

Automatic electrical controls for household and similar use

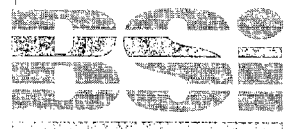
Part 2. Particular requirements

Section 2.1 Electrical controls for electrical household appliances

The European Standard EN 60730-2-1 : 1997 has the status of a
British Standard

ICS 97.120

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee CPL/72, Electrical control devices for household equipment and appliances, upon which the following bodies were represented:

Association of Control Manufacturers (TACMA (BEAMA Ltd.))
 Association of Manufacturers of Domestic Electrical Appliances
 British Combustion Equipment Manufacturers Association
 British Electrotechnical Approvals Board
 British Refrigeration Association
 BSI Testing Services
 Consumer Policy Committee of BSI
 Department of the Environment (Building Research Establishment)
 Department of Trade and Industry (Consumer Safety Unit, CA Division)
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National foreword

This Section of BS EN 60730 has been prepared by Technical Committee CPL/72, and is the English language version of EN 60730-2-1 : 1997, *Automatic electrical controls for household and similar use Part 2: Particular requirements for electrical controls for electrical household appliances*, published by the European Committee for Electrotechnical Standardization (CENELEC). It is derived by CENELEC from IEC 730-2-1 : 1989, published by the International Electrotechnical Commission.

The CENELEC common modifications have been implemented at the appropriate places in the text and are indicated by a side line in the margin. Parts of the original IEC text that have been modified by CENELEC have been quoted in national annex NA.

This British Standard supersedes BS EN 60730-2-1 : 1992 which will be withdrawn on 1 April 1999 in accordance with the CENELEC Internal Regulations. Certification and marks will not be awarded after this date with respect to BS EN 60730-2-1 : 1992. However, such certification and marks already awarded, may continue to apply to production until 1 April 2004.

This British Standard is to be read in conjunction with BS EN 60730-1 : 1995 *General requirements*, which it supplements or modifies. The many references to Part 1 should be read as references to BS EN 60730-1 : 1995, which is the English language version of EN 60730-1 : 1995 which was derived from IEC Publication 730-1 (1993) second edition. Consideration may be given to future editions of, or amendments to, BS EN 60730-1.

Product approval. Attention is drawn to the fact that products conforming to this British Standard may be approved by the British Electrotechnical Approvals Board for the purposes of participation in the CENELEC Certification Agreement and in the CB Scheme of the IECEE. (Details of the BEAB Approval Scheme are given on the inside back cover).

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages.

This document comprises a front cover and an inside front cover, pages i and ii, the EN title page, pages 2 to 14, an inside back cover and a back cover.



EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60730-2-1

January 1997

ICS 97.120

Supersedes EN 60730-2-1 : 1991 and its amendments

Descriptors: Electrical household appliance, control, automatic control, thermal cut-out, definition, requirement, test

English version

Automatic electrical controls for household and similar use
Part 2: Particular requirements for electrical controls for
electrical household appliances

(IEC 730-2-1 : 1989, modified)

Dispositifs de commande électrique automatiques
à usage domestique et analogue
Partie 2: Règles particulières pour dispositifs de
commande électrique pour appareils
électrodomestiques
(CEI 730-2-1 : 1989, modifiée)

Automatische elektrische Regel- und Steuergeräte
für den Hausgebrauch und ähnliche
Anwendungen
Teil 2: Besondere Anforderungen an Regel- und
Steuergeräte für elektrische Haushaltsgeräte
(IEC 730-2-1 : 1989, modifiziert)

This European Standard was approved by CENELEC on 1996-12-09. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of the International Standard IEC 730-2-1 : 1989, prepared by IEC TC 72, Automatic controls for household use, together with common modifications prepared by the Technical Committee CENELEC TC 72, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 60730-2-1 on 1996-12-09.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1997-10-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1999-04-01

For products which have complied with EN 60730-2-1 : 1991 and its amendments A11 : 1992, A12 : 1993 and A13 : 1995 before 1999-04-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2004-04-01.

This Part 2 is to be used in conjunction with EN 60730-1 : 1995, *Automatic electrical controls for household and similar use — Part 1: General requirements*. Consideration may be given to future editions of, or amendments to, EN 60730-1.

This Part 2 supplements or modifies the corresponding clauses of EN 60730-1 : 1995, so as to convert it into the European Standard: Safety requirements for electrical controls for electrical household appliances.

Where a particular clause or subclause of Part 1 is not mentioned in this Part 2, that clause or subclause applies as far as is reasonable. Where this Part 2 states 'addition', 'modification' or 'replacement', the relevant text of Part 1 is to be adapted accordingly.

Subclauses and figures which are in addition to those in Part 1 are numbered 101, 102 etc. The reference of subclauses and annexes which are in addition to those in IEC 730-2-1 is prefixed with the letter Z.

There are no special national conditions (snc) causing a deviation from this European Standard other than those listed in annex ZB of EN 60730-1.

There are no national deviations from this European Standard other than those listed in annex ZC of EN 60730-1.

NOTE. In this document, the following print types are used:

- requirements proper: in roman type;
- test specifications: *in italic type*;
- explanatory matter: in smaller roman type;
- instructions for modification of the reference: **in bold type**.

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AUTOMATIC ELECTRICAL CONTROLS FOR HOUSEHOLD AND SIMILAR USE

Part 2: Particular requirements for electrical controls for electrical household appliances

1. Scope

This clause of Part 1 is replaced as follows:

1.1 This standard is applicable to automatic electrical controls to be incorporated in or associated with electrical appliances within the scope of EN 60335-1 and Parts 2 of EN 60335, unless otherwise specified in a particular Part 2 of EN 60730.

1.1.1 This standard applies to the inherent safety, to the operating values, operating times, and operating sequences where such are associated with equipment safety and to the testing of automatic electrical control devices used in, or in association with, household or similar equipment.

Throughout this standard the word "equipment" means "appliance and equipment".

1.1.2 This standard applies to automatic electrical controls, mechanically or electrically operated, responsive to or controlling such characteristics as temperature, pressure, passage of time, humidity, light, electrostatic effects, flow, or liquid level, current, voltage or acceleration.

1.1.3 This standard applies to starting relays, which are a specific type of automatic electrical control, designed to switch the starting winding of a motor. Such controls may be built into, or be separate from, the motor.

Starting relays are tested as voltage sensing or current sensing controls.

1.1.4 This standard applies to manual controls which are electrically and/or mechanically integral with automatic controls.

Requirements for manual switches not forming part of an automatic control are contained in IEC Publication 328.

1.2 This standard applies to controls with a rated voltage not exceeding 660 V and with a rated current not exceeding 63 A.

1.3 This standard does not take into account the response value of an automatic action of a control, if such a response value is dependent upon the method of mounting the control in the equipment. Where a response value is of significant purpose for the protection of the user, or surroundings, the value defined in the appropriate household equipment standard or as determined by the manufacturer shall apply.

1.4 This standard applies also to controls incorporating electronic devices.

2. Definitions

This clause of Part 1 is applicable.

3. General requirement

This clause of Part 1 is applicable.

4. General notes on tests

This clause of Part 1 is applicable except as follows:

4.1 Addition:

The numbers of cycles and the values for y are given in annex ZD.

Addition:

4.2.1 If the tests of subclause 14.Z101 have to be performed, six additional samples are required.

5. Rating

This clause of Part 1 is applicable.

6. Classification

This clause of Part 1 is applicable except as follows:

6.4.2 Addition:

Thermal cut-outs shall be of Type 2 action.

6.5.3 Delete the third dashed paragraph.

7. Information

This clause of Part 1 is applicable except as follows:

7.2 Addition:

For incorporated controls limited marking only is required – see subclause 7.2.6.

Add to note 3 of table 7.2:

A manual reset thermal cut-out shall not reset automatically at a higher temperature than $-20\text{ }^{\circ}\text{C}$, or at a lower temperature if this has been declared.

8. Protection against electric shock

This clause of Part 1 is applicable except as follows:

8.1.9.5 Replace by:

If the manufacturer instructs the user to remove a part, that part is regarded as a detachable part even if a tool has to be used for its removal.

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9. Provision for protective earthing

This clause of Part 1 is applicable.

10. Terminals and terminations

This clause of Part 1 is applicable.

11. Constructional requirements

This clause of Part 1 is applicable.

12. Moisture resistance

This clause of Part 1 is applicable.

13. Electric strength and insulation resistance

This clause of Part 1 is applicable.

14. Heating

This clause of Part 1 is applicable except as follows:

Additional subclause:

14.Z101 If the maximum permitted temperature of a winding or core lamination exceeds the value specified for the text described in 14.1 six additional samples shall be subjected to the following tests:

Moving parts, if any, are locked and a current is passed individually through each winding, this current being such that the temperature of the relevant winding is equal to the maximum temperature measured under the conditions specified in 14.1. This temperature is increased by whichever value is chosen from the following table. The total time during which the current is passed is as indicated in the table for the temperature increase chosen.

Temperature increase °C (K)	Total time h
0 ± 3	$p^{1)}$
10 ± 3	0,5 p
20 ± 3	0,25 p
30 ± 3	0,125 p

¹⁾ In general, p equals 8000 for controls for EN 60335-1 applications.

The total time is divided into four equal periods, each of them being followed by a period of 48 h during which the control is subjected to a humidity treatment as specified in 12.2. After the final humidity treatment, the insulation shall withstand an electric strength test and insulation resistance test as specified in clause 13, the test voltage for the electric strength being, however, reduced to 50% of the values specified in the table of that clause.

Failure of only one of the six samples during the first of the four periods of the test is ignored.

If one of the six samples fails during the second, third or fourth period of the test, the remaining five samples are subjected to an additional fifth period of passing current and humidity treatment, followed by an electric strength and insulation resistance test as specified before.

Failure of any of the remaining five controls will entail a rejection.

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The controls are then subjected to the test of 17.8, but only for half the number of cycles specified in that subclause. All controls shall then withstand an electric strength test as specified before.

Examples of cases where there may be doubt with regard to the classification of the insulating system of a winding are those two cases where well-known insulating materials are used in an unconventional way, where combinations of materials of different temperature classes are used at a temperature higher than that allowed for the lowest class used or where materials are used for which no sufficient experience is available, as may be the case for integral core insulation.

If it is desired to establish that the insulation system falls within the temperature class claimed by the manufacturer, the winding temperature must be equal to the temperature limit for the class of insulation claimed, increased by the temperature increase chosen from the table.

The temperature increase chosen from the table should be agreed with the manufacturer.

15. Manufacturing deviation and drift

This clause of Part 1 is applicable.

16. Environmental stress

This clause of Part 1 is applicable.

17. Endurance

This clause of Part 1 is applicable except as follows:

17.16 Tests for particular purpose controls

Additional sub-clauses:

17.16.101 Thermostats

Sub-clauses 17.1 to 17.5 inclusive are applicable.

Sub-clause 17.6 is applicable to actions classified as Type 1.M or Type 2.M.

Sub-clauses 17.7 and 17.8 are applicable.

Sub-clause 17.9 is applicable, but only to slow-make, slow-break automatic actions.

Sub-clauses 17.10 to 17.13 inclusive are applicable, but only to those thermostats which have a manual action (including an actuating means providing setting by the user).

Sub-clause 17.14 is applicable.

Sub-clause 17.15 is not applicable.

17.16.102 Temperature limiters

Sub-clauses 17.1 to 17.5 inclusive are applicable.

Sub-clause 17.6 is applicable to actions classified as Type 1.M or Type 2.M.

Sub-clauses 17.7 and 17.8 are applicable, except that where necessary the reset operation, if required, is obtained by actuation.

This actuation shall be as specified in Sub-clause 17.4 for the accelerated speed test as soon as permitted by the mechanism, or as declared by the manufacturer in Sub-clause 7.2.

Sub-clause 17.9 is applicable, but only to temperature limiters with slow-make, slow-break automatic actions, the same conditions for manual reset as specified above for Sub-clauses 17.7 and 17.8 being used.

Sub-clauses 17.10 to 17.13 inclusive are applicable, but only to those temperature limiters which have a manual action (including an actuating means providing setting by the user).

Sub-clauses 17.10 to 17.13 inclusive do not apply to the normal reset manual action which is tested during the automatic tests of Sub-clauses 17.7 to 17.9 inclusive. If the temperature limiter has other manual actions which are not tested during the automatic tests, then these sub-clauses are applicable.

Sub-clause 17.14 is applicable.

Sub-clause 17.15 is not applicable.

17.16.103 *Thermal cut-outs*

Sub-clauses 17.1 to 17.5 inclusive are applicable.

Sub-clause 17.6 is applicable to actions classified as Type 2.M, the value of "X" being $(2 \pm 1) ^\circ\text{C}$, or $\pm 2\%$ of the original activating quantity, whichever is greater.

Sub-clauses 17.7 and 17.8 are applicable except that, where necessary, the reset operation, if required, is obtained by actuation.

This actuation shall be as specified in Sub-clause 17.4 for accelerated speed, as soon as permitted by the mechanism, or as declared by the manufacturer in Sub-clause 7.2.

Sub-clause 17.9 is applicable, but only to cut-outs with slow-make, slow-break automatic actions, the same conditions for manual reset as specified above for Sub-clauses 17.7 and 17.8 being used.

Sub-clauses 17.10 to 17.13 inclusive do not apply to the normal reset manual action which is tested during the automatic tests of Sub-clauses 17.7 to 17.9 inclusive. If the thermal cut-out has other manual actions which are not tested during the automatic tests, then these sub-clauses are applicable.

Sub-clause 17.14 is applicable.

Sub-clause 17.15 is not applicable.

17.16.104 *Energy regulators*

Sub-clauses 17.1 to 17.5 inclusive are applicable.

Sub-clause 17.6 is applicable to actions classified as Type 1.M or Type 2.M.

Sub-clauses 17.7 and 17.8 are applicable, except that for the overvoltage test the number of automatic cycles is either one-tenth of the number declared in Sub-clause 7.1 or 250 h, whichever takes the shorter time.

The position of the actuating member is that which produces the fastest natural cycling rate at the commencement of the test.

Sub-clauses 17.10 to 17.13 inclusive are applicable except that for actuating members which have been tested during the automatic action tests of Sub-clauses 17.7 and 17.8, the number of cycles of actuation is reduced in Sub-clause 17.13 by the number of cycles carried out during the tests of Sub-clauses 17.7 and 17.8.

Sub-clause 17.14 is applicable.

Sub-clause 17.15 is not applicable.

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17.16.105 *Timers*

Sub-clauses 17.1 to 17.5 inclusive are applicable.

Sub-clause 17.6 is applicable to actions classified as Type 1.M or Type 2.M.

Sub-clauses 17.7 and 17.8 are applicable except that at the end of each cycle an appropriate actuation must be performed to initiate the next cycle. If the timer has different programmes, that programme which utilizes the maximum number of contact operations shall be chosen.

The tests may be carried out by using a special test programme of the timer, agreed upon between manufacturer and test house. This special test programme shall be such that it is possible, by carrying it out, to make a reasonable prediction of the test results for all specific application programmes of the timer.

If this programme does not cause all the contacts to be operated, the test shall be repeated on (a) new set or sets of samples operating on other programmes to ensure that all contacts are tested. These extra samples need not be tested where the design is such that the results can be reasonably predicted from the result of the first set of samples, as could be done if the design of all contacts were identical.

If the timer requires an external electrical or mechanical signal to move it from a rest position, this shall be simulated, if necessary, in the manner declared by the manufacturer.

For timers with Type 2 actions, any electrically driven prime mover shall, for at least 50% of the test, be connected to a supply of 0.9 Vr, all other loads and connections remaining as in Sub-clause 17.7.

For timers with Type 1 actions, if there is any failure attributable to the acceleration (such as the excessive use of a clutch) then the test is held to be invalid and should be repeated in another manner.

Sub-clause 17.9 is only applicable if the timer has a slow-make, slow-break automatic action.

Sub-clauses 17.10 to 17.13 inclusive are applicable except that for manual actions which have been tested during the tests of Sub-clauses 17.7 and 17.8, the number of cycles of actuation is reduced by the number of cycles carried out during those tests.

If a clutch is used during the tests of Sub-clauses 17.10 to 17.13 inclusive care should be taken to ensure that it does not fail due to the acceleration. If it fails or is considered liable to fail, the speeds of actuation shall be as specified, but rest periods shall be introduced between cycles to allow the heat dissipation which would occur during normal use.

Sub-clause 17.14 is applicable.

Sub-clause 17.15 is not applicable.

17.16.106 *Time switches*

Sub-clauses 17.1 to 17.5 inclusive are applicable.

Sub-clause 17.6 is applicable to actions classified as Type 1.M or Type 2.M.

Sub-clauses 17.7 and 17.8 are applicable, except that if the time switch has different programmes, that programme which utilizes the maximum number of contact operations shall be chosen.

The tests may be carried out by using a special test programme of the timer, agreed upon between manufacturer and test house. This special test programme shall be such

that it is possible, by carrying it out, to make a reasonable prediction of the test results for all specific application programmes of the timer.

If this programme does not cause all the contacts to be operated, the test shall be repeated on (a) new set or sets of samples operating on other programmes to ensure that all contacts are tested. These extra samples need not be tested where the design is such that the results can be reasonably predicted from the result of the first set of samples, as could be done if the design of all contacts were identical.

For time switches with Type 2 actions, any electrically driven prime mover shall, for at least 50% of the test, be connected to a supply of 0.9 V_r , all other loads and connections remaining as in Sub-clause 17.7.

For time switches with Type 1 actions, if there is any failure attributable to the acceleration (such as the excessive use of a clutch) then the test is held to be invalid and should be repeated in another manner.

Sub-clause 17.9 is only applicable if the time switch has a slow-make, slow-break automatic action.

Sub-clauses 17.10 to 17.13 inclusive are applicable except that for manual actions which have been tested during the tests of Sub-clauses 17.7 and 17.8, the number of cycles of actuation is reduced by the number of cycles carried out during those tests.

If a clutch is used during the tests of Sub-clauses 17.10 to 17.13 inclusive care should be taken to ensure that it does not fail due to the acceleration. If it fails or is considered liable to fail, the speeds of actuation shall be as specified, but rest periods shall be introduced between cycles to allow the heat dissipation which would occur during normal use.

Sub-clause 17.14 is applicable.

Sub-clause 17.15 is not applicable.

17.16.107 *Manual controls*

Sub-clauses 17.1 to 17.5 inclusive are applicable.

Sub-clause 17.6 is applicable to actions classified as Type 1.M or Type 2.M, the value of "X" being as small as practicable.

Sub-clauses 17.7 to 17.9 are not applicable.

Sub-clauses 17.10 to 17.14 inclusive are applicable.

Sub-clause 17.15 is not applicable.

17.16.108 *Sensing controls (other than temperature sensing controls)*

Sub-clauses 17.1 to 17.5 inclusive are applicable.

Sub-clause 17.6 is applicable to actions classified as Type 1.M or Type 2.M, the value of "X" being as small as practicable.

Sub-clauses 17.7 and 17.8 are applicable.

Sub-clause 17.9 is applicable only for slow-make, slow-break automatic actions.

Sub-clauses 17.10 to 17.13 inclusive are applicable, but only to those sensing controls which have a manual action (including an actuating means providing setting by the user).

Sub-clause 17.14 is applicable.

Sub-clause 17.15 is not applicable.

17.16.109 *Electrically operated controls*

Under consideration.

17.16.110 *Motor protectors*

Motor protectors within the scope of EN 60730-2-2 and EN 60730-2-4 are not within the scope of this Part 2.

18. **Mechanical strength**

This clause of Part 1 is applicable.

19. **Threaded parts and connections**

This clause of Part 1 is applicable.

20. **Creepage distances, clearances and distances through insulation**

This clause of Part 1 is applicable except as follows:

20.1 *Addition:*

The distance classified as 'Normal' in EN 60730-1 is to be regarded as identical to that classified as 'not protected' in EN 60335-1. The distance classified as 'Clean' in EN 60730-1 is to be regarded as identical to that classified as 'protected' in EN 60335-1.

21. **Resistance to heat, fire and tracking**

This clause of Part 1 is applicable except as follows:

21.1 *Addition*

The control category A, B, C and D is chosen to cover the required material applications and appliance applications as specified in EN 60335-1, clause 30 (Annex H).

22. **Resistance to corrosion**

This clause of Part 1 is applicable.

23. **Radio interference suppression**

This clause of Part 1 is applicable.

24. **Components**

This clause of Part 1 is applicable.

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25. Normal operation

This clause of Part 1 is applicable.

26. Operation with mains-borne perturbations

This clause of Part 1 is applicable.

27. Abnormal operation

This clause of Part 1 is applicable.

ANNEXES

The annexes of Part 1 are applicable except as follows:

Annex H

H26.2 Add the following additional explanatory paragraph:

Free standing and independently mounted controls submitted and declared for use with a particular appliance are tested in accordance with H26.2 or H26.2.1.

H26.9 Delete the explanatory paragraph

Add the following subclause:

H26.9.Z101 Test procedure

The control is subjected to five tests. The tests are performed with the maximum number of outputs connected as permitted by the operating sequence. Three tests are performed with power delivered to the load(s) and two tests are performed without power delivery to the load(s).

Additional annex:

ANNEX ZD (informative)

Number of cycles and values for y for appliance controls

Control	Parameter	Low	Normal	High	Very high
Thermostat	M	300	3 000	10 000	
	A		10 000	30 000	100 000
Temperature limiter	M		1 000	3 000	10 000
	A		1 000	3 000	10 000
Self-resetting thermal cut-out	A		300	3 000	30 000
	y	300h	3 000h	10 000h	
Non self-resetting thermal cut-out	A/M		30	300	1 000
	y	300h	3 000h	10 000h	
Non resettable thermal cut-out	y	300h	3 000h	10 000h	
Energy regulator	M	1 000	3 000	10 000	
	A		10 000	30 000	100 000
Timers	M	3 000	10 000	30 000	
	A	3 000	10 000	30 000	

NOTE: The 'Normal' column will apply for all controls used for appliances within the scope of the parts 2 of EN 60335, unless otherwise specified in a particular Part 2.

National annex NA**Original IEC text amended by CENELEC common modifications****1. Scope**

1.1 This Sub-clause has been replaced. It read as follows.

1.1 This standard applies to automatic electrical controls for electrical household appliances within the scope of IEC Publication 335-1 and its relevant Part 2s. Where for a specific control, a Part 2 of Publication 730-1 has been published, it supersedes the requirements for the specific controls contained in this Part 2.

1.5 This Sub-clause has been replaced. It read as follows.

1.5 This standard is not applicable to controls used in central heating, air conditioning and similar applications.

4. General notes on tests

This clause has been replaced. It read as follows.

This clause of Part 1 is applicable.

6. Classification

This clause has been replaced. It read as follows.

This clause of Part 1 is applicable.

7. Information

This clause has been replaced. It read as follows.

This clause of Part 1 is applicable.

8. Protection against electric shock

8.1.5 The addition has been deleted. It read as follows.

8.1.5 Addition:

In the United States the dimensions of the recommended probes in Figures 1 and 2 are currently under consideration.

13. Electric strength and insulation resistance

This clause has been replaced. It read as follows.

This clause of Part 1 is applicable except as follows.

Addition to the notes of Table 13.2:

101) In Canada and the United States other values are applicable.

14. Heating

This clause has been replaced. It read as follows.

This clause of Part 1 is applicable except as follows:

14.1.1 Addition:

In Canada and the United States, for some integrated or incorporated controls, the test of Clause 14 is replaced by the tests of Sub-clauses 17.7 and 17.8 conducted at the maximum declared operating value.

14.4 Addition:

In the United States, the test is conducted at the voltages specified in Sub-clauses 17.2.3.1 and 17.2.3.2.

Addition to Note 1 of Table 14.1:

In Canada and the United States, the maximum temperature permitted is 75 °C. Higher temperatures are permitted if the control is marked with the required temperature (T) rating for the external conductors.

15. Manufacturing deviation and drift

This clause has been replaced. It read as follows.

This clause of Part 1 is applicable except as follows:

15.1 Addition:

In Canada and the United States, manufacturing deviation and drift are expressed as separate tolerances to the declared operating value. For some controls with Type 2 action, allowable values of manufacturing deviation and drift are specified. The consistency is then determined, using the prescribed apparatus, by measuring the operating value of the sample and by comparing this value to the declared operating value.



17. Endurance

17.16 The additional explanation paragraph has been deleted. It read as follows.

Addition:

In Canada and the United States, the tests of this sub-clause are not applicable. The applicable requirements will be contained in the relevant Part 2s of Publication 730-1.

17.16.103 The words 'Type 1.M or' have been deleted in the second paragraph.

17.16.110 This sub-clause has been replaced. It read as follows.

17.16.110 *Motor protectors*

Under consideration.

17.16.111 This subclause has been deleted. It read as follows.

17.16.111 *Electrically operated valves*

Under consideration.

17.16.112 This subclause has been deleted. It read as follows.

17.16.112 *Electrically operated mechanisms*

Under consideration.

20. Creepage distances, clearances and distances through insulation

This clause has been replaced. It read as follows.

This clause of Part 1 is applicable.

21. Resistance to heat, fire and tracking

This clause has been replaced. It read as follows.

This clause of Part 1 is applicable.

25. Normal operation

This clause has been replaced. It read as follows.

See Appendix H (in preparation)

26. Operation with mains-borne perturbations

This clause has been replaced. It read as follows.

See Appendix H (in preparation)

27. Abnormal operation

This clause has been replaced. It read as follows.

See Appendix H (in preparation)

Annexes

The title has been replaced. It read 'Appendices'.

The text has been replaced. It read as follows.

The appendices of Part 1 are applicable.



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