

ICS 29.120.50
CCS K 31



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

GB/T 19214.1-2023

Replacing GB/T 19214-2008

**Electrical accessories - Residual current monitors (RCMs) - Part
1: RCMs for household and similar uses**

电器附件 剩余电流监视器 (RCM) 第1部分: 家用和类似用途剩余电流监视器
(English Translation)

Issued on: September 7, 2023

Implemented on: April 1, 2024

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Preface	
Introduction	
1 Scope	
2 Normative reference documents	
3 Terms and Definitions	
4 Category	
4.1 Divide into 5 points according to the action method	
4.2 Divide into 5 according to device type	
4.3 Score 5 points based on current loop number	
4.4 Divide into 5 points based on the ability to adjust the residual operating current	
4.5 Score 5 points based on the possibility of adjusting the delay	
4.6 Points 5 based on protection against external influences	
4.7 Divided into 5 according to installation method	
4.8 Divided into 5 according to wiring method	
4.9 Divided into 6 according to load wire connection type	
4.10 Divide into 6 according to fault indicating device	
4.11 According to the ability to distinguish the direction of residual current on the power side and load side, it is divided into 6 points	
4.12 Divided into 6 according to power supply system	
4.13 Divide 6 according to the monitored residual current type	
4.14 Divided into 6 according to the residual current detection method	
5 Characteristics of RCM	
5.1 Feature Summary	
5.2 Ratings and other characteristics 7	
5.3 Standard and preferred values	
5.4 Cooperation with short circuit protective device (SCPD) (only applicable to RCM classified according to 4.9.2)	
6 Logo and other product data 10	
7 Standard operating conditions for use and installation 12	
7.1 Standard conditions	
7.2 Installation conditions	
8 Structural and operational requirements	
8.1 Mechanical design	

- 8.2 Protection against electric shock 16
- 8.3 Dielectric properties
- 8.4 Temperature rise
- 8.5 Action characteristics
- 8.6 Direction judgment
- 8.7 Operating life
- 8.8 Performance under short-circuit current 18
- 8.9 Mechanical impact resistance 18
- 8.10 Heat resistance 18
- 8.11 Resistance to abnormal heat generation and flame resistance 18
- 8.12 Test device
- 8.13 RCM operates correctly within the power supply voltage range
- 8.14 When the main circuit is over-current, the working status of RCM19
- 8.15 RCM's performance in preventing malfunction under the action of surge current generated by impulse voltage 19
- 8.16 When the ground fault current contains a DC component, the working condition of the RCM19
- 8.17 Reliability 19
- 8.18 Electromagnetic compatibility (EMC)
- 8.19 Connection of external current transformer (CT)
- 8.20 RCM response to temporary overvoltage on the low-voltage side caused by high-voltage side fault 19
- 9 Trial
- 9.1 General requirements
- 9.2 Test conditions
- 9.3 Marking durability test
- 9.4 Reliability testing of screws, current-carrying parts and connections 21
- 9.5 Reliability test of terminal blocks connected to external conductors
- 9.6 Verification of electric shock protection
- 9.7 Dielectric property test
- 9.8 Temperature rise test
- 9.9 Verify action characteristics
- 9.10 Verification of operating life
- 9.11 Verification of short-circuit withstand capability 31
- 9.12 Verification of mechanical impact resistance 35
- 9.13 Heat resistance test

9.14	Abnormal heating resistance and flame resistance test	
9.15	Verification of operation of the test device at rated voltage limits	38
9.16	Verify the non-operating current limit value in case of overcurrent	38
9.17	Verify the performance against malfunction under the action of surge current caused by impulse voltage	
9.18	Empty	
9.19	Verify the correct operation when the residual current contains a DC component	39
9.20	Verify Reliability	
9.21	Verify the anti-aging performance of electronic components	
9.22	Verification of electromagnetic compatibility (EMC) requirements	
9.23	RCM response to temporary overvoltage on the low-voltage side caused by high-voltage side fault	
9.24	Anti-rust test	
Appendix A (Normative) Test procedures and number of test specimens to verify compliance with this document		
A.1	Summary	
A.2	Test procedure	
A.3	Number of test samples submitted for all test procedures	
A.4	When a series of RCMs with the same basic design and structure are submitted for testing at the same time, the number of specimens for the simplified test procedure is	
Appendix B (Normative) Determination of electrical clearances and creepage distances		
Reference		

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents" Drafting.

This document is Part 1 of GB/T 19214 "Residual Current Monitor (RCM) for Electrical Accessories". GB/T 19214 has been released the following sections are included.

---Part 1: Residual current monitors for household and similar purposes.

This document replaces GB/T 19214-2008 "Residual current monitors for electrical accessories for household and similar purposes". This document is related to Compared with GB/T 19214-2008, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

---Added the classification, action characteristics and verification requirements of Type F and Type B RCM (see 4.13, 5.2.6.3, 5.2.6.4 and 9.19.3);

---In the action characteristics test, the requirement to conduct separate tests at the TN and TT positions is deleted (see 9.9.2, 9.9.4 and Figure 3).

This document is equivalent to IEC 62020-1:2020 "Residual current monitor (RCM) for electrical accessories - Part 1: Household and similar Purpose Residual Current Monitor".

This document has made the following minimal editorial changes.

---In the action characteristic test and in Figure 3, the TN and TT position descriptions missing from the original text have been deleted.

--- Add a note in 9.11.2.1 to give reference information for the silver wire diameter, τ_u and τ_{up} values at 10000A.

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

Introduction

Residual current monitors are used to monitor residual current in installations and are generated between live parts and exposed conductive parts or ground.

An electrical appliance that sends an alarm signal when the residual current exceeds a predetermined value. GB/T 19214 "Residual Current Monitor (RCM) for Electrical Accessories" refers to A series of standards for residual current monitor products is planned to consist of 2 parts.

---Part 1: Residual current monitors for household and similar purposes. The purpose is to specify the performance of RCM for household and similar purposes requirements and test methods and other product-related requirements.

---Part 2: Residual current monitors for industrial use up to 1000VAC. The purpose is to provide for industrial use of RCM Product-related requirements such as performance requirements and test methods.

Electrical accessories residual current monitor (RCM) Part 1: Household and similar use surplus Current monitor

1 Scope

This document applies to residual current for household and similar purposes with a rated voltage not exceeding AC 440V and a rated current not exceeding 125A.

monitor.

This document specifies the classification, characteristics, technical requirements and testing of RCM.