SLOVENSKI STANDARD

SIST EN 62020:2000

prva izdaja
april 2000

Električni pribor - Monitorji preostalega (diferenčnega) toka za gospodinjsko in podobno uporabo (IEC 62020:1998)

Electrical accessories - Residual current monitors for household and similar uses (RCMs)(IEC 62020:1998)

ICS 29.120.50

Referenčna številka
SIST EN 62020:2000(en)

EUROPEAN STANDARD

NORME EUROPÉENNE

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EN 62020

October 1998

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

English version

Electrical accessories Residual current monitors for household and similar uses (RCMs) (IEC 62020:1998)

Petit appareillage électrique
Contrôleurs d'isolement à courant différentiel résiduel (RCM) pour usages domestiques et analogues
(CEI 62020:1998)

Elektrisches Installationsmaterial
Differenzstrom-Überwachungsgeräte für Hausinstallationen und ähnliche Verwendungen (RCMs)
(IEC 62020:1998)

This European Standard was approved by CENELEC on 1998-10-01. 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

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

Ref. No. EN 62020:1998 E

Foreword

The text of document 23E/337/FDIS, future edition 1 of IEC 62020, prepared by SC 23E, Circuit-breakers and similar equipment for household use, of IEC TC 23, Electrical accessories, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62020 on 1998-10-01.

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) 1999-07-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2001-07-01

Annexes designated "normative" are part of the body of the standard.
In this standard, annex ZA is normative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62020:1998 was approved by CENELEC as a European Standard without any modification.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60038 (mod)	1983	IEC Standard voltages	HD 472 S1[1)]	1989
IEC 60050(101)	1998	International Electrotechnical Vocabulary (IEV) Part 101: Mathematics	-	-
IEC 60050(151)	1978	Chapter 151: Electrical and magnetic devices	-	-
IEC 60050(441)	1984	Chapter 441: Switchgear, controlgear and fuses	-	-
IEC 60051	series	Direct acting indicating analogue electrical measuring instruments and their accessories	EN 60051	series
IEC 60068-2-28	1980	Environmental testing Part 2: Tests - Guidance for damp heat tests	HD 323.2.28 S1	1988
IEC 60068-2-30 + A1	1980 1985	Part 2: Tests - Test Db and guidance: Damp heat, cyclic (12 + 12 hour cycle)	HD 323.2.30 S3	1988
IEC 60364-4-443	1995	Electrical installations of buildings Part 4: Protection for safety Chapter 44: Protection against overvoltages Section 443: Protection against overvoltages of atmospheric origin or due to switching	-	-
IEC 60364-5-53	1994	Part 5: Selection and erection of electrical equipment -- Chapter 53: Switchgear and controlgear	-	-
IEC 60417-2	1998	Graphical symbols for use on equipment Part 2: Symbol originals	-	-

1) The title of HD 472 S1 is: *Nominal voltages for low voltage public electricity supply systems.*

Publication	Year	Title	EN/HD	Year
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991 1993
IEC 60664-1 (mod)	1992	Insulation coordination for equipment within low-voltage systems Part 1: Principles, requirements and tests	HD 625.1 S1 + corr. November	1996 1996
IEC 60695-2-1/0	1994	Fire hazard testing Part 2: Test methods Section 1/sheet 0: Glow-wire test methods General	EN 60695-2-1/0	1996
IEC 60755	1983	General requirements for residual current operated protective devices	-	-
IEC 61008-1	1996[2)]	Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCB's) Part 1: General rules	-	-
IEC 61543	1995	Residual current-operated protective devices (RCDs) for household and similar use Electromagnetic compatibility	EN 61543	1995
IEC 61557-8	1997	Electrical safety in low voltage distribution systems up to 1 kV a.c. and 1,5 kV d.c. Equipment for testing, measuring or monitoring of protective measures Part 8: Insulation monitoring devices for IT systems	EN 61557-8	1997
ISO/IEC Guide 2	1991	General terms and their definitions concerning standardization and related activities	EN 45020[3)]	1993

2) The European Standard EN 61008-1:1994 (IEC 61008-1:1990 + A1:1992, mod.) + corrigendum December 1997 + A2:1995 (IEC/A2:1995) + A11:1995 + A12:1998 + corrigendum April 1998 + A13:1998 + A14:1998 applies.

3) EN 45020 is superseded by EN 45020:1998 which is based on ISO/IEC Guide 2:1996.

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
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Première édition
First edition

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Petit appareillage électrique –

Contrôleurs d'isolement à courant différentiel résiduel (RCM) pour usages domestiques et analogues

Electrical accessories –

Residual current monitors for household and similar uses (RCMs)

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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Pour prix, voir catalogue en vigueur
For price, see current catalogue

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL ACCESSORIES – RESIDUAL CURRENT MONITORS FOR HOUSEHOLD AND SIMILAR USES (RCMs)

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62020 has been prepared by subcommittee 23E: Circuit-breakers and similar equipment for household use, of IEC technical committee 23: Electrical accessories.

The text of this standard is based on the following documents:

FDIS	Report on voting
23E/337/FDIS	23E/353/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

In this standard, the following print types are used:

– Requirements proper: in roman type.
– *Test specifications: in italic type.*
– NOTES: in smaller roman type.

INTRODUCTION

The purpose of a residual current monitor (hereinafter referred to as RCM) is to monitor an electrical installation or circuit for the presence of an unbalanced earth fault current and to indicate, by means of an alarm, the presence of such a residual current when it exceeds a predetermined level.

An RCM may be used in conjunction with protective devices (see IEC 60364-4).

Installation and application rules are given in IEC 60364.

ELECTRICAL ACCESSORIES – RESIDUAL CURRENT MONITORS FOR HOUSEHOLD AND SIMILAR USES (RCMs)

1 Scope

This International Standard applies to residual current monitors having rated voltages not exceeding 440 V a.c. and rated currents not exceeding 125 A for household and similar purposes.

These devices are intended to monitor the residual current of the installation and to give a warning if the residual current between a live part and an exposed conductive part or earth exceeds a predetermined level.

RCMs detect residual alternating currents and residual pulsating direct currents whether suddenly applied or slowly rising (see 8.16).

This standard applies to monitors performing simultaneously the functions of detection of the residual current, of comparison of the value of this current with the residual operating current of the device and of providing the prescribed warning signal(s) when the residual current exceeds this value.

RCMs having internal batteries are not covered by this standard.

The requirements of this standard apply for normal environmental conditions (see 7.1). Additional requirements may be necessary for RCMs used in locations having severe environmental conditions.

This standard does not cover Insulation Monitoring Devices (IMDs) which are covered by the scope of IEC 61557-8.

NOTE – An RCM is distinguished from an IMD in that it is passive in its monitoring function and only responds to an unbalanced fault current in the installation being monitored. An IMD is active in its monitoring and measuring functions in that it can measure the balanced and unbalanced insulation resistance or impedance in the installation (see IEC 61557-8).

2 Normative references

The following normative documents contain requirements which, through reference in this text, form an integral part of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and product committees using this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60038:1983, *IEC standard voltages*

IEC 60050-101:1998, *International Electrotechnical Vocabulary (IEV) – Part 101: Mathematics*

IEC 60050(151):1978, *International Electrotechnical Vocabulary (IEV) – Chapter 151: Electrical and magnetic devices*

IEC 60050(441):1984, *International Electrotechnical Vocabulary (IEV) – Chapter 441: Switchgear, controlgear and fuses*

IEC 60051(all parts), *Direct acting indicating analogue electrical measuring instruments and their accessories*

IEC 60068-2-28:1990, *Environmental testing – Part 2: Tests – Guidance for damp heat tests*

IEC 60068-2-30:1980, *Environmental testing – Part 2: Tests – Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)*

IEC 60364-4-443:1995, *Electrical installations of buildings – Part 4: Protection for safety – Chapter 44: Protection against overvoltages – Section 443: Protection against overvoltages of atmospheric origin or due to switching*

IEC 60364-5-53:1994, *Electrical installations of buildings – Part 5: Selection and erection of electrical equipment – Chapter 53: Switchgear and controlgear*

IEC 60417-2:1998, *Graphical symbols for use on equipment – Part 2: Symbol originals*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*

IEC 60664-1:1992, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60695-2-1/0:1994, *Fire hazard testing – Part 2: Test methods – Section 1/sheet 0: Glow-wire test methods – General*

IEC 60755:1983, *General requirements for residual current operated protective devices*

IEC 61008-1:1996, *Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) – Part 1: General rules*

IEC 61543:1995, *Residual current-operated protective devices (RCDs) for household and similar use – Electromagnetic compatibility*

IEC 61557-8:1997, *Electrical safety in low-voltage distribution systems up to 1 000 V a.c. and 1 500 V d.c. – Equipment for testing, measuring or monitoring of protective measures – Part 8: Insulation monitoring devices for IT systems*

ISO/IEC Guide 2:1991, *General terms and their definitions concerning standardization and related activities*

3 Definitions

For the purpose of this standard, the following definitions apply.

Where the terms "voltage" or "current" are used, they imply r.m.s. values, unless otherwise specified.

3.1 Definitions relating to currents flowing from live parts to earth

3.1.1
earth fault current
current flowing to earth due to an insulation fault

3.1.2
earth leakage current
current flowing from the live parts of the installation to earth in the absence of an insulation fault

3.1.3
pulsating direct current
current of pulsating wave form (IEV 101-14-31) which assumes, in each period of the rated power frequency, the value 0 or a value not exceeding 0,006 A d.c. during one single interval of time, expressed in angular measure, of at least 150°

3.1.4
current delay angle α
time, expressed in angular measure, by which the starting instant of current conduction is delayed by phase control

3.2 Definitions relating to the energization of an RCM

3.2.1
energizing quantity
electrical excitation quantity which alone, or in combination with other such quantities, shall be applied to a RCM to enable it to accomplish its function under specified conditions

3.2.2
energizing input-quantity
energizing quantity by which the RCM is activated when it is applied under specified conditions

These conditions may involve, for example, the energizing of certain auxiliary elements.

3.2.3
residual current (I_Δ)
vector sum of the instantaneous values of the current flowing in the main circuit of the RCM (expressed as r.m.s. value)

3.2.4
residual operating current
value of residual current which causes the RCM to operate under specified conditions