourable value between 0.94 and 1.06 times I_R .....:	11	P
14.4.1	For circuits and contacts other than for external loads, load(s) as specified by the manufacturer: voltage (V); current (A) .....:	-	N/A
14.4.2	Actuating members placed in most unfavourable position	-	N/A
14.4.3	Contacts initially closed at rated current and rated voltage	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
14.4.3.1	Temperature sensing controls:		—
	- temperature of sensing element is raised or lowered (5 ± 1) °C from operating temperature such that contacts are then in closed position	OK	P
	- operating temperature (°C) .....:		
	- temperature for heating test (°C) .....:	145	P
	If the whole control is declared as the sensing element: heating test conducted under conditions of 14.4.3.1 and 14.5.1	The contact remains open under 14.5.1	P
	If all contacts are open under 14.4.3.1 conditions parts are considered to have reached the higher of T_{max} or temperature determined under 14.5.1 (°C) .....:	-	N/A
14.4.3.1	For a voltage maintained thermal cut-out, the heating test of 14.4.3.1 is completed after which (IEC60730-2-9:08)		—
A	The temperature of the sensing element is raised until the contacts open.	-	N/A
	At this time, the ambient temperature surrounding the sensing element is reduced to $T_{max.1}$ in time, t_1, at a uniform rate.	-	N/A
	The test of 14.5.1 is then completed.	-	N/A
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
14.5.1	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) .....:	190 °C	P
	Mounting surface of the switch head maintained between $T_{s\ max}$ and ($T_{s\ max}$ + 5) °C, or between $T_{s\ max}$ 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
14.101	the following is applicable to controls classified under 6.7.101 to 6.7.103 inclusive (cooking appliance, self-cleaning, food handling) (IEC60730-2-9:08):		—
14.101.1	test of 17.16.101 may be conducted after the conditioning of 14.102 and 14.102.1, if temperature of insulating parts exceeds the permitted (this is a mean to comply with note 12):	-	N/A
14.102	An untested sample is conditioned for 1000h in an oven:		—
	temperature; required [°C]; measured [°C]:	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	control shall not be energised:	-	N/A
14.102.1	if the elevated temperature is localised, such or near a terminal, the 1000h conditioning is conducted between Tmax and Tmax+5% for normal conditions:	-	N/A
	contacts closed, non-cycling:	-	N/A
	bi-metallic heaters energised with the corresponding current:	-	N/A

15	MANUFACTURING DEVIATION AND DRIFT		—
15.1	Adequate consistency of declared operating value etc. required for parts of controls providing Type 2 actions	-	N/A
	Deviation and drift acc. to annex AA unless otherwise declared by manufacturer : (IEC60730-2-9:08)	-	N/A
	Alternatively, declared deviation may be expressed as a tolerance value	-	N/A
15.2	Measurement of deviation and drift	-	N/A
15.4	Addition: manufacturers deviation and drift may be expressed separately as tolerance value to the declared operating value (IEC60730-2-9:08):	-	N/A
15.5.3	Additional subclauses (IEC60730-2-9:08):		—
15.5.3.101	Setting by the user shall be set at the maximum operating temperature; temperature [°C]:	-	N/A
	Otherwise declared; temperature [°C]:	-	N/A
15.5.3.102	Portion of control (bi-metallic or similar) exposed to a controlled ambient temperature:	-	N/A
	Placed in a circulating oven (to determine the operating value):	-	N/A
15.5.3.103	Bi-metallic and similar type of controls:	-	N/A
	Temperature determined by a 0.25mm thermo-couple on an identical control not electrically connected, adjacent to the control under test:	-	N/A
15.5.3.104	Fluid expansion control:	-	N/A
	0.25mm (max) thermocouple attached to the sensing portion:	-	N/A
15.5.3.105	Fluid expansion or contraction type controls:	-	N/A
	Sensing part (intended use ore as declared) placed in a circulating air oven or in a liquid bath:	-	N/A
15.5.3.106	Temperature of the oven rapidly increased or decreased to 10K below/ above expected operation temperature; temperature [°C]:	-	N/A
	Condition of equilibrium achieved:	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	Rate of temperature change reduced to max. 0.5K/min or as declared; degree of change [K/min]:	-	N/A
15.5.3.107	Operation sensed by a suitable device:	-	N/A
	Current max. 0.05A; current [A]:	-	N/A
	Voltage; voltage [V]:	-	N/A
15.5.3.108	Operating values recorded, see attached sheet; sheet no.:	-	N/A
15.5.3.109	Bi-metallic single operation devices, satisfactory disconnection:	-	N/A
	Voltage, table 13.2 applies; voltage[V] :	-	N/A
15.5.4	Not applicable (IEC60730-2-9:08):		—
15.5.5	Not applicable (IEC60730-2-9:08):		—
15.5.6	To be recorded (3 samples):	-	N/A
	- operating value, or	-	N/A
	- operating time, or	-	N/A
	- operating sequence	-	N/A
	Requirement: no two samples differ from each other by an amount exceeding the declared deviation	-	N/A
	Addition: alternatively: manufacturing deviation according to annex AA (IEC60730-2-9:08):	-	N/A

16	ENVIRONMENTAL STRESS		—
	Addition:not applicable to single-operation devices: (IEC60730-2-9:08)	OK	P
	Test result	OK	P
16.1	Control can withstand the level of stress likely to occur in transportation and storage	-	N/A
16.2	Environmental stress of temperature	OK	P
	Entire control (not energized) maintained for 24h at a temperature of (-10 ± 2) °C or as declared	-25 (Annex ZB)	P
	Entire control (not energized) maintained for 4h at a temperature of (60 ± 5) °C or as declared	60	P
16.2.3	Control capable of being actuated at room temperature to provide disconnection as declared (without dismantling)	OK	P
16.2.4	Controls with Type 2 actions after repetition of the appropriate test of Cl. 15: manufacturer's deviation and/or drift not greater than declared (Table 7.2, item 42)	-	N/A

17.	ENDURANCE		—

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Clause	Requirement + Test	Result – Remark	Verdict
17.1 to 17.5	General requirements, see IEC/EN 60730-1 and IEC/EN 60730-2-9		—
17.2	Electrical conditions for the tests		—
	Type of circuit	**substantially resistive**/ ~~resistive or inductive/ declared specific load/20 mA load/ declared motor load/ pilot duty load~~	—
	Rated voltage(V):	250	P
	Rated current(A):	10	P
	Rated frequency(Hz)	50	P
17.3	Thermal conditions for the tests		—
	Parts other than temperature sensing elements		—
	Accessible parts, (°C) :	-	N/A
	Mounting surface, temperature: (°C) :	-	N/A
	Remainder of switch head, temperature:(°C) :	-	N/A
17.4	Manual and mechanical conditions for the tests		—
	- see IEC/EN 60730-1		—
17.5	Dielectric strength requirements		—
	- see cl. 17.14		—
17.6	Ageing test		—
17.6.1	Controls of 1M or 2M action (operating after a declared ageing period):		—
	- sensing element maintained at activating quantity determined in Cl. 14	-	N/A
	- other parts maintained as specified in 17.3	-	N/A
	- electrically loaded as specified in 17.2, breaking conditions: voltage (V); current (A) :	-	N/A
	- duration (h): (100 + 0,02 y) h; y (h): ageing period declared in 7.2 :	-	N/A
17.6.2	If control operates during test of 17.6.1: new value actuating quantity	-	N/A
17.7	Over-voltage test of automatic action at accelerated rate.		—
	Test voltage (1,15xV_R)(V):	288	P
	Test current making (A, cosφ, ms)::	11.5; 0.98	P
	Test current breaking A, cosφ, ms):	11.5; 0.98	P
	Number of cycles(no):	200	P

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Clause	Requirement + Test	Result – Remark	Verdict
17.8	Test of automatic action at accelerated rate		—
17.8.4.101	Independently mounted and in-line cord controls, number of automatic cycles as indicated in CC.1 of IEC 60730-2-9 annex CC (For Canada amd USA see CC.2); number of cycles:	-	N/A
	higher number declared; number:	-	N/A
	Test voltage (V_R)(V):	250	P
	Test current making (A, cosφ, ms)::	10; 0.98	P
	Test current breaking(A, cosφ, ms):	10; 0.98	P
	Number of cycles(no):	800	P
17.9	Test of automatic action at slow rate (slow make, slow break controls only)		—
	Test voltage (V_R)(V):	-	N/A
	Test current making (A, cosφ, ms)::	-	N/A
	Test current breaking(A, cosφ, ms):	-	N/A
	Number of cycles(no):	-	N/A
17.10	Over-voltage test of manual action at accelerated speed		—
	Test voltage (1,15xV_R)(V):	288	P
	Test current making (A, cosφ, ms)::	11.5; 0.98	P
	Test current breaking(A, cosφ, ms):	11.5; 0.98	P
	Number of cycles(no):	100	P
17.11	Test of manual action at slow speed		—
	Test voltage (V_R)(V):	250	P
	Test current making (A, cosφ, ms)::	10; 0.98	P
	Test current breaking(A, cosφ, ms):	10; 0.98	P
	Number of cycles(no):	100	P
17.12	Test of manual action at high speed (controls with more than one pole and where polarity reversal occurs during the action)		—
	- number of poles :	-	N/A
	Test voltage (V_R)(V):	-	N/A
	Test current making (A, cosφ, ms)::	-	N/A
	Test current breaking(A, cosφ, ms):	-	N/A
	Number of cycles(no):	-	N/A
17.13	Test of manual action at accelerated speed		—
	Test voltage (V_R)(V):	250	P
	Test current making (A, cosφ, ms)::	10; 0.98	P
	Test current breaking(A, cos, ms):	10; 0.98	P

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Clause	Requirement + Test	Result – Remark	Verdict
	Number of cycles(no):	5800	P
17.14	Evaluation of compliance		—
	Actions function in the intended and declared manner:		—
	- automatically	OK	P
	- manually	OK	P
	The following requirements are still met:		—
	- Cl. 14, heating: terminals for external conductors: measured (°C); requirement (°C) :	-	N/A
	- Cl. 14, heating: other terminals: measured (°C); requirement (°C) :	163	P
	- Cl. 14, heating: current-carrying parts: measured (°C); requirement (°C) :	163	P
	- Cl. 14, heating: supporting surfaces: measured (°C); requirement (°C) :	-	N/A
	- Cl. 8, protection against electric shock	OK	P
	Test of insulation or disconnection (Table 13.2, test voltage 75% of value), no flashover or breakdown:		—
	- operational insulation: working voltage (V); test voltage (V) :	-	N/A
	- basic insulation: working voltage (V); test voltage (V) :	250; 1088	P
	- supplementary insulation: working voltage (V); test voltage (V) :	-	N/A
	- reinforced insulation: working voltage (V); test voltage (V) :	-	N/A
	- across full-disconnection: working voltage (V); test voltage (V) :	-	N/A
	- across micro-disconnection: working voltage (V); test voltage (V) :	250; 375	P
	- across micro-interruption: working voltage (V); test voltage (V) :	-	N/A
	- Cl. 20, distances and clearances	OK	P
	Requirements of Cl. 15 for Type 2 actions are still met (drift and manufacturing deviations). Appropriate test repeated:		—
	- conditions as used in Cl. 15 :	-	N/A
	- rate of change of activating quantity :	-	N/A
	- operating value :	-	N/A
	- operating time :	-	N/A
	- operating sequence :	-	N/A
	Drift and or deviation measured	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	Manual actions: declared circuit disconnection can be obtained	-	N/A
	No evidence that any transient fault has occurred between live parts and:		—
	- earthed metal parts	-	N/A
	- accessible metal parts	-	N/A
	- actuating members	-	N/A
17.15	Replacement: single operation devices (IEC60730-2-9:08)		—
17.15.1	Bi-metallic single operation devices shall be subjected to the following tests:		—
17.15.1.1	6 samples (after appropriate test clause 15): maintained 7h at –35°C or 0°C (as declared in table 7.2, requirement 103):	-	N/A
	no reset, test acc. to 15.5.3.109:	-	N/A
17.15.1.2	6 untested Bi-metallic SOD's conditioned 720h at the lower temp. of either:		—
	90 % of the declared operating value ±1 K, or	-	N/A
	(7 ± 1) K below the declared operating value.	-	N/A
17.15.1.2.1	Devices do not operate (detected acc. 15.5.3.107):	-	N/A
17.15.1.2.2	The appropriate tests of clause 15 shall be repeated on the six samples subjected to the conditioning of 17.15.1.2 and	-	N/A
	the temperature measured shall be within the declared deviation limits. (results see attached sheet); sheet no.:	-	N/A
17.15.1.3	For bi-metallic SOD's		—
	with a declared reset temperature of -35 °C	-	N/A
	6 untested samples shall be subjected to an over-voltage test for one cycle under the electrical conditions of table 17.2-1 or table 17.2-2, as appropriate.	-	N/A
	overload test in Canada, China, and the USA	-	N/A
17.15.1.3.1	For bi-metallic SOD's with a declared reset temperature of 0 °C	-	N/A
	1 sample subjected to an over-voltage test of 50 cycles under the electrical conditions of table 17.2-1 or table 17.2-2, as appropriate; voltage [V]; current [A]; cos , number of executed cycles:	-	N/A
	overload test in Canada, China, and the USA ; voltage [V]; current [A]; cos , number of executed cycles:	-	N/A
17.15.2	The thermal sensing element of the non bi-metallic SOD's shall be subjected to the tests of clause 11 of IEC 60691,	-	N/A
	except that a suitable test apparatus shall be used to heat the sensing element of the sample, and	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	take care to prevent other parts of the control becoming exposed to temperatures in excess of their intended use.	-	N/A
17.15.3.1	If reset temperature 0°C, one sample subjected to an overvoltage (overload) test, 50 cycles, conditions 17.2.1 or 17.2.2; voltage [V]; current [A]; cos , number of executed cycles:	-	N/A
	Further cycles: number see table 7.2 requirement 104; rated voltage [V]; rated current [A]; rated cos , number of executed cycles:	-	N/A
	appropriate test of clause 15 repeated: operating temperature within declared deviation limits; temperature [°C]:	-	N/A
17.16	Tests for particular purpose controls, additional subclauses (IEC60730-2-9:08)		—
17.16.101	Thermostats:		—
	17.1 to 17.5 applicable:	-	N/A
	17.6 applicable to actions type 1.M or 2.M, value “X“: the greater of 5K ± 1K or ±5% of the original activating quantity:	-	N/A
	17.7 and 17.8 are applicable:	-	N/A
	17.9 applicable to slow make and break automatic action:	-	N/A
	17.9.3.1 not applicable	-	N/A
	17.10 to 17.13 applicable to thermostats with manual action and means for setting by the user:	-	N/A
	17.14 is applicable:	-	N/A
	17.15 is not applicable:	-	N/A
17.16.102	For USA and Canada: independently mounted room thermostats for direct control of an electric space-heating equipment with resistance load		—
17.16.102.1	Over-current test for 50cycles, 6 cycles/min sample 1 and 2:	-	N/A
	Operating values acc. tab. 17.2-2 IEC 60730-1:	-	N/A
17.16.102.2	Endurance test for 6000cycles, 1 cycle/min sample 1 and 2:	-	N/A
	Operating values 110% x In, 110% x Un ON-time 50%±20:	-	N/A
17.16.102.3	Endurance test for additional 30000cycles, 1 cycle/min sample 1:	-	N/A
	Operating values In, Un, ON-time 50%±20:	-	N/A
17.16.103	Temperature limiters		—
	17.1 to 17.5 is applicable:	OK	P

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Clause	Requirement + Test	Result – Remark	Verdict
	17.6 is applicable to actions type 1.M or 2.M, value “X“: the greater of 5K ± 1K or ±5% of the original activating quantity:	-	N/A
	17.7 and 17.8 are applicable, except if reset operation is obtained by actuation:	OK	P
	Actuation: 17.4 (for accelerated speed) as permitted by mechanism or declared, table 7.2, requirement 37:	OK	P
	17.9 applicable to slow make and break automatic action:	-	N/A
	17.9.3.1 not applicable:	-	N/A
	17.10 to 17.13 not applicable to normal reset manual action (tested according to 17.7 to 17.9) applicable if other manual actions not tested during automatic tests:	OK	P
	17.14 is applicable:	OK	P
	17.15 is not applicable:	-	N/A
17.16.104	Thermal cut-outs:		—
	17.1 to 17.5 applicable:	-	N/A
	17.6 applicable to actions type 1.M or 2.M, value “X“: the greater of 5K ± 1K or ±5% of the original activating quantity:	-	N/A
	17.7 and 17.8 are applicable, except if reset operation is obtained by actuation:	-	N/A
	actuation: 17.4 (for accelerated speed) as permitted by mechanism or declared, table 7.2, requirement 37:	-	N/A
	17.9 applicable to slow make and break automatic action, for manual reset: conditions specified for 17.7 and 17.8 being used:	-	N/A
	17.9.3.1 not applicable:	-	N/A
	17.10 to 17.13 not applicable to normal reset manual action (tested according to 17.7 to 17.9) applicable if other manual actions not tested during automatic tests:	-	N/A
	17.14 is applicable:	-	N/A
	17.15 is not applicable:	-	N/A
17.16.104.1	For voltage maintained thermal cut-outs, the test of 17.16.108 is applicable (IEC60730-2-9:08)	-	N/A
17.16.105	USA and Canada: controls with two or more electrical ratings		—
	rating 1: type of load; voltage; current cycles (not less then 25% of declared cycles)	-	N/A
	rating 2: type of load; voltage; current cycles (not less then 25% of declared cycles)	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
17.16.106	evaluation of materials		—
	the following tests are conducted as indicated in 14.101.1		—
	test of 17.7: 50 operations:	not declared acc. to 6.7.101 .. 6.7.103	N/A
	test of 17.8: 1000 operations:	-	N/A
	conducted at an ambient temperature of 20°C ± 5°C:	-	N/A
	after the test, control complies with clause 17.5:	-	N/A
17.16.107	over-temperature test of sensing element		—
	controls declared under req. 105 of table 7.2, the sensing element portion of a previously untested sample is exposed to 250 thermal cycles:	no separate sensing element	N/A
	ambient temperature; temperature [°C]:	-	N/A
	rate of temperature change; rate [K/min]:	-	N/A
	temperature extremes are maintained for 30min:	-	N/A
	after the test control complies with clause 17.14:	-	N/A
17.16.108	Voltage maintained thermal cut-out: These requirements apply to a voltage maintained thermal cut-out (IEC60730-2-9:08)		—
	in the operated condition with the voltage across it.	-	N/A
	6 untested voltage maintained thermal cut-outs are conditioned for 7 h at a temperature of –20 °C (or lower, if declared); temperature [°C]:	-	N/A
	Operation of the voltage maintained thermal cut-outs shall be detected as indicated in 15.5.3.107.	-	N/A
	During and at the conclusion of the conditioning, none shall have operated.	-	N/A
17.101	thermal cycling test for temperature sensing controls type 2.P actions, tests:		—
17.101.1	after the tests according to clause 17.6 and the evaluation after 17.14 the control has to be subjected to a thermal cycling test 50'000 cycles:	-	N/A
	temperature between 50% and 90% in 17.4 recorded cut-off temperature; temperature [°C]:	-	N/A
	switch-head is held at ambient temperature:	-	N/A
	manufacturers declaration:	17.101.2/ 17.101.3	N/A
	test procedures as declared in tab. 7.2 requ. 112	-	N/A
17.101.2	two bath method:		—
	baths filled with synthetic oil, water or air:	-	N/A
	first bath, 0.9 times switch-off temperature (measured acc. to clause 17.4); temperature [°C]:	-	N/A
	second bath 0.5 times switch-off temperature (measured acc. to clause 17.4); temperature [°C]:	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	sensing element alternatively immersion of at least 5 x time-constant, number of cycles: 50'000; time-constant [s]:	-	N/A
17.101.3	thermal cycling method:		—
	water cooled bath containing synthetic oil:	-	N/A
	cylindrical aluminium box immersed in the bath, containing the two temperature sensing elements:	-	N/A
	cylindrical aluminium box is heated by resistive wire:	-	N/A
	temperature is controlled by a second identical sample:	-	N/A
	if not otherwise declared (req. 37 acc. to table 7.2), degree of temperature change shall be 35 ± 10K/min:	-	N/A
	number of temperature cycles: 50'000:	-	N/A
17.101.4	after this test the control is subjected additional 20 temperature cycles:	-	N/A
	temperature is risen to 1.1 x switch-off temperature; temperature [°C]:	-	N/A
	manual reset means shall not be reset, other conditions acc. to clause 17.101.2:	-	N/A
17.101.5	after the test, switch head is lubricated thoroughly:	-	N/A
	measuring of operating temperature acc. to clause 15; temperature [°C] :	-	N/A
	control shall still comply with the declared deviation and drift:	-	N/A

18	MECHANICAL STRENGTH		—
18.1.1	Control constructed to withstand mechanical stress	No touchable parts	N/A
18.1.2	Actuating members of class I and class II controls or for class I and class II equipment:		—
	- 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	OK	P
18.1.4	Tests of 18.2 to 18.8 carried out sequentially on one sample:		—
	- tested sample: type reference .....:	-	N/A
	- tested sample: identification No. .....:	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
18.1.5	Compliance (after the tests of Cl. 18):		—
	- no damage to impair compliance with this standard, in particular	-	N/A
	- Cl. 8, protection against electric shock	-	N/A
	- Cl. 13, electric strength and insulation resistance	-	N/A
	- Cl. 20, creepage distance and clearances	-	N/A
	- insulating linings, etc. have not worked loose	-	N/A
	- detachable parts: removal and replacing still possible	-	N/A
	- actuating to provide full- or micro-disconnection still possible	-	N/A
	- supplementary or reinforced insulation tested to clause 13	-	N/A
18.1.6	In USA and Canada, mechanical strength requirements for threaded entries.	-	N/A
18.2	Impact resistance		—
18.2.1 - 18.2.6	In-line cord controls, free-standing and independently mounted controls: test by means of impact test apparatus IEC 817	-	N/A
18.4	In USA and Canada, impact tests not required if minimum thickness of sheet or case metal maintained.	-	N/A
18.5	Free standing controls		—
18.5.1	Additional tests of 18.5.2 and 18.5.3 required (test apparatus Fig. 4)	-	N/A
18.5.2	Input terminals: 2 m of flexible, lightest cord (used in 10.1.4); cord; cross-sectional area (mm²) .....:	-	N/A
	Output terminals: 2 m of flexible, lightest cord (if intended); cord; cross-sectional area (mm²) .....:	-	N/A
	Pull and fall test (3 times):		—
	- pull (N), increasing value, applied on the cord (Table 11.7.2) .....:	-	N/A
	- sample falls onto the base, height 0.500 m (Fig. 4)	-	N/A
18.6	In-line cord controls		—
18.6.1	Additional test in a tumbling barrel required (Fig. 5)	-	N/A
18.6.2	Cords:		—
	- attachment method X: flexible cord(s), smallest cross-section (Cl. 10.1.4) (mm²), length approx. 50 mm .....:	-	N/A
	- attachment M, Y or Z: cord(s) as declared or supplied, length 50 mm; cord; cross-sectional area (mm²) .....:	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
18.6.3	Tumbling barrel (height 50 cm, steel plate 3 mm, 5 revolutions per minute):		—
	- mass of sample ≤ 100 g: number of falls: 1000	-	N/A
	- mass of sample 100-200 g: number of falls: 500	-	N/A
18.6.4	If mass > 200 g: sample tested to clause 18.5	-	N/A
18.6.6	Connection of flexible cord(s) after test	-	N/A
18.7	Pull-cord actuated controls		—
18.7.2	Control mounted as declared: forces applied to the pull-cord, each 1 min:		—
18.7.3	- rated current (A) .....:	-	N/A
	- force in normal direction (N) .....:	50 / 100 N	N/A
	- force in most unfavorable direction (N) .....:	25 / 50 N	N/A
18.7.4	No damage to the control after the tests, compliant to clauses 8, 13 and 20	-	N/A
18.8	Foot-actuated controls		—
18.8.2	Control subjected to a force (increased from 250 N to 750 N and maintained for 1 min) by steel pressure plate .....:	-	N/A
18.8.3	Force applied three times to control (fitted with cords) placed in different, most unfavourable positions	-	N/A
18.8.4	No damage to the control after the tests, compliant to clauses 8, 13 and 20	-	N/A
18.9	Actuating member and actuating means		—
18.9.1	Controls supplied (or intended to be fitted) with actuating members, tests:		—
	- axial pull force (N) .....:	-	N/A
	- axial push force of 30 N applied for (min) .....:	-	N/A
18.9.2	Controls submitted without actuating member: pull and push of 30 N applied to the actuating means	OK	P
18.9.3	During and after the tests, control showed no damaged nor movement of the actuating members.	OK	P
18.101	Push- and turn or pull and turn actuation (IEC60730-2-9:08)		—
18.101.1	Controls with actions classified as type 1.X or 2.X or type 1.Z or 2.Z shall be subjected to the tests of 18.101.2 and 18.101.3:	-	N/A
18.101.2	Min. axial force to push or pull:	-	N/A
	Axial push or pull force of 140N shall not affect compliance with clause 18.1.5:	-	N/A
	Control intended to use with special knob shall withstand without damage or effect on control function a torque of 4Nm:	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	Alternatively, if the means preventing rotation of the shaft is defeated when a torque of at least 2Nm is applied, the effect shall be either the means is not damaged but overridden to close the contacts, in which case subsequent actuation at a torque less than 2Nm shall require both push- and turn or pull and turn to operate the contacts, or:	-	N/A
	No operation of the contacts occurs nor can be made to occur:	-	N/A
	The torque required to reset the control to the initial contact condition, if necessary after the application of the push or pull, shall not be greater than 0.5Nm:	-	N/A
	A torque of 6Nm is applied to the setting means. Any breakage or damage to the means preventing rotation of the shaft shall not result in failure to comply with the requirements of clauses 8, 13 and 20:	-	N/A
	For controls intended for use with a special knob, the values of torque are increased proportionally:	-	N/A
18.101.3	Controls with actions classified as type 1.X or 2.X or type 1.Z or 2.Z shall be actuated for the declared number of manual actions:	-	N/A
	After this test control shall comply with requirements of clause 18.101.1:	-	N/A
	For the case in which the means preventing rotation is not damaged but is overridden to operate the contacts, the first 1/16th of the declared manual cycles shall be performed without first pushing or pulling the actuating member:	-	N/A
18.102	Parts containing liquid metal		—
18.102.1	Controls containing liquid metal, shall withstand for 1min without leakage or rupture a hydraulic pressure equal to five times the maximum internal pressure achieved during operation:	-	N/A
18.102.1.1	The method of test and the number of samples shall be agreed between manufacturer and the testing authority:	-	N/A
18.102.1.2	After the test of 18.102.1, the hydraulic pressure is to be increased until rupture occurs:	-	N/A
	The rupture shall occur at the bellows or diaphragm or other part, that is within the switch head or control enclosure:	-	N/A
18.102.2	The control shall not leak or rupture when heated to 1.2 times the maximum temperature of the sensing element:	-	N/A
18.102.3	When the bellows or diaphragm of a separate sample is deliberately punctured with a sharp, pointed metal rod, liquid metal shall be contained in the switch head or control enclosure:	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
19	THREADED PARTS AND CONNECTIONS		—
19.1	Threaded parts to be moved during mounting or servicing		—
19.1.2	Threaded parts: easily replaceable if completely removed; excluded: constructions restricting complete removal	-	N/A
19.1.3	Thread:		—
	- metric ISO thread or thread of equivalent effectiveness	-	N/A
	- for other than ISO, BA, SI or Unified thread: torque values increased by 20%	-	N/A
19.1.4	Screw generating a thread:		—
	- thread forming (swaging) type screws	-	N/A
	- thread cutting type screw not used	-	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 are 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	-	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:		—
	- diameter < 3 mm: threaded part of metal	-	N/A
	- diameter ≥ 3 mm: non-metallic allowed, but not used for electrical connection	-	N/A
19.1.11	Threaded parts tightened and loosened:		—
	- 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 10.2.10); cross-sectional area (mm^2) .....:	-	N/A
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

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Clause	Requirement + Test	Result – Remark	Verdict
19.1.15	Torque test	-	N/A
19.2	Current-carrying connections		—
19.2.1	- not disturbed by mounting or servicing capable of withstanding the stresses in normal use.	-	N/A
19.2.2	- subjected to torsion in normal use locked against movement	-	N/A
	- movement is limited	-	N/A
19.2.3	Contact pressure:		—
	- not transmitted through non-metallic material, or	OK	P
	- sufficient resilience in the metallic part	-	N/A
	Non-metallic material: suitability considered with respect to stability of dimension within temperatures applicable to the control; max. temperature (°C) .....:	-	N/A
19.2.4	Space threaded screws:		—
	- 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 shall be clamped into contact with parts resistant to corrosion	-	N/A

20	CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH INSULATION		—
20.1	Clearances		—
20.1.1	Basic Insulation - Case A applies except as permitted in Cl. 20.1.7	See appended table	P
20.1.2	Operational Insulation - Case A applies except as permitted in Cl. 20.1.7 or	-	N/A
	For electronic controls Cl. H27.1.3 met	-	N/A
20.1.3	Methods of measurement: Annex B and Fig. 17		—
20.1.3.1	Controls with equipment inlet and/or socket-outlet with connector / plug inserted and without	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
20.1.3.2	Controls with terminals for external conductors: without conductors and with conductors of largest cross-sectional area (mm²) (10.1.4) .....:	-	N/A
20.1.3.3	Controls with terminals for internal conductors: without conductors and with conductors for minimum cross-sectional area (mm²) (10.2.1) .....:	Tab receptacles: 1,0	P
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	OK	P
20.1.5	Standard test finger applied to apertures as specified in 8.1: distances between live parts and metal foil not reduced below required values	OK	P
20.1.6	Force (standard test finger) to be applied in an endeavour to reduce distances:		—
20.1.6.1	- 2 N force applied by standard test finger to any point on bare live parts accessible before control is mounted.....:	OK	P
	- 30 N force applied by standard test finger to accessible surfaces after control mounted.....:	-	N/A
20.1.7	For basic and operational insulation, smaller distances permitted but no less than values specified in Case B of table 20.2, provided that:		—
	- control meets the impulse test, Cl 20.1.12	-	N/A
	- all parts are rigid and secure	-	N/A
	- no likelihood of the distance being reduced	-	N/A
	Impulse voltage applied across clearance of operational insulation	-	N/A
20.1.7.1	For micro-disconnection and interruption:		—
	- clearance distance not specified	OK	P
	- other parts- not less than contact separation	OK	P
20.1.7.2	Full disconnection - case A applies to parts separated by switching element incl. contacts	-	N/A
20.1.8	Clearances of supplementary insulation: not less than basic insulation, case A	-	N/A
20.1.9	Clearances of reinforced insulation: next higher step for rated impulse voltage used.	Rated impulse voltage	N/A
20.1.10	Clearances of operational and basic insulation in controls supplied from a double insulated transformers	Primary rated voltage Primary impulse voltage second. rated voltage second. impulse voltage	N/A
	Clearances in controls supplied from a transformer without separate windings	max. rated voltage impulse voltage	N/A
20.1.11	ELV circuits derived from supply using protective impedance, clearance of operational insulation determined from table 20.1 and based on max. working voltage in the ELV circuit	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
20.1.12	Impulse voltage test, Cl 4.1.1.2.1 of IEC 60664-1 applied between live parts and metal .....:	-	N/A
20.1.13	Transformers with sec. side connected to earth: The clearance of basic insulation on the secondary side exceeds the values specified in Table 20.2	-	N/A
20.2	Creepage distances		—
20.2.1	Creepage distances for basic insulation, per table 20.3 and based on material group and pollution degree:		—
	- measurements	See table 20 creepage and clearance	P
	- 2 N force applied by standard test finger to bare conductors .....:	OK	P
	- 30 N force applied to accessible surfaces applied by standard test finger .....:	-	N/A
20.2.2	Creepage distance for operational insulation, per table 20.4 and based on material group and pollution degree		—
	- measurements	-	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	Supplementary insulation: not less than basic	-	N/A
20.2.4	Reinforced insulation: double the value of basic	-	N/A
20.3	Solid Insulation		—
	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		—
	- 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:		—
	- max. temperature measured per Cl. 27 and H.27 does not exceed permissible values in Table 14.1	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	- conditioned insulation complies with Cl. 13.2 at the oven and room temperatures	-	N/A

21	FIRE HAZARD TESTING		—
21.2	Integrated, incorporated and in-line cord controls		—
21.2.1	Accessible parts (control correctly mounted):		—
	- ball-pressure test 1 conducted at temperature (°C):	-	N/A
	diameter of the impression (mm) .....:	-	N/A
	- horizontal burning test (G1.), or	-	N/A
	- glow-wire test (G2.) at 550 °C	-	N/A
21.2.2	Parts retaining current-carrying parts in position (other than electrical connections):		—
	- ball-pressure test 2 conducted at temperature (°C):	-	N/A
	diameter of the impression (mm) .....:	-	N/A
	- horizontal burning test (G1.), or	-	N/A
	- glow-wire test (G2.) at 550 °C	-	N/A
21.2.3	Parts maintaining or retaining electrical connections in position: categories A, B, C or D according to Annex F		—
	Category A:		—
	- ball-pressure test 2 conducted at temperature (°C):	-	N/A
	diameter of the impression (mm) .....:	-	N/A
	- horizontal burning test (G1.), or	-	N/A
	- glow-wire test (G2.) at 550 °C	-	N/A
	Category B:		—
	- ball-pressure test 2 conducted at temperature (°C):	-	N/A
	diameter of the impression (mm) .....:	-	N/A
	- horizontal burning test (G1.), or	-	N/A
	- glow-wire test (G2.) at 550 °C	-	N/A
	Parts within 50 mm of parts supporting current-carrying parts: needle-flame test (G3.)	-	N/A
	Category C:		—
	- ball-pressure test 2 conducted at temperature (°C):	-	N/A
	diameter of the impression (mm) .....:	-	N/A
	- glow-wire test (G2.) at 750 °C	-	N/A
	Category D:		—
	- ball-pressure test 2 conducted at temperature (°C):	210	P
	diameter of the impression (mm) .....:	0.8	P

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Clause	Requirement + Test	Result – Remark	Verdict
	- glow-wire test (G2.) at 850 °C	OK	P
21.2.4	Other parts (except small parts unlikely to be ignited):		—
	- horizontal burning test (G1.), or	-	N/A
	- glow-wire test (G2.) at 550 °C	-	N/A
21.2.5	Ball-pressure test 1, test procedures (tests not to be made on parts of ceramic material)		—
	Preconditioning: 24 h, 15-35 °C, RH 45-75%.....:	-	N/A
	Temperature during ball pressure, the higher of:		—
	- (20 ± 2) K (or (15 ± 2) K if control for appliances within IEC 355-1) in excess of the maximum temperature during test Cl. 14 (°C), or .....:	-	N/A
	- 75 ± 2°C, or .....:	-	N/A
	- as declared (°C) .....:	-	N/A
	Ball (steel) diameter: 5 mm, force: 20 N, duration: 1 h	-	N/A
	Evaluation:		—
	- sample cooled down, immersion 10 s in cold water	-	N/A
	- diameter of the impression (mm): ≤ 2 mm .....:	-	N/A
21.2.6	Ball-pressure test 2, test procedures (tests not to be made on parts of ceramic material)		—
	Preconditioning: 24 h, 15-35 °C, RH 45-75%.....:	-	N/A
	Temperature Tb during ball pressure:	-	N/A
	- Tb (°C): 100 °C if T_{max} = 30-54 °C .....:	-	N/A
	- Tb (°C): 125 °C if T_{max} = 55-84 °C .....:	-	N/A
	- Tb (°C): 125 °C for controls to be incorporated in appliances EN 60 335-1 .....:	-	N/A
	- Tb (°C): (T_{max} + 40) °C if T_{max} 〈 85 °C .....:	-	N/A
	- Tb (°C): 20 K in excess of the max. temperature during tests of Cl. 14 (°C), if higher.....:	210	P
	- Compliance with Annex H	-	N/A
	Ball (steel) diameter: 5 mm, force: 20 N, duration: 1 h	-	N/A
	Evaluation:		—
	- sample cooled down, immersion 10 s in cold water	OK	P
	- diameter of the impression (mm): <2 mm .....:	0.8mm	P
21.2.7	Resistance to tracking:		—
	Test procedure see Annex G, Cl. G4; applied voltage corresponding to the PTI value declared Table 7.2, item 30:	175V	P

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Clause	Requirement + Test	Result – Remark	Verdict
	Creepage paths of non-metallic parts under evaluation.	OK	P
21.3	Independently-mounted controls		—
21.3.1	Preconditioning		
	Controls without T rating:		—
	- circuit of switching part and driving mechanism not connected, detachable parts (covers) removed	-	N/A
	- temperature (°C): (80 ± 2) °C, 1 x 24 h .....:	-	N/A
	Controls with T rating up to 85 °C:		—
	- switching circuit and driving mech.- not connected, without covers: temperature (°C): (80 ± 2) °C, 1 x 24 h .....:	-	N/A
	- switching circuit and driving mech. connected, with covers: temperature (°C): (T_{max} ± 2) K, 6 x 24 h.....:	-	N/A
	Controls with T rating higher than 85 °C:		—
	- switching circuit and driving mech. connected, with covers: temperature (°C): (T_{max} ± 2) K, 6 x 24 h.....:	-	N/A
21.3.2	Insulating parts retaining live parts: requirements, tests and test results see 21.2.3, category B or D	-	N/A
21.3.3	Accessible non-metallic parts: requirements, tests and test results see 21.2.1	-	N/A
21.3.4	Other non-metallic parts: requirements, tests and test results see 21.2.4	-	N/A
21.3.5	Independently mounted controls: requirements, tests and test result see 21.2.7, resistance to tracking	-	N/A
21.4	Controls with mercury-tube switch, subjected to short-circuit test:		—
	- working voltage, ac/dc .....:	-	N/A
	- maximum power rating (VA) .....:	-	N/A
	- short-circuit current (A) .....:	-	N/A
	- fuse rating (A) .....:	-	N/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		—
22.1.1	Ferrous parts protected against corrosion	-	N/A
22.1.2	Test not required on temperature sensing elements and other component parts adversely affected by protective treatment	OK	P

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Clause	Requirement + Test	Result – Remark	Verdict
22.1.4	Control or parts stored in a humidity cabinet for 14 days:		—
	- temperature (°C): (40 ± 2) °C .....:	-	N/A
	- relative humidity (%): 93-97% .....:	-	N/A
22.1.5	Control or parts dried in a heating cabinet: for 10 min:		—
	- Temperature (°C): (100 ± 5) °C .....:	-	N/A
	After parts have been dried: no evidence of corrosion on surfaces.	-	N/A

23	ELECTROMAGNETIC COMPATIBILITY (EMC) REQUIREMENTS - EMISSION		—
23.1	Free standing and independently mounted controls which cycle under normal operation evaluated:		—
	- to CISPR 14-1 with modifications and/or CISPR 22, class B or	-	N/A
	- to clauses 23.1.1 and 23.1.2	-	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:		—
	- 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
23.101	Additional: thermostats shall be so constructed that they do not generate radio interference for a time period exceeding 20ms: (IEC60730-2-9:08)	-	N/A
23.101.1	Three untested sample are subjected to the test:		—
	Thermal and electrical conditions acc. to 17.2 and 17.3:	-	N/A
	except: test is conducted at the lowest declared Voltage and lowest declared current (table 7.2, requirement 108):	-	N/A
	Except: the rate of temperature change is 1 and 1:	-	N/A
	1 and 1 if not declared:	-	N/A
	Except: controls declared for use with inductive loads, the power factor is 0.2:	resistive and inductive	
	Controls declared for use with resistive loads, the power factor is 1.0:	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
23.101.2	Test procedure		—
	The control is subjected to five cycles of operation with the contacts opening and five cycles of operation with the contacts closing:	-	N/A
	The duration of radio interference is measured by an oscilloscope connected to the control so as to measure the voltage drop across the contacts:	-	N/A
	Test result:	<20ms	N/A

24	COMPONENTS		—
24.1	Transformer supply power to a safety extra-low voltage circuit (SELV and PELV):		—
	- safety isolating type	-	N/A
	- complies with relevant requirements of IEC 61558-2-6	-	N/A
	Capacitors for radio interference suppression: comply with requirements of IEC 60384-14	-	N/A
	Fuses: comply with requirements of IEC 60127 or IEC 60269	-	N/A
24.1.1	Controls that incorporate a transformer as the source of supply to an external SELV-circuit or PELV-circuit	-	N/A
	Output test conducted with the primary energized at full rated voltage	-	N/A
	converter is used as the source of supply to an external SELV-circuit or PELV-circuit, Clause T.3 applies	-	N/A
	Secondary output voltage (V), power (VA) and current (A).....:	(See table 24.1.1)	N/A
24.2	Components other than those of 24.1: checked when carrying out the tests of this standard	-	N/A
24.3	Annex U not applicable to relays used as components in a control	-	N/A

25	NORMAL OPERATION		—
	Meets requirements per annex H .....:	See annex H	N/A

26	ELECTROMAGNETIC COMPATIBILITY (EMC) REQUIREMENTS - IMMUNITY		—
	Meets requirements per Cl. H.26.....:	See clause H.26	N/A

27	ABNORMAL OPERATION		—
27.2	Burnout test (for controls incorporating electro-magnets)		—

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Clause	Requirement + Test	Result – Remark	Verdict
27.2.1	Control mechanism blocked in position when control is de-energized:		—
	- 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):		—
	- 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)Temperatures measured by the method specified in 14.7.1:	-	N/A
27.2.3.1	Controls with motors, such as electric actuators, measured temperature being corrected to a 25 °C reference value:	-	N/A
	For controls with motors declared for three-phase operation, one phase disconnected	-	N/A
27.2.3.2	The average temperature be within the limits during both the second and the twenty-fourth hours of the test	-	N/A
27.2.3.3	Power be continually supplied to the motor during the test	-	N/A
	electric strength (specified in Clause 13 without humidity treatment of 12.2)	-	N/A
27.3	Over-voltage and under-voltage test (for controls incorporating electro-magnets)	-	N/A

28	GUIDANCE ON THE USE OF ELECTRONIC DISCONNECTION		—
	Meets requirement per annex H .....:	See annex H	N/A

A	ANNEX A – INDELIBILITY OF MARKING		—
A.1	Classification of markings		—
A.1.1	Markings which are not mandatory	-	N/A
A.1.2	Markings which are mandatory but not accessible to the final user	OK	P
A.1.3	Markings which are mandatory and accessible to the final user	-	N/A
A.1.4	Permanence of marking test:		—
	- solvents: neutral liquid detergent	OK	P
	- solvents: petroleum spirit	OK	P
	- solvents: water	OK	P

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Clause	Requirement + Test	Result – Remark	Verdict
A2	Test of indelibility of markings classified in A1.2		—
A2.1	Drops of detergent standing on the marked surface: duration (h): 4 h .....:	4 h	P
	Drops removed by fine spray of warm water (40 ± 5 °C) or by lightly wiping	40 °C	P
A2.2	Allowed to dry completely at (25 ± 5) °C	25 °C	P
A2.3	Rubbed in the apparatus (Fig. 8) with dry lint, weight 250 g, duration (s): 15 s .....:	15 s	P
A2.4	Rubbed in the apparatus (Fig. 8) with water-soaked lint, weight 250 g, duration (s): 15 s .....:	15 s	P
A2.6	Marking after these tests still legible	OK	P
A3.	Test of indelibility of markings classified A1.3		—
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 .....:	-	N/A
	Then removed by fine spray of warm water (40 ± 5 °C) or by lightly wiping	-	N/A
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

C	ANNEX C - COTTON USED FOR MERCURY SWITCH TEST FOR USA AND CANADA		—
	Part 1 is applicable:		—
	test result:	-	N/A

D	ANNEX D – HEAT, FIRE AND TRACKING		—
	Canada and USA national difference	-	N/A

G	ANNEX G – HEAT AND FIRE RESISTANCES TESTS	—
G1	Burning test: Performed in accordance with IEC 60707 with amendments.	—
G2.	Glow-wire test: Performed in accordance with IEC 60695-2-1 with amendments.	—
G3.	Needle-flame test: Performed in accordance with IEC 60695-2-2 with amendments.	—

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Clause	Requirement + Test	Result – Remark	Verdict
G4.	Proof tracking test: Performed in accordance with IEC 60112 with amendments.		—

H	ANNEX H – REQUIREMENTS FOR ELECTRONIC CIRCUITS		—
H.6	Classification, additions:		—
H.6.4.3.13	- electronic disconnection on operation (Type 1.Y - 2.Y) .....:	-	N/A
H.6.9.5	- electronic disconnection	-	N/A
H.6.18	Software class (A, B,C) .....:	-	N/A
H.7	Information in addition to Table 7.2 provided:		—
	36 - replacement: limits of activating quantity for any sensing element over which micro-disconnection or electronic disconnection is secure; clause: 11.3.2, H2.4.6; method: X	-	N/A
	52 - the minimum parameters of any heat dissipator (e.g. heat sink) not provide 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 H27.1.3.1); 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 H27.1.3); clause: H27 ; method: X	-	N/A
	57 - the effect on controlled output(s) after electronic circuit component failure if relevant (item c) of H27.1.3); 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, H26.13; 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, H26.13; method: X	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	59 - any component on which reliance is placed for electronic disconnection which is disconnected as required by note 14 to Table 13.2; clause: 13.2, H27.1; method: X	-	N/A
	60 - category (surge immunity); clause: H26.8.2, H26.10.4; method: X	-	N/A
	66 - software sequence documentation; clause: H11.12.10; method: X	-	N/A
	67 - program documentation; clause: H11.12.10, H11.12.13; method: X	-	N/A
	68 - software fault analysis; clause: H11.12, H27.1.3.1; method: X	-	N/A
	69 - software class(es) and structure; clause: H6.18, H11.12.2; method: D	-	N/A
	70 - analytical measures and fault/error control techniques employed; clause: H11.12.6, H11.12.7; method: X	-	N/A
	71 - software fault/error detection time(s) for controls of software Classes B or C; clause: H2.17.10, H11.12.8; method: X	-	N/A
	72 - control response(s) in case of detected fault/error; clause: H11.12.8.1; method: X	-	N/A
	73 - Controls subjected to second fault analysis and declared condition	-	N/A
	74 - external load and emission control	-	N/A
	109 - output condition of thermal cut outs type 2 thermostats and type 2 limiters after operation, clause H26.2.103, H26.2.104, H26.2.105: (IEC60730-2-9:08)	-	N/A
	117 - condition of test when requested by the manufacturer for integrated and incorporated electronic controls, H23.1.2 (IEC60730-2-9:08)	-	N/A
H.8	Protection against electric shock		—
H.8.1.10	Accessible parts separated from the supply by protective impedance; identification of circuit.....:	-	N/A
H.8.1.10.1	Maximum current between accessible parts and either pole of the supply:		—
	- 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:		—
	- peak value (V) .....:	-	N/A
	- 42.4 V < V ≤ 450 V: capacitance C (µF): ≤ 0.1 µF .:	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	- 450 V < V ≤15 kV: capacitance C (µF): C x V ≤ 45 µC; calculated Cmax (µF) .....:	-	N/A
	- V > 15 kV: capacitance C (µF): C x V² ≤ 350 µJ; calculated Cmax (µF) .....:	-	N/A
H.11	Constructional requirements		—
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.27.1 note 13)	-	N/A
	- resistors comply with IEC 60065, cl. 14.1	-	N/A
	a), b) short-circuiting and open-circuiting each impedance in turn	-	N/A
	c) applying a fault condition to any other part which might influence the leakage current	-	N/A
	Requirements of H.8.1.10 still met: leakage current (mA) .....:	-	N/A
H.11.4	Actions:		—
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:		—
	- connected to maximum load	-	N/A
	- supplied with rated voltage (V) .....:	-	N/A
	- at temperature T_{max} (°C) .....:	-	N/A
H.11.4.16.2	Current through electronic disconnection not exceeding the lower of:		—
	- 5 mA (mA) .....:	-	N/A
	- 10% of the rated current (mA) .....:	-	N/A
H.11.12	Controls using software		—
H.11.12.1	Controls with software Class B or C: complies with clauses H11.12.2 to H11.12.13	-	N/A
H.11.12.2	Controls using software Class C: software structure .....:	-	N/A
	Controls using software Class B: software structure .....:	-	N/A
H.11.12.2.1	Other structure, equivalent safety level H.11.12.2 ....:	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
H.11.12.3	Redundant memory with comparison on two areas of the same component: storage in a different form	-	N/A
H.11.12.4	Software Class C using dual channel structures with comparison: additional fault/error detection	-	N/A
H.11.12.5	Software other than Class A: means for recognition and control of errors in transmission to external safety-related data paths	-	N/A
H.11.12.6	Software Class C: used combination of analytical measures, Table H.11.12.6	-	N/A
H.11.12.6.1	Software Class C, tests used during software development:		—
	- systematic tests (H.2.17.8) and inspection (H.2.17.5), or	-	N/A
	- walk-through (H.2.17.9), or	-	N/A
	- static analysis (H.17.7.2)	-	N/A
H.11.12.7	Controls with function other than software Class A: manufacturer provided within the control measures to address the fault/errors in safety-related segments and data indicated in Table H.11.12.7 and identified in Table 7.2, requirement 68	-	N/A
H.11.12.7.1	Other measures permitted, if they can be shown to satisfy the minimum fault/error requirements of the acceptable measures shown in Table H.11.2.7.1, example of measures to control fault/errors in a single chip microcomputer (8 bit)	-	N/A
H.11.12.8	Software fault/error detection:		—
	- occurs not later than declared time(s), Table 7.2, requirement 71	-	N/A
	- acceptability of declared time(s): evaluated during fault analysis	-	N/A
	- limited by the relevant Part 2	-	N/A
	values declared in H.7.2 req. 71 may be given in applicable equipment standard (IEC60730-2-9:08)	-	N/A
H.11.12.8.1	Detection of fault/error:		—
	- results in the response declared in Table 7.2, requirement 72 (IEC60730-2-9:08)	-	N/A
	- if Class C: independent means provided	-	N/A
H.11.12.9	Class C, dual channel structure, loss of dual channel capability: deemed to be an error	-	N/A
H.11.12.10	Software referenced:		—
	- to relevant parts of the operating sequence	-	N/A
	- to the associated hardware functions	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
H.11.12.11	Where labels used for memory locations: labels are unique	-	N/A
H.11.12.12	Software protected from users alteration of safety-related segments and data	-	N/A
H.11.12.13	Software and safety-related hardware under its control: initialized to and terminate at a declared state, Table 7.2, requirement 66	-	N/A
H.13	Electric strength and insulation resistance		—
H.13.2	Across electronic disconnection .....:	-	N/A
H.17	Endurance		—
H.17.1	General requirements		—
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
H.17.1.4.2	Thermal cycling test: conditions forming the basis of the test:		—
	a) Duration (h) .....:	-	N/A
	b) Electrical conditions:		—
	- loaded, according to manufacturer's declaration ....:	-	N/A
	- voltage (V): 1.1 times Vr .....:	-	N/A
	- for 30 min. of each 24 h period: voltage (V): 0.9 times Vr .....:	-	N/A
	- during each 24 h period: duration of supply switched off (s); 30 s .....:	-	N/A
	- change of voltage not synchronised with change of temperature	-	N/A
	c) Thermal conditions: temperature (ambient and/or mounting surface) varied between:		—
	- T_{max} ($T_{s\,max}$) (°C) .....:	-	N/A
	- T_{min} ($T_{s\,min}$) (°C) .....:	-	N/A
	- rate of change: 1 °C/min	-	N/A
	- extremes maintained: 1 h	-	N/A
	d) Rate of operation: cycled at the fastest rate possible, max. 6 cycles/min	-	N/A
	If operational mode to be set by the user:		—
	- 1/3 test period: maximum setting	-	N/A
	- 1/3 test period: intermediate setting	-	N/A
	- 1/3 test period: minimum setting	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	According to these requirements:		—
	- duration of heating period (h) .....:	-	N/A
	- duration of maintaining maximum temperature (h) :	-	N/A
	- duration of cooling period (h) .....:	-	N/A
	- duration of maintaining minimum temperature (h) .:	-	N/A
	- duration of 1 complete cycle (h) .....:	-	N/A
	- total number of cycles executed .....:	-	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		—
H.18.1.5	controls providing electronic disconnection (Type 1.Y and 2.Y), requirements of H11.4.16 are met	-	N/A
H.20	Creepage distances, clearances and distances through insulation		—
H.20.1.9	Electronic controls		—
H.20.1.9.1	Spacing between live parts (supply) and accessible surfaces and parts	-	N/A
H.20.1.9.2	Spacing between live parts and SELV circuits	-	N/A
H.20.1.9.3	Across protective impedances: double or reinforced insulation	-	N/A
	Across each component: supplementary insulation	-	N/A
H.20.1.9.4	Providing operational insulation	-	N/A
H.21	Resistance to heat, fire and tracking		—
H.21.2.6	Ball-pressure test 2, addition:		—
	- temperature (°C) achieved during test H.27.1.3, if higher than given in the preceding paragraphs .....:	-	N/A
H.23	Electromagnetic compatibility (EMC) requirements – emission		—
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	-	N/A
	For integrated and incorporated electronic controls test may be carried out under declared conditions under declared conditions if so requested by the manufacturer. (IEC60730-2-9:08)	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
H.25	Normal operation		—
H.25.1	- output waveform sinusoidal, examined under all normal operating conditions, or	-	N/A
	- as declared, see 7.2, item 53	-	N/A
H.26	Electromagnetic compatibility (EMC) requirements - immunity		—
H.26.2	Controls with Type 1 or 2 action: tests levels as indicated in Table H.26.2.1	-	N/A
H.26.2.1	Integrated and incorporated controls Type 1 action: tests H.26.8 and H.26.9, if declared in Table 7.2, requirement 58a	-	N/A
	Additional subclauses: (IEC60730-2-9:08)	-	N/A
H26.2.101	The control shall remain in its current condition and thereafter shall continue to operate as declared within the limits verified in clause 15, if applicable:	-	N/A
H26.2.102	The control shall assume the condition declared in tab. 7.2, req. 109 and thereafter shall operate as in H26.2.101:	-	N/A
H26.2.103	The control shall assume the conditions declared in tab. 7.2 req. 109 - such that it cannot be reset automatically or manually. The output wave form shall be sinusoidal or as declared condition as in H26.2.103:	-	N/A
H26.2.104	The control shall remain in the condition declared in tab. 7.2 req. 109. A non-resetting control shall be such that it can only reset manually. After the temperature which caused cut-out to occur is removed, it shall operate as in H26.2.101 or shall remain in the declared condition as in H26.2.103:	-	N/A
H26.2.105	The control may return to its initial state and thereafter shall operate as in H26.2.101:	-	N/A
H26.2.106	The output and functions shall be as declared in tab. 7.2 req. 58a or 58b and the control shall comply with the requirement of 17.5:	-	N/A
H.26.2.2	Integrated and incorporated controls Type 2 action:		—
	- tests H.26.5	-	N/A
	- any other tests of H.26. declared in Table 7.2, requirement 58a	-	N/A
H.26.3	not applicable (IEC60730-2-9:08)		—
H.26.5	Voltage dips and voltage interruptions in the power supply network.....:	(See Table H.26.5)	N/A
	Test values for voltage dips and interruptions applied to all the test levels	-	N/A
H.26.5.3	Test procedure according to IEC 61000-4-11	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	The voltage dips and interruptions, at random phase with respect to the mains frequency, performed at least three times in the relevant operating modes with a waiting time of at least 10 s	-	N/A
H.26.5.4	Voltage variation test.....: severity levels observed (IEC60730-2-9:08)	(See Table H.26.5.4)	N/A
H.26.5.4.3	The control subjected to each of the specified voltage test cycles three times with 10 s intervals between each test cycle for the most representative modes of operation	-	N/A
H26.5.5.101	for controls declared under tab. 7.2 req. 109, each test is performed three times when the control is in the declared condition and three times when it is not (IEC60730-2-9:08)	-	N/A
H.26.6	Influence of voltage unbalance		—
H.26.6.1	Test applies only to three-phase equipment	-	N/A
H.26.6.4	Test carried out with an unbalanced factor of 2%, no dangerous influence on equipment; unbalance factor (%) .....:	-	N/A
H.26.8	1.2/ 50µs - 8/ 20µs voltage-current surge test:		—
H.26.8.2	Severity levels:		—
	Installation class .....:	-	N/A
	Power supply: coupling mode		—
	Line-to-line, test level (kV peak) .....:	-	N/A
	Line-to-earth, test level (kV peak) .....:	-	N/A
	Unbalanced operated circuits and lines: coupling mode		—
	Line-to-line, test level (kV peak) .....:	-	N/A
	Line-to-earth, test level (kV peak) .....:	-	N/A
	Balanced operated circuits and lines: coupling mode		—
	Line-to-line, test level (kV peak).....:	-	N/A
	Line-to-earth, test level (kV peak) .....:	-	N/A
H.26.8.3	Test procedure: impulse intervals ≥ 60 s: Five pulses of each polarity (+,-):		—
	- between any external conductor and neutral	-	N/A
	- between external conductors/terminals (signal, data, control etc), if designed for cables > than 10 m	-	N/A
H26.8.3.101	Additional subclause: for controls declared under tab. 7.2 req. 109, three of the tests are performed when the control is in the declared condition and two when it is not: (IEC60730-2-9:08)	-	N/A
H.26.9	Fast transient burst test: conducted in accordance with IEC 61000-4-4		—
	Test level .....:	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	Repetition frequency (kHz) .....:	-	N/A
	Generator drive .....:	-	N/A
	Minimum number of applications: 1 (+ , -) polarity; number of applications .....:	-	N/A
	Operating conditions: see Part 2	-	N/A
	A.C. power supply (Table H.26.9.2) between:	-	N/A
	- reference ground plane and each power supply line.	-	N/A
	- reference ground plane to protective earth terminal	-	N/A
	- reference ground plane to all combinations of power supply lines and also earth line	-	N/A
	D.C. power supply: capacitive clamps	-	N/A
	Data lines: capacitive clamps	-	N/A
H.26.9.3.101	Additional subclause: test procedure: (IEC60730-2-9:08)		—
	control is subjected to five tests:	-	N/A
	for controls declared under tab. 7.2 req. 109, three of the tests are performed when the control is in the declared condition and two when it is not:	-	N/A
H.26.10	Ring wave test: (U.S. difference)	-	N/A
H26.10.5	Test procedure: (IEC60730-2-9:08)	-	N/A
H26.10.5.101	For controls declared under tab. 7.2 req. 109, three of the tests are performed when the control is in the declared condition and two when it is not:	-	N/A
H.26.11	Electrostatic discharge test: conducted in accordance with IEC 61000-4-2, clause 5, severity level 3:		—
	- contact discharge to accessible metal parts .....:		—
	- air discharge to accessible insulating parts .....:		—
H.26.12	Radiated electromagnetic field		—
H.26.12.2.1	Test levels for conducted disturbances per table H.26.12.2.1 applied	-	N/A
H.26.12.2.2	Test executed in accordance with IEC 61000-4-6		—
	- sweep rate 1.5 x 10^3 decades/sec	-	N/A
	- step size ≤ 1% of f_o if frequency range swept incrementally	-	N/A
H.26.12.2.2	Addition: (IEC 60730-2-9:08)	-	N/A
	If declared under Item 109 of Table7.2,control in declared condition:	-	N/A
	- sweep rate 1.5 x 10^3 decades/sec	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	- step size ≤ 1% of f_o if frequency range swept incrementally	-	N/A
	control not in declared condition:	-	N/A
	- sweep rate 1.5 x 10^3 decades/sec	-	N/A
	- step size ≤ 1% of f_o if frequency range swept incrementally	-	N/A
H.26.12.3	Immunity to radiated electromagnetic fields		—
H.26.12.3.1	Test level for radiated electromagnetic fields per table H.26.12.3.1 applied	-	N/A
H.26.12.3.2	Test executed in accordance with IEC 61000-4-3		—
	- each side of the control exposed	-	N/A
	- entire frequency range applied in both the horizontal and vertical antenna orientation	-	N/A
	- sweep rate 1.5 x 10^3 decades/sec	-	N/A
	- step size ≤ 1% of f_o if frequency range swept incrementally	-	N/A
H.26.12.3.101	Addition: (IEC 60730-2-9:08)	-	N/A
	If declared under Item 109 of Table7.2,control in declared condition:	-	N/A
	- sweep rate 1.5 x 103 decades/sec	-	N/A
	- step size ≤ 1% of fo if frequency range swept incrementally	-	N/A
	control not in declared condition:	-	N/A
	- sweep rate 1.5 x 103 decades/sec	-	N/A
	- step size ≤ 1% of fo if frequency range swept incrementally	-	N/A
H.26.13	Test of influences of supply frequency variations in accordance with IEC 61000-4-28		—
	Evaluation of compliance: (IEC60730-2-9:08)		—
	this subclause is replaced by the criteria in H26.2 and H26.3, observed:	-	N/A
H.26.13.2	Test values of table H.26.13.2 applied	-	N/A
	- test level 2 applied	-	N/A
	- test level 3 applied	-	N/A
H.26.14	Power frequency magnetic field immunity test in accordance with IEC 61000-4-8		—
H.26.14.2	Test levels of table H.26.14.2 applied	-	N/A
	- test level 2 applied – 3 A/m	-	N/A
	- test level 3 applied – 10 A/m	-	N/A
H.26.14.3	Addition：test procedure(IEC60730-2-9:08)	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	If declared under Item 109 of Table7.2,control in declared condition:	-	N/A
	- sweep rate 1.5 x 103 decades/sec	-	N/A
	- step size ≤ 1% of fo if frequency range swept incrementally	-	N/A
	control not in declared condition:	-	N/A
	- sweep rate 1.5 x 103 decades/sec	-	N/A
	- step size ≤ 1% of fo if frequency range swept incrementally	-	N/A
H.26.15	Evaluation of compliance		—
H.26.15.1	After the tests of H.26.2 to H.26.12, the control meets applicable requirements of:		—
	- Cl. 8, protection against electric shock	-	N/A
	- Cl. 17.5, electric strength requirements after the endurance tests	-	N/A
	- Cl. 20, creepage and clearance distances	-	N/A
H.26.15.2	The control meets requirements of H.17.14, or	-	N/A
	- output(s) and functions as declared in table 7.2, items 58a and 58b	-	N/A
	Compliance with table H.26.2.101(IEC60730-2-9:08)	-	N/A
H.26.15.3	Different output and functions declared by manufacturer after testing at level 2 or 3	-	N/A
H.26.15.4	Compliance criteria given in part 2 and based on operating output conditions and functional specifications of the control under test:		—
	- normal performance with no loss of protective functions and control within declared limits.	-	N/A
	- Loss of protective function within declared limits	-	N/A
	- Loss of protective function with safety shut down	-	N/A
	- Loss of protective function with unsafe operation	-	N/A
	Compliance with table H.26.2.101(IEC60730-2-9:08)	-	N/A
H27	Abnormal operation		—
H.27.1.1	Fault conditions specified in H.27.1.4 not applied:		—
	- electronic circuit is a low-power circuit	-	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	-	N/A
	- circuit under evaluation .....:	-	N/A
	- max. power consumed by the variable resistor (W): ≤ 15 W, 5 s .....:	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	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.27.1.2	Operating conditions:		—
	a) at most unfavourable voltage (V): range: 0.9-1.1 times V_R .....:	-	N/A
	b) load producing the most onerous effect: kind of load; significant values .....:	-	N/A
	c) ambient temperature (°C): (20 ± 5) °C or other ....:	-	N/A
	d) fuse (supply), rating (A) such that test result not influenced by operation of the fuse .....:	-	N/A
	e) actuating member in the most unfavourable position .....:	-	N/A
	controls declared under req. 109 of tab. 7.2 shall be tested when the control is in the declared condition and when it is not: (IEC60730-2-9:08)	-	N/A
H.27.1.3	Requirements, evaluation of compliance:		—
	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 7.2, requirement 57	-	N/A
	d) control continuous to comply with requirements of Cl. 8 and Cl. 13	-	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:		—
	- with a), b) and d) of H.27.1.3	-	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 7.2, requirement 56	-	N/A
H.27.1.4	Electronic circuit fault conditions per table H.27.1 ....:	See table H.27.1	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
H.27.1.5	Motor load, if failure or malfunction causes change in the supply waveform to the controlled motor:		—
	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) .....:	-	N/A
	c) ambient temperature (°C) .....:	-	N/A
	d) fuse rating (A) .....:	-	N/A
	e) actuating member .....:	-	N/A
	4) evaluation of compliance per H.27.1.3 a) to e)	-	N/A
H.27.4	Electronic disconnection: withstood abnormal overvoltage conditions		—
H.27.4.1	- control loaded as indicated in Cl. 17.2; rated voltage (V) .....:	-	N/A
	- control subjected to 1.15 x V_R for 5 s during electronic disconnection; test voltage (V) .....:	-	N/A
H.27.4.2	- control provides electronic disconnection as determined by the test of H.11.4.16.2	-	N/A

J	ANNEX J – REQUIREMENTS FOR CONTROLS USING THERMISTORS		—
J.4.3.5.4	Type 1 controls using thermistors as temperature sensing devices where selfheating is negligible are not subjected to the tests for thermistors.	-	N/A
	allowable deviation and drift , values see table in IEC 60730-2-9		—
J4.3.5.101	thermistor evaluated for the function performed in the control. Type 2 tested with thermistor (IEC60730-2-9:08)	-	N/A
	requirement 64 in table 7.2 observed (IEC60730-2-9:08)	-	N/A
J.6.4.3.3	According to features of automatic action provide the equivalent of micro-interruption	-	N/A
J.6.15.5	According to construction, addition: control using NTC or PTC thermistors	-	N/A
J.6.17	According to use of the thermistor, addition:		—
J.6.17.1	- thermistor control element	-	N/A
J.6.17.2	- self-controlled heater	-	N/A
J.6.17.3	- thermistor sensing element	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
J.7	Information, addition to Table 7.2		—
	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
J.12.2.1	Protection against humid conditions, addition: Type 2 controls using thermistors		—
	- resistance/temperature measurements performed before and after the test	-	N/A
	- resistance/temperature characteristics and drift within the declared limits	-	N/A
J.15.7	Manufacturing deviation and drift, addition: resistance/temperature characteristics determined, (indicated in J.12.2.1 and J.17.17) using the method declared (manufacturer) in Table 7.2, requirement 65	-	N/A
J.17	Endurance, addition: sequence of tests:		—
	a) Type 1 controls using thermistors:	-	N/A
	- thermal runaway by increased voltage (PTC), J.17.8.5.	-	N/A
	- Overcurrent test (NTC), J17.18.6	-	N/A
	b) Type 2 controls using thermistors: 1) Resistance/Temperature measurements before and after each of the following		—
	- extended cycling, J.17.18.2	-	N/A
	- thermal conditioning, J.17.18.3	-	N/A
	- cold environmental electrical cycling, J.17.18.4	-	N/A
	- thermal runaway (PTC), J.17.18.5	-	N/A
	- overcurrent test (NTC), J.17.18.6	-	N/A
J.17.17.1	Compliance, after tests J17.18.1 to J17.18.4:		—
	- performance of the control not adversely affected	-	N/A
	- function as intended and declared	-	N/A
	Type 2 controls using thermistors, resistance/temperature characteristic(s):		—
	- determined as indicated in b) of J.17.17	-	N/A
	- as declared, Table 7.2, requirement 63	-	N/A
J.17.17.2	Compliance after tests J.17.18.5 and J.17.18.6		—
	- control complies with requirements of Cl. 8 and 13	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	- no emission of flames or expulsion of particles	-	N/A
J.17.18	Test conditions: test conducted on 3 samples; identification numbers; number.....:	-	N/A
J.17.18.1	Method of resistance/temperature measurement (Table 7.2, requirement 65): R/T curve established taking into consideration, self-heating, thermal dissipation and voltage effect	-	N/A
J.17.18.2	Extended cycling, thermistor subjected to:		—
	- number of cycles declared (manufacturer); Table 7.2, requirement 64; number of cycles.....:	-	N/A
	- cycling over the portion of the resistance/ temperature curve used in the application	-	N/A
	Self-controlled heaters and thermistor control elements		—
	Cycled electrically under:	-	N/A
	- max. rated voltage (V) .....:	-	N/A
	- max. load conditions .....:	-	N/A
	Thermistor sensing elements		—
	- Cycled thermally	-	N/A
J.17.18.3.1	Unswitched mode, thermal conditioning:		—
	- without energization	-	N/A
	- temperature just below the step-like change in resistance occurs, resistance/temperature declaration; Table 7.2, requirement 62; temperature (°C) .....:	-	N/A
	- duration (h): 1000 h .....:	-	N/A
J.17.18.3.2	Switched mode, thermal conditioning:		—
	- without energization	-	N/A
	- temperature: 30 K above temperature increment in which step-like change occurs; temperature (°C) ....:	-	N/A
	- duration (h): 1000 h .....:	-	N/A
J17.18.4	Cold environmental electrical cycling:		—
	- control in a chamber at 0 °C or Tmin (the lower); temperature (°C) .....:	-	N/A
	- thermistor cycled at max. rated electrical conditions	-	N/A
	- over the significant portion of the resistance/ temperature curve; temperature (°C) .....:	-	N/A
	- number of cycles: 1000 cycles .....:	-	N/A
J.17.18.5	Thermal runaway by increased voltage:		—
	- thermistors energized with max. rated conditions (until thermally stabilized)	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	- voltage increased (appropriate rate: 0.1 times every 2 min) until breakdown occurs or 2 x working voltage is reached; voltage (V) .....:	-	N/A
J.17.18.6	Overcurrent test (NTC)		—
	- thermistor to be operated at max. rated conditions (A) (until thermally stabilized) .....:	-	N/A
	- current increased (0.1 times every 4 min) until 1.5 times max. working current is reached; current (A) .....:	-	N/A
J.24.2.1	Components, addition: thermistors tested under IEC 60738-1, IEC 60738-1-1 or IEC 60539	-	N/A

L	ANNEX L (NORMATIVE) – OVERVOLTAGE CATEGORIES	—

N	ANNEX N (NORMATIVE) – POLLUTION DEGREES	—

P	ANNEX P (NORMATIVE) – PRINTED CIRCUIT BOARD (PCB) COATING PERFORMANCE TEST		—
P.2	PCB base material complies with IEC 60249 and IEC 60326	-	N/A
P.3	Electric strength of coating		—
	- test conducted after conditioning - Clauses P.3.3 and P.3.4	-	N/A
	- based on operational insulation	-	N/A
	- test voltage per table 13.2 .....:	-	N/A
P.3.2	Ageing test:		—
	- five samples subjected to 130° C ± 2° C..... :	-	N/A
	- duration: 1000 hours	-	N/A
P.3.3	Humidity Conditioning:		—
	- performed on same samples used in Cl. P.3.2	-	N/A
	- conditioned in humidity chamber at a temperature of (35 ± 1)° 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:		—
	- 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

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Clause	Requirement + Test	Result – Remark	Verdict
P.3.5	After conditioning, each sample wrapped in aluminum foil was subjected to the electric strength test, Cl. P.3 between:		—
	- leads A, B, and C individually and common lead (figure P.1)	-	N/A
	- no evidence of flashover or breakdown		

Q	ANNEX Q (NORMATIVE) – PRINTED CIRCUIT BOARD COATING PERFORMANCE TEST		—
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:		—
	- 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, Cl. 5 with test levels or conditions specified in Cl. Q.5		—

T	ANNEX T (NORMATIVE) - REQUIREMENTS FOR SELV AND PELV		—
T.2	Protection against electric shock by SELV or PELV		—
T.2.1	SELV Protection against electric shock is provided by the following measures		—
	– 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,		—
	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:		—

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Clause	Requirement + Test	Result – Remark	Verdict
	– 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 2.1.5 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
	If conductors of different circuits are contained together in a multiconductor cable or in another grouping of conductors, they are insulated for the highest voltage present, so that double insulation or reinforced insulation is achieved.	-	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		—
	– through a safety isolating transformer, or	-	N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	– a converter with separate windings providing equivalent insulation and meeting following requirements:	-	N/A
	Control declared IPX7 was subjected to second fault analysis (item 73 of Table H.7.2) for the circuits and insulation between windings of the converter and 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 part being protected (e.g. a SELV-circuit or a PELV circuit).	-	N/A
	The protective screen is 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 values 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

U	ANNEX U - REQUIREMENTS FOR RELAYS WHEN USED AS CONTROLS IN IEC 60335 APPLIANCES		—
U.6	Classification	-	—
U.6.3	According to their purpose	-	—
U.6.6	According to method of connection	-	—
U.6.8	According to protection against electric shock	-	—
U.6.8.4	For a relay: insulation between coil and contact circuits:	-	—
U.6.8.5	For a relay: insulation between live parts and test function, manual action actuating member:	-	—

IEC 60730-2-9			
Clause	Requirement + Test	Result – Remark	Verdict
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 subclause:	-	N/A
U.14.4	Tests were conducted under the following conditions:	-	N/A
	UCoil × 0,9 + contacts loaded or ICoil × 0,9 + contacts loaded	-	N/A
	UCoil × 1,1 + contacts loaded or ICoil × 1,1 + contacts loaded	-	N/A
	ICoil =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 available, relays were mounted to plain pwb material, conductors according to Tab 10.2.1 were 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 Clause 14, under the conditions stated by U.14.4, for terminals, current carrying parts, and supporting surfaces are met. (see table 14.1 Note 1)	-	N/A
U.17.16	Test for particular purpose controls	-	N/A
	Relays were endurance tested according to the following schedule:		—
	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 if applicable	-	N/A
U.20	CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH SOLID INSULATION	-	N/A

IEC 60730-2-9			
Clause	Requirement + Test	Result – Remark	Verdict
	Assessment was conducted with relay energised, de-energised, 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

	ANNEX AA - MAXIMUM MANUFACTURING DEVIATION AND DRIFT		—
	allowable deviation and drift , values see table in IEC 60730-2-9		—
	type of control:	-	N/A
	temperature range:	-	N/A
	maximum allowable deviation from declared operating value:		—
	% of declared value:	-	N/A
	declared value [K]:	-	N/A
	declared value [°C]:	-	N/A
	calculated:		—
	minimum operating temperature [°C]:	-	N/A
	maximum operating temperature [°C]:	-	N/A
	measured operating values see clause 15:	-	N/A
	maximum allowable drift from initial measured value:		—
	% of declared value:	-	N/A
	declared value [K]:	-	N/A
	measured value [°C]:	-	N/A
	calculated:		—
	minimum operating temperature [°C]:	-	N/A
	maximum operating temperature [°C]:	-	N/A
	measured operating values see clause 15:	-	N/A
	notes 1 to 5 under table IEC 60730-2-9 observed:	-	N/A

BB	ANNEX BB - TIME FACTOR		—
	allowable deviation and drift , values see table in IEC 60730-2-9		—
	requirements:		—
	information of table 7.2 requirement 102:	-	N/A
	subclause 11.101:	-	N/A

IEC 60730-2-9			
Clause	Requirement + Test	Result – Remark	Verdict
	method to determine time factor (details see IEC 60730-2-9)		—
	BB.2: two bath method:	-	N/A
	BB.3: gradient method:	-	N/A
BB.1	characteristics and switching point for determination of T		—
	checked in a steady state:	-	N/A
BB.1.1	media:		—
	working medium:	-	N/A
	test medium:	-	N/A
	conversion factor:	-	N/A
BB.1.2	T measured (as declared)		—
	with sheath or bulb:	-	N/A
	without sheath or bulb:	-	N/A
BB.1.2	velocity of the test medium:		—
	fluids: 0.2 .. 0.3m/s:	-	N/A
	air: 1.0 .. 1.5m/s:	-	N/A
	kind of control:	-	N/A
	temperature range:	-	N/A
BB.2	two bath method:		—
	initial steady state temperature:	-	N/A
	temperature of the bath:	-	N/A
	set temperature of the control, 63.2% of the sudden rise:	-	N/A
	time (measured) up to reached output signal (=time factor T):	-	N/A
	declared value T:	-	N/A
	value of T according to table BB.1 (see IEC 60730-2-9)	-	N/A
BB.3	gradient method:		—
	initial steady state temperature:	-	N/A
	test bath gradient:	-	N/A
	set temperature of the control:	-	N/A
	time between reached bath temperature and reached output signal (=time factor T):	-	N/A
	declared value T:	-	N/A
	value of T according to table BB.1 (see IEC 60730-2-9)	-	N/A

IEC 60730-2-9			
Clause	Requirement + Test	Result – Remark	Verdict
CC	ANNEX CC - NUMBER OF CYCLES FOR INDEPENDTLY MOUNTED AND IN-LINE CORD CONTROLS		—
	see table in IEC 60730-2-9		—
	kind of thermal control:	-	N/A
	required number of automatic action:	-	N/A
	required number of manual action:	-	N/A

CC.2	ANNEX CC.2 - MINIMUM NUMBER OF CYCLES FOR INDEPENDTLY MOUNTED AND IN-LINE CORD CONTROLS (Canada and USA)		—
	see table in IEC 60730-2-9		—
	kind of thermal control:	-	N/A
	required number of automatic action:	-	N/A
	required number of manual action:	-	N/A

DD	ANNEX DD CONTROLS FOR USE IN AGRICULTURAL CONFINEMENT BUILDINGS (normative)		—
DD.7	Testing		—
DD.7.1	Moist carbon dioxide - sulfur dioxide - air mixture		—
	Two samples are placed in the test chamber, one exposed for 10 days and the other for 30 days. An amount of carbon dioxide equivalent to 1 % of the volume of the test chamber and an equal amount of sulfur dioxide is to be introduced into the test chamber each working day. Prior to the introduction of gas each day, the gas-air mixture from the previous day is purged. The test is run continuously, with the introduction of gas accomplished at least 8 times during the 10 day exposure and 22 times during the 30 day exposure. A quantity of 10 ml of water per 0,003 m^3 of chamber volume is maintained at the bottom of the chamber for humidity. The temperature of the test chamber is maintained at (35 ± 2) °C.	-	N/A
DD.7.2	Moist hydrogen sulfide - air mixture		—
	Two samples are placed in the test chamber, one exposed for 10 days and the other for 30 days. An amount of hydrogen sulfide equivalent to 1 % of the volume of the test chamber is to be introduced into the test chamber each working day. Prior to the introduction of gas each day, the gas-air mixture from the previous day is purged. The test is run continuously, with the introduction of gas accomplished at least 8 times during the 10-day exposure and 22 times during the 30-day exposure. A quantity of 10 ml of water per 0,003 m^3 of chamber volume is maintained at the bottom of the chamber for humidity. The temperature of the test chamber is maintained at (25 ± 5) °C.	-	N/A

IEC 60730-2-9			
Clause	Requirement + Test	Result – Remark	Verdict
DD.7.3	Moist ammonia - air mixture		—
	Two samples are placed in the test chamber, one exposed for 10 days and the other for 30 days. An ammonium hydroxide-water solution is placed in the bottom of the chamber. The solution is of a concentration which produces a 1 % by volume ammonia vapour above the solution, the remaining vapour being composed of air and water. The solution is not replaced or replenished during the test. The temperature of the test chamber is maintained at (35 ± 2) °C.	-	N/A
DD.7.4	Urea - water vapour		—
	Two samples are placed in the test chamber, one exposed for 10 days and the other for 30 days. A saturated urea-water solution (excess crystals in 10 ml of water per 0,003 m^3 of chamber volume) is placed in the bottom of the chamber. The solution is not replaced or replenished during the test. The temperature of the test chamber is maintained at (35 ± 2) °C.	-	N/A
DD.7.5	Warm humid air		—
	Two samples are placed in the test chamber, one exposed for 10 days and the other for 30 days. The humidity of the test chamber is maintained at (98 ± 2) % relative humidity. The temperature of the test chamber is maintained at (60 ± 1) °C.	-	N/A
DD.7.6	Disinfectant - germicide - water mixture exposure		—
	One sample is exposed to 1 300 cycles of intermittent spraying and drying of disinfectantgermicide- water mixture. The spray-dry cycle consists of 10 min spray followed by 50 min of no spray. The temperature of the test chamber is maintained at (35 ± 2) °C.	-	N/A
	The dairy disinfectant-germicide is mixed at a concentration of 7,8 ml disinfectant-germicide per l of water. The disinfectant-germicide is composed of 15% dimethyl ammonium chloride compounds and 85 inert ingredients.	-	N/A
DD.7.7.1	Dust penetration		—
	One sample shall be exposed to the dust test in IEC 60529 for the first characteristic numeral 5. Enclosures may be deemed either category 1 or category 2.	-	N/A

IEC 60730-2-9			
Clause	Requirement + Test	Result – Remark	Verdict
DD.7.7.2	Dust heating, abnormal		—
	For controls incorporating heat producing devices (e.g. transformer, relay, electronic switching device), one sample is mounted and electrically connected as intended in a test chamber. Wheat and corn dust passed through a 0,075 mm mesh width screen is blown into the top of the chamber and allowed to fall vertically onto the sample until the blanket on top of the sample stabilizes. The blower is deenergized. The test chamber temperature is then raised to Tmax or 40 °C, whichever is greater, and the sample energized at Vr and Ir until chamber temperature stabilizes.	-	N/A
DD.8	Recovery		—
	Samples tested in accordance with DD.7.1 through DD.7.7.1, inclusive, are rinsed with water and allowed to dry at room temperature.	-	N/A
DD.9	Evaluation General		—
DD.9.1	Gaskets and other materials intended to seal the enclosure shall not have deteriorated excessively. External adjustments and other mechanisms, if any, shall remain operable. Compliance is checked by actuation and inspection. Samples of the control shall complete each of the six corrosive exposure tests without undue corrosion which may affect integrity of the enclosure so as to impair its function within the meaning of this standard. Compliance is checked by inspection.	-	N/A
DD.9.2	For the tests of DD.7.1 through DD.7.6, each sample shall meet the requirements of Clause 8, Subclause 17.5 and Clause 20 after the overvoltage test of 17.1.3.1 conducted at room temperature.	-	N/A
	In Canada and the USA, the overvoltage test is replaced by an overload test.	-	N/A
DD.9.3	For the test of DD.7.7.1, dust shall not have entered the enclosure. Compliance is checked by inspection.	-	N/A
DD.9.4	For test of DD.7.7.2, the temperatures specified in Clause 14 shall not be exceeded by more than 15 K.	-	N/A

IEC 60730-2-9			
Clause	Requirement – Test	Result – Remark	Verdict

10.2.1	TABLE: Connectable conductors	OK	P
terminal No.	nominal current (A)	cross-sectional area (mm^2)	
#1	10	1.0	
#2	10	1.0	

10.2.4.3	TABLE: axial push and pull Test		OK	P
tab identification	size (mm x mm)	axial push (N)	axial pull (N)	result code
	4.8x0.5	60	50	ND
	4.8x0.8	60	50	ND
	6.3x0.8	80	70	ND
ND - No Displacement / Damage D - Displacement / Damage				

13.2	TABLE: electric strength test			Pass
test location / circuit	type of insulation	working voltage (V)	test voltage (V)	flashover/ breakdown
Live parts to cap	Basic insulation	250	1450	No
Across tabs	Micro-disconnection	250	500	No

13.3.3	TABLE: leakage current of in-line cord and free-standing controls	-		N/A
circuit identification	position of switch S1	class of control	required leakage current (mA)	measured leakage current (mA)
	Open			
	Closed			

14.6 + 14.7	TABLE: heating test		
thermocouple locations	max. temperature measured, (°C)	max. temperature limit, (°C)	
thermo-plastic material	158	-	
Current-carrying parts made of steel	158	400	

IEC 60730-2-9			
Clause	Requirement – Test	Result – Remark	Verdict
14.6 + 14.7	TABLE: heating test AIK24	-	N/A

thermocouple locations	max. temperature measured, (°C)	max. temperature limit, (°C)
Print		
Print		
Connector		
housing		
cable		

17.5.1	TABLE: electric strength test			Pass
test location / circuit	type of insulation	working voltage (V)	test voltage (V)	flashover/ breakdown
Live parts to cap	Basic insulation	250	1088	No
Across tabs	Micro-disconnection	250	375	No

20.1 + 20.2	TABLE: creepage distance and clearance measurement							—
	requirements creepage distance and clearance met			OK				P
	supply working voltage (V):			250				P
	installation category			-				N/A
	rated impulse voltage accord. to table 20.1(V):			2500				P
	requirements for case B (20.1.7, 20.1.12) met (cl20.1 Note 2:			OK				P
creepage distance Cd and clearance Cl across:		Insulation type	nominal Volt. (V)	pollution degree	required Cd (mm)	Cd (mm)	required Cl (mm)	Cl (mm)
PCB – touchable parts								
PCB internal								
Live parts to cap		basic insulation	250	2	2.5	2.8	1.5	2.8
full disconnection								
micro-disconnection		micro-disconnection	250	2	2.5	3.5	1.5	3.5
electronic disconnection								

(*) Legend for type of Insulation:
- OP – operational insulation
- B – Basic Insulation
- RI – Reinforced Insulation
- SI – Supplementary Insulation
- DI – Double Insulation

IEC 60730-2-9			
Clause	Requirement – Test	Result – Remark	Verdict
21.2.7	TABLE: resistance to tracking	OK	P

non-metallic part under consideration	creepage path under test	applied test voltage (V)	comments
Base	OK	175	P

24.2	TABLE: components	-	N/A

object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity[1])
Base	Shanghai European-Asian Synthetic Material Co.,Ltd	EA-5555J	Thickness> 1.2mm	IEC 60730-1/ IEC 60730-2-9	Test in appliance
1) an asterisk indicates a mark which assures the agreed level of surveillance					

Differences according to EN 60730-2-9:2010 used in conjunction with EN 60730-1:2000 + A1:2004 + A2:2008 + A12:2003 + A13:2004 + A14:2005 + A15:2007 + A16:2007			
Clause	Requirement + Test	Result – Remark	Verdict
	CENELEC COMMON MODIFICATIONS (EN)		N/A
5.	RATING		—
5.1	Controls for direct connection to supply mains: single phase usage at 230V / multiphase usage at 400V covered (EN 60730-1)	-	N/A
6.	CLASSIFICATION		—
6.4..3.105	**Replace:**		N/A
	an action which cannot be reset under electrically loaded conditions and at temperatures above -20 °C or at a lower temperature if so declared (Type 1.AK or 2.AK);	-	N/A
6.7	According to ambient temperature limits of the switch head		
6.7.104	**Add:**	-	N/A
	Non-bimetallic SOD for incorporation into appliances for heating or employing liquids or steam	-	N/A
7.	INFORMATION		—
7.2.1	Methods of information:		—
	Replace in the table 7.2.		—
	601 – EMC standard / test method 23.1(Method X) (EN 60730-1)..... :	-	N/A
	602 – declared voltage and current for emission test 23.1.1 (Method D) (EN 60730-1)..... :	-	N/A
	103 - SOD reset temperature (either –35 °C or 0 °C) (17.15.2.2) ..... :	-	N/A
	115 - Ageing temperature for non-bimetallic SOD 106 ..... :	-	N/A
	116 - Rate of rise of temperature for testing non-bimetallic SOD 107 .....:	-	N/A
	Add. in the table 7.2.		—
	601 - The minimum voltage at which a voltage maintained thermal cut-out will not reset (this shall not be higher than 0,85 times the minimum rated voltage).....:	-	N/A
7.4.3	In United Kingdom terminals exclusively for live external conductor marked L not used otherways (EN 60730-1 Annex ZB)	-	N/A

Differences according to EN 60730-2-9:2010 used in conjunction with EN 60730-1:2000 + A1:2004 + A2:2008 + A12:2003 + A13:2004 + A14:2005 + A15:2007 + A16:2007			
Clause	Requirement + Test	Result – Remark	Verdict

10.	TERMINALS AND TERMINATION'S		—
10.1.4.2	Sub-clause deleted		—
10.1.4.3	Sub-clause deleted		—
10.1.16	Void		—
10.2	Terminals and terminations for internal conductors		—
10.2.1	Connectable conductors:		—
	-no terminals required if conductor permanently connected by manufacturer	-	N/A
10.2.4	Flat push-on connectors		—
10.2.4.1	Dimension of tabs:		—
	Depression or hole is optional; existing ones complies with dimensional requirements	OK	P

11.	CONSTRUCTIONAL REQUIREMENTS		—
11.1.102	**Add:**		—
	Insulating material used in non-bimetallic SODs as defined in this standard shall comply with the requirements of EN 60216-1:2001 and be suitable for the application..... :	-	N/A
11.2.4	Sheath of flexible cord used as supplementary insulation:		—
	- insulation properties comply with IEC 60227 (EN60730-1: H05 VV-F) or IEC 60245 (EN60730-1: H05 RR-F)	-	N/A
11.4	Actions:		—
11.4.106	**Replace: Voltage maintained thermal cut-out (Type 1.AK or Type 2.AK)**		—
	A voltage maintained thermal cut-out shall be so designed that it does not automatically reset at any temperature higher than -20 °C or any lower temperature declared in Table 7.2, Requirement 111..... :	-	N/A
	Compliance is checked by the following test which is carried out as part of 17.14	-	N/A
	The voltage maintained thermal cut-out shall be maintained, in an operated condition, at -20 °C or at any lower temperature declared by the manufacturer in Table 7.2, Requirement 111	-	N/A
	The voltage maintained thermal cut-out is connected to the voltage value declared in Table 7.2,Requirement 601, in series with a resistance of a value which will limit the current through the control to not more than the maximum rated current together with a suitable means to detect resetting of the thermal cut-out.	-	N/A

Differences according to EN 60730-2-9:2010 used in conjunction with EN 60730-1:2000 + A1:2004 + A2:2008 + A12:2003 + A13:2004 + A14:2005 + A15:2007 + A16:2007			
Clause	Requirement + Test	Result – Remark	Verdict
	The test will continue for 1 h. The device shall not reset during this period.	-	N/A
11.8	Size of cords - non-detachable		N/A
11.8.1	Non-detachable cords:		N/A
	- rubber sheathed, not lighter than H05 RR-F; type:	-	N/A
	- PVC sheathed, not lighter than H05 VV-F; type :	-	N/A
	- exception: if specified in particular equipment standard; standard :	-	N/A
11.11	Requirements during mounting, maintenance and servicing		N/A
11.11.1	Covers and their fixing		N/A
11.11.1.3	Sub-clause deleted		—
11.11.1.4	Sub-clause deleted		—
12.	MOISTURE AND DUST RESISTANCE		N/A
12.1	Protection against ingress of water and dust		N/A
12.1.2	Test according to EN 60529 (test to be combined with test of 11.5.3); declared degree of protection :	-	N/A
12.3	Sub-clause deleted		—
13.	ELECTRIC STRENGTH AND INSULATION RESISTANCE		—
	Replace:		—
	Clause of part 1 is applicable		—
13.2.3	Consult the table 13.2 for differences in test voltages	-	—
13.3	Sub-clause deleted:		—
14.	HEATING		—
14.4	Electrical conditions:		—
	- voltage (V): most unfavourable value between 0.9 and 1.1 times U_R :	-	N/A
	- voltage (V) if circuit not voltage sensitive: min. 10% of U_R :	30	P
	- current (A): most unfavourable value between 0.9 and 1.1 times I_R :	11	P
14.101	Sub-clause deleted		—

Differences according to EN 60730-2-9:2010 used in conjunction with EN 60730-1:2000 + A1:2004 + A2:2008 + A12:2003 + A13:2004 + A14:2005 + A15:2007 + A16:2007			
Clause	Requirement + Test	Result – Remark	Verdict
14.Z1	If $T_{Meas} \geq T_{Max}$ specified in 14.1, 6 samples were subjected to the following tests:		N/A
	Moving parts, if any, were locked and a current was passed individually through each winding to reach T_{Max} measured under the conditions of test 14.1	-	N/A
	Current is increased to reach $T_{Max} + T_{Increase}$ ($T_{Increase}$ chosen in table 14.Z1) and held constant for the first period of the corresponding $Time_{Total}$	-	N/A
	$Time_{Total}$ (corresponding to chosen $T_{Increase}$) is divided in 4 equal periods each followed by humidity treatment acc. 12.2 (deviation: electric strength at level 50 % of 13.2)	-	N/A
	Failure of only one of the six samples during the first of the four periods of the test is ignored.	-	N/A
	If 1e of the 6 samples fails during the 2nd, 3rd or 4th period of the test, the remaining five samples are subjected to an additional fifth test cycle	-	N/A
	Failure of any of the remaining five controls will entail a rejection.	-	N/A
15.	MANUFACTURING DEVIATION AND DRIFT		—
15.5.3.109	**Replace:**		—
	For SODs, after the contacts have operated, satisfactory disconnection is determined by subjecting each SOD device to the voltage specified in Table 13.2, with no prior humidity treatment	-	N/A
16.	ENVIROMENTAL STRESS		—
	Replace:		—
	All controls except bimetallic SODs shall be environmentally conditioned as per Clause 16 of EN 60730-1.	OK	P
17	ENDURANCE		—
17.2.3	Sub-clause deleted		—

Differences according to EN 60730-2-9:2010 used in conjunction with EN 60730-1:2000 + A1:2004 + A2:2008 + A12:2003 + A13:2004 + A14:2005 + A15:2007 + A16:2007			
Clause	Requirement + Test	Result – Remark	Verdict
17.15.	Single operation devices		—
17.15.1	Bimetallic single operation devices		—
17.15.1.3	**Replace:**		—
17.15.1.3	For bimetallic single operation devices with a declared reset temperature of -35 °C, six untested samples shall be subjected to an over-voltage test for one cycle under the electrical conditions of Table 17.2-1.	-	N/A
17.15.1.3.1	**Replace:**		—
17.15.1.3.1	For bimetallic single operation devices with a declared reset temperature of 0 °C, one sample shall be subjected to an over-voltage test of 50 cycles under the electrical conditions of Table 17.2-1.	-	N/A
17.15.2	Non-bimetallic single operation devices		—
	Replace:		—
	For a non-bimetallic SOD, automatic temperature sensing functions except those for the non-bimetallic part of the control, such as thermostat, temperature limiter and/or the thermal-cut-out, shall comply with 17.16.101, 17.16.103 and 17.16.104 respectively. Tests conducted on separate samples.	-	N/A
	Replace:		—
17.15.2.1	Six untested samples are then to be mounted in a suitable apparatus and the thermal sensing elements are conditioned for an ageing period equal to either 750 h or the result of the specified number of cycles declared by the end product application divided by 4 (calculation value is the number of hours), whichever is greater..... :	-	N/A
	The ageing temperature is declared in Table 7.2, Item 115, tolerance of 0 K -5 K. No operation of the single operation devices shall occur during this ageing period. Operation of the devices shall be detected as indicated in 15.5.3.107 ..... :	-	N/A
	Replace:		—
17.15.2.2	At the end of the ageing period, the samples are removed from the apparatus.	-	N/A
	The appropriate tests of Clause 15 shall be repeated on six untested samples and the six samples subjected to the conditioning of 17.15.2.1 and the temperatures measured shall be within the declared deviation limits, with the electrical conditions of the test VRmax and IRmax. ..... :	-	N/A

Differences according to EN 60730-2-9:2010 used in conjunction with EN 60730-1:2000 + A1:2004 + A2:2008 + A12:2003 + A13:2004 + A14:2005 + A15:2007 + A16:2007			
Clause	Requirement + Test	Result – Remark	Verdict
	For non-bimetallic SOD's where any sensing element has a declared reset temperature, the SOD's shall be held at the temperature declared in Table 7.2, the test shall continue for 7 h. The device shall not reset during this period as determined as indicated in 15.5.3.109 ..... :	-	N/A
	All samples shall then be subjected to the test of Clause 13, carried out at the temperature limits declared in Table 7.2, Requirement 36 ..... :	-	N/A
17.16.105	**Replace:**	-	N/A
	Void	-	N/A
18.	MECHANICAL STRENGTH		—
18.1	General requirements		—
18.1.6	Sub-clause deleted		—
18.3	Sub-clause deleted		—
18.4	Sub-clause deleted		—
20.	CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH INSULATION		N/A
	If a control complies with EN 60730-1:1995 and its Amendments up to A17:01, Compliance with clause 20 of this standard is assumed	-	N/A
21.	RESISTANCE TO HEAT, FIRE AND TRACKING		
21.2.3	Parts maintaining or retaining electrical connections in position: categories B, C or D but $I_{max.} \leq 0.5A$	-	N/A
21.4	Sub-clause deleted		—
23.	EMC REQUIREMENTS EMISSION		N/A
23.1	Test conditions see standard	-	N/A
26.	EMC REQUIREMENTS IMMUNITY. OPERATION WITH MAINS BORNE PERTURBATIONS, MAGNETIC AND ELECTROMAGNETIC DISTURBANCES		N/A
	See Annex H		N/A
27.	ABNORMAL OPERATION		N/A
27.2	Locked mechanism test (for controls incorporating Electro-magnets)		N/A

Differences according to EN 60730-2-9:2010 used in conjunction with EN 60730-1:2000 + A1:2004 + A2:2008 + A12:2003 + A13:2004 + A14:2005 + A15:2007 + A16:2007			
Clause	Requirement + Test	Result – Remark	Verdict
C	ANNEX C - COTTON USED FOR MERCURY SWITCH TEST		N/A
	Clause deleted		—
D	ANNEX D - HEAT, FIRE AND TRACKING		N/A
	Clause deleted		—
H	ANNEX H - REQUIREMENTS FOR ELECTRONIC CIRCUITS		N/A
H7.	Information, addition to Table 7.2:		N/A
	H36 - replacement: limits of activating quantity for any sensing element over which micro-disconnection or electronic disconnection is secure; clause: 11.3.2, H2.4.6; method: X	-	N/A
H23	EMC REQUIREMENTS EMISSION	-	N/A
H23.1	electronic controls do not emit excessive electric or electromagnetic disturbances	-	N/A
H23.1.1	low frequency emission	-	N/A
	electronic control which controls directly an external load connected to the mains power supply, or falling within the scope of EN 61000 Part 3 Section 2+3, complies with these standards. (Does not apply to controls for pilot duty loads only)	-	N/A
H23.1.2	Radio frequency emission		N/A
	Free standing ,independently mounted, or inline cord control, using software, oscillating circuits or switching power supply complies with EN55014 and EN 55022	-	N/A
	additional details may be given in part 2	-	N/A
H26.	EMC REQUIREMENTS IMMUNITY .Operation with mains borne perturbations, magnetic, and electromagnetic disturbances		N/A
H26.7	Influence of d.c. in a.c. networks (sub-clause deleted)		N/A
H26.8	Surge immunity test conducted in accordance with IEC 61000-4-5	-	N/A
H26.8	Fast transient/burst test conducted in accordance with IEC 61000-4-4	-	N/A
H26.10	**Replace:**		N/A
	Sub-clause deleted		N/A
J	ANNEX J - REQUIREMENTS FOR CONTROLS USING THERMISTORS		N/A
J17.17	- thermal runaway by increased voltage (PTC), J17.18.5.	-	N/A

Differences according to EN 60730-2-9:2010 used in conjunction with EN 60730-1:2000 + A1:2004 + A2:2008 + A12:2003 + A13:2004 + A14:2005 + A15:2007 + A16:2007			
Clause	Requirement + Test	Result – Remark	Verdict
	- thermal runaway by increased current (NTC), J17.18.6	-	N/A
CC	ANNEX CC – Number of cycles		N/A
	Delete: Table CC.2		N/A
ZA	ANNEX ZA (normative) Normative references to international publications		N/A
ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		N/A
ZB 2.7	AUSTRIA, BELGIUM, DENMARK, FRANCE, GERMANY, UNITED KINGDOM		N/A
ZB 2.7.2	RS class 0 not allowed	-	N/A
ZB 2.7.3	RS class 0I not allowed	-	N/A
	UNITED KINGDOM		N/A
ZB 7.4.3	Terminals exclusively for live external conductor: indicated: "L"	-	N/A
7.4.3.2	letter "L" must not be used in another way	-	N/A
ZB 11.1.3	Plug must be according to standard sheet B2 in IEC 83 (see also ZC)	-	N/A
	FINLAND , NORWAY AND SWEDEN		N/A
ZB 16.2.1	replace "-10±2 °C" by "-25±2 °C" (control must be stored 24h at -25±2 °C)	OK	P
ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		N/A
ZC 11.1.2	(SWEDEN) Mercury not allowed in switches and controls, such as level switches, thermostats and relays	-	N/A
ZC 11.1.3	(UNITED KINGDOM) add to requirement: These regulations apply to all plugs for domestic use at a voltage of not less than 200V and in General allow only plugs to BS 1363 to be fitted	-	N/A
ZE	ANNEX ZE (normative) REQUIREMENTS FOR SAFETY TESTING OF RELAYS		N/A
ZE.6	Classification	-	N/A
ZE.6.3	According to their purpose	-	N/A
ZE.6.3.10	– electrically operated control type:	-	N/A
ZE.6.6	According to method of connection	PCB, non PCB	N/A
ZE.7	Information		N/A

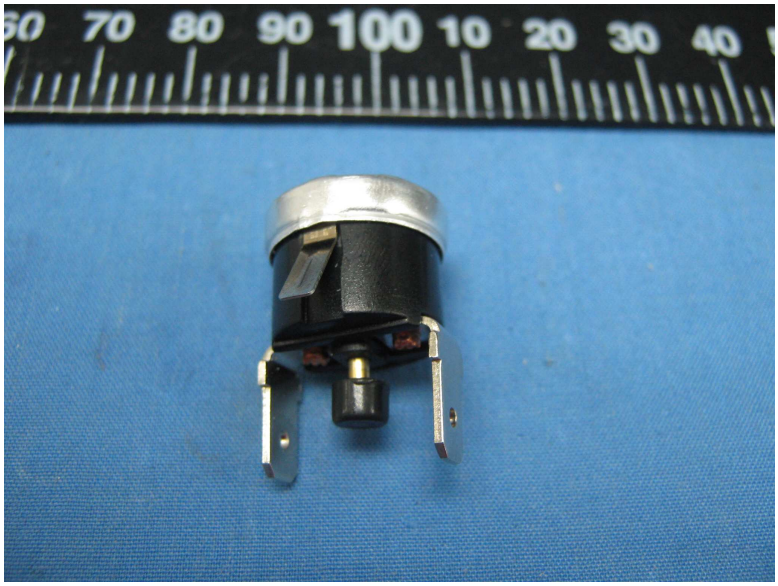
Differences according to EN 60730-2-9:2010 used in conjunction with EN 60730-1:2000 + A1:2004 + A2:2008 + A12:2003 + A13:2004 + A14:2005 + A15:2007 + A16:2007			
Clause	Requirement + Test	Result – Remark	Verdict
	3 Rated voltage for both coil and contacts, if different ZE.14, ZE.17 C		—
	4 Nature of supply for both coil and contacts, if different ZE.14, ZE.17 C	-	N/A
	603 Maximum intended click rate 23 D	-	N/A
ZE.14	Heating		N/A
ZE.14.4	Tests were conducted under the following conditions:		N/A
	– coil voltage × 0,9 + contacts loaded or coil current × 0,9 + contacts loaded;	-	N/A
	– coil voltage × 1,1 + contacts loaded or coil current × 1,1 + contacts loaded;	-	N/A
	– coil de-energised + contacts loaded (N.C. contacts).	-	N/A
	Relays mounted as specified. Relays for PCB mounting tested on PCB	-	N/A
	If not available, relays are mounted to plain PCB material, conductors of the appropriate size (according to Table 10.2.1) where soldered to printed circuit board pins.	-	N/A
ZE.17	Endurance		N/A
ZE.17.14	Evaluation of compliance		N/A
	Replace the second bullet item by the following:	-	N/A
	– the requirements of Clause 14, under the conditions stated by ZE.14.4, with regard to those items designated by Note 1 of Table 14.1, that is, terminals, current carrying parts and supporting surfaces, are still met.	-	N/A
ZE.17.16	Test for particular purpose controls		N/A
	The relay was endurance tested according to the following schedule:	-	N/A
	– ageing test of 17.6 if applicable;	-	N/A
	– overvoltage test of automatic action of 17.7;	-	N/A
	– automatic action test of 17.8;	-	N/A
	– ‘slow rate’ automatic action test of 17.9, if applicable;	-	N/A
	– relay with manual test function of 17.10, if applicable;	-	N/A
	– relay with manual test function of 17.11, if applicable;	-	N/A

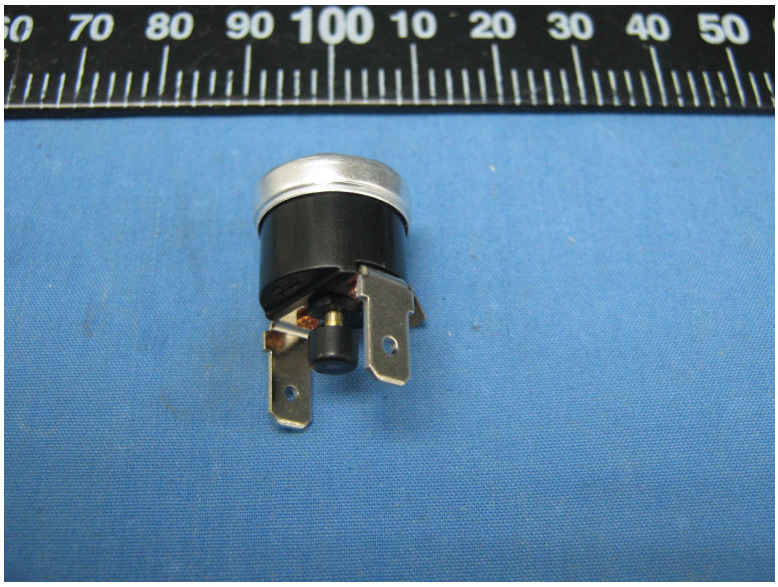
Differences according to EN 60730-2-9:2010 used in conjunction with EN 60730-1:2000 + A1:2004 + A2:2008 + A12:2003 + A13:2004 + A14:2005 + A15:2007 + A16:2007			
Clause	Requirement + Test	Result – Remark	Verdict
	– relay with manual test function of 17.12, if applicable;	-	N/A
	– relay with manual test function of 17.13, if applicable.	-	N/A
	ZE.20 Creepage distances, clearances and distances through solid insulation	-	N/A
	Assessment was conducted with the relay energised, de-energised and manually operated (if applicable).	-	N/A
ZE.24	Components		N/A
	Relays incorporating electronic components shall be assessed according to Annex H.	-	N/A
ZF	ANNEX ZF (normative) EMC IMMUNITY FOR CONTROLS		
ZF.2	Classification of the control:	-	N/A
	80 According to the electromagnetic environment of one of the two EMC levels	-	N/A
	81 EUT was tested without primary protection,	-	N/A
	82 Cable length ≤ 30 meters,	-	N/A
	83 Data line length < 10 meters	-	N/A
	84 Test level (= protection level when upstream protection is not in place)	-	N/A
	85 Data line length ≤ 3 meters	-	N/A
	86 Applicable of test and frequency	-	N/A
	Installation and environmental condition	-	N/A
	ESD: ..... :	Contact discharge Air discharge	—
	Radiated EMF field: Level; Frequency range ..... :		—
	Burst: Level ..... :		—
	Surge: Installation Class..... :		—
	Conducted disturbance: Level..... :		—
	Power magnetic field: Level ..... :		—
	Voltage dips & interruption Level ..... :		—
ZF.3	Compliance criteria	A B C	—
ZF.4	Surge immunity test	-	N/A
	The control is mounted as specified in 4.1.1, supplied at rated voltage and operated at representative	-	N/A

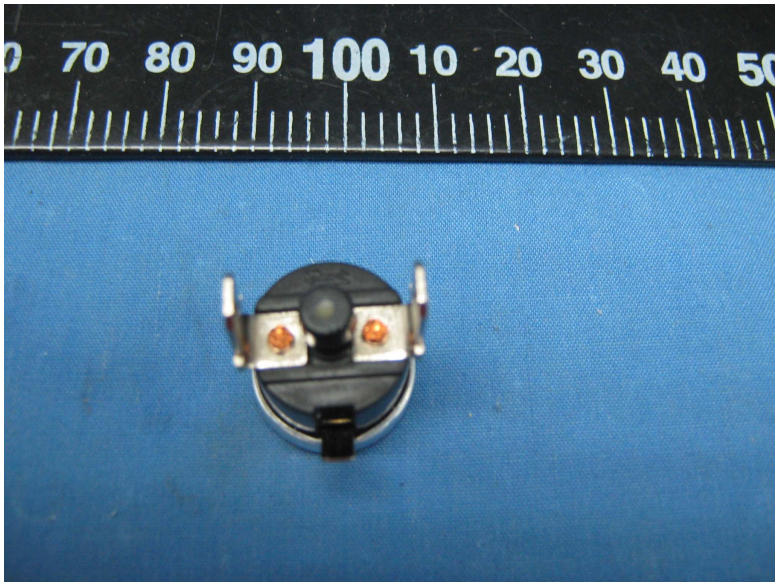
Differences according to EN 60730-2-9:2010 used in conjunction with EN 60730-1:2000 + A1:2004 + A2:2008 + A12:2003 + A13:2004 + A14:2005 + A15:2007 + A16:2007			
Clause	Requirement + Test	Result – Remark	Verdict
	operating conditions. It is tested in accordance with EN 61000-4-5.	-	N/A
	AC power supply and AC I/O directly connected to mains network	-	N/A
	AC power supply and AC I/O not directly connected to mains network	-	N/A
	DC power supply and DC I/O directly connected thereto	-	N/A
	Unsymmetrical operated circuits/lines	-	N/A
	Symmetrical operated circuits/lines	-	N/A
	Shielded I/O and shielded communication lines	-	N/A
ZF.5	Electrical fast transient/burst immunity test	-	N/A
	AC power supply and control output for direct connection to the supply	-	N/A
	DC power supply and control outputs for direct connection to the supply	-	N/A
	Data lines	-	N/A
ZF.6	Radio-frequency electromagnetic field immunity	-	N/A
ZF.6.1	Immunity to conducted disturbances Test levels for conducted disturbances on,	-	N/A
	mains	-	N/A
	I/O lines	-	N/A
	DC power lines	-	N/A
ZF.6.2	Electrostatic discharge Test voltage and application..... :	-	N/A
ZF.7	Immunity to radiated electromagnetic fields Control declaration	-	N/A
	80 MHz to 1 GHz Field strength..... :	-	N/A
	1,4 GHz to 2 GHz Field strength..... :	-	N/A
	2,0 GHz to 2,7 GHz Field strength..... :	-	N/A
ZF.8	Immunity to power-frequency magnetic fields	-	N/A
	Power ..... : A/m ..... : Frequency ..... :		—
ZF.9	Test of the influence of voltage dips and voltage interruption in the power supply network	-	N/A

Differences according to EN 60730-2-9:2010 used in conjunction with EN 60730-1:2000 + A1:2004 + A2:2008 + A12:2003 + A13:2004 + A14:2005 + A15:2007 + A16:2007			
Clause	Requirement + Test	Result – Remark	Verdict
	During the test, the control was initially operated at its rated voltage. The control was operated at representative operating conditions.	-	N/A
	Voltage dips (50 Hz / 60 Hz)	-	N/A
	Duration in periods 50 Hz/60 Hz	-	N/A
	Compliance criteria	-	N/A
	Voltage interruption (50 Hz/60 Hz)	-	N/A
	Duration in periods 50 Hz/60 Hz	-	N/A
	Compliance criteria	-	N/A
ZZ	ANNEX ZA (informative) Coverage of Essential Requirements of EC Directives		N/A

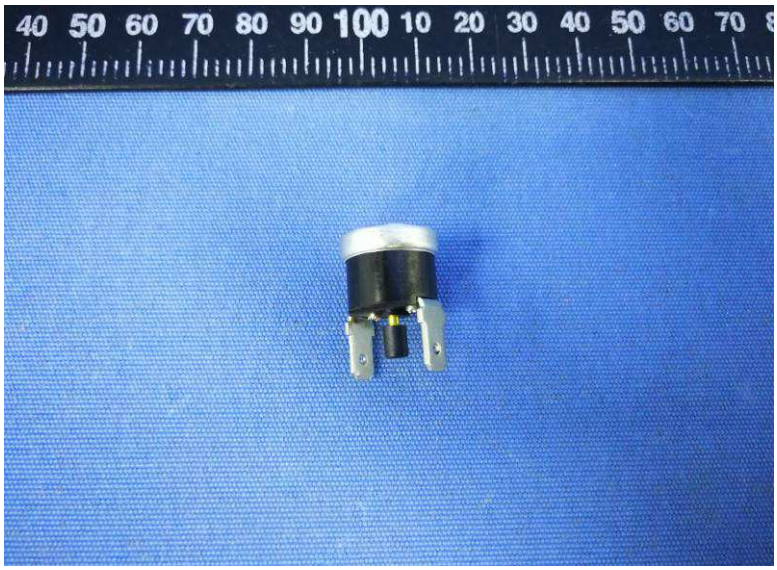
Photograph attachment
Overall view of KSD301

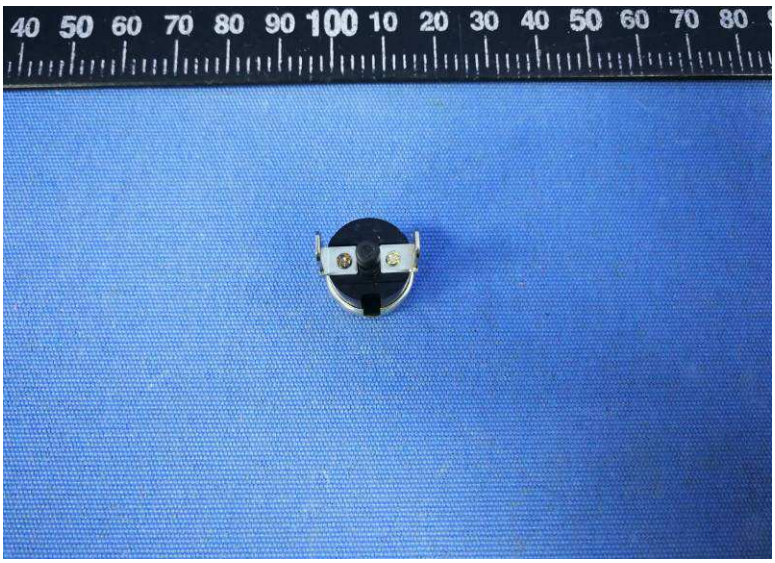


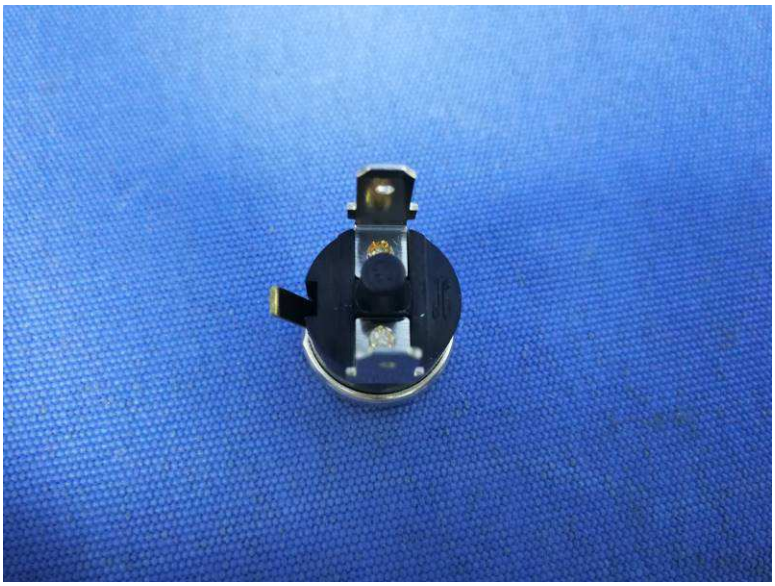




Overall view of KSD301 (with alternative reset button)








KSD301
10A 250V~
150

Internal view of KSD301