# IEC 61540

Edition 2.0 2023-07

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

## Portable residual current devices (PRCDs) without integral overcurrent protection for household and similar use

## Dispositifs différentiels portables à courant résiduel (PCDM) sans protection incorporée contre les surintensités pour usages domestiques et analogues

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 29.120.01

ISBN 978-2-8322-7185-8

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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# PORTABLE RESIDUAL CURRENT DEVICES (PRCDS) WITHOUT INTEGRAL OVERCURRENT PROTECTION FOR HOUSEHOLD AND SIMILAR USE

## FOREWORD

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IEC 61540 has been prepared by subcommittee 23E: Circuit-breakers and similar equipment for household use, of IEC technical committee 23: Electrical accessories. It is an International Standard.

This second edition cancels and replaces the first edition published in 1997 and its Amendment 1:1998. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) The content of the document was revised and aligned with IEC 60755 (group safety publication for residual current devices) and standard library "blocks and modules".
b) Introduction of classification "4.3 According to behaviour after opening automatically in case of failure of the line voltage".

c) New requirements and tests were added to cover the introduced protection function against shock hazard:
   – Verification of correct performance in the case of missing protective conductor.
   – Verification of correct performance in the case of hazardous live protective conductor.
   – Verification of correct performance in the case of loss of protective conductor.
   – Verification of behaviour in the case of external fault current in the protective conductor.
d) Clearances/creepage distances revised and modified in alignment with IEC 62752 (IC-CPD).
e) Revision of values for minimum operating voltages.
f) Introduction of requirements and test for ambient air temperature between −25 °C and +40 °C.
g) Test of dielectric properties revised and aligned with standard library "blocks and modules".
h) Relevant clauses aligned with IEC 62752 (IC-CPD); IC-CPD is a product standard describing similar product/features.
i) All annexes revised and adapted to content of main document.

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

| Draft | Report on voting |
|---|---|
| 23E/1320/FDIS | 23E/1323/RVD |

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

In this document, the following print types are used:

- requirements: in roman type;
- *conformity statements: in italic type*;
- notes: in small roman type.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under 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.

# INTRODUCTION

A portable residual current device (hereafter referred to as PRCD), consists of a plug, a residual current device (RCD) and one or more socket-outlets or a provision for connection.

This document is harmonized as far as practicable with the rules and requirements of IEC 60755 (group safety publication for RCD) and the standard library "blocks and modules", as defined in IEC 62873-1.

# PORTABLE RESIDUAL CURRENT DEVICES (PRCDS) WITHOUT INTEGRAL OVERCURRENT PROTECTION FOR HOUSEHOLD AND SIMILAR USE

## 1 Scope

This document applies to portable residual current devices (PRCDs) for household and similar uses, consisting of a plug, a residual current device (RCD) and one or more socket-outlets or a provision for connection. They do not incorporate overcurrent protection. They are intended for single- and two-phase systems for rated currents not exceeding 16 A for rated voltages not exceeding 250 V AC, or for rated current not exceeding 32 A for rated voltages not exceeding 130 V AC to earth. They are intended to provide protection against shock hazard in case of direct contact, in addition to the protection provided by the fixed installations for the circuit downstream.

PRCDs have a rated residual operating current not exceeding 0,03 A.

The plug and socket-outlet parts of a PRCD are covered by the national standard of the country where the PRCD is placed on the market. If no national requirements exist, IEC 60884-1 is used.

This document applies to portable devices performing simultaneously the functions of detection of the residual current, of comparison of the value of this current with the residual operating value and of opening of the protected circuit when the residual current exceeds this value.

PRCDs providing an additional function of detecting faults on the supply side with a defined behaviour in case of supply failures or miswiring (PRCD-S) are also covered by this document.

PRCDs are not intended to be used as parts of fixed installations. Their connecting means can be plugs, socket-outlets, terminals or cords.

NOTE 1 The requirements for PRCDs are in compliance with the general requirements of IEC 60755. PRCDs are essentially intended to be operated by ordinary persons and designed not to require maintenance.

NOTE 2 An integral fuse is used, if necessary, for the relevant plug and socket-outlet system.

The switching contacts of the PRCDs are not intended to provide isolation, as isolation can be ensured by disconnecting the plug.

The requirements of this document apply for environmental conditions as defined in 7.1. Additional requirements can be necessary for PRCDs used in locations having more severe environmental conditions.

PRCDs including batteries are not covered by this document.

This document does not contain additional requirements for PRCDs without earthing contacts for which specific requirements can apply. This document can, however, be used as a guide for such devices which are intended to be used with Class II appliances only.