

**SLOVENSKI  
STANDARD**

**SIST EN 61008-  
1:1996/A14:1999**

prva izdaja

april 1999

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Electrical accessories - Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCB's) - Part 1: General rules - Amendment A14

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ICS 29.120.50

Referenčna številka  
SIST EN 61008-1:1996/A14:1999(en)

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UDC 621.316.57:621.316.9:620.1  
ICS 29.120.50

Descriptors: Electrical household accessory, low-voltage equipment, residual current operated switching device, definition, characteristics, construction, tests

English version

**Electrical accessories**  
**Residual current operated circuit-breakers without integral**  
**overcurrent protection for household and similar uses (RCCB's)**  
**Part 1: General rules**

Petit appareillage électrique  
Interrupteurs automatiques à courant  
différentiel résiduel pour usages  
domestiques et analogues sans  
dispositif de protection contre les  
surintensités incorporé (ID)  
Partie 1: Règles générales

Elektrisches Installationsmaterial  
Fehlerstrom-/Differenzstrom-  
Schutzschalter ohne eingebauten  
Überstromschutz für Hausinstallationen  
und für ähnliche Anwendungen  
Teil 1: Allgemeine Anforderungen

This amendment A14 modifies the European Standard EN 61008-1:1994; it was approved by CENELEC on 1997-03-11. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 amendment 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

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

### Foreword

The texts of document 23E/245/FDIS, intended to be published in a new (second) edition of IEC 61008-1, and document 23E/251/FDIS, future amendment to that new edition, both prepared by SC 23E, Circuit-breakers and similar equipment for household use, of IEC TC 23, Electrical accessories, were submitted to the IEC-CENELEC parallel vote and were approved by CENELEC as amendment A14 to EN 61008-1:1994 on 1997-03-11.

The following dates were fixed:

- latest date by which the amendment has to be implemented  
at national level by publication of an identical  
national standard or by endorsement (dop) 1998-07-01
  - latest date by which the national standards conflicting  
with the amendment have to be withdrawn (dow) 2001-01-01
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## CONTENTS

*Add, under Annexes, the title of the following new annex:*

IE Follow-up testing programme for RCCBs.....XXX

### 1 Scope

*Add, before the existing NOTE 4, the following:*

RCCBs of the general type are resistant to unwanted tripping including the case where surge voltages (as a result of switching transients or induced by lightning) cause loading currents in the installation without occurrence of flashover.

RCCBs of the S type are considered to be sufficient proof against unwanted tripping even if the surge voltage causes a flashover and a follow-on current occurs.

NOTE 4 – Surge arresters installed downstream of the general type of RCCBs and connected in common mode may cause unwanted tripping.

*Replace:*

"NOTE 4" by "NOTE 5" and

"NOTE 5" by "NOTE 6".

### 2 Normative references

*Add the following new normative reference:*

IEC 60-2: 1994, *High-voltage test techniques – Part 2: Measuring Systems*

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**4.5 According to resistance to unwanted tripping due to voltage surges**

*Replace "Under consideration." by:*

- RCCBs with normal resistance to unwanted tripping (general type as in table 1);
- RCCBs with increased resistance to unwanted tripping (S type as in table 1).

**8.14 Resistance of RCCBs against unwanted tripping due to impulse voltages**

*Replace the title and text of this subclause by the following:*

**8.14 Resistance of RCCBs to unwanted tripping due to current surges caused by impulse voltages**

RCCBs shall adequately withstand the current surges to earth due to the loading of the capacitances of the installation. RCCBs with increased resistance to unwanted tripping (S type as in table 1) shall additionally withstand the current surges to earth due to flashover in the installation.

*Compliance is checked by the tests of 9.19.*

**Table 7 – List of type tests**

*Replace the 17th dashed text by:*

- Resistance against unwanted tripping due to current surges 9.19

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**9.19 Verification of resistance against unwanted tripping due to an impulse voltage**

*Replace the title and text of this subclause by the following:*

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**9.19 Verification of resistance against unwanted tripping due to current surges caused by impulse voltages**

**9.19.1 Current surge test for all RCCBs (0,5  $\mu$ s /100 kHz ring wave test)**

The RCCB is tested using a surge generator capable of delivering a damped oscillator current wave as shown in figure 19 a. An example of circuit diagram for the connection of the RCCB is shown in figure 19 b.

One pole of the RCCB chosen at random shall be submitted to 10 applications of the surge current. The polarity of the surge wave shall be inverted after every two applications. The interval between two consecutive applications shall be about 30 s.

The current impulse shall be measured by appropriate means and adjusted using an additional RCCB of the same type with the same  $I_n$  and the same  $I_{\Delta n}$ , to meet the following requirements:

- peak value: 200 A  $^{+10}_0$  %  
or 25 A  $^{+10}_0$  % for RCCBs with  $I_{\Delta n} \leq 10$  mA
- virtual front time: 0,5  $\mu$ s  $\pm$  30 %
- period of the following oscillatory wave: 10  $\mu$ s  $\pm$  20 %
- each successive peak: about 60 % of the preceding peak

During the tests, the RCCB shall not trip. After the ring wave test, the correct operation of the RCCB is verified by a test according to 9.9.2.3 at  $I_{\Delta n}$  only with the measurement of the tripping time.

NOTE – Test procedures and relevant test circuits for RCCBs with integral or incorporated overvoltage protection are under consideration.

#### 9.19.2 Verification of higher resistance against unwanted tripping (8/20 $\mu$ s surge current test, applicable to S-type RCCBs only)

The RCCB is tested using a current generator capable of delivering a damped surge current 8/20  $\mu$ s (IEC 60-2) as shown in figure 23. An example of circuit diagram for the connection of the RCCB is shown in figure 24.

One pole of the RCCB chosen at random shall be submitted to 10 applications of the surge current. The polarity of the surge current wave shall be inverted after every two applications. The interval between two consecutive applications shall be about 30 s.

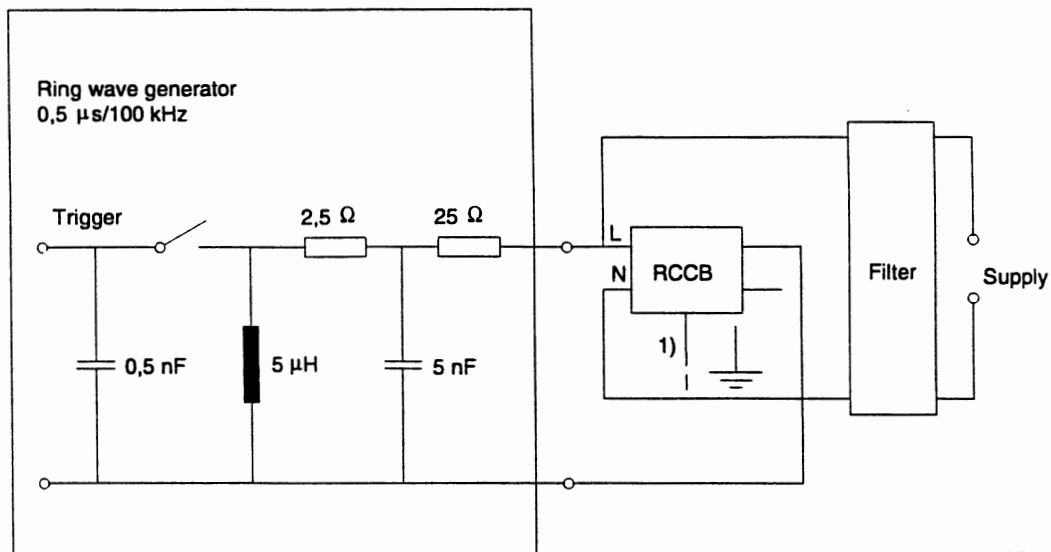
The current impulse shall be measured by appropriate means and adjusted using an additional RCCB of the same type with the same  $I_n$  and the same  $I_{\Delta n}$ , to meet the following requirements:

- peak value: 3 000 A  $^{+10}_0$  %
- virtual front time: 8  $\mu$ s  $\pm$  20 %
- virtual time to half value: 20  $\mu$ s  $\pm$  20 %
- peak of reverse current: less than 30 % of peak value

The current should be adjusted to the asymptotic current shape. For the tests on other samples of the same type with the same  $I_n$  and the same  $I_{\Delta n}$ , the reverse current, if any, should not exceed 30 % of the peak value.

During the tests, the RCCB shall not trip. After the surge current test, the correct operation of the RCCB is verified by a test according to 9.9.2.3 at  $I_{\Delta n}$  only with the measurement of the tripping time.

Replace figure 19 b by:



IEC 845a/96

1) If the RCCB has an earthing terminal, it shall be connected to the neutral terminal, if any, and if so marked on the RCCB or, failing that, to any phase terminal.

Figure 19b – Test circuit for the ring wave test at RCCBs

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Add figures 23 and 24 :

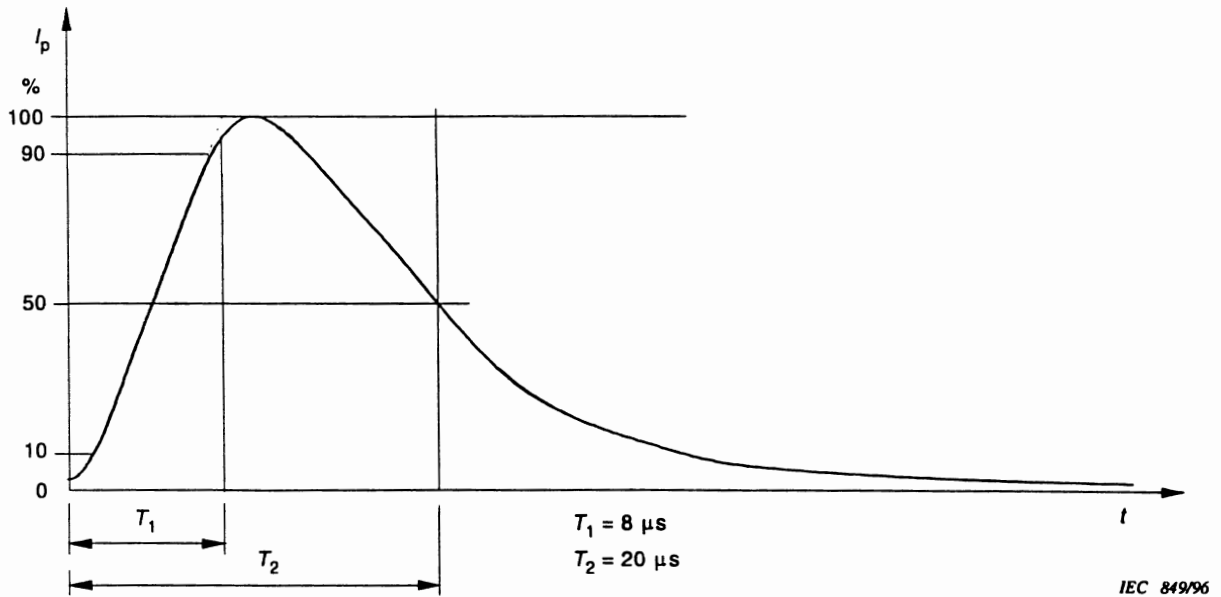
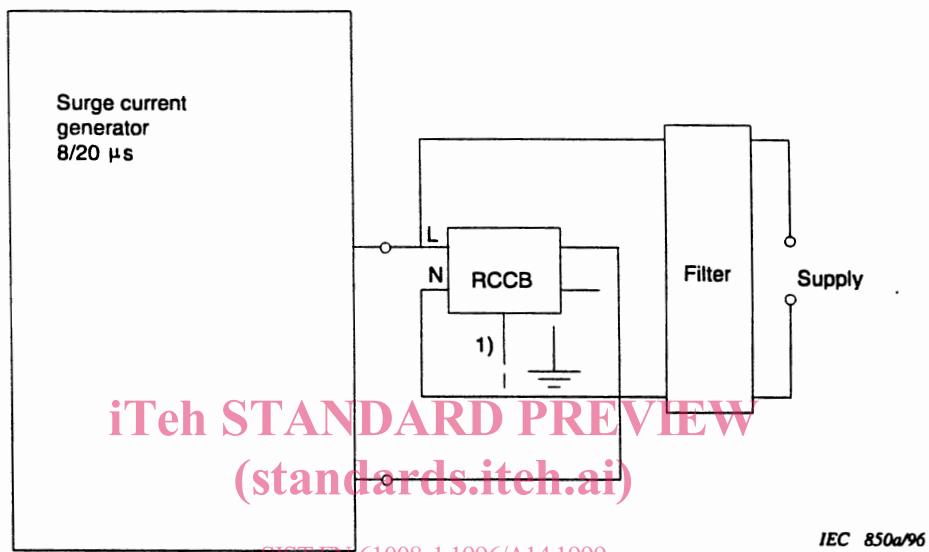


Figure 23 – Surge current impulse 8/20  $\mu s$



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1) If the RCCB has an earthing terminal, it should be connected to the neutral terminal, if any, and if so marked on the RCCB or, failing that, to any phase terminal.

Figure 24 – Test circuit for the surge current test at RCCBs