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Routine tests for controls within the scope of the EN 60730 series - Part 1: General requirements

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Stückprüfungen in der Fertigung von Regel- und Steuergeräten im Geltungsbereich der Normenreihe EN 60730 -- Teil 1: Allgemeine Anforderungen

Essais de production des dispositifs de commande du domaine de la série des EN 60730 -- Partie 1: Règles générales

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English version

Routine tests for controls within the scope of the EN 60730 series Part 1: General requirements

Règles particulières pour les essais de production des dispositifs de commande du domaine de la série des EN 60730 Partie 1: Règles générales

Besondere Regeln für Stückprüfungen in der Fertigung von Regel- und Steuergeräten im Geltungsbereich der Normenreihe EN 60730 Teil 1: Allgemeine Anforderungen

This European Standard was approved by CENELEC on 2000-08-01. 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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC
European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 72, Automatic controls for household use.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 50344-1 on 2000-08-01.

The proposal to prepare a draft for routine tests originated from a decision taken at the meeting of CLC/TC 72 held 6-7 December 1994 where CLC/TC 72 Working Group 1 was set up to produce a draft for routine tests, based on the document for routine testing of appliances under the scope of EN 60335-1, for use by testing authorities;

Following the circulation of drafts prepared by WG 1, document CLC/TC 72(SEC)71 which was circulated during 1996, and document CLC/TC 72(SEC)87 circulated during 1997, it was agreed at the meeting of CLC/TC 72 held 11 and 12 September 1997 that when finalised, the requirements for routine tests should be published in a separate standard.

Further modifications to the draft followed at the meeting of CLC/TC 72 held 10 and 11 September 1998 which resulted in WG 1 holding a further meeting in July 1999 in order to finalise a draft for voting under the CENELEC Unique Acceptance Procedure.

At the meeting of CLC/TC 72 held 10 and 11 September 1998 it was also agreed that there needed to be a Part 2 to this standard in order to cover functional testing of some safety related controls. It was agreed that work on the part 2 would not be started until the Part 1 was complete.

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)	2001-12-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2003-08-01

Introduction

The tests detailed in this standard are carried out by the manufacturer and apply to products within the scope of EN 60730-1 and its part 2's.

This standard is for use within the scheme of the CENELEC certification agreement (CCA) and can be used in conjunction with other schemes.

Routine tests are line tests performed on 100% of production and are normally carried out at the final stage of manufacture.

NOTE 1 Routine tests are not to be confused with functional or performance tests, or product verification tests (repeat type tests).

NOTE 2 Functional or performance tests are considered the responsibility of the manufacturer and shall be carried out at the manufacturer's discretion unless otherwise specified in clause 2 of this standard

NOTE 3 Product verification tests (repeat type tests) are considered the responsibility of the manufacturer and shall be carried out at the manufacturer's discretion and to the manufacturers own quality system.

These tests are performed to ensure the electrical safety of the products and are intended to reveal a variation during the manufacture of Automatic Electrical Controls which could impair safety. They do not impair the properties and the reliability of the Automatic Electrical Control. They are normally carried out on the complete Automatic Electrical Control after assembly but the manufacturer may perform the tests at an appropriate stage during production provided later manufacturing operations will not affect the results.

The tests listed in this standard are the minimum considered necessary to cover essential electrical safety aspects. It is the responsibility of the manufacturer to decide if additional routine tests are necessary. It may be determined from engineering considerations of the manufacturer that some of the tests required in this standard are inappropriate and therefore unnecessary eg. for those Automatic Electrical Controls which can only be tested when incorporated or integrated in the final application.

For the purpose of this standard the definitions of EN 60730 apply.

1 General

1.1 The electrical safety tests described in this standard shall be carried out at the final stage of manufacture on the following Automatic Electrical Controls:

a) free standing and in line cord controls, 100% of production.

b) independently mounted Automatic Electrical Controls, 100% of production.

c) any Automatic Electrical Controls with flexible integrated or internal conductors, 100% of production

d) incorporated or integrated Automatic Electrical Controls with any surfaces directly accessible to the end user when mounted as declared 100% of production. Except that for controls where 100% testing is carried out on the final equipment in which the control is incorporated or integrated, routine testing is not required and testing is subject to agreement between the Control Manufacturer and the Appliance Manufacturer.

1.2 Components of the Control need not be subjected to the routine tests if they have been tested 100% previously equivalent to the requirements of this standard.

1.3 Tests shall be made on the complete Automatic Electrical Control after assembly, except that where this is not practical it shall be permissible to carry out certain tests at a stage prior to final assembly. If a flexible cord is provided, all Automatic Electrical Control shall be tested with the cord fitted.

1.4 Any non-conforming control shall be clearly identified and segregated to prevent unauthorized use, delivery or mixing with conforming products. Repaired and reworked controls shall be re-inspected in accordance with documented procedures.

1.5 The manufacturer shall install and maintain a failure investigation and corrective action procedure, and shall document the testing, test results, test equipment verification and any corrective actions in case of non-compliance of test equipment or a control.

2 Test method (general conditions)

2.1 No pre-conditioning of the control is required before testing.

2.2 The test equipment shall be verified for correct operation.

2.3 It shall be verified that the values of test current and voltage are correct and are applied in such a manner that they are not detrimental to the product.

3 Earth continuity test

A current of at least 10 A, and derived from an a.c source with a no load voltage not exceeding 12 V, is passed between the earthing terminal, earthing termination or earthing contact, and each other accessible part required to be connected thereto, in turn if applicable.

The voltage drop between the earthing terminal, earthing termination or earthing contact and the part is measured, and the resistance calculated from the current and this voltage drop in no case shall the resistance exceed 0,1 ohm.

The test is only carried out for the duration necessary for the measurement to be made.

Care shall be taken that the contact resistance between the tip of the measuring probe and the metal part under test does not influence the test results.

The resistance of any external conductor or internal conductor is not included in the resistance measurement, but the resistance of any integrated conductor is included

4 Electric strength test

The test is conducted between live parts and all metal surfaces accessible to the the user including foil or a suitable alternative on accessible non metallic surfaces when the control is mounted as declared.

A voltage of substantially sinusoidal form having a frequency of 50 Hz to 60 Hz and the value specified in Table 4 shall be applied for one second minimum. No breakdown or flashover shall occur during the tests.

Table 4 - Test voltages for the electric strength test

Points of application [1]	Test voltage for		
	Class I controls	Class II controls	Class III controls
Between live parts and accessible metal surfaces and between accessible non metallic surfaces covered by metal foil or a suitable alternative separated from live parts by			
- basic insulation only	1 000		400
- double or reinforced insulation	2 500	2 500	
Between live parts and metal parts separated from live parts by basic insulation only [2]		1 000	

[1] Special components which might render the test impractical, such as electronic parts, neon lamps, coils or windings shall be disconnected at one pole or bridged as appropriate to the insulation being tested.

[2] This test may be carried out on components during assembly.

The circuit used for the test incorporates a current sensing device which trips when the current exceeds 5 mA. However, it may be necessary to set the device to trip at a higher value which shall not exceed 30 mA. Tripping of the device shall indicate breakdown by audible or visual means. The high voltage transformer shall be capable of maintaining the specified voltage until the tripping current flows.

Instead of being subjected to an a.c. voltage, the insulation may be subjected to a d.c. voltage of 1,5 times the value shown in the table. An a.c. voltage having a frequency up to 5 Hz is considered to be a d.c. voltage.