



DELHI TEST HOUSE®

Plot No. 50, Phase - IV, Sector-57, HSIDC Industrial Area, Behind Parnami Hospital, Kundli, Sonipat-131028 (Haryana)

Telex : 0130-2116529 Mobile : 09050604301, 09050604350

e-mail : kundli@delhitesthouse.com, ag@delhitesthouse.com Website : www.delhitesthouse.com



Issued to

Onkar Engine & Generator P Limited
E-14, Sector: 63, Noida Distt: Gautam Budh
Nagar UP (20301)

QR: 1401

Report No.: 222446210317KUNE10000

Date of Issue: 22.04.2021

Date of Receipt: 17.03.2021

Party Ref. No.: NIL

Letter Date: 17.03.2021

Sample description: Automatic Electrical Control for Household and Similar Use

Type: T-7

Reference Specification: IS/IEC 60730-2-9: 2011

Rating: 250VAC, 20A, 50Hz

Electrical Testing

Domestic electrical appliance

Test Report

Clause No.	Description	Measurement/ testing	Page No.	Verdict
5.	RATING	RATING	03	P
6.	CLASSIFICATION	CLASSIFICATION	03-08	P
7.	INFORMATION	INFORMATION	09-10	P
8.	PROTECTION AGAINST ELECTRIC SHOCK	PROTECTION AGAINST ELECTRIC SHOCK	11-13	P
9.	PROVISION FOR PROTECTIVE EARTHING	PROVISION FOR PROTECTIVE EARTHING	14	N/A
10.	TERMINALS AND TERMINATIONS	TERMINALS AND TERMINATIONS	15-17	P
11.	CONSTRUCTION REQUIREMENTS	CONSTRUCTION REQUIREMENTS	18-25	P
12.	MOISTURE AND DUST RESISTANCE	MOISTURE AND DUST RESISTANCE	26-28	P
13.	ELECTRIC STRENGTH AND INSULATION RESISTANCE	ELECTRIC STRENGTH AND INSULATION RESISTANCE	29	P
14.	HEATING	HEATING	30-32	P
15.	MANUFACTURING DEVIATION AND DRIFT	MANUFACTURING DEVIATION AND DRIFT	33-35	P
16.	ENVIRONMENTAL STRESS	ENVIRONMENTAL STRESS	36	P
17.	ENDURANCE	ENDURANCE	37-44	P
18.	MECHANICAL STRENGTH	MECHANICAL STRENGTH	45-49	P
19.	THREADED PART AND CONNECTIONS	THREADED PART AND CONNECTIONS	50-51	P
20.	CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH SOLID INSULATION	CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH SOLID INSULATION	52-54	P
21.	RESISTANCE TO HEAT, FIRE AND TRACKING	RESISTANCE TO HEAT, FIRE AND TRACKING	55	P
22.	RESISTANCE TO CORROSION	RESISTANCE TO CORROSION	56	P
23.	ELECTROMAGNETIC COMPATIBILITY (EMC) REQUIREMENTS – EMISSION	ELECTROMAGNETIC COMPATIBILITY (EMC) REQUIREMENTS – EMISSION	57	N/A

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Director

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24.	COMPONENTS NORMAL OPERATION	COMPONENTS NORMAL OPERATION	58	N/A
25.			59	N/A
26.	ELECTROMAGNETIC COMPATIBILITY (EMC) REQUIREMENTS – IMMUNITY	ELECTROMAGNETIC COMPATIBILITY (EMC) REQUIREMENTS – IMMUNITY	59	N/A
27.	ABNORMAL OPERATION	ABNORMAL OPERATION	60	N/A
28.	GUIDANCE ON THE USE OF ELECTRONIC DISCONNECTION	GUIDANCE ON THE USE OF ELECTRONIC DISCONNECTION	61	N/A
	ANNEX H	ANNEX H	61-69	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
5.	Rating		P
5.1	Rated voltage	250VAC	P
5.2	Rated current	20A	P
5.3	Compliance		P
6.	CLASSIFICATION		P
6.1	According to nature of supply	See below	P
6.1.1	Control for a.c. only	ac only	P
6.1.2	Control for d.c. only	As above	N/A
6.1.3	Control for a.c. and d.c.	As above	N/A
6.1.4	Control for specific supplies or multiple supplies	Control for specific supply only	P
6.2	According to type of load to be controlled by each circuit of the control	Resistive load	P
6.2.1	Circuit for a substantially resistive load with a power factor not less than 0.95.	In compliance	P
6.2.2	Circuit suitable for either a resistive load or for an inductive load with a power factor not less than 0.6 or a combination of both.	As above	P
6.2.3	Circuit for declared specific load	No such construction used	N/A
6.2.4	Circuit for a current less than 20mA	No such construction used	N/A
6.2.5	Circuit for a.c. motor load whose characteristics are defined by the control manufacturer's declaration.	As above	N/A
6.2.6	Circuit for pilot load	As above	N/A
6.3	According to their purpose	In compliance	P
6.3.1	- thermostat	In compliance	P
6.3.2	- temperature limiter	No such construction used	N/A
6.3.3	- thermal cut-out	As above	N/A
6.3.4	- Void		
6.3.5	- energy regulator	No such construction used	N/A
6.3.6	- timer	As above	N/A
6.3.7	- time switch	As above	N/A
6.3.8	- manual control	As above	N/A
6.3.9	- sensing control	As above	N/A
6.3.10	- electrically operated control	As above	N/A
6.3.11	- motor protector	No such construction used	N/A
6.3.11.1	- thermal motor protector	As above	N/A
6.3.12	- thermal motor protector	As above	N/A
6.3.13	- electrically operated mechanism	As above	N/A
6.3.14	- protective control	As above	N/A
6.3.15	- operating control	As above	N/A
6.4	According to features of automatic action		P

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Clause	Requirement- Test	Result – Remark	Verdict
6.4.1	- type 1 action		N/A
6.4.2	- type 2 action	Type 2 action	P
6.4.3	Type 1 actions and Type 2 actions are further classified according to one or more of the following constructional or operational features:	Type 2A action	P
6.4.3.1	Full disconnection on operation	In compliance	P
6.4.3.2	Micro disconnection on operation	No such construction used	N/A
6.4.3.3	Micro interruption on operation	No such construction used	N/A
6.4.3.4	A trip free mechanism which cannot even momentarily be reclosed against the fault	As above	N/A
6.4.3.5	A trip free mechanism in which the contacts cannot be prevented from opening	As above	N/A
6.4.3.6	An action which can only be reset by the use of tool	As above	N/A
6.4.3.7	An action which is not intended to reset under electrically loded condition	As above	N/A
6.4.3.8	A trip-free mechanism in which the contacts cannot be prevented from opening and which may automatically be reset to the closed position	As above	N/A
6.4.3.9	A trip-free mechanism in which the contacts cannot be prevented from opening and the control is not permitted to function as an automatic reset device	As above	N/A
6.4.3.10	For sensing actions, no increase in operating value as the result of breakage in the sensing element	As above	N/A
6.4.3.11	An action that does not require any external auxiliary energy source of electrical supply	As above	N/A
6.4.3.12	An action which operates after a declared ageing period	As above	N/A
6.4.3.13	See annex H		N/A
6.4.3.101	- for sensing actions, no increase in the operating value as a result of any leakage from the sensing element (IS/IEC 60730-2-9)	No such construction used	N/A
6.4.3.102	- an action which operates after a declared thermal cycling test (IS/IEC 60730-2-9)	As above	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 (IS/IEC 60730-2-9)	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
6.4.3.104	- an action which is initiated only after a push-and-turn or pull-and-turn actuation (IS/IEC 60730-2-9)	As above	N/A
6.4.3.105	An action which cannot be reset under electrically loaded condition (IS/IEC 60730-2-9)	As above	N/A
6.4.3.106	An action which operates after declared agriculture environment exposure (IS/IEC 60730-2-9)	As above	N/A
6.5	According to the degree of protection and control pollution degree	IP20	P
6.5.1	According to degrees of protection provided by enclosures against ingress of solid objects and Dust	IP20	P
6.5.2	According to degree of protection provided by enclosures against harmful ingress of water	IP20	P
6.5.3	According to the pollution degree of degrees for which the control is declared.		P
6.6	According to method of connection		P
6.6.1	Control with at least one terminal intended for the connection of fixed wiring	No such fixed wiring or flying leads are incorporated	N/A
6.6.2	Control with at least one terminal intended for the connection of a flexible cord.	No such flexible cord are provided	N/A
6.6.3	Control without any terminals intended for the connection of an external conductor.	In compliance	P
6.7	According to ambient temperature limits of the switch head		P
6.7.1	Control with a switch head for use in an ambient temperature between a minimum value 0°C, and maximum value of 55°C.	See below	N/A
6.7.2	Control with a switch head intended to be used in an ambient temperature having a maximum value other than 55°C but no less than 30°C, or a minimum value lower than 0°C.	$T_{min}: 0^{\circ}\text{C}$ $T_{max}: 75^{\circ}\text{C}$	P
6.7.101	Controls for use in or on cooking appliances (IS/IEC 60730-2-9)	No such appliance control used	N/A
6.7.102	Controls for use in or on ovens of the self cleaning type (IEC 60730-2-9)	As above	N/A
6.7.103	Controls for use in or on food-handling appliances (IS/IEC 60730-2-9)	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
6.7.104	The non-bimetallic SODs are limited for use in appliance for heating or employing liquids or steam	As above	N/A
6.8	According to protection against electric shock	In compliance	P
6.8.1	For an integrated control	In compliance	P
6.8.2	For an incorporated control for use in:		N/A
6.8.2.1	Class 0 equipment	See below	N/A
6.8.2.2	Class 0I equipment	See below	N/A
6.8.2.3	Class I equipment	See below	N/A
6.8.2.4	Class II equipment	As above	N/A
6.8.2.5	Class III equipment	As above	N/A
6.8.3	For an in-line cord control, a free standing control, or an independently mounted control:		N/A
6.8.3.1	Of class 0	As above	N/A
6.8.3.2	Of class 0I	As above	N/A
6.8.3.3	Of class I	As above	N/A
6.8.3.4	Of class II	In compliance	P
6.8.3.5	Of class III	As above	N/A
6.9	According to circuit disconnection or interruption	Full disconnection	P
6.9.1	Full-disconnection	In compliance	P
6.9.2	Micro-disconnection	No such construction used	N/A
6.9.3	Micro-interruption	No such construction used	N/A
6.9.4	All-pole disconnection	As above	N/A
6.9.5	See annex H	As above	N/A
6.10	According to number of cycles of actuation of each manual action	No such construction used	N/A
6.10.1	100000 cycles	As above	N/A
6.10.2	30000 cycles	As above	N/A
6.10.3	10000 cycles	As above	N/A
6.10.4	6000 cycles	As above	N/A
6.10.5	3000 cycles	As above	N/A
6.10.6	300 cycles	As above	N/A
6.10.7	30 cycles	As above	N/A
6.11	According to number of automatic cycles of each automatic action	10000 cycles	P
6.11.1	300000 cycles	No such construction used	N/A
6.11.2	200000 cycles	See below	N/A

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6.11.3	100000 cycles	See below	N/A
6.11.4	30000 cycles	See below	N/A
6.11.5	20000 cycles	See below	N/A
6.11.6	10000 cycles	In compliance	P
6.11.7	6000 cycles	As above	N/A
6.11.8	3000 cycles	As above	N/A
6.11.9	1000 cycles	As above	N/A
6.11.10	300 cycles	As above	N/A
6.11.11	30 cycles	As above	N/A
6.11.12	1 cycle	As above	N/A
6.12	According to temperature limits of the mounting surface of control	See below	P
6.12.1	Control suitable for mounting on a surface which is not more than 20K above the ambient temperature	Suitable for mounting on a surface which is not more than 20K above Tmax	P
6.12.2	Control suitable for mounting on a surface which is more than 20K above the ambient temperature	As above	N/A
6.13	According to value of proof tracking index for the insulation material used	Material group IIIb	P
6.13.1	Material of material group IIIb with a PTI of 100 and up to but excluding 175;	In compliance	P
6.13.2	Material of material group IIIa with a PTI of 175 and up to but excluding 400 ;	As above	N/A
6.13.3	Material of material group II with a PTI of 400 and up to but excluding 600	As above	N/A
6.13.4	Material of material group I with a PTI of 600 and over	As above	N/A
6.14	According to period of electrical stress across insulating parts supporting live parts and between live parts and earthed metal	No such construction used	N/A
6.14.1	Short period	As above	N/A
6.14.2	Long period	As above	N/A
6.15	According to construction	Integrated control	P
6.15.1	Integrated control	Incompliance	P
6.15.2	Incorporated control	As above	N/A
6.15.3	In-line cord control	As above	N/A
6.15.3.1	Free-standing control	As above	N/A
6.15.4	Independently mounted control for	As above	N/A
6.15.4.1	Surface mounting	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
6.15.4.2	Flush mounting	No such construction used	N/A
6.15.4.3	Panel mounting	As above	N/A
6.15.5	See annex J		N/A
6.15.101	Controls having parts containing liquid metal. (IS/IEC 60730-2-9)	No such construction used	N/A
6.16	According to ageing requirements of the equipment in which, or with which, the control is intended to be used		N/A
6.16.1	60000 h	As above	N/A
6.16.2	30000 h	As above	N/A
6.16.3	10000 h	As above	N/A
6.16.4	3000 h	As above	N/A
6.16.5	300 h	As above	N/A
6.16.6	15 h	As above	N/A
6.17	According to use of the thermistor	As above	N/A
6.18	According to software class	As above	N/A

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Clause	Requirement- Test	Result - Remark	Verdict
7.	INFORMATION		P
7.1	General requirements	In compliance	P
7.2	Methods of providing information	See below	P
7.2.1	Information shall be provided using one or more of the following methods	Information is provided by table 7.2	P
7.2.2	Information which is indicated as being required by marking I or by documentation (D)	As above	P
7.2.3	For control submitted in, on or with the requirement, the requirement for documentation (D) is replaced by declaration (X)	As above	P
7.2.4	For an integrated control forming part of a more complex control	No such construction used	N/A
7.2.5	The requirement for documentation (D) is considered to be met if such information has been provided by marking (C)	In compliance	P
7.2.5.1	The requirement for declaration (X) is considered to be met if such information has been provided by either document (D) or by marking (C)	As above	P
7.2.6	Except as indicated in 7.4, for integrated controls all information provided by means of declaration (X)		P
7.2.7	For controls that are neither integrated nor incorporated, where lack of space prevents legible marking as specified,	Integrated controls	N/A
7.2.8	According to marking or information is allowed	In compliance	P
7.2.9	When symbols are used		P
7.3	Class II symbol	Class II	P
7.3.1	The symbol of class II construction shall be used only for controls classified	As above	P
7.3.2	The dimension of the symbol for class II construction shall be such that the length of the side of the outer square	As above	P
7.3.2.1	The length of the side of outer square of the symbol shall be not less than 5mm	As above	P
7.4	Additional requirements for marking	In compliance	P

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7.4.1	Required marking on control shall preferably be on the main body of the control but may be placed on the non-detachable parts	Marking is legible and durable after the test	P
7.4.2	Terminals on control intended for the connection of the supply	No such construction used	N/A
7.4.3	Terminals intended exclusively for a natural external conductor	As above	N/A
7.4.3.1	Earthing terminals for external earthing conductors	As above	N/A
7.4.3.2	All other terminal shall be suitably identified	No such construction used	N/A
7.4.4	Controls intended to be set by the user	In compliance	P
7.4.5	Parts destroyed during the normal operation of the control	No such construction used	N/A

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8. PROTECTION AGAINST ELECTRIC SHOCK			P
8.1 General requirements	See below		P
8.1.1 Adequate protection against accidental contact with live parts in any position of use when the switch is mounted and operated as in normal use.	Adequate protection provided		P
8.1.2 For class II controls and controls for class II equipment, accidental contact with metal parts separated from hazardous live parts by basic insulation.	In compliance		P
8.1.3 The insulating properties of lacquer, enamel, paper, cotton, oxide film on metal parts, beads and sealing compounds shall not be relied upon to No such parts give the required protection against accidental contact with hazardous live parts.	No such type of material or compound used		P
8.1.4 Class II controls are connected in normal use to the gas supply mains or to the water supply mains, any metal parts conductively connected to the gas pipes or in electrical contact with the water system shall be separated from hazardous live parts by double insulation or reinforced insulation	In compliance		P
8.1.5 Permanently connected to fixed wiring shall be so designed that the required degree of protection against electric shock is not impaired by the installation of the control.	No fixed wiring used		N/A
8.1.6 For integrated and incorporated controls, the test applied to accessible control	integrated controls		P
8.1.7 For in-line cord and free-standing controls, the tests is only applied to accessible parts when it is mounted in any position in accordance with the manufacturer's declaration	As above		N/A
8.1.8 For independently mounted controls, the test is made when the control is mounted as in normal use, fitted with cable of the smallest or of the largest nominal cross-sectional area	As above		N/A
8.1.9 Inspection checked	Compliance checked by standard test finger with a force of 20N and 30N		P

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Test Report

Clause	Requirement- Test	Result – Remark	Verdict
8.1.9.1	The standard test finger shall be so designed that each of the jointed sections can be turned through an angle of 90° with respect to the axis of the finger in the same direction only.	In compliance	P
8.1.9.2	openings in insulating material and in unearthing metal shall be tested by applying the test pin, shown in figure 1 without force in every possible position	As above	P
8.1.9.3	It shall not be possible, with either the standard test finger or the test pin, to touch hazardous live parts.	As above	P
8.1.9.4	For controls which have any parts of double insulation construction, it shall not be possible to touch metal parts with the standard test finger	Control is separated from hazardous live parts by basic insulation	P
8.1.9.5	If there is an instruction to remove a part during normal use or user maintenance and if there is no warning on the part which indicates	No such construction used	N/A
8.1.10	See annex H		N/A
8.1.11	Between class III circuits and circuits connected to the mains or earth, insulation external to the safety isolating transformer shall comply with all requirements for class II insulation	No such construction used	N/A
8.1.12	A live part shall be considered to be hazardous if it is intended to be at some time connected to a source of voltage other than safety extra-low voltage	No such construction used	N/A
8.2	Actuating members and actuating means	In compliance	P
8.2.1	An actuating member shall not be live	Actuating member did not live	P
8.2.2	An actuating member is insulated and not accessible when it is removed.	In compliance	P
8.2.3	Actuating members and handles held in normal use is adequately covered by insulating material	In compliance	P
8.3	Capacitors	No such capacitor used	N/A
8.3.1	For class II in-line cord controls and independently mounted controls, capacitors shall not be connected to accessible metal parts.	As above	N/A

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Test Report

Clause	Requirement- Test	Result – Remark	Verdict
8.3.2	Controls intended to be connected to the supply by means of a plug shall be so designed that in normal use there is no risk of electric shock from charged capacitors when touching the pins of the plug	As above	N/A
8.3.2.1	The control is supplied at rated voltage	As above	N/A
8.3.2.2	The actuating member, if any, is then moved to the "OFF" position if one exists	As above	N/A
8.3.2.3	One second after disconnection, the voltage between the pins of the plug is measured	As above	N/A
8.3.2.4	The voltage shall not exceed 34 V. The test is only performed if the capacitor exceeds 0.1 μ F.	As above	N/A
8.4	Covers and uninsulated live or hazardous part the cover fixing screws are not accessible	In compliance	P

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QR: 1401

Report No.: 222446210317KUNE10000

Test Report

Issued to

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Clause	Requirement- Test	Result – Remark	Verdict
9.1.1	In-line cord, free-standing and independently mounted controls of class 01 and class I which may become live in the event of an insulation fault shall be permanently and reliably connected to an earthing terminal or termination Within the control, or to the earthing contact of an equipment inlet.	Class II Controls	N/A
9.1.2	integrated and incorporated controls for class 01 and class I equipment which may become live in the event of an insulation fault shall have provision for earthing.	As above	N/A
9.1.3	Earthing terminals, earthing terminations and earthing contacts shall not be electrically connected to any neutral terminal.	As above	N/A
9.2	Class II and class III controls shall have no provision for protective earthing	As above	N/A
9.3	Adequacy of earth connections	As above	N/A
9.3.1	General requirements	As above	N/A
	The connection between an earthing terminal, earthing termination or earthing contact	As above	N/A
	A current of 1.5 times the rated current, but not less than 25 A, and derived from an a.c. source with a no-load voltage not exceeding 12 V	As above	N/A
	The voltage drop between the earthing terminal, earthing termination or earthing contact and the part is measured.	As above	N/A
9.3.2	Fixed wiring and methods X and M	As above	N/A
9.3.3	External conductors	As above	N/A
9.3.4	Size of accessible earthing terminals	As above	N/A
9.3.5	Size of non-accessible earthing terminals	As above	N/A
9.3.6	Locking of earthing terminals	As above	N/A
9.4	Corrosion resistance	As above	N/A
9.4.1	Materials	As above	N/A
9.4.2	Frames or enclosures of aluminium	As above	N/A
9.5	Other requirements	As above	N/A
9.5.1	Detachable parts	As above	N/A
9.5.2	Incorporated control	As above	N/A

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QR. 1401

Report No.: 222446210317KUNE10000

Test Report

Clause	Requirement- Test	Result – Remark	Verdict
10.	TERMINALS AND TERMINATIONS		P
10.1	Terminals and terminations for external copper conductors	In compliance	P
10.1.1	Terminals for fixed wiring and for non-detachable cords using attachment methods X and M, connection is made by means of screws, nuts or equally effective devices or methods	No such cable or cord are provided	N/A
10.1.1.1	Terminals or terminations for non-detachable cords using attachment methods Y and Z shall satisfy the appropriate requirements and may require the use of special-purpose tools for connection or disconnection	As above	N/A
10.1.2	Screws and nuts shall have a metric ISO thread or a thread of equivalent effectiveness.	As above	N/A
10.1.3	Soldered, welded, crimped or similar terminations shall not be used for the connection of non-detachable cords using attachment methods X and M.	As above	N/A
10.1.4	Terminals for fixed wiring or non-detachable cords using attachment methods X or M shall allow at least the connection of conductors having nominal cross-sectional areas	As above	N/A
10.1.4.1	If a terminal is designed to accommodate a wider range of fixed wiring	As above	N/A
10.1.4.2	In the USA creepage distances and clearance between terminals declared for external conductors	As above	N/A
10.1.4.3	In the USA, the measurements of creepage and clearance distances at terminal are made twice	As above	N/A
10.1.5	Terminals for fixed wiring or non-detachable cords using attachment methods X or M shall be so fixed that the terminal does not work loose	As above	N/A
10.1.5.1	Compliance is checked by inspection and measurement after fastening and loosening a conductor	As above	N/A
10.1.6	Terminals for fixed wiring or non-detachable cords using attachment methods X or M, clamp the conductor between metal surfaces with sufficient clamp the conductor between metal surfaces with sufficient	As above	N/A



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Clause	Requirement- Test	Result – Remark	Verdict
10.1.7	Terminals for fixed wiring and non-detachable cords using attachment method X shall not require special preparation of the conductor in order to effect correct connection.	As above	N/A
10.1.7.1	Terminals for attachment method X may also have alternative means of connection	As above	N/A
10.1.8	Terminals for fixed wiring and non-detachable cords using attachment methods X or M, neither the conductor nor a wire of a stranded conductor can slip out.	As above	N/A
10.1.8.1	Compliance is checked by following test	As above	N/A
10.1.8.2	Terminals are fitted with conductor according to the use	As above	N/A
10.1.8.3	The wires of flexible cables and cords are twisted	As above	N/A
10.1.8.4	For flexible cords the test is repeated	As above	N/A
10.1.9	Terminals shall be so designed that they clamp the conductor reliably	As above	N/A
10.1.9.1	The terminals are fitted with conductors	As above	N/A
10.1.9.2	The pull test is normally applied directly to the conductor	As above	N/A
10.1.9.3	During the test the conductor	As above	N/A
10.1.10	Terminals do not attain excessive temperature in normal use	See table14.1	P
10.1.11	Each core contained within any fixed wiring sheath or flexible cord sheath can be terminated in reasonable proximity to the other cores within the same sheath.	No such construction used	N/A
10.1.12	Terminals for non-detachable cords using attachment methods X or M, there is no risk of accidental contact between live parts and accessible metal parts	As above	N/A
10.1.13	Circuit continuity is not maintained by pressure transmitted through insulating material other than ceramic, or other insulating material with Characteristics no less suitable.	In compliance	P
10.1.14	Screws and threaded parts of terminals shall be of Copper alloy metal	Screw and threaded parts of terminal is made of metal	P

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Test Report

Clause	Requirement- Test	Result – Remark	Verdict
10.1.15	Terminals of the pillar type and the mantle type allow an adequate length of conductor to be introduced into, and pass beyond the edge of the screw, to ensure that the conductor does not fall out.	In compliance	P
10.1.16	Flying leads (pig tails)	No such construction used	N/A
10.1.16.1	In Canada and the U.S.A. flying leads shall be provided with strain relief to prevent mechanical stress	As above	N/A
10.2	Terminals and terminations for internal conductors	No such construction used	N/A
10.2.1	Terminals and terminations allow the connection of conductors having nominal cross-sectional areas	As above	N/A
10.2.2	Terminals and terminations are suitable for their purpose	As above	N/A
10.2.3	Soldered terminals are used	No such construction used	N/A
10.2.4	Flat push-on connectors	In compliance	P
10.2.4.1	Tabs forming part of a control with the dimensional requirements	As above	P
10.2.4.2	Tabs forming part of a control consist of material and plating appropriate to the maximum temperature of the tabs	As above	P
10.2.4.3	Tabs forming part of a control have adequate strength to allow the insertion and withdrawal of receptacles without damage to the control such as to impair compliance with this standard.	Incompliance	P
10.2.4.4	Tabs forming part of a control are adequately spaced to allow the connection of the appropriate receptacles.	In compliance	P
10.3	Terminals and terminations for integrated conductors	No such construction used	N/A

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Report No.: 222446210317KUNE10000

Test Report

Clause	Requirement- Test	Result – Remark	Verdict
CONSTRUCTION REQUIREMENTS			
11.1	Materials		P
11.1.1	Insulating materials – Impregnated	Wood, cotton, silk, ordinary paper and similar fibrous or hygroscopic material is not used as insulation unless impregnated	P
11.1.2	Current-carrying parts	In compliance	P
11.1.3	Non-detachable cords	No such type of cord used	N/A
11.1.3.1	Non-detachable cords of class I controls shall have a green/yellow conductor insulation	No such construction used	N/A
11.1.3.2	Conductor insulation identified by the color combination green/yellow shall not be connected to terminals or terminations other than earthing terminals or terminations.	No such construction used	N/A
11.1.101	Parts containing liquid metal (IS/IEC 60730-2-9)	As above	N/A
11.1.102	Material of non bimetallic SODs (IS/IEC 60730-2-9)	As above	N/A
11.2	Protection against electric shock	In compliance	P
11.2.1	Double insulation	Adequate protection provided	P
11.2.1.1	If the basic and the supplementary insulation cannot be tested separately, or if satisfaction with regard to the properties of both insulations cannot be obtained in another way, the insulation is regarded as reinforced insulation.	In compliance	P
11.2.2	Infringement of double or reinforced insulation	In compliance	P
11.2.3	Integrated conductors	No such construction used	N/A
11.2.3.1	Integrated conductor shall be so rigid, so fixed or so insulated that in normal use creepage distance and clearance distance cannot be reduced	As above	N/A
11.2.3.2	Insulation, if any, shall be such that it cannot be damage during mounting or in normal use	As above	N/A
11.2.4	Flexible cord sheaths	No such construction used	N/A
11.2.5	See annex H		N/A
11.3	Actuation and operation		P
11.3.1	Full disconnection	Full disconnection	P

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Report No.: 222446210317KUNE10000

Test Report

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Clause	Requirement- Test	Result – Remark	Verdict
11.3.2	Micro-disconnection	No such construction used	N/A
11.3.3	Reset buttons	No such construction used	N/A
11.3.4	Setting by the manufacturer	As above	N/A
11.3.5	Contacts – General	As above	N/A
11.3.6	Contacts for full-disconnection and micro-disconnection	Full disconnection only	P
11.3.7	The requirements of 11.3.5 and 11.3.6 shall not apply to contacts shows they cannot be operated on-load or are not intended to be operated on-load, nor to contacts which do not arc under conditions of normal use	Compliance is operated on-load	N/A
11.3.7.1	Compliance is checked by inspection and if necessary by the test 11.3.7.2	As above	N/A
11.3.7.2	A d.c. voltage equal to maximum working voltage is applied to the contacts in series with a resistor such that the current occurring in normal use is obtained	As above	N/A
11.3.8	Contacts rest position	In compliance	P
11.3.9	Pull-cord actuated control	No such cable or cord are provided	N/A
11.4	Actions	Type 2A action	P
11.4.1	Combined actions	No such construction used	N/A
11.4.2	Setting by the manufacturer	As above	N/A
11.4.3	Type 2 action	Type 2A action	P
11.4.3.101	Capacitors shall not be connected across the contacts of a thermal cut-out. (IS/IEC 60730-2-9)	No such capacitor incorporated across terminal	N/A
11.4.3.102	Constructions requiring a soldering operation to reset thermal cut-outs are not permitted. (IS/IEC 60730-2-9)	As above	N/A
11.4.4	Type 1.A or 2.A action	In compliance	P
11.4.5	Type 1.B or 2.B action	No such construction used	N/A
11.4.6	Type 1.C or 2.C action	As above	N/A
11.4.7	Type 1.D or 2.D action	As above	N/A
11.4.8	Type 1.E or 2.E action	As above	N/A
11.4.9	Type 1.F or 2.F action	As above	N/A
11.4.10	Type 1.G or 2.G action	As above	N/A
11.4.11	Type 1.H or 2.H action	As above	N/A
11.4.12	Type 1.J or 2.J action	As above	N/A
11.4.13	Type 1.K or 2.K action	As above	N/A

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Report No.: 222446210317KUNE10000

Test Report

Issued to

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Clause	Requirement- Test	Result – Remark	Verdict
11.4.13.101	In the event of a break in the sensing element, the declared disconnection or interruption is provided before the sum of the declared operating value and drift is exceeded. (IS/IEC 60730-2-9)	As above	N/A
11.4.13.102	Type 2.K action may also be achieved by compliance with a, b) or c). (IS/IEC 60730-2-9)	As above	N/A
	a) Two sensing elements operating independently from each other and actuating one switched head.	As above	N/A
	b) Bi-metallic sensing elements	As above	N/A
	c) The bulb and capillary of a temperature sensing control which is actuated by a change in the pressure of a fluid confined in the bulb and capillary.	As above	N/A
11.4.14	Type 1.L or 2.L action	No such construction used	N/A
11.4.15	Type 1.M or 2.M action	As above	N/A
11.4.16	See annex H	As above	N/A
11.4.101	Type 2.N action (IS/IEC 60730-2-9)	No such construction used	N/A
	In the event of a leak in the sensing element, or in any other part between the sensing element and the switch head, the declared disconnection or interruption is provided before the sum of the declared operating value and drift is exceeded.	As above	N/A
11.4.102	Type 2.P (IS/IEC 60730-2-9)	As above	N/A
11.4.103	Bi-metallic single-operation device (IS/IEC 60730-2-9)	As above	N/A
11.4.104	Type 1.X or 2.X (IS/IEC 60730-2-9)	As above	N/A
11.4.105	Type 1.Z or 2.Z (IS/IEC 60730-2-9)	As above	N/A
11.4.106	Voltage maintained thermal cut-out (IS/IEC 60730-2-9)	As above	N/A
11.4.107	Type 1.AM or 2.AM (IS/IEC 60730-2-9)	As above	N/A
11.5	Openings in enclosures	No such drain holes incorporated	N/A
11.6	Mounting of controls		P
11.6.1	The methods of mounting in accordance with the manufacturer's declaration do not adversely affect compliance with this standard	No such construction used	N/A

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Test Report

Clause	Requirement- Test	Result – Remark	Verdict
11.6.2	Control cannot rotate or be otherwise displaced, and cannot be removed from an equipment without the aid of a tool	In compliance	P
11.6.3	Mounting of independently mounted controls	No such construction used	N/A
11.6.3.1	Independently mounted controls other than those declared for panel mounting shall either: – fit a standard box as declared; – be supplied with a conduit box if a special conduit box is required; or – be suitable for surface mounting on a plane Surface.	As above	N/A
11.6.3.2	A special conduit box is required	No such construction used	N/A
11.6.3.3	Independently mounted controls for surface mounting used with buried installation not using an outlet box	As above	N/A
11.6.3.4	Independently mounted controls for surface mounting used with exposed wiring shall be provided with cable or conduit entries, knock-outs, or glands	As above	N/A
11.6.3.5	Independently mounted controls for surface mounting or the sub-bases for such controls, shall be constructed in such a manner that the terminals for external conductors are accessible	As above	N/A
11.6.3.6	Controls intended for mounting on an outlet box or similar enclosure shall have wiring terminals, other live parts and sharp-edged metal parts, earthed or not, located or protected	As above	N/A
11.6.3.7	Back wiring terminals shall be recessed or be protected by close-fitting barriers or insulating material	As above	N/A
11.6.3.101	For agricultural thermostats declared (IS/IEC 60730-2-9)	No such construction used	N/A
11.7	Attachment of cords		N/A
11.7.1	Flexing	No such cable or cord are incorporated	N/A
11.7.1.1	The flexible cords of in-line cord and free standing controls shall be capable of withstanding the flexing likely to occur in normal use	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
11.7.1.2	Compliance is checked by subjecting the control, fitted with the flexible cords for which designed	As above	N/A
11.7.1.2.1	The control is mounted in the flexing apparatus shown in fig 9	As above	N/A
11.7.1.2.2	After the test, the sample shall show no damage within the meaning of this standard	As above	N/A
11.7.1.2.3	Not more than 10% of the total no of conductors of the flexible cords	As above	N/A
11.7.2	Cord anchorage	As above	N/A
11.7.2.1	Controls other than those integrated and incorporated, intended to be connected by means of non-detachable cords, shall have cord anchorages	As above	N/A
11.7.2.2	Cord anchorages of class II controls shall be of insulating material or, if of metal, be insulated from accessible metal	As above	N/A
11.7.2.3	Cord anchorages of class II controls shall be of insulating material	As above	N/A
11.7.2.4	Cord anchorage shall be so designed that	As above	N/A
11.7.2.5	For other than attachment method Z, makeshift methods such as a tying the cord into knot	As above	N/A
11.7.2.6	Glass shall not be used as cord anchorages in-line cord controls using attachment method X unless they make provision for clamping	As above	N/A
11.7.2.7	Screws, if any, which have to be operate when replacing the cord shall not serve to fixed any other component	As above	N/A
11.7.2.8	Compliance with 11.7.2.1 to 11.7.2.7, inclusive, is checked by inspection and by the tests of 11.7.2.9 to 11.7.2.15 inclusive.	As above	N/A
11.7.2.9	The control is fitted with a flexible cord and the conductors are introduced into the terminals,	As above	N/A
11.7.2.10	After this preparation, it shall not be possible to push the cord into the control to such an extent that the cord or internal parts of the control	As above	N/A
11.7.2.11	The cord is then subjected to pulls of the value and number shown in table 11.7.2. The pulls are applied	As above	N/A
11.7.2.12	Immediately afterwards, the cord is subjected for 1 min to a torque of the value shown in table 11.7.2.	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
11.7.2.13	For attachment method X, the tests are made first with the lightest permissible type of flexible cord of the smallest cross-sectional area used in 10.1.4.	As above	N/A
11.7.2.14	During the tests, the cord shall not be damaged. After the tests the cord shall not have been displaced longitudinally by more than 2 mm, the conductors shall not have been moved	As above	N/A
11.7.2.15	For the measurement of the longitudinal displacement, a mark is made on the cord while it is subjected to the pull	As above	N/A
11.8	Size of cords – non-detachable	As above	N/A
11.8.1	Non-detachable cords shall not be lighter than ordinary tough rubber sheathed flexible cord, designated 60245 IEC 53, or ordinary polyvinyl chloride sheathed flexible cord ,	As above	N/A
11.8.2	Controls fitted with non-detachable cords shall have a cord with conductors of a size not less than that shown in table 11.8.2 .	As above	N/A
11.8.3	The space for the flexible cord inside the control shall. Be adequate to allow the conductor to be easily introduced	As above	N/A
11.9	Inlet openings		N/A
11.9.1	Inlet openings for flexible external cord shall be so designed and shaped, or shall be provided with the inlet bushing	No such construction used	N/A
11.9.1.1	Conduit entries and knock-outs of independently mounted controls shall be so designed or located that introduction of the conduit	As above	N/A
11.9.2	If an inlet bushing is not provided then the inlet opening shall be of insulating material.	As above	N/A
11.9.3	If an inlet bushing is provided then it shall be of insulating material	No such insulating bushing are provided	N/A
11.9.4	An inlet bushing shall not be of rubber, with the exception that for attachment methods	As above	N/A
11.9.5	Enclosures of independently mounted controls intended to be permanently connected to fixed wiring shall have cable entries	As above	N/A
11.10	Equipment inlets and socket-outlets	No such socket outlet used	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
11.10.1	The design of equipment inlets and socket-outlets intended for use by the user for the interconnection of controls and equipment shall be such as to render unlikely their engagement	As above	N/A
11.10.2	In-line cord controls provided with an equipment inlet or socket-outlet shall be so rated, or so protected, that unintentional overloading of either the control	As above	N/A
11.10.3	Controls provided with pins, blades, or other connecting/adapting means, in order to be introduced into fixed socket outlets shall comply with the requirements	As above	N/A
11.11	Requirements during mounting, maintenance and servicing		P
11.11.1	Covers and their fixing	No such construction used	N/A
11.11.1.1	For other than integrated controls, user maintenance or servicing of the control, the removal of a cover or cover plate shall not affect the setting of the control if this might impair compliance with this standard.	As above	N/A
11.11.1.2	The fixing of covers shall be such that they cannot be displaced	As above	N/A
11.11.1.3	Covers of enclosures	No such construction used	N/A
11.11.1.4	Glass covering an opening	As above	N/A
11.11.1.5	Non-detachable parts	As above	N/A
11.11.1.5.1	Parts which are likely to be removed	As above	N/A
11.11.1.5.2	For the test of 11.11.1.5.3, the control shall be at room temperature	As above	N/A
11.11.1.5.3	A force is applied for 10 sec.	In compliance	P
11.11.1.5.4	During and after test 11.11.1.5.3	After the test all parts are not detached and remains locked position	P
11.11.1.6	A cover shall not be released when a squeezing force of up to 45 N combined with up to 15 N for the pull test is applied at any two points	In compliance	P
11.11.2	Cover fixing means	No such fixing cover incorporated	N/A
11.11.3	Actuating member		P

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Clause	Requirement- Test	Result – Remark	Verdict
11.11.3.1	A control shall not be damaged when its actuating member is mounted or removed in the intended manner.	In compliance	P
11.11.3.2	Actuating member shall not be removable without the use of a tool	No such construction used	N/A
11.11.3.3	Actuating member shall not be possible to fix the actuating member in an incorrect position.	Actuating member control with type 2 A action	P
11.11.4	Parts forming supplementary or reinforced insulation	Reinforced insulation	P
11.11.5	Sleeving as supplementary insulation	No such sleeving used as supplementary insulation	N/A
11.11.6	Pull-cords	No such construction used	N/A
11.11.7	Insulating linings	As above	N/A
11.12	Controls using software	As above	N/A
11.13	Protective controls and components of protective control systems	As above	N/A
11.101	Time factor (IS/IEC 60730-2-9)	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
12.	MOISTURE AND DUST RESISTANCE		
12.1	Protection against ingress of water and dust	IP20	P
12.1.1	Controls shall provide the degree of protection against ingress of water and dust appropriate to their IP classification when mounted and used in the declared manner.	In compliance	P
12.1.2	After the appropriate test the control shall withstand the electric strength test.	See CI 13.2	P
12.1.3	Controls are allowed to stand in normal test room atmosphere for 24 h before being subjected to the appropriate test.	In compliance	P
12.1.4	Controls with a non-detachable cord using attachment method X are fitted with the appropriate conductors with the smallest cross-sectional area	No such construction used	N/A
12.1.5	Detachable parts are removed and subjected to the tests with the main part.	No such component used	N/A
12.1.6	Sealing rings of glands and other sealing means are aged in an atmosphere having the composition and pressure of the ambient air	No such mechanical gland used	N/A
12.1.6.1	Void		-
12.1.6.2	Immediately after ageing, the parts are taken out of the cabinet and left at room temperature	No such ageing test applied.	N/A
12.2	Protection against humid conditions		P
12.2.1	All controls shall withstand humid conditions which may occur in normal use.	All control withstand humid conditions which may occur in normal use	P
12.2.2	Humidity treatment	As above	P
12.2.3	For in-line cord, free-standing, independently mounted controls, the test is conducted immediately after the humidity treatment.	For integrated controls test 13.2 is conducted after humidity	P
12.2.4	The control shall show no damage so as to impair compliance with this standard.	The control did not show damage so as to impair compliance with this standard	P
12.2.5	Cable inlet openings, if any, and drain holes are left open. If a drain hole is provided for an IPX7 control, it is opened.	IP00 appliance	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
12.2.6	Detachable parts are removed and subjected, if necessary, to the humidity treatment with the main part.	No such detachable part incorporated in the compliance.	N/A
12.2.7	Before being placed in the humidity cabinet, the sample is brought to a temperature between t and 2 days for IP X0 controls (t + 4) °C.	2 days for IP20 controls	P
12.2.8	The humidity treatment is carried out in a humidity cabinet.	Humidity test applied between 20°C to 30°C and 91 to 95% RH	P
12.2.9	After this treatment the tests of clause 13 are made either in the humidity cabinet.	In compliance	P
12.3	For in line cord and free standing controls, one sample is subjected to the test	Intergrated control	N/A
12.3.1	The control is connected to supply voltage equal to 1.06 times the rated voltage.	As above	N/A
12.3.2	The leakage current is measured between parts and indicated	As above	N/A
12.3.3	Measuring circuits for controls using different supplies are shown in figure	As above	N/A
12.3.4	During measurement all control circuits shall be closed	As above	N/A
12.3.5	The measuring circuit shall have a total impedance	As above	N/A
12.3.6	The measurement circuit shall note have an error of more than 5% at an indicated 0.75mA of leakage	As above	N/A
12.3.7	The maximum leakage current, after the temperature of the control has stabilized	As above	N/A
12.101	Refrigeration controls. (IS/IEC 60730-2-9)	Geyser control	N/A
12.101.1	Compliance is checked by the following test. (IS/IEC 60730-2-9)	No such potting compound used	N/A
12.101.2	Controls which used a potting compound are given a softening test. (IS/IEC 60730-2-9)	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
12.101.3	The two samples used for softening tests and one untested sample.(IS/IEC 60730-2-9)	No such construction used	N/A
12.101.4	Two consecutive heating and freezing cycles are performed in one working day.(IS/IEC 60730-2-9)	As above	N/A
12.101.5	After the last freezing test, the sample are thawed to approximately room temperature in water and then insulation resistance is measured (IS/IEC 60730-2-9)	As above	N/A
12.101.6	While the sample is moist, a voltage equal to $2X V_R + 1000V$ is applied (IS/IEC 60730-2-9)	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
13.	ELECTRIC STRENGTH AND INSULATION RESISTANCE		P
13.1	Insulation resistance	In compliance	P
13.1.1	Compliance is checked by the test.	As above	P
13.1.2	Measuring reinforced or supplementary insulation to other than metal parts, each appropriate surface of the insulation is covered with a metal foil to provide an electrode for the test.	See table 13.1	P
13.1.3	The insulation resistance is measured with a d.c. voltage of approximately 500 V applied, the measurement being made 1 min after application of the voltage	See table 13.1	P
13.1.4	Measure value of the insulation resistance	See table 13.1	P
13.2	Electric strength	See table 13.2	P
13.2.1	Measurement value	See table 13.2	P
13.2.2	Measuring reinforced or supplementary insulation to other than metal parts, each appropriate surface of the insulation is covered with a metal foil to provide an electrode for the test	Measuring reinforced insulation each appropriate surface of the insulation is covered with a metal foil.	P
13.2.3	The insulation is subjected to a voltage of substantially sine-wave form, having frequency of 50 Hz or 60 Hz.	1450V for full disconnection	P
13.2.4	Initially not more than half the prescribed voltage is applied, then it is raised rapidly to the full value	No flashover or break down occurred	P
13.3	For In-line cord and free-standing controls, after the test of 13.1 or 13.2, See Table 13.3.4	Intergrated control	N/A
13.3.1	A test voltage, d.c. for controls for d.c. only and a.c. for all other controls, is applied between any live part and accessible metal parts	In compliance	P
13.3.2	The test voltage is 1.06 times rated voltage, or 1.06 times the upper limit of the rated voltage range,	265V applied	P
13.3.3	The leakage current is measured within 5 s after the application of the test voltage.	See below	P
13.3.4	The maximum leakage current to accessible metal parts and metal foil	See table 13.3.4	P

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Clause	Requirement- Test	Result – Remark	Verdict
14.	HEATING		P
14.1	Controls and their supporting surfaces shall not attain excessive temperatures in normal use.	Controls and their supporting surfaces did not attain excessive temperatures in normal use.	P
14.1.1	Compliance is checked by the test of 14.2 to 14.7	As above	P
14.1.2	During this test, the temperatures shall not exceed the values	Temperature did not exceed their value	P
14.2	Terminals and terminations which are intended for the connection of external conductors shall be fitted with conductors of the intermediate cross-sectional area appropriate to the type of conductor and rating	In compliance	P
14.2.1	Attachment methods M, Y or Z are used then the cord declared or supplied shall be used for the test.	No such construction used	N/A
14.2.2	A terminal is suitable for both flexible cords and for fixed conductors, then the appropriate flexible cord is used.	As above	N/A
14.2.3	Terminals not intended for the connection of external conductors shall be fitted with conductors of the minimum cross-sectional area	As above	N/A
14.3	In-line cord controls are stood or rested on a dull black painted plywood surface.	As above	N/A
14.3.1	Independently mounted controls are mounted as in normal use.		N/A
14.4	Controls shall be connected to a supply having the most unfavourable voltage between 0.94 and 1.06 times rated voltage.	265V	P
14.4.1	Circuits and contacts not intended for external loads shall be specified by the manufacturer.	In compliance	P
14.4.2	Actuating members are placed in the most unfavourable position.	As above	P
14.4.3	Contacts required to be closed initially for the purpose of this test are closed at the rated current and the rated voltage of the circuit	Contacts are closed initially for voltage and current	P

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Clause	Requirement- Test	Result – Remark	Verdict
14.4.3.1	For temperature sensing controls the temperature sensing element is raised or lowered to a temperature which differs from the measured operating temperature under the conditions	In compliance	P
14.4.3.2	For all other sensing controls the sensing element shall be maintained such that the contacts are in the closed position, but are as near the point of opening as is practical.	As above	P
14.4.3.3	It may be necessary to raise or lower, the value of the activating quantity beyond the operating value so as to cause operation and then to return the value of activating quantity to the required level.	As above	P
14.4.3.4	For other automatic controls the most arduous operating sequence or segment of the operating sequence shall be selected.	No such construction used	N/A
14.4.4	If the control starts to operate during this test, the control is reset so that the contacts will remain closed.	In compliance	P
14.4.4.1	If resetting to reclose the contacts is not practical, then the test is discontinued.	No such construction used	N/A
14.5	Controls are tested in an appropriate heating and/or refrigerating apparatus.	See below	P
14.5.1	The temperature of the switch head is maintained between T_{max} and either $(T_{max}+5)^\circ C$ or 1.05 times T_{max} , whichever is greater	In compliance	P
14.5.2	In-line cord controls, independently mounted controls and those parts of integrated and incorporated controls which are accessible when the control is mounted as in normal use shall be in a room temperature in the range of 15 ° to 30°C	In compliance	P
14.6	The temperatures specified for the switch head, the mounting surfaces and sensing element shall be attained in approximately 1 h.	The temperature of switch head, the mounting surface and sensing element attain temperature within 1 h	P
14.6.1	The electrical and thermal conditions are maintained for 4 h, or for 1 h after steady state. For controls designed for short-time or intermittent	Electrical and thermal condition are maintained to steady state condition	P
14.6.2	operation the resting time(s) shall be included in the 4 h.	In compliance	P

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Clause	Requirement- Test	Result – Remark	Verdict
14.7	The temperature of the medium in which the switch head is located, and the value shall be measured as near as possible to the center of the space occupied.	In compliance	P
14.7.1	The temperature of the parts and surfaces	In compliance	P
14.7.2	Thermocouples used for determining the temperature of supporting surfaces are attached to the back of small blackened discs of copper or brass, 15 mm in diameter and 1 mm thick, which are flush with the surface.	In compliance	P
14.7.3	In determining the temperature of actuating members and other handles, knobs, rips and the like, consideration is given to other parts which are gripped in normal use, and if of non-metallic material to parts in contact with hot metal.	No such hot metal contact with non-metallic material	N/A
14.7.4	The temperature of electrical insulation, other than that of windings, is determined on the surface See appendix table of the insulation	No such construction used	N/A
14.101	The following is applicable to control classified under 6.7.101 to 6.7.103 inclusive, (IS/IEC 60730-2-9)	See below	N/A
14.101.1	As a means of complying with note 12) (IS/IEC 60730-2-9)	No such construction used	N/A
14.102	A previously untested sample of control is conditioned for 1000h in an oven maintained a temperature $1.02T_1 + 20K$. (IS/IEC 60730-2-9)	As above	N/A
14.102.1	If the elevated temperature is localized, such as a near a terminal. (IS/IEC 60730-2-9)	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
15.	MANUFACTURING DEVIATION AND DRIFT		P
15.1	Those parts of controls providing a Type 2 action shall have adequate consistency of manufacture with regard to their declared operating value, operating time, or operating sequence	In compliance	P
	The value of manufacturing deviation and drift shall be according to annex AA. (IS/IEC 60730-2-9)	Maximum deviation $\pm 6^{\circ}\text{C}$ and drift $\pm 6^{\circ}\text{C}$	P
15.2	Compliance is checked by the appropriate tests of this clause.	In compliance	P
15.3	For those controls which are completely or partially destroyed during their normal operation, the tests of the appropriate subclauses of clause 17 are deemed to be sufficient.	As above	N/A
15.4	For those controls which are dependent on the method of mounting on or incorporation in an equipment for their operation the manufacturing deviation and the drift shall be declared separately and be comparative values.	As above	N/A
	Alternatively, the declared manufacturing deviation and drift may be expressed separately as a tolerance value to the declared operating value. (IS/IEC 60730-2-9)	As above	N/A
15.5	The consistency shall be determined		P
15.5.1	Test apparatus used shall be such that the control is mounted in the manner declared by the manufacturer.	In compliance	P
15.5.2	For sensing controls the apparatus shall preferably be such that the normal operation of the control is used to control the apparatus.	As above	P
15.5.3	Because this test is made to determine comparative values rather than response values, the form of the apparatus is not critical	As above	P
15.5.3.101	Controls intended for setting by the user shall be set at the maximum operating temperature. (IS/IEC 60730-2-9)	In compliance	P
15.5.3.102	Controls utilizing a bimetallic or similar sensing mechanism. (IS/IEC 60730-2-9)	In compliance	P
15.5.3.103	For bimetallic and similar type controls, the temperature shall be determined. (IS/IEC 60730-2-9)	In compliance	P

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Clause	Requirement- Test	Result – Remark	Verdict
15.5.3.104	For fluid expansion type control, a maximum 0.25mm thermocouple shall be attached to sensing position, (IS/IEC 60730-2-9)	No such construction used	N/A
15.5.3.105	For fluid expansion or contraction type controls (IS/IEC 60730-2-9)	As above	N/A
15.5.3.106	The temperature of the oven and the bath may be rapidly increased to 10K below or decrease to 10K above (IS/IEC 60730-2-9)	In compliance	P
15.5.3.107	The operation of the control shall be sensed by suitable device with a sensing current not exceed 0.05A (IS/IEC 60730-2-9)	As above	P
15.5.3.108	The operating value of the control shall be recorded (IS/IEC 60730-2-9)	IN Compliance	P
15.5.3.109	For SODs, after the contacts have operated (IS/IEC 60730-2-9)	No such construction used	N/A
15.5.4	The electrical conditions of the test shall normally be V_R max and I_R max unless different conditions have been declared in requirement 41 of table 7.2.	Compliance is operated at normal operating condition at 250V and 20A	P
15.5.5	For sensing controls the rate of change of activating quantity shall be any suitable value unless specific values have been declared in requirement 37 of table 7.2	In compliance	P
15.5.6	The appropriate operating value, operating time or operating sequence shall be recorded for each sample.	As above	P
15.5.7	The recorded values are also used as reference values for each sample, so that the repeat tests after the environmental tests of clause 16 and the endurance test of clause 17 will enable drift to be determined.	As above	P
15.6	For those controls which are not dependent for their operation on the method of mounting on	No such construction used	N/A
	Alternatively, the manufacturing deviation shall be according to annex AA. (IS/IEC 60730-2-9)	As above	N/A
15.6.1	The manufacturing deviation, and/or the drift may be an absolute value.	In compliance	P
15.6.2	The appropriate operating value, operating time or operating sequence shall be initially measured for all samples and be within the limits declared by the manufacturer.	In compliance	P

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15.6.3	Test apparatus shall be such as to simulate the most arduous conditions of normal use declared.	As above	P
15.6.4	If a drift value has been declared separately in requirement 42 of table 7.2, the measured values for each sample shall be recorded as a reference value,		P
15.7	See annex J.		N/A

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Clause	Requirement- Test	Result – Remark	Verdict
16.	ENVIRONMENTAL STRESS		P
16.1	Controls which are sensitive to the environmental stresses of temperature shall withstand the level of the appropriate stress likely to occur in transportation and storage.	In compliance	P
16.1.1	Compliance is checked by the appropriate tests of 16.2, carried out with the control being left in the same condition declared as a transportation condition.	As above	P
16.2	Environmental stress of temperature	In compliance	P
16.2.1	The effect of temperature is tested as follows:	In compliance	P
	– the entire control shall be maintained at a temperature of $(10 \pm 2)^\circ\text{C}$ for a period of 24 h.	As above	P
	– the entire control shall then be maintained at a temperature of $(60 \pm 5)^\circ\text{C}$ for a period of 4 h.C	As above	P
16.2.2	The control is not energized during either test.	The contact did not energized during either test	P
16.2.3	After each test a control with an actuating member or actuating means shall be capable of being actuated to provide correctly the class of circuit disconnection declared.	The control is held at room temperature for 8h prior to actuation	P
16.2.4	For controls with Type 2 actions	In compliance	P

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Clause	Requirement- Test	Result - Remark	Verdict
17.	ENDURANCE		P
17.1	General requirement	See below	P
17.1.1	Controls shall withstand the mechanical, electrical and thermal stresses that occur in normal use.	Compliance withstand the mechanical, thermal and electrical stress	P
17.1.2	Controls with Type 2 actions shall operate such that any operating value, operating time or operating sequence does not change by an amount greater than the declared drift.	Type 2.A action	P
17.1.2.1	Compliance with 17.1.1 and 17.1.2 is checked by the tests of 17.1.3 as indicated in 17.16.	In compliance	P
17.1.3	Test sequence and conditions	In compliance	P
17.1.3.1	In general, the sequence of tests is:	See below	N/A
	- an ageing test specified in 17.6 (This test applies only to those actions classified as Type 1.M or 2.M)	No ageing test applied	N/A
	- an overvoltage test of automatic action at accelerated rate specified in 17.7	In compliance	P
	- a test of automatic action at accelerated rate specified in 17.8;	As above	P
	- a test of automatic action at slow rate specified in 17.9	Automatic action at accelerated rate	N/A
	- an overvoltage test of manual action at accelerated speed specified in 17.10;	As above	N/A
	- a test of manual action at slow speed specified in 17.11	As above	N/A
	- a test of manual action at high speed specified in 17.12.	As above	N/A
	- a test of manual action at accelerated speed specified in 17.13	As above	N/A
17.1.3.2	The electrical, thermal and mechanical conditions of test shall in general be those specified in 17.2, 17.3 and 17.4	In compliance	P
17.1.3.3	Tests for a manual action forming part of an automatic action are normally specified in the subclause appropriate to the automatic action.	No such construction used	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
17.1.3.4	After all the tests specified the samples shall meet the requirements of 17.14 unless otherwise specified in the appropriate part 2	In compliance	P
17.1.4	See annex H.		N/A
17.2	Electrical conditions for the tests	See below	P
17.2.1	Each circuit of the control shall be loaded according to the ratings declared by the manufacturer.	In compliance	P
17.2.2	In those countries which use an overvoltage test	No such construction used	N/A
17.2.3	The overload tests are performed on a single pole or throw at a time, with all other poles or throws at normal load.	As above	N/A
17.2.3.1	Test voltage (V_T) are	250V	P
17.2.3.2	If the rating of the control does not fall within any of the indicated voltage ranges, it is to be tested at rated voltage	As above	N/A
17.2.4	There is an earthed neutral system, the enclosure shall be connected through a 3 A cartridge fuse to the protective conductor of the circuit.	No such construction used	N/A
17.2.5	For Type 1.G or 2.G actions, or other off-load actions, auxiliary switches are used to simulate the intended operation during the test.	As above	N/A
17.3	Thermal conditions for the tests		P
17.3.1	For parts of the control other than any temperature sensing element	In compliance	P
17.3.1	For controls in which the whole control is declared as the sensing element and for which the minimum operating temperature declared (IS/IEC 60730-2-9)	No such construction used	N/A
17.3.2	During the tests of 17.8 and 17.13, the temperatures of 17.3.1 are applied for the last 50 % of each test	In compliance	P
17.4	Manual and mechanical conditions for the tests		N/A

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Clause	Requirement- Test	Result – Remark	Verdict
17.4.1	For all manual actions each cycle of actuation shall consist of a movement of the actuating member such that the control is successively moved into all positions appropriate to that action and then returned to its starting point	No such construction used	N/A
17.4.2	The speed of movement of the actuating member	As above	N/A
17.4.3	During the slow speed test of 17.4.2:	As above	N/A
17.4.4	During the accelerated speed test of 17.4.2:	As above	N/A
17.4.5	Additional lubrication shall not be applied during these tests.	As above	N/A
17.5	Dielectric strength requirements	As above	N/A
17.5.1	After all the tests of this clause, the requirements of 13.2 shall apply, with the exception that the samples are not subjected to the humidity treatment before the application of the test voltage.	As above	N/A
17.6	Ageing test	No such construction used	N/A
17.6.1	During this test the sensing element shall be maintained at that value of the activating quantity determined and used in clause 14.	As above	N/A
17.6.2	If during this test the action being tested operates, the value of the activating quantity is increased or decreased to cause reverse operation and then returned to a value differing by a quantity "x" from the original to enable the test to be resumed.	As above	N/A
17.7	Overvoltage test of automatic action at accelerated rate		P
17.7.1	The electrical conditions shall be those specified for overvoltage in 17.2.	250V	P
17.7.2	The thermal conditions shall be those specified in 17.3.	In compliance	P
17.7.3	The method and rate of operation	In compliance	P
17.7.4	For Type 2 sensing actions, overshoot at each Operation shall be between the values declared in 7.2.	Type 2.A action	P

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17.7.5	It is permissible in the case of sensing actions to increase the rates of change of activating quantity, or for other Type 1 actions to override the prime mover between operations, provided that this does not significantly affect the results.	No such construction used	N/A
17.7.6	The number of automatic cycles for the test is either one tenth of the number declared in 7.2, or 200.	200 cycle is applied	P
17.7.7	During the test actuating members are placed in their most unfavourable position.	In compliance	P
17.8	Test of automatic action at accelerated rate		P
17.8.1	The electrical conditions shall be those specified in 17.2.	In compliance	P
17.8.2	The thermal conditions shall be those specified in 17.3.	As above	P
17.8.3	The method and rate of operation shall be as used during the test of 17.7.3.	As above	P
17.8.4	The number of automatic cycles	10000 cycles	P
17.8.4.1	For slow-make, slow-break automatic actions only 75 % of the number of automatic cycles referred to in 17.8.4 shall be carried out during this test.	Automatic action at accelerated rate	N/A
17.8.4.101	The number of automatic and manual cycles for independently mounted and in-line cord controls shall be as indicated in clause CC.1, unless a higher number is declared by the manufacturer. (IS/IEC 60730-2-9)	No such construction used	N/A
17.9	Test of automatic action at slow rate	No such construction used	N/A
17.9.1	Slow-make, slow-break automatic actions shall be tested for the 25 % remainder of the number of automatic cycles specified in 17.8	As above	N/A
17.9.2	The electrical and thermal conditions shall be as specified in 17.2 and 17.3.	As above	N/A
17.9.3	The method of operation is either by imposing a change of value of activating quantity on the sensing element, or by the prime mover.	As above	N/A
17.9.3.1	Such monitoring is also recommended for other controls to determine consistency of testing.	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
17.9.4	If only the make or the break is a slow automatic action, then it may, by agreement between the testing authority and the manufacturer, be possible to accelerate the rest of the action, to which the details of 17.8 apply	As above	N/A
17.10	Overvoltage test of manual action at accelerated speed	As above	N/A
17.10.1	The electrical conditions shall be those specified for overvoltage in 17.2	As above	N/A
17.10.2	The thermal conditions shall be those specified in 17.3.	As above	N/A
17.10.3	The method of operation shall be that specified in 17.4 for accelerated speed.	As above	N/A
17.10.4	In some countries where the overload test applies, the number of cycles IS 50	As above	N/A
17.11	Test of manual action at slow speed	As above	N/A
17.11.1	The electrical conditions shall be those specified in 17.2.	As above	N/A
17.11.2	The thermal conditions shall be those specified in 17.3.	As above	N/A
17.11.3	The method of operation shall be that specified in 17.4 for slow speed.	As above	N/A
17.11.4	The number of cycles of actuations shall be either one tenth of the number declared in 7.2 or 100, whichever is smaller.	As above	N/A
17.12	Test of manual action at high speed	As above	N/A
17.12.1	The electrical conditions shall be those specified in 17.2.	As above	N/A
17.12.2	The thermal conditions shall be those specified in 17.3.	As above	N/A
17.12.3	The method of operation shall be that specified in 17.4 for slow speed.	As above	N/A
17.12.4	The number of cycles of actuation is 100.	As above	N/A
17.12.5	In some countries where the overload test applies, the number of cycles is 50.	As above	N/A
17.13	Test of manual action at accelerated speed	As above	N/A
17.13.1	The electrical conditions shall be those specified in 17.2.	As above	N/A
17.13.2	The thermal conditions shall be those specified in 17.3.	As above	N/A

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17.13.3	The method of operation shall be that specified in 17.4 for slow speed.	As above	N/A
17.13.4	The number of cycles of actuation is that number declared in 7.2 less the number actually made during the tests of 17.10, 17.11 and 17.12.	As above	N/A
17.13.5	During the test, the failure of any component part of a Type 1 action other than a protective control which is not significant according to the requirements of the test, shall not be a cause of rejection providing that it can be repaired or replaced, or that the test can be continued in an agreed alternative manner such that the total required number of cycles of actuation can be Completed.	As above	N/A
17.14	Evaluation of compliance	In compliance	P
17.15	Single operation devices (IS/IEC 60730-2-9)	No such construction	N/A
17.15.1	Bimetallic single operation devices (IS/IEC 60730-2-9)	As above	N/A
17.15.1.1	After the appropriate tests of clause 15, the same six sample shall be maintained at -35°C or 0°C (IS/IEC 60730-2-9)	As above	N/A
17.15.1.2	Six untested bimetallic single operation device are conditioned for 720 h. (IS/IEC 60730-2-9)	As above	N/A
17.15.1.2.1	During the conditioning, the bimetallic single operation device shall not operate. (IS/IEC 60730-2-9)	As above	N/A
17.15.1.2.2	The appropriate test of clause 15 shall be repeated on the sixth samples subjected to the conditioning (IS/IEC 60730-2-9)	As above	N/A
17.15.1.3	For bimetallic single operation devices with the declare reset temperature of -35°C (IS/IEC 60730-2-9)	As above	N/A
17.15.1.3.1	For bimetallic single operation devices with the declare reset temperature of 0°C (IS/IEC 60730-2-9)	As above	N/A
17.15.2	Non bimetallic SODs (IS/IEC 60730-2-9)	No such construction used	N/A
17.15.2.1	Non bimetallic SODs are subjected to following test -for non bimetallic SOD, automatic temperature functions except those for non-bimetallic part of the control (IS/IEC 60730-2-9)	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
17.15.2.2	Six untested samples are than to be mounted in a suitable apparatus and the thermal sensing element are conditioned for an ageing period (IS/IEC 60730-2-9)	As above	N/A
17.15.2.3	At the end of ageing period the sample are removed from the apparatus. (IS/IEC 60730-2-9)	As above	N/A
17.16	Test for particular purpose controls	Thermostat	P
17.16.101	Thermostats (IS/IEC 60730-2-9)	In compliance	P
17.16.102	Independently mounted room thermostats for operation above 50 V (IS/IEC 60730-2-9)	No such construction used	N/A
17.16.102.1	Two sample of room thermostat are intended for direct control of electric space heating element (IS/IEC 60730-2-9)	As above	N/A
17.16.102.2	Sample 1 and sample 2 shall be subjected to an endurance test consisting for 6000 cycles at the rate of not more than one cycle/min and at 110% of both rated current and rated voltage (IS/IEC 60730-2-9)	As above	N/A
17.16.102.3	Thermostat designated sample 2 shall be subjected to an additional 30 000 cycle under the condition described in 17.4 (IS/IEC 60730-2-9)	As above	N/A
17.16.103	Temperature limiters (IS/IEC 60730-2-9)	As above	N/A
17.16.104	Thermal cut-outs (IS/IEC 60730-2-9)	As above	N/A
17.16.104.1	For voltage maintained thermal cut-outs	As above	N/A
17.16.105	A control has two or more electrical ratings (IS/IEC 60730-2-9)	As above	N/A
17.16.106	Evaluation of materials (IS/IEC 60730-2-9)	In compliance	P
17.16.107	Over-temperature test of sensing element (IS/IEC 60730-2-9)	No such construction used	N/A
17.16.108	Voltage maintained thermal cut-out (IS/IEC 60730-2-9)	As above	N/A
17.101	Type 2.P cycling test (IS/IEC 60730-2-9)	No such construction used	N/A
17.101.1	The appropriate test of 17.16 and the evaluation of 17.14, the control is subjected to a thermal cycle test of 50000 cycle (IS/IEC 60730-2-9)	As above	N/A
17.101.2	Two bath method (IS/IEC 60730-2-9)	Type 2.A action	N/A
17.101.3	Temperature change method (IS/IEC 60730-2-9)	As above	N/A

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17.101.4	After the test, for controls other than bimetallic SODs (IS/IEC 60730-2-9)	No such construction used	N/A
17.101.5	After thoroughly degreasing the switch head (IS/IEC 60730-2-9)	As above	N/A
17.17 to	See annex J		N/A
17.18			

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Clause	Requirement- Test	Result – Remark	Verdict
18	MECHANICAL STRENGTH		P
18.1	General requirements	See below	P
18.1.1	Controls shall be so constructed as to withstand the mechanical stress that occurs in normal use.	In compliance	P
18.1.2	Actuating members of class I and class II controls shall either have adequate mechanical strength or be such that adequate protection against electric shock is maintained	In compliance	P
18.1.3	Integrated controls and incorporated controls are not tested as in 18.2 as their impact resistance will be tested by the equipment standard.	Integrated controls used	P
18.1.4	Compliance is checked by the tests of the appropriate sub clauses 18.2 to 18.8 inclusive, carried out sequentially on one sample.	As above	P
18.1.5	After the appropriate tests the control shall show no damage to impair compliance with this standard.	Controls has no damage to impair	P
18.1.6	Threads for the connection of metal conduit are tapped all the way through a hole in an enclosure wall or if an equivalent construction is employed, there shall not be any sharp edges	No sharp edges	P
18.1.6.1	Threads for the connection of metal conduit are not tapped all the way through a hole in an enclosure wall, conduit hub or the like, there shall not be less than 3.5	In compliance	P
18.1.6.2	Threads for the connection of metal conduit are not tapped all the way through a hole in an enclosure wall, conduit hub or the like, there shall not be less than 3.5 full threads into the metal with a conduit stop, and a smooth well-rounded inlet hole having an internal diameter approximately the same as that of the corresponding size of rigid metal conduit. Which shall afford protection to the conductors equivalent to that provided by a standard conduit bushing.	Smooth well –rounded inlet hole	N/A
18.1.6.3	A conduit hub or nipple attached to the enclosure by swaging, staking or similar means shall withstand without pulling apart the following tests.	No such nipple used	N/A
18.2	Impact resistance		P

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Clause	Requirement- Test	Result – Remark	Verdict
18.2.1	In-line cord, free-standing and independently mounted controls are checked by applying blows to the sample by means of the apparatus	In compliance	P
18.2.2	All surfaces which are accessible when the control is mounted as in normal use are tested with the apparatus.	Control is mounted as in normal used	P
18.2.3	The control is held in contact with a vertical sheet of plywood 8 mm thick and 175 mm square without any metallic back plate.	Control is mounted on rigid frame	N/A
18.2.4	Blows are applied to all accessible surfaces, including actuating members, at any angle, the test apparatus being calibrated to deliver an energy of (0.5 ± 0.04) Nm.	Blows are applied to all accessible surface	P
18.2.4.1	Foot actuated controls shall be subject to the same test, but using a test apparatus calibrated to deliver an energy of (1.0 ± 0.05) Nm.	No foot actuated controls	N/A
18.2.5	For all such surfaces three blows are applied to every point that is likely to be weak.	Three blows are applied	P
18.2.5.1	Care must be taken that the results from one series of three blows does not influence subsequent series.	No such construction used	N/A
18.2.5.2	There is a doubt whether a defect has been caused by the application of preceding blows, this defect is neglected and the group of three blows which led to the defect is applied to the same place of a new sample, which shall then withstand the test.	Control withstand the test	P
18.2.6	Signal lamps and their covers are only tested if they protrude from the enclosure by more than 10 mm or if their area exceeds 4 cm^2	No such construction used	N/A
18.3	Void		
18.4	some countries the minimum thicknesses of sheet metal or case metal shown in tables 184-1 and 184-2 are considered to meet the requirements of 18.2 and the tests specified are not required ..	No such construction used	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
18.4.1	Cast metal shall be not less than 3mm thick but not more than 6 mm thick at threaded holes for conduit, except that, other than at plain or threaded holes for conduit, die-cast metal may be not less than 1.6 mm thick for an area not greater than 150 cm ² And having no dimension greater than 150mm, and may be not less than 2.4 mm thick for larger areas .	As above	N/A
18.5	Free-standing controls	No such free standing controls	N/A
18.5.1	Free-standing controls shall be additionally checked by the test of 18.5.2 and 18.5.3 using the apparatus shown in figure 4.	As above	N/A
18.5.2	Two metres of flexible cord of the lightest type used in 10.1.4 shall be connected to the input terminals and secured as intended.	As above	N/A
18.5.3	After the test, the sample shall be evaluated as in 18.1.5.	As above	N/A
18.6	In-line cord controls		N/A
18.6.1	In-line cord controls other than free-standing controls shall be additionally tested in a tumbling barrel as shown in figure 5.	No such construction used	N/A
18.6.2	Controls with non-detachable cords using attachment method X shall be fitted with the flexible cord or cords having the smallest cross-sectional area specified in 10.1.4 and a free length of approximately 50 mm.	No chords used	N/A
18.6.3	The sample falls from a height of 50 cm onto a steel plate, 3 mm thick.	As above	N/A
18.6.4	In-line cord controls with a mass exceeding 200 g are not tested in the tumbling barrel, but shall be subjected to the test of 18.5.	As above	N/A
18.6.5	The barrel is turned at a rate of five revolutions per min, 10 falls per min thus taking place.	As above	N/A
18.6.6	After this test, the control shall be evaluated as in 18.1.5. Special attention is paid to the connection of flexible cord or cords.	As above	N/A
18.7	Pull-cord actuated controls	As above	N/A
18.7.1	Pull-cord actuated controls shall be additionally tested as in 18.7.2 and 18.7.3.	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
18.7.2	The control shall be mounted as declared by the manufacturer, and the pull-cord shall be subjected to a force, applied without jerks, first for 1 min in the normal direction, and then for 1 min in the most unfavourable direction, but not exceeding 45° from the normal direction.	As above	N/A
18.7.3	The values of the force are shown in table 18.7.	As above	N/A
18.7.4	After this test the control shall be evaluated as in 18.1.5.	As above	N/A
18.8	Foot actuated controls	No foot actuated controls	N/A
18.8.1	Controls actuated by foot shall be additionally tested as follows:	As above	N/A
18.8.2	The control is subjected to a force applied by means of a circular steel pressure plate with a diameter of 50 mm.	As above	N/A
18.8.3	The control is placed on a flat horizontal steel support with the appropriate flexible cord fitted.	As above	N/A
18.8.4	After the test the control shall be evaluated as in 18.1.5.	As above	N/A
18.9	Actuating member and actuating means		P
18.9.1	Controls supplied with, or intended to be fitted with actuating members	Axial pull is applied on the actuating member for 1 min	P
18.9.2	If a control is intended to have an actuating member but is submitted for approval without, or is intended to have an easily removable actuating member then a pull and push of 30 N are applied to the actuating means.	30N pull and push force is applied	P
18.9.3	During and after each of these tests the control shall show no damage, nor shall an actuating member have moved so as to impair compliance with this standard.	After the test compliance show no damage	P
18.101	Push-and-turn or pull-and-turn actuation (IS/IEC 60730-2-9)	Type 2.A control	N/A
18.101.1	Control with actions classified as Type 1.X or 2.X or Type 1.Z or 2.Z (IS/IEC 60730-2-9)	As above	N/A
18.101.2	Control with actions classified as Type 1.X or 2.X or Type 1.Z or 2.Z shall be subjected to following test (IS/IEC 60730-2-9)	As above	N/A
	- The axial force required to push or pull the actuating member shall not be less than 10N	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
	- An axial push or pull force of 140N applied to the actuating member shall not effect	As above	N/A
	- For a control intended for use with a knob having a grip diameter of length of 50mm or less	As above	N/A
	- Alternatively, if the means preventing rotation of the shaft is defeated when a torque of at least 2Nm applied	In compliance	N/A
	- The torque required to reset the control to the initial contact condition	As above	N/A
	- A torque of 6Nm is applied to the setting means	As above	N/A
	- for controls intended for use with a knob having a grip diameter	As above	N/A
18.101.3	Control with actions classified as Type 1.X or 2.X or Type 1.Z or 2.Z shall be actuated for the declare no of cycle (IS/IEC 60730-2-9)	As above	N/A
18.102	Parts containing liquid metal (IS/IEC 60730-2-9)	No such construction used	N/A
18.102.1	Parts of all controls containing (Na), potassium (K), or both (IS/IEC 60730-2-9)	As above	N/A
18.102.1.1	The method of test and the number of samples required shall be agreed between the manufacturer and the test authority (IS/IEC 60730-2-9)	As above	N/A
18.102.1.2	After the test of 18.102.1, the hydraulic pressure is to be increased until rupture occurs. (IS/IEC 60730-2-9)	As above	N/A
18.102.2	The control shall not leak or rupture when heated to 1.2 times the maximum temperature to sensing element (IS/IEC 60730-2-9)	As above	N/A
18.102.3	Additionally, when the bellows or diaphragm of a separate sample is deliberately punctured with a sharp (IS/IEC 60730-2-9)	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
19.	THREADED PART AND CONNECTIONS		P
19.1	Threaded parts moved during mounting or servicing	In compliance	P
19.1.1	Threaded parts, electrical or otherwise which are likely to be operated while the control is being mounted or during servicing shall withstand the mechanical stresses occurring in normal use.	In compliance	P
19.1.2	Such parts shall be easily replaceable if completely removed.	As above	P
19.1.3	Such threaded parts shall have a metric ISO thread or a thread of equivalent effectiveness.	Provided by manufacturer	P
19.1.4	If such a threaded part is a screw and if it generates a thread in another part, it shall not be of the thread cutting type.	No such type of screw used	N/A
19.1.5	Such screws may be of the space threaded type, (sheet metal) if they are provided with a suitable means to prevent loosening.	No such type of screw used	N/A
19.1.6	Such threaded parts shall not be of non-metallic material if their replacement by a dimensionally similar metal screw could impair compliance with clause 13 or 20.	No such type of screw used	N/A
19.1.7	Such threaded parts shall not be of metal which is soft or liable to creep such as zinc or aluminum.	No such type of screw used	P
19.1.8	Such screws operating in a thread of non-metallic material shall be such that the correct introduction of the screw into its counterpart shall be ensured.	Metal screw used	N/A
19.1.9	Such threaded parts, when used for in-line cord controls, if they are transmitting contact pressure and if they have a nominal diameter less than 3 mm, shall screw into metal.	No such construction used	N/A
19.1.10	Compliance with 19.1.1 to 19.1.9 inclusive is checked by inspection and by the test of 19.1.11 to 19.1.15, inclusive.		P
19.1.11	Threaded parts are tightened and loosened:	Incompliance	P
	– 10 times if one of the threaded parts is of non-metallic material, or	Both parts are of metallic material.	N/A
	– five times if both parts are of metallic material.	In compliance	P
19.1.12	Screws in engagement with a thread of non-metallic material are completely removed and reinserted each time.	Metallic screw used	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
19.1.13	The shape of the screwdriver should suit the head of the screw to be tested.	In compliance	P
19.1.14	The conductor is moved each time the threaded part is loosened.	After the test no damage occurred	P
19.1.15	The test is made by means of a suitable test screwdriver, spanner or key, applying a torque, without jerks	Other metal screws used, Column II, 0.4Nm applied. No damage occurred	P
19.2	Current-carrying connections		P
19.2.1	Current-carrying connections which are not disturbed during mounting or servicing and the efficiency or security	Current carrying connection withstand the mechanical, thermal and electrical stress in normal use	P
19.2.2	Such current-carrying connections which are also subject to torsion in normal use, shall be locked against any movement.	As above	P
19.2.3	Contact pressure is not transmitted through non-metallic material other than ceramic or other non-metallic material having characteristics no less suitable	Contact pressure is not transmitted through non-metallic material	P
19.2.4	Such current-carrying connections shall not make use of space threaded screws.	Space threaded screws are not used with proper means of locking	N/A
19.2.4.1	Space threaded screws may be used to provide earthing continuity if at least two such screws are used for each connection	No such space threaded screw are used	N/A
19.2.5	Such current-carrying connections may make use of thread cutting screws if these produce a full-form standard machine screw thread.	No such thread cutting screw are used	N/A
19.2.5.1	Thread cutting screws may be used to provide earthing continuity if at least two such screws are used for each connection.	No such construction used	N/A
19.2.6	Such current-carrying connections shall have resistance to corrosion over the area of contact not inferior to that of brass.	No such relay used	N/A
19.2.7	Compliance with 19.2.1 to 19.2.6 inclusive is checked by inspection.	In compliance	P

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Clause	Requirement- Test	Result – Remark	Verdict
20.	CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH SOLID INSULATION		P
20.1	Clearances	Measured clearance: 23.65mm (Required limit: 1.5mm)	P
20.1.1	The clearances of basic insulation shall be sufficient to withstand the overvoltages that can be expected in use, taking into account the rated impulse voltage	As above	P
20.1.2	For operational insulation, table 20.2, case A applies	See clause 20.1	P
20.1.3	Compliance with 20.1 is checked by measurement using the methods of measurement	As above	P
20.1.3.1	For controls provided with an equipment inlet or socket-outlet, the measurements are made twice, once with an appropriate connector or plug inserted,	No such type of socket-outlet used	N/A
20.1.3.2	For terminals intended for the connection of external conductors, the measurements of such terminals are made twice, once with conductors of the largest cross-sectional area	No such cable or code are provided	N/A
20.1.3.3	For terminals intended for the connection of internal conductors, the measurements of such terminals are made twice, once with conductors of the minimum cross-sectional area	As above	N/A
20.1.4	Distances through slots or openings in surfaces of insulating material are measured to metal foil in contact with the surface.	No such construction used	N/A
20.1.5	The standard test finger is applied to apertures as specified in 8.1, the distance through insulation between live parts and the metal foil shall then not be reduced below the values specified.	As above	N/A
20.1.6	A force is applied to any point on bare live parts which are accessible before the control is mounted, and to the outside of surfaces which are accessible after the control is mounted,	As above	N/A
20.1.6.1	The force is applied by means of the standard test finger and has a value	As above	N/A
20.1.7	For basic and operational insulation, smaller distances may be permitted	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
20.1.7.1	For micro-disconnection and interruption, there is no specified minimum distance for the clearance between the contacts.	As above	N/A
20.1.7.2	For full disconnection, the values specified in table 20.2,	In compliance	P
20.1.8	Clearances of supplementary insulation shall be not less than those specified for basic insulation in table 20.2, case A.	As above	N/A
20.1.9	Clearances of reinforced insulation shall be not less than those in table 20.2, case A but using the next higher step for rated impulse voltage as a reference	No such construction used	N/A
20.*8/1.10	For controls or portions of controls supplied from a transformer with double insulation, clearances of operational insulation and basic insulation on the secondary side are based on the secondary voltage of the transformer which is used as the nominal voltage	As above	N/A
20.1.11	For circuits having extra-low voltage which are derived from the supply by means of protective impedance, clearances of operational insulation are determined	As above	N/A
20.1.12	The impulse dielectric test, when required, is applied in accordance with 4.1.1.2.1 of IEC 60664-1	As above	N/A
20.1.13	If the secondary of a transformer is earthed, or if there is an earthed screen between the primary and secondary windings, the clearances of basic insulation on the secondary side shall not be less than those	As above	N/A
20.2	Creepage distances	Measured clearance: 23.65mm (Required limit: 3.2mm)	P
20.2.1	Controls shall be constructed so that creepage distances for basic insulation are not less than those specified in table 20.3 for the rated voltage, 6mm taking into account the material group and the pollution degree.	As above	P

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Clause	Requirement- Test	Result – Remark	Verdict
20.2.2	Controls shall be constructed so that creepage distances for operational insulation are not less than those specified in table 20.4 for working voltage, taking into account the material group and the pollution degree.	As above	P
20.2.3	Creepage distances of supplementary insulation shall be not less than those appropriate for basic insulation taking into account the material group and the pollution degree		N/A
20.2.4	Creepage distances of reinforced insulation shall be not less than double those appropriate for basic insulation, taking into account the material group and the pollution degree.		N/A
20.3	Solid insulation	In compliance	P
20.3.1	There is no dimensional requirement for the thickness of basic or operational insulation.	As above	P
20.3.2	The distance through insulation for supplementary and reinforced insulation between metal parts shall not be less than 0,7 mm	As above	P
20.3.2.1	The requirement of 20.3.2 does not apply if the insulation is applied in thin sheet form	No such type of insulation used	N/A
20.3.2.2	The requirement of 20.3.2 does not apply if the supplementary insulation or the reinforced insulation is inaccessible and meets one of the following criteria	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
21. RESISTANCE TO HEAT, FIRE AND TRACKING			P
21.1	General requirements		P
21.2	Integrated, incorporated and in-line cord controls	Integrated controls	P
21.2.1	Parts which are accessible when the control is mounted in its manner of intended use, and the deterioration becoming unsafe.	No such construction used	N/A
21.2.2	For parts which retain in position current-carrying parts other than electrical connections	As above	N/A
21.2.3	For parts which maintain or retain in position electrical connections, the tests shall be as indicated for the declared category of the control	For category D the glow wire test is carried out at 850°C the material withstand the test	P
21.2.4	For all other parts	No such construction	N/A
21.2.5	Ball pressure test 1	Ball pressure test is carried at 75°C	P
21.2.6	Ball pressure test 2	As above	N/A
21.2.7	Resistance to tracking	Material of material group IIIb	P
21.3	Independently mounted controls	Integrated controls	P
21.3.1	Preconditioning	No such construction used	N/A
21.3.2	Insulating parts retaining live parts comply with the requirements of Category B or D	As above	N/A
21.3.3	Accessible non-metallic parts shall comply with the requirements of 21.2.1	As above	N/A
21.3.4	Other non-metallic parts shall comply with the requirements of 21.2.4	As above	N/A
21.3.5	Independently mounted controls shall comply with the requirements of 21.2.7.	As above	N/A
21.4	Controls employing a mercury-tube switch intended for connection to a working-voltage circuit as defined in 2.1.3 shall perform acceptably when tested in series	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
22	RESISTANCE TO CORROSION		P
22.1	Resistance to rusting		P
22.1.1	Ferrous parts, including covers and enclosures, the corrosion shall be protected against corrosion.	The ferrous part is sufficiently resistance to rust	P
22.1.2	This requirement does not apply to temperature sensing elements	Temperature sensing elements	N/A
22.1.3	Compliance is checked by the following test:		P
22.1.4	The parts are subjected to a test of 14 days duration at 93 % to 97 % relative humidity at (40 ±2) °C.	Test of 14 days duration at 93 % to 97 % relative humidity at (40 ±2) °C.	P
22.1.5	After the parts have been dried for 10 min in a heating cabinet at a temperature of (100 ± 5) °C, their surfaces shall show no corrosion	No corrosion occurred	P
22.1.6	Traces of rust on sharp edges and a yellowish film removable by rubbing are ignored.	In compliance	P

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Clause	Requirement- Test	Result – Remark	Verdict
23.	ELECTROMAGNETIC COMPATIBILITY (EMC) REQUIREMENTS – EMISSION		N/A
23.1	Free standing and independently mounted controls	No electromagnetic compatibility test performed	N/A
23.1.1	Test conditions	As above	N/A
23.1.2	Test procedure	As above	N/A
23.101	Thermostats shall be so constructed that they do not generate radio interference for a time period exceeding 20 ms. (IS/IEC 60730-2-9)	As above	N/A
23.101.1	Test conditions (IS/IEC 60730-2-9)	As above	N/A
23.101.2	Test procedure (IS/IEC 60730-2-9)	As above	N/A



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Clause	Requirement- Test	Result – Remark	Verdict
24.	COMPONENTS		N/A
24.1	Transformers intended to supply power to a safety extra-low voltage circuit (SELV)	No such transformer	N/A
24.1.1	Controls that incorporate a safety isolating transformer as the source of supply to an external isolated limited secondary circuit are subjected to an output test with the primary energized at full rated voltage as indicated in 17.2.2, 17.2.3.1 and 17.2.3.2.	As above	N/A
24.2	Components other than those detailed in 24.1	As above	N/A
24.2.1	For components which have previously been standard, to reduce the testing necessary	As above	N/A
24.2.2	See also annex J	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
25.	NORMAL OPERATION		N/A
26.	ELECTROMAGNETIC COMPATIBILITY (EMC) REQUIREMENTS – IMMUNITY		N/A
	See Annex H.26	No electromagnetic compatibility test performed	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
27. OTH OTH OTH OTH	ABNORMAL OPERATION		N/A
27.1	See annex H		N/A
27.2	Locked mechanism test	No such construction used	N/A
	Controls incorporating electro-magnets shall withstand the effects of blocking of the control mechanism	As above	N/A
27.2.1	The control mechanism is blocked in the position assumed when the control is de-energized	As above	N/A
27.2.2	After this test the control shall be deemed to comply if:	As above	N/A
	– there has been no emission of flame or molten metal, and there is no evidence of damage to the control which would impair compliance with this standard;	As above	N/A
	– the requirements of 13.2 are still met.	As above	N/A
27.3	Overvoltage and undervoltage test	As above	N/A
27.4	See annex H	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
28.	GUIDANCE ON THE USE OF ELECTRONIC DISCONNECTION		N/A
	See Annex H		N/A
ANNEX H	Requirements for electronic controls		
H.6	Classification	No such construction used	N/A
H.6.4	According to features of automatic action	As above	N/A
H.6.4.3.13	electronic disconnection on operation.	As above	N/A
H.6.9	According to circuit disconnection or interruption	As above	N/A
H.6.9.5	- electronic disconnection	As above	N/A
H.6.18	According to software class	As above	N/A
H.6.18.1	- Software class A	As above	N/A
H.6.18.2	- Software class B	As above	N/A
H.6.18.3	- Software class C	As above	N/A
H.7	Information	As above	N/A
H.8	Protection against electric shock	As above	N/A
H.8.1	General requirements	As above	N/A
H.8.1.10	Accessible parts shall not be considered as hazardous live parts if separated from the supply by protective impedance	As above	N/A
H.8.1.10.1	When protective impedance is used, the current between the part or parts and either pole of the supply source shall not exceed 0.7mA (peak value) a.c or 2 mA d.c	As above	N/A
H.11	Constructional requirements	As above	N/A
H.11.2	Protection against electric shock	As above	N/A
H.11.2.5	Protective impedance shall consist of two or more impedance components of equivalent resistance values in series, which are connected between live parts and accessible parts	As above	N/A
H.11.4	Actions	As above	N/A
H.11.4.16	Type 1.Y or 2.Y action shall operate to provide electronic disconnection	As above	N/A
H.11.4.16.1	The test is carried out with the control connected to its declared maximum load, supplied with rated voltage, and at temperature Tmax	As above	N/A
H.11.4.16.2	The current through the electronic disconnection shall not exceed 5mA or 10 % of the rated current, whichever is the lower	As above	N/A
H.11.12	Controls using software	As above	N/A

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H.11.12.1	Controls with functions classified as software class B or C shall use measures to void and control software-related faults/errors in safety-related data and safety-related segments of the software, as detailed in H.11.12.2 to H.11.12.13 inclusive.	As above	N/A
H.11.12.2	Controls with functions declared as software class C shall have one of the following structures: <ul style="list-style-type: none"> – single channel with periodic self-test and monitoring – dual channel (homogenous) with comparison – dual channel (diverse) with comparison Controls with functions declared as software class B shall have one of the following structures: <ul style="list-style-type: none"> - single channel with functional test - single channel with periodic self-test - dual channel without comparison 	As above	N/A
H.11.12.3	When redundant memory with comparison is provided on two areas of the same component, the data in one area shall be stored in a different format from that in the other area.	As above	N/A
H.11.12.4	Controls with functions declared as software class C using dual channel structures with comparison shall have additional fault/error detection means for any fault/errors not detected by the comparison	As above	N/A
H.11.12.5	For controls with functions other than software class A, means shall be provided for the recognition and control of errors in transmissions to external safety-related data paths.	As above	N/A
H.11.12.6	For controls with functions declared as software For controls with functions declared as software the combinations (a–p) of analytical measures given in the columns of table H.11.12.6 during hardware development	As above	N/A
H.11.12.7	For control functions other than software class A, the manufacturer shall provide, 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	As above	N/A

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H.11.12.8	Software fault/error detection shall occur not later than the time declared in requirement 71 of table 7.2. The acceptability of the declared time(s) is evaluated during the fault analysis of the control.	As above	N/A
H.11.12.9	The loss of dual channel capability is deemed to be an error in a control using a dual channel structure with functions declared as software class C.	As above	N/A
H.11.12.10	The software shall be referenced to relevant parts of the operating sequence and the associated hardware functions.	As above	N/A
H.11.12.11	Where labels are used for memory locations, these labels shall be unique	As above	N/A
H.11.12.12	The software shall be protected from user alteration of safety-related segments and data	As above	N/A
H.11.12.13	The software and safety-related hardware under its control shall be initialized to, and terminate at, a its control shall be initialized to, and terminate at, a requirement 66	As above	N/A
H.13	Electric strength and insulation resistance	As above	N/A
H.13.2	Electric strength	As above	N/A
H.17	Endurance	As above	N/A
H.17.1.4	No endurance test is carried out on electronic controls with type 1 action unless this is necessary for the testing of associated components such as those with manual actions relays, etc.	As above	N/A
H.17.1.4.1	Electronic controls with type 2 action are not subjected to an endurance test but to a thermal cycling test under the conditions described in H.17.1.4.2.	As above	N/A
H.17.1.4.2	Thermal cycling test	As above	N/A
H.17.14	Evaluation of compliance	As above	N/A
H.18	Mechanical strength	As above	N/A
H.18.1	General requirements	As above	N/A
H.18.1.5	For controls providing electronic disconnection (Type 1.Y or 2.Y), the requirements of H.11.4.16 shall be met.	As above	N/A
H.20	Creepage distances, clearances and distances through insulation	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
H.20.1.9	Electronic controls	As above	N/A
H.20.1.9.1	Creepage distances, clearances and distances through insulation between live parts connected electrically to the mains supply and accessible surfaces or parts shall comply with the requirements of clause 20	As above	N/A
H.20.1.9.2	Creepage distances, clearances and distances through insulation between live parts and parts operating at safety extra-low voltage (SELV) shall comply with the requirements of clause 20 for double or reinforced insulation unless the path is via earthed metal	As above	N/A
H.20.1.9.3	Creepage distances, clearances and distances through insulation shall comply	As above	N/A
	– across protective impedance with the requirements of clause 20 for double or reinforced insulation;	As above	N/A
	– across each separate component of protective impedance with the requirements of clause 20 for supplementary insulation	As above	N/A
H.20.1.9.4	Creepage distances and clearances providing operational insulation shall comply with the requirements of clause 20	As above	N/A
H.21	Resistance to heat, fire and tracking	As above	N/A
H.21.2.6	Ball pressure test 2	As above	N/A
H.23	Electromagnetic compatibility (EMC) requirements – emission	As above	N/A
H.23.1	Electronic controls shall be so constructed that they do not emit excessive electric or electromagnetic disturbances in their environment.	As above	N/A
H.23.1.1	Low frequency emission, disturbances in supply systems	As above	N/A
H.23.1.2	Radio frequency emission	As above	N/A
H.25	Normal operation	As above	N/A
H.25.1	The output waveform of electronic controls shall be as declared	As above	N/A
H.26	Electromagnetic compatibility (EMC) requirements – Immunity	As above	N/A

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H.26.1	Electronic controls shall be so constructed as to withstand the effects of mains-borne perturbations and electromagnetic phenomena which may occur in normal use.	As above	N/A
H.26.2	For protective and operating controls with either type 1 or 2 action, and either integrated, incorporated, independently mounted, or free-standing, compliance is checked at test levels as indicated by the following Table H.26.2.1. The controls shall comply with H.26.15	As above	N/A
H.26.2.1	For integrated and incorporated controls with Type 1 action, compliance is checked by the tests of H.26.8 and H.26.9 if declared in table 7.2, requirement 58a	As above	N/A
H.26.2.2	For integrated and incorporated controls with Type 2 action, compliance is checked by H.26.5 and any other tests of clause H.26 which are declared in table 7.2, requirement 58a	As above	N/A
H.26.2.101	The control shall remain in its current condition and thereafter shall continue to operate as declared within the limits verified in clause 15 (IS/IEC 60730-2-9)	As above	N/A
H.26.2.102	The control shall assume the condition declared in table 7.2, requirement 109 and thereafter shall operate as in H.26.2.101 (IS/IEC 60730-2-9)	As above	N/A
H.26.2.103	The control shall assume the condition declared in table 7.2, requirement 109 such that it cannot be reset automatically or manually (IS/IEC 60730-2-9)	As above	N/A
H.26.2.104	The control shall remain in the condition declared in table 7.2, requirement 109. A non-self-resetting control shall be such that it can only reset manually (IS/IEC 60730-2-9)	As above	N/A
H.26.2.105	The control may return to its initial state and thereafter shall operate as in H.26.2.101 (IS/IEC 60730-2-9)	As above	N/A
H.26.2.106	The output and functions shall be as declared in table 7.2, requirement 58a or 58b and the control shall comply with the requirement of 17.5 (IS/IEC 60730-2-9)	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
H.26.3	A separate sample, as submitted, may be used for each test. At the option of the control manufacturer, multiple tests may be performed on 60730-2-9 a single sample	As above	N/A
H.26.4	Test of the influence of signal voltages in the power supply networks	As above	N/A
H.26.5	Test of the influence of signal voltages in the power supply networks	As above	N/A
H.26.5.1	Purpose of the test	As above	N/A
H.26.5.2	Test values	As above	N/A
H.26.5.3	Test procedure	As above	N/A
H.26.5.4	Voltage variation test	As above	N/A
H.26.5.5.101	For controls declared under requirement 109 of table 7.2, each test is performed three times when the control is in the declared condition and three times when it is not (IS/IEC 60730-2-9)	As above	N/A
H.26.6	Test of influence of voltage unbalance	As above	N/A
H.26.6.1	Purpose of the test – Range of application	As above	N/A
H.26.6.2	Test voltage characteristics	As above	N/A
H.26.6.3	Test equipment/test generator	As above	N/A
H.26.6.4	Severity level	As above	N/A
H.26.7	Test of the influence of d.c. in a.c. networks	As above	N/A
H.26.8	1,2/50 s – 8/20 s voltage-current surge test (IS/IEC 60730-2-9)	As above	N/A
H.26.8.1	Purpose of the test	As above	N/A
H.26.8.2	Test values	As above	N/A
H.26.8.3	Test procedure	As above	N/A
H.26.8.5.101	For controls declared under requirement 109 of table 7.2, three of the tests are performed when the control is in the declared condition and two are performed when it is not. (IS/IEC 60730-2-9)	As above	N/A
H.26.9	Electrical fast transient/burst test	As above	N/A
H.26.9.1	Purpose of the test	As above	N/A
H.26.9.2	Test levels	As above	N/A
H.26.9.3	Test procedure	As above	N/A
H.26.9.101	Test procedure (IS/IEC 60730-2-9)	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
H.26.10	The control is subjected to five tests. For controls declared under requirement 109 of table 7.2, three tests are performed when the control is in the declared condition and two are performed when it is not. (IS/IEC 60730-2-9)	As above	N/A
H.26.10.1	Ring wave test	As above	N/A
H.26.10.2	Purpose of the test – Range of application	As above	N/A
H.26.10.3	Test wave characteristics	As above	N/A
H.26.10.4	Test equipment/test generator	As above	N/A
H.26.10.5	Severity levels	As above	N/A
H.26.10.5.101	Test procedure	As above	N/A
H.26.11	For controls declared under requirement 109 of table 7.2, three of the tests are performed when the control is in the declared condition and two are performed when it is not (IS/IEC 60730-2-9)	As above	N/A
H.26.12	Electrostatic discharge test	As above	N/A
H.26.12.1	Radio-frequency electromagnetic field immunity	As above	N/A
H.26.12.2	Purpose of the test	As above	N/A
H.26.12.2.1	Immunity to conducted disturbances	As above	N/A
H.26.12.2.2	Test levels for conducted disturbances	As above	N/A
H.26.12.3	Test procedure	As above	N/A
H.26.12.3.1	Radiated electromagnetic fields immunity evaluation	As above	N/A
H.26.12.3.2	Test level for radiated electromagnetic fields	As above	N/A
H.26.12.6.101	Test procedure	As above	N/A
H.26.13	For controls declared under requirement 109 of table 7.2, sweeping is performed when the control is in the declared condition and when it is not (IS/IEC 60730-2-9)	As above	N/A
H.26.13.1	Test of influence of supply frequency variations	As above	N/A
H.26.13.2	Purpose of the test	As above	N/A
H.26.13.3	Test levels	As above	N/A
H.26.13.4	Test procedure	As above	N/A
H.26.14	Power frequency magnetic field immunity test	As above	N/A
H.26.14.1	Purpose of the test	As above	N/A
H.26.14.2	Test levels	As above	N/A
H.26.14.3	Test procedure	As above	N/A
H.26.15	Evaluation of compliance	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
H.26.15.1	After the tests of H26.2 through H.26.12, the sample(s) shall meet the requirements of Clause 6, Subclause 17.5 and Clause 20	As above	N/A
H.26.15.2	In addition, the control shall meet the following:	As above	N/A
	– the requirements of H.17.14 or	As above	N/A
	– the output(s) and functions shall be as declared in Table 7.2, requirements 58a and 58b.	As above	N/A
H.26.15.3	Different outputs and functions may be declared by the manufacturer after testing at level 2, or level 3, if relevant. Part 2 may specify particular criteria after each of these tests.	As above	N/A
H.26.15.4	The compliance criteria shall be given in part 2 and shall be based on the operating output conditions and the functional specifications of the control under test:	As above	N/A
	a) normal performance with no loss of protective functions and control is within specification or declared limits;	As above	N/A
	b) loss of protective function within declared limits	As above	N/A
	c) loss of protective function with safety shut down	As above	N/A
	d) loss of protective function with unsafe operation	As above	N/A
H.27	Abnormal operation	As above	N/A
H.27.1	Electronic controls are assessed for the effects of failure or malfunction of circuit components.	As above	N/A
H.27.1.1	Fault conditions specified in H.27.1.4 are not applied to circuits or parts of circuits where all of the following conditions are met:	As above	N/A
	– the electronic circuit is a low-power circuit as described below	As above	N/A
	– the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction in other parts of the control does not rely on the correct functioning of the electronic circuit	As above	N/A
H.27.1.2	The control shall be operated under the following conditions:	As above	N/A
	a) At the most unfavourable voltage in the range 0,9 to 1,1 times the rated supply voltage.	As above	N/A

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Clause	Requirement- Test	Result – Remark	Verdict
	b) Loaded with the type of load, within the declared or measured parameters, producing the most onerous effect	As above	N/A
	c) In an ambient temperature of $(20 \pm 5)^\circ\text{C}$, unless there are significant reasons of H.27.1.3) for conducting the test at another temperature within the manufacturer's declared range	As above	N/A
	d) Connected to an electrical supply having a fuse rating such that the result of the test is not influenced by the operation of the fuse	As above	N/A
	e) With any actuating member set to the most unfavourable position.	As above	N/A
H.27.1.3	With each fault described in Table H.27.1, simulated or applied to one circuit component at a time, the control shall comply with correlative requirement.	As above	N/A
H.27.1.4	Electronic circuit fault conditions	As above	N/A
H.27.1.5	For the load includes a motor load, and the failure or malfunction of an electronic circuit component	As above	N/A
H.27.4	Controls providing electronic disconnection (Type1.Y or 2.Y) shall withstand the abnormal overvoltage conditions which may occur	As above	N/A
H.27.4.1	The control is loaded as indicated in 17.2 and subjected to $1.15 \times VR$ for 5 s, when the control is providing electronic disconnection	As above	N/A
H.27.4.2	During and after the test, the control shall continue to provide electronic disconnection as determined by the test of H.11.4.16.2	As above	N/A
H.28	Guidance on the use of electronic disconnection	As above	N/A
H.28.1	Main features of solid-state switching devices	As above	N/A
H.28.2	Application of solid-state switching devices	As above	N/A

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13.1

TABLE: Insulation resistance measurements

Insulation resistance R between:	R (MΩ)	Required R (MΩ)
L/N & enclosure	More than 550 MΩ	7

13.2

TABLE: Electric strength measurements

Test voltage applied between:	Test voltage (V)	Breakdown
L/N & enclosure	1450	No breakdown

13.3.4

TABLE: Maximum leakage current measurements

Leakage current between:	I (mA)	Required I (mA)
L/N & Enclosure	0.061	0.25

14.1

Heating

Maximum temperature T of part/at:	T(°C)	Permitted T max(°C)
Terminal for external conductors	66.1	85
Enclosure	38.7	85
Ambient(°C)	24.8	77

21.1

TABLE: Ball pressure

Part	Test temperature (°C)	Impression diameter (mm)	Allowed impression diameter (mm)
Plastic material	75	1.39 mm	2

21.1

TABLE: Glow wire Test

Part	Test temperature (°C)	Duration of application of test flame (S)	Result
Plastic material	850	30	No ignition

Note:- The deviation of test method (if) Any-Nil

Date of Starting of test: 17.03.2021

Date of Completion of test: 21.04.2021



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