



SLOVENSKI STANDARD
SIST HD 251 S3:2000/A3:2000
01-september-2000

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Safety of household and similar electrical appliances -- Part 1: General requirements

Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke -- Teil 1:
 Allgemeine Anforderungen

Sécurité des appareils électrodomestiques et analogues -- Partie 1: Règles générales

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ICS:

97.030 0\ dā } āā āāā āā { Ā æ Domestic electrical
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SIST HD 251 S3:2000/A3:2000 **en**

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AMENDMENT 3 TO HD 251 S3

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ENGLISH VERSION

SAFETY OF HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES
 GENERAL REQUIREMENTS

Sécurité des appareils électro-
 domestiques et analogues.
 Règles générales.

Sicherheit elektrischer Ge-
 räte für den Hausgebrauch und
 ähnliche Zwecke.
 Allgemeine Anforderungen.

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This Amendment 3 to HD 251 S3 was prepared by CENELEC/TC 61 on the basis of the decisions taken at its meetings held in Athens in October 1985 and in Nice in November 1986. It was ratified by the Technical Board at its meeting held in Brussels on 1987-03-04.

It supplements HD 251 S3.

The changes to be made to the text of the HD are given hereafter.

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FOREWORD

This Amendment 3 to HD 251 S3 has been prepared by the Secretariat of CENELEC Technical Committee 61 in accordance with the relevant decisions taken by that committee during its meetings held in October 1985 in Athens and in November 1986 in Nice.

During the meeting held in Athens, it was decided to circulate a draft for that amendment for approval under the three months' voting procedure.

The result of the three months' voting procedure being favourable, it was decided to publish this amendment in the CENELEC member countries before January 1st, 1988.

This latest date of publication was confirmed by the Technical Board during its meeting held in March 1987 in Brussels. During the latter meeting, the Technical Board decided also that conflicting non-harmonized national standards should be withdrawn before July 1st, 1988.

This amendment is provisional and intended to improve the usefulness of the tests of Appendix B; it will be used until a harmonized revision of Appendix B exists.

Note. There are no national deviations from this amendment other than those specified in the list of national deviations from HD 251 S3.

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ENDORSEMENT NOTICE

The following common modification supplements those given in HD 251 S3.

CLAUSE	COMMON MODIFICATION	JUSTIFICATION
B19	Replace this clause of Appendix B by the text given in Appendix 2 to this Harmonization Document.	This modification is considered to be necessary to improve the usefulness of Appendix B.

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B19 Abnormal operation

B19.101 Electronic circuits shall be so designed and applied that any fault condition will not render the appliance unsafe with regard to electric shock, fire hazard, mechanical hazard or dangerous malfunction.

Compliance is checked by evaluating the fault conditions specified in Sub-clause B19.103 for all circuits or parts of circuits, taking into account the conditions specified in Sub-clause B19.102. If the safety of the appliance under any of the fault conditions depends on the operation of a miniature fuse-link, acceptability of this provision is checked by the test of Sub-clause B19.104. During and after each test, the temperature of windings shall not exceed the values specified in the table of Sub-clause 19.6 and the appliance shall comply with the conditions specified in Sub-clause 19.11. In particular, live parts shall not be accessible to the standard test finger or the test pin, as specified in Sub-clause 8.1.

After the tests, basic insulation, supplementary insulation and reinforced insulation shall withstand an electric strength test as specified in Sub-clause 16.4. If a conductor on a printed circuit board opens, the appliance is considered to have withstood the particular test, provided all three of the following

- conditions are met:
- the material of the printed circuit board withstands the burning test of Sub-clause 20.1 of HD 195 S4,
 - any loosened conductor does not reduce the creepage distances or clearances between live parts and accessible metal parts below the values specified in Clause 29,
 - the appliance withstands the tests of Sub-clause B19.103 with the interrupted conductor bridged.

Unless it is necessary to replace components after any of the tests, the electric strength test need only be carried out after the final test on the electronic circuit.

In general, examination of the appliance and its circuit diagram will reveal the fault conditions which have to be simulated, so that testing can be limited to those cases which may be expected to give the most unfavourable result.

In certain cases, it may be preferable to simulate all fault conditions rather than to analyze the circuit diagram.

Examples of constructions of appliances incorporating electronic circuits are shown in Figure B1.

B19.102

The fault conditions 1) to 5) specified in Sub-clause B19.103 are not applied to circuits or parts of circuits where all three of the following conditions are met:

- the electronic circuit is supplied by an extra-low voltage transformer or through a limiting impedance, provided the circuit is a low-power circuit as described below,
- the requirements of Sub-clause 8.1 are met, even with one component of the limiting impedance short-circuited or open-circuited or with the basic insulation between the input winding and output winding of an extra-low voltage transformer bridged,
- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction in other parts of the appliance does not rely on the correct functioning of the electronic circuit.

A low-power circuit is determined as follows and further explained in Figure B2.

The appliance is operated at rated voltage or at the upper limit of the rated voltage range and a variable resistor, adjusted to its maximum resistance, is connected between the point to be investigated and the opposite pole of the supply source.

The resistance is then decreased until the power consumed by the resistor reaches a maximum. Any point nearest to the supply source at which the maximum power delivered to this resistor does not exceed 15 W after 5 s, is called a low-power point. The part of the circuit farther from the supply source is considered to be a low-power circuit.

The measurements are made only from one pole of the supply source, preferably the one that gives the fewest low-power points.

When determining the low-power points, it is recommended to start with points close to the supply source.

19.103

The following fault conditions are considered and, if necessary, applied one at a time, together with any consequential fault.

- 1) Short-circuit of creepage distances and clearances between live parts of different polarity, if these distances are less than the values specified in Clause B29, unless the relevant part is adequately encapsulated.

- 2) Short-circuit between live parts of different polarity across insulation which does not withstand the tests of Clause 16.
- 3) Open-circuit at the terminals of any component.
- 4) Short-circuit across resistors and capacitors, unless:
 - the resistor withstands the tests of Sub-clause 14.1 of HD 195 S4,
 - the capacitor withstands the tests of Sub-clause 14.2 of HD 195 S4, provided it is used in circuits where the peak voltage across its terminals does not exceed 354 V,
 - the capacitor complies with IEC Publication 384-14.
- 5) Short-circuit across any two terminals of electronic devices and of electronic units.
6. Short-circuit of each lower-power circuit by connecting the low-power point to the pole of the supply from which the measurements are made.

For the simulation of the fault conditions, the appliance is operated under the conditions specified in Clause 11, but at rated voltage or at the most unfavourable voltage within the rated voltage range.

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If any of the fault conditions have to be simulated, the duration of the test is:

- as specified in Sub-clause 11.7, but only for one operating cycle and only if the fault cannot be recognized by the user, for example, a change in temperature setting;
- as specified in Sub-clause 19.6, if the fault can be recognized by the user, for example, when the motor of a kitchen machine stops;
- until steady conditions are established, for circuits continuously connected to the supply mains, for example, stand-by circuits.

In each case, the test is considered to be ended if interruption of the current occurs.

Fault condition 5) is not applied in the case of discrete components, such as opto-couplers, provided with insulation withstanding the tests of Clauses 16 and 29.