

IEC60730_2_9M - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT IEC 60730-2-9 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Automatic electrical controls - Part 2-9: Particular requirements for temperature sensing controls			
Differences according to		EN IEC 60730-2-9:2019 + A1:2019 + A2:2020 EN 60730-1:2016 + A1:2019 + A2:2022	
TRF template used		IECEE OD-2020-F2:2020, Ed.1.1	
Attachment Form No.		EU_GD_IEC60730_2_9M	
Attachment Originator		UL(Demko)	
Master Attachment		2022-08-12	
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	CENELEC COMMON MODIFICATIONS (EN)		P
5.	RATING		P
5.1	Controls with terminals for direct connection to supply mains: single phase usage at 230 V / multiphase usage at 400 V covered		P
7.	INFORMATION		P
7.2.1	Methods of information:		P
	Replace 7 – The type of load and rated current (Method C)..... :		P
	23 – Temperature limits of mounting surfaces (Ts) if more than 20 K above Tmax (Method C)		N/A
	After requirements 95, add Z1 – EMC standard / test method 23.1 (Method X)		P
	After requirements 95, add Z2 – declared voltage and current for emission test 23.1.1 (Method D)		P
7.4.3	Replace the NOTE by: see Annex ZB		—
7.4.3.2	Replace NOTE 1 to NOTE 4 by: See Annex ZB		—

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8.	PROTECTION AGAINST ELECTRIC SHOCK		P
8.1.1.1	Delete the NOTE..... :		—
8.4	Delete NOTE 1 and NOTE 2.....:		—
9.	PROVISION FOR PROTECTIVE EARTHING		P
9.1	Add "See annex ZB" after 1st paragraph..... :		N/A
9.2	Add "See annex ZB" after 1 st paragraph..... :		P
9.3.2	Delete NOTE 1, NOTE 2 and Table 2.....:		—
9.3.4	Delete the NOTE..... :		—
9.5.2	Delete the entire subclause.....:		—
10.	TERMINALS AND TERMINATIONS		P
10.1.4.1	Delete NOTE 1 and NOTE 2		—
10.1.14	Delete the NOTE		—
10.1.16	Delete subclause		—
10.2	Terminals and terminations for internal conductors		N/A
10.2.1	Connectable conductors:		—
	- no terminals required if conductor permanently connected by manufacturer		N/A
11.	CONSTRUCTIONAL REQUIREMENTS		P
11.2.1.1	Delete the NOTE		—
11.3.2	Delete "or" in the sixth line.		—
11.5	Delete NOTE 3		—
11.8.1	Non-detachable cords:		N/A
	Replace: "60245 IEC 53" by "EN 50525-2-21"		—
	Replace: "60227 IEC 53" by "EN 50525-2-11"		—
11.9.4	Add "See annex ZB" at the end of the first sentence:		N/A
11.10.3	Delete the NOTE		—
11.11	Requirements during mounting, maintenance and servicing		P
11.11.1	Covers and their fixing		P

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11.11.1.2	Delete NOTE 1 and NOTE 2		—
11.11.1.3	Replace the text of the NOTE by "Void".		—
11.11.1.4	Replace the text of the NOTE by "Void".		—
12. MOISTURE AND DUST RESISTANCE			
12.1	Protection against ingress of water and dust		P
12.1.6	Delete the NOTE		—
12.3	Sub-clause deleted		—
13. ELECTRIC STRENGTH AND INSULATION RESISTANCE			
13.2.3	Consult the table 12 for differences in test voltages		P
13.3	Sub-clause deleted:		—
14. HEATING			
14.4	Electrical conditions:		P
	- voltage (V): most unfavourable value between 0.9 and 1.1 times UR	1,1Ur, (considered EN required)	P
	- voltage (V) if circuit not voltage sensitive: min. 10% of UR		N/A
	- current (A): most unfavourable value between 0.9 and 1.1 times IR		N/A
14.Z1	If TMeas ≥ TMax specified in 14.1, 6 samples were subjected to the following tests:		N/A
	Moving parts, if any, were locked and a current was passed individually through each winding to reach TMax measured under the conditions of test 14.1		N/A
	Current is increased to reach TMax + TIncrease (TIncrease chosen in table Z1) and held constant for the first period of the corresponding TimeTotal		N/A
	TimeTotal (corresponding to chosen TIncrease) is divided in 4 equal periods each followed by humidity treatment acc. 12.2 (deviation: electric strength at level 50 % of 13.2)		N/A

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	Failure of only one of the six samples during the first of the four periods of the test is ignored.		N/A
	If 1 of the 6 samples fails during the 2nd, 3rd or 4th period of the test, the remaining five samples are subjected to an additional fifth test cycle		N/A
	Failure of any of the remaining five controls will entail a rejection.		N/A
	The controls are then subjected to the test of 17.8, but only for half the number of cycles specified in that subclause.		N/A
	All controls withstand an electric strength test as specified before.		N/A
15. MANUFACTURING DEVIATION AND DRIFT			
15.1	Delete the NOTE		—
16. ENVIRONMENTAL STRESS			
16.2.1	Add "See annex ZB" at the end of the dashed paragraph.		P
	Delete the NOTE		—
17. Endurance			
17.1.3	Add the following NOTE: For tests sequence and conditions of non-resettable thermal cut-outs, see 17.16		—
17.1.3.1	Delete text in brackets in second and fifth dashed paragraph		N/A
17.2.2	Electrical loads according to Table 14, at rated voltage VR increased to 1.15VR (V) for the overvoltage test of 17.7 and 17.10.		P
17.2.3	Sub-clause deleted		—
17.3.1	Replace last sentence of third dashed paragraph: If Tmin < 0°C additional test carried out with switch head maintained between Tmin and (Tmin -5) °C		P
	Controls for Type 1 action: Clause 16 and 17		P
	Controls for Type 2 action: clause 15, 16 and 17		N/A
	Three additional samples required.		P

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17.5.1	Delete the NOTE		—
17.7.1	Delete the words in brackets		—
17.7.7	Delete the NOTE		—
17.8.4.1	Delete the NOTE		—
17.10	Delete the words in brackets		—
17.10.1	Delete the words in brackets		—
17.10.4	Delete		—
17.12.5	Delete		—
18. MECHANICAL STRENGTH			
18.1	General requirements		—
18.1.6	Sub-clause deleted		—
18.2.1	Delete the words "except as provided by 18.4"		P
18.4	Sub-clause deleted		—
19. THREADED PARTS AND CONNECTIONS			
19.1	Threaded parts moved during mounting or servicing		—
19.1.7	Replace "screws" by "threaded parts".		P
19.2.4.1	Delete the NOTE		—
19.2.5.1	Delete the NOTE		—
20. CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH INSULATION			
20.1	In NOTE 2 Replace "impulse test" by "impulse voltage test"		—
20.1.7	In the NOTE Replace "impulse test" by "impulse voltage test"		—
21. RESISTANCE TO HEAT, FIRE AND TRACKING			
21.1	Delete the NOTE		—

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21.2.7	Compliance checked by the tests of Clause G.4, carried out at a voltage corresponding to the PTI value declared for Table 1, requirement 30.		P
21.3	Test sequence 21.2.1 – 21.2.7 applies, preceded by preconditioning of 21.3.1		P
	For parts which maintain or retain in position electrical connections the glow-wire shall be carried out at 850°C		P
21.4	Sub-clause deleted, including Table 25		—
23.	ELECTROMAGNETIC COMPATIBILITY (EMC) REQUIREMENTS - EMISSION		P
23.1	Compliance checked by method declared by manufacture, see Z1 in Table 1 and Table H.10		—
23.1.1	Add before first dashed paragraph: Test conducted at lowest declared voltage and lowest declared current, see Z2 in Table 1		—
23.1.2	Duration of radio interference is measured by oscilloscope, or measuring equipment according to EN 55016-1-1		P
24	COMPONENTS		P
24.1.1	In the 1st paragraph, delete ", 17.2.3.1 and 17.2.3.2".		N/A
27.	ABNORMAL OPERATION		P
27.2	Replace "Burnout test" by "locked mechanism test"		—
	Locked mechanism test (for controls incorporating Electro-magnets)		N/A
27.2.1	In 1:st paragraph, delete 17.2.3.1 and 17.2.3.2		—
27.2.3.1	Delete the NOTE		—
C	ANNEX C – COTTON USED FOR MERCURY SWITCH TEST		N/A
	Replace the text by 'Void'.		—
D	ANNEX D – HEAT, FIRE AND TRACKING		N/A

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	Replace the text by 'Void'.		—
H			
	ANNEX H – REQUIREMENTS FOR ELECTRONIC CIRCUITS		P
H7.	Information, addition to Table 1:		N/A
	H36 – replacement: limits of activating quantity for any sensing element over which micro-disconnection or electronic disconnection is secure; After clause: 11.3.2, add H2.4.6; method: X		N/A
H26.	EMC REQUIREMENTS IMMUNITY .Operation with mains borne perturbations, magnetic, and electromagnetic disturbances		P
H26.1	For controls of Type 1 action, intended for “free standing controls, independently mounted and/ or in-line controls”, the tests of Annex ZD apply instead of clause H26.		P
H26.7	Influence of d.c. in a.c. networks (sub-clause deleted)		—
H26.10	Sub-clause deleted		—
J			
	ANNEX J – REQUIREMENTS FOR CONTROLS USING THERMISTORS		P
J17.17 a)	- thermal runaway by increased voltage		P
J.17.18.5	- thermal runaway by increased voltage.		P
ZB			
	ANNEX ZB (normative) , SPECIAL NATIONAL CONDITIONS (EN)		P
	AUSTRIA, BELGIUM, DENMARK, FRANCE, GERMANY, ITALY, NORWAY, UNITED KINGDOM		N/A
ZB 2.7.2	Class 0 controls are not allowed		N/A
ZB 2.7.3	Class 01 controls are not allowed		N/A
ZB 2.7.5.3	Class 01 controls are not allowed		N/A
ZB 4.3.3.1	Class 0 and class 01 01 controls are not allowed		N/A
ZB 4.3.3.3	Class 0 and class 01 01 controls are not allowed		N/A
ZB 6.8.2.1	Class 0 controls are not allowed		N/A
ZB 6.8.2.2	Class 01 controls are not allowed		N/A

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ZB 6.8.3.1	Class 0 controls are not allowed		N/A
ZB 6.8.3.2	Class 01 controls are not allowed		N/A
	UNITED KINGDOM		N/A
ZB 7.4.3	Terminals exclusively for live external conductor: indicated: "L"		N/A
ZB 7.4.3.2	Letter "L" must not be used in another way		N/A
	AUSTRIA, BELGIUM, DENMARK, FRANCE, GERMANY, ITALY, NORWAY, UNITED KINGDOM		N/A
ZB 9.1.1	Class 01 controls are not allowed		N/A
ZB 9.1.2	Class 01 controls are not allowed		N/A
ZB 11.9.4	Class 01 controls are not allowed		N/A
	FINLAND , NORWAY AND SWEDEN		P
ZB 16.2.1	- replace "-10±2 °C" by "-25±2 °C" (control must be stored 24h at -25±2 °C)	24h at -25 °C	P
ZC	ANNEX ZC (informative), NATIONAL DEVIATIONS (EN)		N/A
ZC 11.1.2	(SWEDEN) (Ordinance 1991:1290) Mercury not allowed in switches and controls, such as level switches, thermostats and relays		N/A
ZC 11.1.3	(UNITED KINGDOM) (Statutory Instrument 1768:1994) Add to requirement: These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and in General allow only plugs to BS 1363 to be fitted		N/A
ZD	ANNEX ZD (normative) EMC immunity for controls		P
ZD.2	Classification of the control:	Residential / Industrial	P
ZD.3	Information		P
	Z3 According to the electromagnetic environment of one of the two EMC levels (Method X)		P
	Z4 EUT was tested without primary protection (Method X)		P
	Z5 Cable length ≤ 30 m (Method X)		P
	Z6 Data line length < 10 m (Method X)		P
	Z7 Test level (= protection level when upstream protection is not in place) (Method X)		N/A

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	Z8 Data line length \leq 3 m (Method X)		P
	Z9 Applicable of test and frequency (Method X)		P
	Installation and environmental condition		
	ESD: : Contact discharge Air discharge		—
	Radiated EMF field: Level; Frequency range :		—
	Burst: Level..... :		—
	Surge: Installation Class..... :		—
	Conducted disturbance: Level..... :		—
	Power magnetic field: Level..... :		—
	Voltage dips & interruption Level..... :		—
ZD-4	Evaluation of compliance	A /B /C	P
ZD.5	Surge immunity test	see attachment 1: NN22S76T 004 EMC report	P
	The control is mounted as specified in 4.1.1, supplied at rated voltage and operated at representative		P
	Operating conditions. It is tested in accordance with EN 61000-4-5.		P
	AC power supply and AC I/O directly connected to mains network		N/A
	AC power supply and AC I/O not directly connected to mains network		N/A
	DC power supply and DC I/O directly connected thereto		N/A
	Unsymmetrical operated circuits/lines		N/A
	Symmetrical operated circuits/lines		N/A
	Shielded I/O and shielded communication lines		N/A
ZD.6	Electrical fast transient/burst immunity test	see attachment 1: NN22S76T 004 EMC report	P
	AC power supply and control output for direct connection to the supply		P
	DC power supply and control outputs for direct connection to the supply		N/A
	Data lines		P

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ZD.7	Radio-frequency electromagnetic field immunity	see attachment 1: NN22S76T 004 EMC report	P
ZD.7.1	Immunity to conducted disturbances Test levels for conducted disturbances on,		P
	Mains		P
	I/O lines		P
	DC power lines		N/A
ZD.7.2	Electrostatic discharge Test voltage and application		
ZD.8	Immunity to radiated electromagnetic fields Control declaration	Residential / Industrial see attachment 1: NN22S76T 004 EMC report	P
	80 MHz to 1 GHz Field strength		P
	1,4 GHz to 2 GHz Field strength		P
	2,0 GHz to 2,7 GHz Field strength		P
ZD.9	Immunity to power-frequency magnetic fields	see attachment 1: NN22S76T 004 EMC report	P
	Power..... A/m..... Frequency		—
ZD.10	Test of the influence of voltage dips and voltage interruption in the power supply network		P
	During the test, the control was initially operated at its rated voltage. The control was operated at representative operating conditions.		P
	Voltage dips (50 Hz / 60 Hz)		P
	Duration in periods 50 Hz/60 Hz		P
	Compliance criteria		P
	Voltage interruption (50 Hz/60 Hz)		P
	Duration in periods 50 Hz/60 Hz		P
	Compliance criteria		P