IEC 62640

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Residual current devices with or without overcurrent protection for socket-outlets for household and similar uses

Dispositifs à courant différentiel résiduel avec ou sans protection contre les surintensités pour les socles de prises de courant destinés à des installations domestiques et analogues

IEC 62640:2011

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

RESIDUAL CURRENT DEVICES WITH OR WITHOUT OVERCURRENT PROTECTION FOR SOCKET-OUTLETS FOR HOUSEHOLD AND SIMILAR USES

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 62640 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/706/FDIS	23E/713/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.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

In this standard, the following print types are used:

– Requirements proper: in roman type.

– *Test specifications: in italic type.*

– Explanatory matter: in smaller roman type.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

IEC series 61008 and IEC 61009 are applicable to residual current devices having one to four poles used in any part of an electrical installation. These devices may be installed either at the origin of a whole installation or upstream of one or several circuits of a fixed installation or upstream of a circuit powering one or more socket-outlets, or be integrated in the same enclosure as a socket-outlet.

Such residual current devices are able to provide fault protection (protection against indirect contact), additional protection (protection against direct contact) if the rated residual current is equal to or less than 30 mA and protection against fire hazard due to a persistent earth leakage current without the operation of the overcurrent protection. Equipment meeting the requirements of the series IEC 61008 or IEC 61009 ensure isolation, withstand high levels of electromagnetic disturbances for household and similar applications and allow safe use of an electrical installation.

Although the series IEC 61008 and IEC 61009 may be applicable to “residual current devices integrated in socket-outlets” it is acknowledged that due to the specific use and location of a socket-outlet, at the boundary of the fixed installation and immediately upstream of electrical equipment powered through a plug inserted into the socket-outlet, these devices require different features.

The residual current device at socket-outlet level is normally intended to be installed by skilled or instructed persons. It can be operated several times per day. The isolation function is not necessary since pulling out the plug from the socket-outlet is recognized as providing effective isolation. The absence of permanently connected long conductors downstream of the RCD, together with a limited number of powered appliances, justifies reduced EMC levels. Residual current devices covered by this standard are intended for additional protection in case of direct contact only. These particular features having been considered, it was recognized that a dedicated standard for socket-outlet residual current devices (SRCDs) was necessary.

RESIDUAL CURRENT DEVICES WITH OR WITHOUT OVERCURRENT PROTECTION FOR SOCKET-OUTLETS FOR HOUSEHOLD AND SIMILAR USES

1 Scope

This International Standard applies to residual current-operated devices (RCD) incorporated in, or specifically intended for use with two pole socket-outlets, with or without earthing contact for household and similar uses (SRCD: socket-outlet residual current devices). SRCDs, according to this standard, are intended to be used in single phase systems such as phase to neutral or phase to phase or phase to earthed middle conductor.

SRCDs are only intended to provide additional protection downstream of the SRCD. SRCDs are intended for use in circuits where the fault protection (indirect contact protection) is already assured upstream of the SRCD.

NOTE 1 For example, fault protection (indirect contact protection) can be covered as follows:

– in TT systems, by upstream RCBOs or RCCBs according to IEC 61008-1 and IEC 61009-1;

– in a TN system, an overcurrent protective device can be used upstream.

NOTE 2 In the United States, there is no requirement for providing indirect contact protection upstream of an SRCD.

NOTE 3 In Switzerland these devices are not allowed for protective measures according to the national installation rules.

SRCDs are neither intended to provide an isolation function nor intended to be used in IT systems.

NOTE 4 For SRCDs intended to provide isolation or fault protection, or to be used in IT systems, IEC 61008-1 or IEC 61009-1 should be used, as applicable, in conjunction with IEC 60884-1.

NOTE 5 Requirements and testing for SRCDs intended to be used in IT systems are under consideration.

SRCDs are not used in distribution boards. They are not intended for the protection of a complete distribution circuit or a complete final circuit. These products are intended to be installed

– in boxes in compliance with IEC 60670-1,
– or in cable trunking systems in compliance with the IEC 61084 series,
– or in power track systems in compliance with the IEC 61534 series,
– or in boxes according to one of the above standards adjacent to socket-outlet boxes.

They are not intended to be used in enclosures or distribution boards in conformity with IEC 60670-24, IEC 61439-1 or IEC 60439-3.

RCDs for household and similar use not covered by the scope of this standard are covered by IEC 61008-1 or IEC 61009-1. SRCDs energized from batteries, or a circuit other than the one powering the loads, are not covered by this standard.

The residual current device incorporates the functions of detection of the residual current, of comparison of the value of this current with the residual operating value and of opening the protected circuit when the residual current exceeds this value.

The maximum rated residual operating current is 30 mA.

The maximum rated current is 16 A for devices with a rated voltage not exceeding 250 V a.c. or 20 A for devices with a rated voltage not exceeding 130 V a.c.

NOTE 6 In Australia and New Zealand, the maximum rated current for devices with a rated voltage not exceeding 250 V a.c. is 20 A.

NOTE 7 In Korea, the maximum rated current for devices with a rated voltage not exceeding 250 V a.c. is 32 A.

This International Standard applies to SRCDs incorporating overload or overcurrent protection.

This standard also applies to a connection unit incorporating a residual current device intended to protect only one piece of fixed electrical equipment immediately adjacent to the connection unit (e.g. hand dryer, water cooler, etc).

NOTE 8 SRCDs are designed to be operated by uninstructed persons and not to require maintenance.

The requirements of this standard apply for normal conditions of temperature and environment. Additional requirements may be necessary for devices used in locations having more severe environmental conditions.

The socket-outlet part of an SRCD is covered by IEC 60884-1 or the national requirements of the country where the SRCD is placed on the market.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60065:2001, *Audio, video and similar electronic apparatus – Safety requirements*
Amendment 1 (2005)
Amendment 2 (2010)

IEC 60068-2-30:2005, *Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12 h +12 h cycle)*

IEC 60068-3-4:2001, *Environmental testing – Part 3-4: Supporting documentation and guidance – Damp heat tests*

IEC 60384-14, *Fixed capacitors for use in electronic equipment – Part 14: Sectional specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains*

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

IEC 60664-3:2003, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

IEC 60670-1:2002, *Boxes and enclosures for electrical accessories for household and similar fixed electrical installations – Part 1: General requirements*

IEC 60695-2-10:2000, *Fire hazard testing – Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure*

IEC 60695-2-11:2000, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products*