IEC 60755

Edition 1.0 2017-10

INTERNATIONAL STANDARD

BASIC SAFETY PUBLICATION

General safety requirements for residual current operated protective devices

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue
The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,…). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org
The world's leading online dictionary of electronic and electrical terms containing 20 000 terms and definitions in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary
65 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

IEC 60755

Edition 1.0 2017-10

INTERNATIONAL STANDARD

BASIC SAFETY PUBLICATION

General safety requirements for residual current operated protective devices

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ICS 29.120.50

ISBN 978-2-8322-4935-2

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

GENERAL SAFETY REQUIREMENTS FOR RESIDUAL CURRENT OPERATED PROTECTIVE DEVICES

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.
2) The formal decisions or agreements of 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 IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60755 has been prepared by subcommittee 23E: Circuit breakers and similar equipment for household use, of IEC technical committee 23: Electrical accessories.

This first edition cancels and replaces IEC TR 60755 published in 2008 and constitutes a technical revision.

This edition includes the following significant technical changes with respect to IEC TR 60755:

a) restructuration of the document, as a Group Safety Publication, in compliance with Guide 104;
b) introduction of classification for type F RCDs;
c) introduction of Clause 9 for tests of RCDs (operating characteristics, electrical endurance, behaviour in short-circuit conditions, trip-free mechanism, test device, surges, reliability, EMC).

The text of this International Standard is based on the following documents:

FDIS	Report on voting
23E/1035/FDIS	23E/1036/RVD

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

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

It has the status of a group safety publication in accordance with IEC Guide 104.

The following differing practices of a less permanent nature exist in the countries indicated below:

– 5.3.3: 0,015 A, 0,05 A and 0,2 A are also considered standard values (Korea and Japan);

– 5.3.12: 1 000 A, 2 000 A, 2 500 A, 7 500 A and 9 000 A are also considered preferred values (Korea and Japan);

– 8.1.1.1: multiple settings are not allowed (Australia, Germany, Denmark, the UK and Switzerland);

– 8.1.2: the colours red and green are not used for contact position indication (US).

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

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

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

IEC 60755 has been prepared as a Group Safety Publication by subcommittee 23E in accordance with its Group Safety Function for residual current devices. It is intended for use by technical committees in the preparation of standards for residual current unit, function or devices when it is intended to provide protective measures according to IEC 60364 (all parts).

There are two basic conditions of protection against the risk of electric shock: fault protection (indirect contact) and basic protection (direct contact).

Fault protection implies that the device is used to prevent dangerous voltages persisting on accessible installation metalworks, which are earthed but become live under earth fault conditions.

Under such conditions, the risk arises not from the user making direct contact with a live conductive part, but making contact with earthed metalwork, which itself is in contact with a live conductive part.

The primary or basic function of residual current devices is to provide fault protection. However, where devices have an adequate sensitivity (i.e. units having operating residual currents not exceeding 30 mA), they provide the additional benefit of people (and livestock) protection to a user making direct contact with a live conductive part where other methods of protection failed.

The operating characteristics given in this document are therefore based on requirements, which themselves are based on the information contained in IEC 60479-1 and IEC 60479-2.

Residual current devices having rated residual operating currents not exceeding 300 mA also provide protection against the risk of fire resulting from earth fault currents which can exist for lengthy periods without operating the overcurrent protective device.

GENERAL SAFETY REQUIREMENTS FOR RESIDUAL CURRENT OPERATED PROTECTIVE DEVICES

1 Scope

This document provides general minimum requirements, recommendations and information for the drafting of standards on residual current operated protective devices (hereinafter referred to as residual current devices, "RCDs"). It applies to any device providing residual current protection intended primarily for protection against electric shock hazard.

NOTE 1 Residual current monitors (RCMs) according to IEC 62020, whose purpose is to monitor an electrical installation and not to provide protection, are not covered by this document and cannot be considered similar or equivalent to RCDs.

NOTE 2 RCDs for DC supply system are under consideration.

NOTE 3 For the relationship between this document and the RCD product standards, see Annex D.

This document is primarily intended to be used as a reference for drafting product safety standard for devices identified as "RCD" or "residual current device" either for general use or incorporated or embedded in equipment.

This document is also intended to be used as a reference for defining the design requirements and the applicable testing procedure for an RCD incorporated or embedded in an equipment.

This basic safety publication is primarily intended for use by technical Committees in the preparation of standards in accordance with the principles laid down in IEC Guide 104 and ISO/IEC Guide 51. It is not intended for use by manufacturers or certification bodies.

One of the responsibilities of a technical committee is, wherever applicable, to make use of basic safety publications in the preparation of its publications. The requirements, test methods or test conditions of this basic safety publication will not apply unless specifically referred to or included in the relevant publications.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60060-1, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60060-2, *High-voltage test techniques – Part 2: Measuring systems*

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

IEC 60364 (all parts), *Low-voltage electrical installations*

IEC 60364-4-41, *Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock*