IEC 62955

Edition 1.0 2018-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Residual direct current detecting device (RDC-DD) to be used for mode 3 charging of electric vehicles

Dispositif de détection à courant différentiel résiduel continu (DD-CDC) à utiliser pour la charge en mode 3 des véhicules électriques

IEC 62955:2018-03(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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RESIDUAL DIRECT CURRENT DETECTING DEVICE (RDC-DD) TO BE USED FOR MODE 3 CHARGING OF ELECTRIC VEHICLES

FOREWORD

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International Standard IEC 62955 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 International Standard is based on the following documents:

FDIS	Report on voting
23E/1042/FDIS	23E/1047/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.

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

Specific rules in several countries are introduced in:

– Clause 5.3.8.1, Table 4 and 8.1.2 Note 1,
– Annex I Note 1,
– Annex J Note 1,
– Annex J Note 1 and in Clause 8.3.2.

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 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- withdrawn,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.

INTRODUCTION

According to IEC 60364-7-722, each connecting point is protected by its own RCD of at least type A, having a rated residual operating current not exceeding 30 mA.

Protective measures against DC fault currents need to be taken. The appropriate measures are:

– RCD type B, or

– RCD type A and appropriate equipment that ensures the switching of the supply in case of a DC fault current above 6 mA.

It is the purpose of this document to specify this type of detecting equipment to ensure that the proper functionality of RCDs type A or type F is not impaired by DC residual currents above 6 mA.

RESIDUAL DIRECT CURRENT DETECTING DEVICE (RDC-DD) TO BE USED FOR MODE 3 CHARGING OF ELECTRIC VEHICLES

1 Scope

This International Standard applies to residual direct current detecting devices (RDC-DD) for permanently connected AC electric vehicle charging stations (mode 3 charging of electric vehicles, according to IEC 61851-1 and IEC 60364-7-722), hereafter referred to as RDC-MD (residual direct current monitoring device) or RDC-PD (residual direct current protective device), for rated voltages not exceeding 440 V AC with rated frequencies of 50 Hz, 60 Hz or 50/60 Hz and rated currents not exceeding 125 A.

NOTE 1 This document can also be used as guidance for devices for voltages up to and including 690 V AC 50 Hz, 60 Hz or 50/60 Hz, at a rated current not exceeding 250 A.

RDC-DDs are intended to remove or initiate removal of the supply to the EV in cases where a smooth residual direct current equal to or above 6 mA is detected.

NOTE 2 The value of 6 mA for smooth residual direct current was chosen to prevent impairing the correct operation of an upstream type A or type F RCD.

This document covers two different classes of residual direct current detecting device (RDC-DD) to be used for mode 3 charging of electric vehicles (see classification in 4.1):

– RDC-MD (monitoring devices), and

– RDC-PD (protective devices).

This document applies to devices performing simultaneously the functions of detection of the residual direct current, of comparison of the value of this current with the residual operating value, and initiating the opening of the circuit when the residual direct current exceeds 6 mA.

RDC-PDs according to this document are suitable for isolation.

RDC-DDs are intended to be used for single-phase or multi-phase circuits in TN-, TT- and IT-systems.

RDC-DDs are intended to be used within the fixed installation.

RDC-DDs are intended to be used in AC circuits only. RDC-DDs according to this document are not intended for bilateral power flow between electric vehicle and fixed installation.

For RDC-DDs with integrated AC, pulsating DC and 6 mA DC detection, evaluation and mechanical switching in one unit, Annex O applies.

For RDC-MD consisting of a RDC-M-unit with a mechanical interface to a separate protective device (circuit breaker or RCD), Annex M applies.

For RDC-MD consisting of a RDC-M-module with separated residual current detection and evaluation with an electrical interface to a switching device (e.g. contactor) or a protective device (circuit breaker or RCD), Annex N applies.