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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 16917.1-2014

Replacing GB 16917.1-2003

**Residual current operated circuit-breakers with integral
overcurrent protection for household and similar uses (RCBOs)
-- Part 1: General rules**

家用和类似用途的带过电流保护的剩余电流动作断路器(RCBO) 第1部分: 一般规则

(English Translation)

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Foreword

All technical content in this section is mandatory.

GB 16917 "household and similar uses overcurrent protection for residual current operated circuit breaker (RCBO)" is divided into three parts.

--- Part 1. General rules;

--- Part 21. General rules for the operation of the functions independent of line voltage RCBO the applicability;

--- Part 22. General rules for the operation of the function and line voltage RCBO applicability.

This section GB Part of 116,917.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This Part replaces GB 16917.1-2003 "household and similar uses overcurrent protection for residual current operated circuit breaker (RCBO) Part 1. General rules. " this section compared with GB 16917.1-2003, the main changes are as follows.

--- Chapter 1 Scope, AC rated frequency is 50Hz or 60Hz expanded to 50Hz, 60Hz or 50/60Hz, that can apply to increase the frequency range of 60Hz and 50Hz, while increasing the value of the standard frequency standard frequency 5.3.5 of 50/60Hz.

--- Increased 3.10 definition of insulation coordination.

--- Revised Table 2, Table 3, the A-type RCBO breaking time and non-driving time limits

clearer. When Ideltat clear characteristic test with a load in Table 2, So Ideltat In equal to B, C or D (where applicable) overcurrent instantaneous tripping range limit value.

--- D-type RCBO overcurrent tripping range changed to $10I_n \sim 20I_n$.

--- Increasing the value of the standard 5.3.10 rated impulse withstand voltage (U_{imp}) of.

--- In Chapter 6, rated frequency flag amended as follows. "nominal frequency; if RCBO for a plurality of frequencies (such as 50/60Hz), shall be marked accordingly. "; Increases may be marked with the symbol for Isolated for D-type RCBO, if the instantaneous tripping current range above $20I_n$.

An increase request flag its maximum instantaneous tripping current.

--- 8.1.1, for the setting mode RCBO with multi-level setting value put forward specific requirements.

--- In 8.1.2, should be provided to increase the RCBO in the open position to meet the isolation required isolation distance requirements, and provide one or two indicating means to indicate the main contact means.

--- Modified 8.1.3, 9.7.7 and 9.20 as well as in relation to insulation coordination in Appendix B. Increased requirements and verification of isolation,

Table 7. rated working voltage of 230/400V, 230V and clearances contacts 400V disconnect between the RCBO

Increases to the 3mm 4mm; 9.7.7 Verify increase impulse withstand voltage (across clearances and across solid insulation) and disconnect Leakage current between the contacts.

--- Table 10 "Time - Current Operating Characteristic", modify the pilot project a) "trip or trip time limit" representation [$t \leq 1h$ (For $I_n \leq 63A$) or $t \leq 2h$ (for $I_n > 63A$)], to be consistent with GB 10963.1.

--- Modify the current-carrying parts 8.1.4.4 related materials are described manner. Direct current-carrying parts specified in the original material is a copper alloy, is Modification specified metal, illustrative material is copper alloy. And clearly when using appropriate coating alloy or iron alloy, it should rust through corrosion tests to verify compliance with the requirements. Thus, the newly added clause 9.25 "rust test."

--- To 9.5.1 has been amended to provide for various types of wire, hard wire (single or stranded) and flexible conductors are to be tested, and provides a range of wire cross-sectional area corresponding to the type of test conductor; table 15 has also been modified, clearly different section Wire tension applied to the corresponding product.

--- Increased leakage 9.7.7 "Verifying impulse withstand voltage (across clearances and across solid insulation) and disconnection between the contacts Flow ", including with

impulse withstand voltage verification clearances, verify the leakage current disconnection between the contacts (for isolation) and experience Disconnect the card contacts insulation resistance test methods and basic insulation voltage capability of the pilot project impact. The original 9.20 "absolute verification Margin impact resistance voltage performance "is also incorporated into this test articles, and test voltage values were adjusted accordingly.

--- Modified 9.9.1.2c) 1) Test method for residual sinusoidal alternating currents suddenly appear. Modify the first closing switch S2, then Closing the power switch S1 approach to measurement of break time. This test method includes measuring the time when the power of the RCBO Inter, the measurement time is more reasonable.

--- Modified 9.9.1.2d) test procedures within 5Ideltan ~ 500A range of residual current, from select. 5A, 10A, 20A, 7 residual current value of 50A, 100A, 200A and 500A, etc. tested, modified to the current range 5A ~ 200A Select any of the two remaining within the current value and 500A test, simplifying the test procedures.

--- Modified 9.9.2.2 instantaneous trip test, the introduction of new items a) "General test conditions" of the test current, the lower limit of the test the method has been modified. The lower limit of the current instantaneous trip, still under any suitable voltage test, and the test current limit points Do not be tested at an appropriate voltage and rated voltage, and the test procedures and test methods have been amended accordingly.

--- At 9.12 verification RCBO in working conditions under short-circuit conditions, the circuit diagram and description of the way the test was modified. The original 5 short circuit test chart are tested in a single-phase circuit, three-phase circuit, three-phase four-wire circuits combined into a short-circuit test chart, and a block diagram of an additional one for IT test test circuit diagrams and impedance Z.

--- Increased 9.12.11.2.2 "in IT system validation RCBO the applicability of short-circuit test."

--- Modify 9.15 "resistance to abnormal heat and flame test," the number of samples and modify the provisions of the ban imposed site. In three test sample Carried on. Glow wire can not be directly applied to the following areas. the terminal portion of the arc chamber and the magnetic trip.

--- 9.17 clear classification of 4.1.2.2 product verification test methods for multi-phase power requirements.

--- Deletion of the entire 9.18 three-pole or four-pole verification RCBO through to single phase load over-current limit.

--- Further defined test 9.21.1.4 verify residual pulsating direct currents superimposed on a smooth direct current of 0.006A correct operation Test methods.

--- Cancellation of the original Appendix H "RCBO verify compliance with electromagnetic

compatibility (EMC) tests the technical requirements, the number of additional test procedures and test Volume list ", the relevant items to the new provisions of 9.24" Electromagnetic compatibility ", and Table A.1 in Appendix A, Table A.2 and

Table A.3 new EMC test procedures H, I and J, including pilot projects, number of samples and determine the number of qualified, etc., and to increase the

Added T2.6 "within the 150kHz frequency range below the common mode conducted harassment" pilot projects.

--- Add a new Appendix. Particular requirements for connecting external copper conductors having screwless terminals of the RCBO; with flat quick-connect terminals Specific requirements of child RCBO; having a screw-type terminal blocks and connectors to connect an external copper or aluminum conductors untreated aluminum wire Particular requirements for aluminum screw-type terminals of the RCBO.

--- Appendix alphabetically renumbered.

This section uses redrafted law revision using IEC 61009-1:2012 overcurrent protection "for household and similar uses residual current Operated circuit breaker (RCBO) - Part 1. General rules "(version 3.1).

This part of IEC 61009-1:2012 The main differences are as follows.

--- $\Delta I_{\Delta n} \leq 0.03A$ this section of the motor function and line voltage and the supply voltage fault can not be automatically disconnected RCBO, retained when supply voltage falls below 50V also the technical requirements of the action proposed in the GB 16917.1-2003.

Therefore, in the following 4.1.2.2 increased Note 2 test method 9.9.1.5.

--- IEC 61009-1:2012 Chapter 6 in paragraph 3, "All RCBO this section can provide isolation, so the RCBO available symbols indicate it applies to isolation. "This section was revised to" all parts of the RCBO can Provide isolation, so the RCBO available symbol (symbol can also be used) indicate it applies to every other from. "Because RCBO RCD function is the combination of features and functions in line with GB 10963.1 of the circuit breaker for the GB 10963.1 consistent increase the descriptions in parentheses.

--- Deleting IEC 61009-1:2012 Table 18, because the content of the IEC 61009-1:2012 Table 28 repeat. This section IEC 61009-1:2012 of the original table to table 19 No. 18, No. 28 original table to table 19, a reference to the original text in Table 19, Table 28, and accordingly modify.

--- IEC 61009-1. 9.7.7.5 paragraph 52012, the mistakenly written as. "Under test conditions 9.9.1.2c) regulations, in order to pass $1.25\Delta I_{\Delta n}$, RCBO shall trip. "This section read as follows." Under test conditions 9.9.1.2c) 1) regulations, through to $1.25\Delta I_{\Delta n}$, RCBO shall trip. ".9.12.13.2 Paragraph 3, 9.19.2.3, paragraph 2, 9.22.1.3a) and 9.23 paragraph 3 have similar feelings Conditions, also be amended accordingly.