

DMMS IEC 61009-1:2010+AMD1:2012+AMD2:2013 Ed.3.2 -Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - Part 1: General rules

Scope

This International Standard applies to residual current operated circuit-breakers with integral overcurrent protection functionally independent of, or functionally dependent on, line voltage for household and similar uses (hereafter referred to as RCBOs), for rated voltages not exceeding 440 V a.c. with rated frequencies of 50 Hz, 60 Hz or 50/60 Hz and rated currents not exceeding 125 A and rated short-circuit capacities not exceeding 25 000 A for operation at 50 Hz or 60 Hz.

These devices are intended to protect people against indirect contact, the exposed conductive parts of the installation being connected to an appropriate earth electrode and to protect against overcurrents the wiring installations of buildings and similar applications. They may be used to provide protection against fire hazards due to a persistent earth fault current, without the operation of the overcurrent protective device. RCBOs having a rated residual operating current not exceeding 30 mA are also used as a means for additional protection in the case of failure of the protective means against electric shock. This standard applies to devices performing simultaneously the function 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, and also of performing the function of making, carrying and breaking overcurrents under specified conditions. NOTE 1 The content of the present standard related to operation under residual current conditions is based on IEC 61008-1. The content of the present standard related to protection against overcurrents is based on IEC 60898-1. NOTE 2 RCBOs are essentially intended to be operated by uninstructed persons and designed not to require maintenance. They may be submitted for certification purposes. NOTE 3 Installation and application rules of RCBOs are given in the IEC 60364 series. They are intended for use in an environment with pollution degree 2. NOTE 4 For more severe overvoltage conditions, circuit-breakers

complying with other standards (e.g. IEC 60947-2) should be used. NOTE 5 For environments with higher pollution degrees, enclosures giving the appropriate degree of protection should be used. RCBOs of the general type are resistant to unwanted tripping, including the case where surge voltages (as a result of switching transients or induced by lightning) cause loading currents in the installation without occurrence of flashover. RCBOs of type S are considered to be sufficiently proof against unwanted tripping even if the surge voltage causes a flashover and a follow-on current occurs. NOTE 6 Surge arresters installed downstream of the general type of RCBOs and connected in common mode may cause unwanted tripping. RCBOs are suitable for isolation. RCBOs complying with this standard, with the exception of those with an uninterrupted neutral, are suitable for use in IT systems. Special precautions (e.g. lightning arresters) may be necessary when excessive overvoltages are likely to occur on the supply side (for example in the case of supply through overhead lines) (see IEC 60364-4-44). NOTE 7 For RCBOs having a degree of protection higher than IP20 special constructions may be required. This standard also applies to RCBOs obtained by the assembly of an adaptable residual current device with a circuit-breaker. The mechanical assembly shall be effected in the factory by the manufacturer, or on site, in which case the requirements of Annex G shall apply. It also applies to RCBOs having more than one rated current, provided that the means for changing from one discrete rating to another is not accessible in normal service and that the rating cannot be changed without the use of a tool. Supplementary requirements may be necessary for RCBOs of the plug-in type. Particular requirements are necessary for RCBOs incorporated in or intended only for association with plugs and socket-outlets or with appliance couplers for household and similar general purposes and if intended to be used at frequencies other than 50 Hz or 60 Hz. NOTE 8 For the time being, for RCBOs incorporated in, or intended only for plugs and socket-outlets, the requirements of this standard in conjunction with the requirements of IEC 60884-1 may be used, as far as applicable. NOTE 9 In DK, plugs and socket-outlets shall be in accordance with the requirements of the heavy current regulations section 107. NOTE 10 In the UK, the plug part associated with an RCBO shall comply with BS 1363-1 and the socket-outlet(s) associated

with an RCBO shall comply with BS 1363-2. In the UK, the plug part and the socket-outlet(s) associated with an RCBO need not comply with any IEC 60884-1 requirements. This standard does not apply to: – RCBOs intended to protect motors; – RCBOs the current setting of which is adjustable by means accessible to the user in normal service. The requirements of this standard apply for normal environmental conditions (see 7.1). Additional requirements may be necessary for RCBOs used in locations having severe environmental conditions. RCBOs including batteries are not covered by this standard. A guide for the coordination of RCBOs with fuses is given in Annex F.