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

GB/T 13850-2025

Replacing GB/T 13850-1998

**Electrical measuring transducers for converting AC and DC
electrical quantities to analogue or digital signals**

(English Translation)

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Table of Contents

Preface	
Introduction	
1 Scope	
2 Normative References	
3 Terms and Definitions	
3.1 General Terminology	
3.2 Terminology describing transmitters	
3.3 Describe the transmitter using terminology based on the measured quantity. (6)	
3.4 Terminology describing the transmitter based on the output load	
3.5 Nominal value	
3.6 Describe user-adjustable transmitter terminology	
3.7 Influence Quantity and Reference Conditions	
3.8 Errors and Changes	
3.9 Accuracy, Accuracy Class, Class Indicators	
3.10 Terminology related to primary measurement of transmitters	
3.11 Terminology related to transmitter secondary output	
4 Environmental conditions	
5 Rating	
6 Design and structural requirements	
6.1 General Requirements	
6.2 Safety Requirements	
6.3 EMC requirement	
6.4 Climate Requirements	
6.5 Mechanical Requirements	
6.6 Functional Requirements	
6.7 Marking Requirements	
6.8 Document Requirements	
7 Type testing	
8 Routine Tests	
Appendix A (Normative) TRD1 Requirement	
A.1 Scope	
A.2 Standard Reference	

A.3 Terms and Definitions

A.4 Environmental Conditions

A.5 Rating

A.6 Design and structural requirements of TRD1

A.7 TRD1 Test

Appendix B (Normative) TRD2 requires

B.1 Scope

B.2 Normative references

B.3 Terms and Definitions

B.4 Environmental conditions

B.5 TRD2 rating

B.6 Design and structural requirements of TRD2

B.7 TRD2 Type Test

B.8 TRD2 Routine Test

Appendix C (Specifications) Interface Coding

C.1 General Requirements

C.2 Interface Connection Method

C.3 Transmitter rated output value coding

C.4 Transmitter Auxiliary Power Supply Encoding

C.5 Transmitter transfer function curve encoding

C.6 Transmitter output interface complete code

Appendix D (Informative) Anti-aliasing Requirements

Appendix E (Normative) Harmonic and Low-Frequency Measurement Requirements

E.1 General Requirements

E.2 Accuracy Class Extension WBm0 Requirement

E.3 Accuracy Class Extension WBm1 requires

E.4 Accuracy Class Extension WBm2 Requirement

E.5 Accuracy Class Extension WBm3 Requirement

Appendix F (Normative) Terminal Markings for TRD2

F.1 Terminal markings for monitoring AC current TRD2

F.2 Terminal markings for monitoring voltage TRD2

Appendix G (Informative) Guidelines for Cables, Busbars and Bare Conductors in the Installation

G.1 Cable Insulation

G.2 Temperature of cables and busbars

Appendix H (Informative) Overvoltage Category and Measurement Category Related Guidance

H.1 Concept of Overvoltage Categories

H.2 IEC 60664-1 standard for the method of TRD2 primary circuit

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 supersedes GB/T 13850-1998 "Electrical measuring transmitters for converting AC electrical quantities into analog or digital signals", and is consistent with...

Compared with GB/T 13850-1998, apart from structural adjustments and editorial changes, the main technical changes are as follows.

a) Added features for DC transmitters, specific to low-voltage monitoring applications, harmonic and total harmonic distortion, apparent power, and digital compatibility.

The applicable scope of the transmitter (see Chapter 1);

b) The terminology definitions for electrical measurement transmitters have been changed (see 3.2.1, 3.1.1 of the 1998 edition);

c) Increased DC power (see 3.1.6);

d) Increased security requirements (see 6.2);

e) Added EMC requirements (see 6.3);

f) Interface coding has been added to facilitate end-user selection (see Appendix C).

This document is equivalent to IEC 60688:2024 "Electrical measuring transmitters for converting AC and DC electrical quantities into analog or digital signals".

The following minimal editorial changes have been made to this document.

---Add formula number (1) to terminology 3.8.2 and add an explanation of the relative error epsilon;

---The symbol "-" in Table 1 should be changed to "sqrt";

---A.6.6.3.2 Add the introductory phrase "The DC power supply shall meet the following requirements";

---Add "Accuracy Grade E" to Formula (A.1);

---In A.7.3.3, formula numbers (A.2) and formula (A.3) are added, and the change is represented by "V";

---The chapter numbers in A.7.19.1.1~A.7.19.1.4 have been changed to "A.7.19.1~A.7.19.4";

---Appendix B includes formula numbers (B.3) and (B.4), along with explanations of the symbols used in the formulas;

---Add formula numbers (D.1) and (D.2) to Appendix D. The first frequency in formula (D.1) mapped to f_s is denoted as f_{alias} .

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Machinery Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Standardization of Electrical Instruments and Meters (SAC/TC104).

Introduction

Energy distribution systems need to ensure energy efficiency, availability, and network performance to address the following challenges.

- To meet the requirements of sustainable development, energy measurement is essential for identifying energy-saving sources and improving energy efficiency in manufacturing, commercial establishments, and public services.

Necessary conditions for ability;

- Adapt to technological advancements (electronic loads, electronic measurement methods, etc.);
- Addressing end-users' needs in power management (cost savings, compliance with building codes, etc.);
- Ensure the security and continuity of service;
- Adapt to the development of installation standards;
- Meets the needs of new applications in DC systems (photovoltaics, electric vehicles, DC power distribution, etc.).

Monitoring the power levels of the internal network helps address these challenges; to establish such monitoring, transmitters are needed.

- Measure different types of electrical charge;
- Converts AC and DC electrical quantities into analog or digital signals;