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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 43918-2024

Standard meters for AC electrical energy

交流标准电能表

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Standardization Administration of the PRC

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Foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting: This document replaces GB/T 17215:701-2011 "Standard Electric Energy Meter": Compared with GB/T 17215:701-2011, in addition to structural adjustments and In addition to editorial changes, the main technical changes are as follows:

a) Added the following terms: instrument test device (see 3:1), AC standard watt-hour meter (see 3:2), minimum current (see 3:3), maximum current (see 3:4), nominal voltage (see 3:6) and nominal frequency (see 3:7), and changed the description of the term "nominal current of the range" (see 3:5, GB/T 17215:701-2011, 3:7), deleted the term: stability of measurement error (see GB/T 17215:701-2011 3:2 of GB/T 17215:701-2011), repeatability (see 3:3 of GB/T 17215:701-2011), starting current (see 3:4) (Standard Electric Energy Meter) Automatic Range Switching (See 3:8 of GB/T 17215:701-2011) (Standard Electric Energy Meter) Non-Automatic Range Switching Program switching (see 3:9 of GB/T 17215:701-2011);

b) Changed the "Classification of Standard Tables" (see Chapter 4, Chapter 4 of GB/T 17215:701-2011);

c) Added the requirements and test methods for "Protection against mechanical hazards" (see 5:2:1); deleted "Dust protection" (see GB/T 17215:701- 2011, 5:3:6) and "dust intrusion prevention test" (see 6:3:5 of GB/T 17215:701-2011);

d) The "vibration test" (see 5:2:2, 6:3:3 of GB/T 17215:701-2011) and the "impact test" (see

5:2:3, GB/T 17215:701-2011, 6:3:2);

e) Deleted "heat resistance and flame retardant" (see 5:3:5 of GB/T 17215:701-2011) and "heat resistance and flame retardant test" (see GB/T 17215:701-2011, 6:3:4);

f) Added the requirements and test methods for "prevention of flame spread" (see 5:2:4) and "surface temperature limit" (see 5:2:5); added Requirements and test methods for "Electrical clearances and creepage distances" (see 5:2:6);

g) Added the requirements for "voltage measurement range" (see 6:1:1); added the requirements and test methods for "power supply" of the standard table (see 6:2); Added the requirements and test methods for "electrical energy pulse" (see 6:4);

h) Deleted "power loss" (see 5:4:1 of GB/T 17215:701-2011) and "power consumption test" (see GB/T 17215:701- In 6:4:1) of:2011, the power loss of voltage lines and current lines only retains the "power consumption" of the power supply (see 6:3);

i) Added the "pulse voltage test" for the power supply port of the standard meter (see 6:5:3);

j) Deleted "overcurrent effect" (see 5:4:3:1 of GB/T 17215:701-2011) and "overcurrent effect test" (see GB/T 17215:701-2011, 6:4:3:1), "overvoltage effects" (see GB/T 17215:701-2011, 5:4:3:2) and "Overvoltage impact test" (see 6:4:3:2 of GB/T 17215:701-2011);

k) Deleted "temperature rise" (see 5:4:5 of GB/T 17215:701-2011) and "temperature rise test" (see GB/T 17215:701-2011 6:4:5), added the requirements and tests for "surface temperature limit" (see 5:2:5);

l) Deleted "sudden power failure" (see 5:4:2) and "sudden power failure test" (see 6:4:2);

m) The "basic error" (see 5:6:1 of GB/T 17215:701-2011) and the "basic error test" (see GB/T 17215:701- 2011 6:6:2) is merged into "Basic Error", and the requirements for indication error are added (see 7:2:1);

1 Scope

China's national standard for reference meters used to measure alternating current electrical energy. A standard meter is the instrument against which working energy meters are calibrated, and it sits in the traceability chain between the national electrical standards and the meter on a customer's wall. Its accuracy class is an order of magnitude better than the meters it tests, which is what allows it to certify them. The measurement is harder than it appears because energy is the integral of the product of voltage and current, and real loads are neither sinusoidal nor in phase: a standard meter has to remain accurate with distorted waveforms, at low power factor, and over a current range spanning several decades from a household's standby load to its peak. Those conditions are exactly where

cheap meters diverge, and where the revenue disputes arise that the calibration chain exists to prevent.

This document specifies the classification, mechanical properties, electrical properties, metering properties, electromagnetic compatibility, and other characteristics of standard AC electric energy meters (hereinafter referred to as "standard meters"): It describes the requirements of the packaging, transportation and storage, etc: content: This document is applicable to newly manufactured electrical networks with a frequency of 50Hz (or 60Hz) and a voltage not exceeding 600V in a controlled environment Design, production, manufacture, use and testing of standard AC electric energy meters:

Note 1: The above voltage is the line-to-neutral voltage obtained from the nominal voltage, see Table 7 of GB/T 17215:231-2021:

Note 2: A controlled environment refers to a place with temperature, humidity regulation or electromagnetic shielding measures, usually including laboratories, production workshops, etc:

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document: For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document:

GB/T 2423:1-2008 Environmental testing for electric and electronic products Part 2: Test methods Test A: Low temperature

GB/T 2423:2-2008 Environmental testing for electric and electronic products Part 2: Test methods Test B: High temperature

GB/T 2423:4-2008 Environmental testing for electric and electronic products Part 2: Test methods Test Db: Cyclic damp heat (12h 12h cycle)

GB/T 2423:5-2019 Environmental testing Part 2: Test method Test Ea and guidance: Impact

GB/T 2423:10-2019 Environmental testing Part 2: Test methods Test Fc: Vibration (sinusoidal)

GB/T 4208-2017 Enclosure protection degree (IP code)

GB/T 5169:11-2017 Fire hazard tests for electric and electronic products Part 11: Basic test methods for glowing wire/hot wire Glow Wire Flammability Test Method for Products (GWEPT)

GB/T 13384 General technical requirements for packaging of electromechanical products

GB/T 16927:1-2011 High voltage test technology Part 1: General definitions and test requirements

GB/T 16935:1-2008 Insulation coordination for equipment in low voltage systems Part 1: Principles, requirements and tests

GB/T 17215:231-2021 Electrical measuring equipment (AC) General requirements, tests and test conditions Part 31: Product safety Requirements and tests

GB/T 17626:2-2018 Electromagnetic compatibility test and measurement technology Electrostatic discharge immunity test

GB/T 25480-2010 Basic environmental conditions and test methods for transportation and storage of instruments and meters

3 Terms and definitions

The terms and definitions defined in GB/T 17215:211-2021 and the following apply to this document: