



SLOVENSKI STANDARD

SIST EN 60051-4:1995

01-avgust-1995

Neposredni kazalni analogni električni merilni instrumenti in njihov pribor – 4. del: Posebne zahteve za merilnike frekvence (IEC 60051-4:1984)

Direct acting indicating analogue electrical measuring instruments and their accessories -
- Part 4: Special requirements for frequency meters

Direkt wirkende anzeigende elektrische Meßgeräte und ihr Zubehör; Meßgeräte mit
Skalenanzeige -- Teil 4: Spezielle Anforderungen für Frequenz-Meßgeräte

Appareils mesureurs électriques indicateurs analogiques à action directe et leurs
accessoires -- Partie 4: Prescriptions particulières pour les fréquencesmètres

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ICS:

17.220.20	Merjenje električnih in magnetnih veličin	Measurement of electrical and magnetic quantities
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EUROPEAN STANDARD

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ENGLISH VERSION

DIRECT ACTING INDICATING ANALOGUE ELECTRICAL
MEASURING INSTRUMENTS AND THEIR ACCESSORIES
PART 4: SPECIAL REQUIREMENTS FOR FREQUENCY METERS
(IEC 51-4 (1984) edition 4)

Appareils mesureurs électriques
indicateurs analogiques
à action directe
et leurs accessoires
Quatrième partie: Prescriptions
particulières pour les
fréquencesmètres
(CEI 51-4 (1984) édition 4)

Direkt wirkende anzeigende
elektrische Meßgeräte
und ihr Zubehör
Meßgeräte mit Skalenanzeige
Teil 4: Spezielle
Anforderungen für Frequenz-
Meßgeräte
(IEC 51-4 (1984) Ausgabe 4)

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue Bréderode 2, B-1000 Brussels

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**NORME
INTERNATIONALE
INTERNATIONAL
STANDARD**

**CEI
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51-4**

Quatrième édition
Fourth edition
1984

**Appareils mesureurs électriques indicateurs
analogiques à action directe et
leurs accessoires**

Quatrième partie:

**Prescriptions particulières pour les fréquencesmètres
(standards.iteh.ai)**

**Direct acting indicating analogue electrical
measuring instruments and their accessories**

Part 4:

Special requirements for frequency meters

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**DIRECT ACTING INDICATING ANALOGUE ELECTRICAL MEASURING
INSTRUMENTS AND THEIR ACCESSORIES****Part 4: Special requirements for frequency meters**

FOREWORD

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

PREFACE

This standard has been prepared by IEC Technical Committee No. 85: Measuring Equipment for Basic Electrical Quantities (former Sub-Committee 13B: Electrical Measuring Instruments).

This fourth edition replaces the third edition of IEC Publication 51.

This standard constitutes Part 4.

The general layout for the revised Publication 51 is as follows:

- Part 1: Definitions and General Requirements Common to all Parts.
- Part 2: Special Requirements for Ammeters and Voltmeters.
- Part 3: Special Requirements for Wattmeters and Varmeters.
- Part 4: Special Requirements for Frequency Meters.
- Part 5: Special requirements for Phase Meters, Power Factor Meters and Synchrosopes.
- Part 6: Special Requirements for Ohmmeters (Impedance Meters) and Conductance Meters.
- Part 7: Special Requirements for Multi-function Instruments.
- Part 8: Special Requirements for Accessories.
- Part 9: Recommended Test Methods.

Parts 2 to 9 are not complete in themselves and shall be read in conjunction with Part 1.

All of these parts are arranged in the same format and a standard relationship between subject and clause number is maintained throughout. In addition, tables, figures and appendices add a suffix to the part number in order to differentiate the parts. This re-arrangement will assist the reader of IEC Publication 51 to distinguish information relating to the different types of instruments.

The text of this standard is based upon the following documents:

Six Months' Rule	Report on Voting
13B(CO)87	13B(CO)96

Further information can be found in the Report on Voting indicated in the table above.

DIRECT ACTING INDICATING ANALOGUE ELECTRICAL MEASURING INSTRUMENTS AND THEIR ACCESSORIES

Part 4: Special requirements for frequency meters

1. Scope

- 1.1 Part 4 of the standard applies to direct acting indicating analogue frequency meters.
- 1.2 This part also applies to non-interchangeable accessories (as defined in Sub-clause 2.1.15.3 of Part 1) used with frequency meters.
- 1.3 This sub-clause of Part 1 does not apply to frequency meters.
- 1.4 to 1.8 See Part 1.

2. Definitions

See Part 1.

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3. Description, classification and compliance

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3.1 Description

Frequency meters shall be described as:

- 3.1.1 Pointer-type frequency meters, or
- 3.1.2 Vibrating-reed frequency meters.

3.2 Classification

Frequency meters shall be classified in one of the accuracy classes denoted by the following class indices:

0.05, 0.1, 0.15, 0.2, 0.3, 0.5, 1, 1.5, 2, 2.5, 5.

3.3 Compliance with the requirements of this standard

See Part 1.

4. Reference conditions and intrinsic errors

4.1 Reference conditions

See Part 1 and Table I-4.

TABLE I-4

Reference condition and tolerance, additional to those given in Table I-1, for testing purposes

Influence quantity	Reference condition unless otherwise marked	Tolerance permitted for testing purposes ¹⁾
Voltage of a.c. measured quantity	Rated voltage or any voltage within the reference range (if any)	±2% of the rated value

¹⁾ For a reference range, no tolerance is allowed.

4.2 *Limits of intrinsic error; fiducial value*

See Part 1.

4.2.1 See Part 1.

4.2.2 *Fiducial value*

For frequency meters, the class index is marked using Symbol E-1 given in Table III-1 (see Part 1, Clause 8).

The fiducial value for a frequency meter corresponds to:

4.2.2.1 The upper limit of the measuring range.

4.2.2.2 For vibrating-reed frequency meters which have several rows of reeds, each row is considered to be a separate range and each row has its own fiducial value which is the upper limit of the measuring range of that row.

4.2.3 *Special requirements for vibrating reed frequency meters*

For vibrating reed frequency meters, the following shall also apply:

4.2.3.1 The difference between the nominal frequencies of two adjacent reeds shall not exceed twice the limit of the permissible intrinsic error.

4.2.3.2 With a uniform rate of change of frequency, reeds shall reach their maximum amplitudes of vibration in the sequence implied by their nominal frequencies.

4.2.3.3 The error is taken as the greatest value of the frequency differences:

- between the nominal frequency for each reed and the frequency at which that reed has its maximum amplitude of vibration, or
- between the mean of the nominal frequencies of any two adjacent reeds and the frequency at which these reeds have the same amplitude of vibration.

5. **Nominal range of use and variations**

5.1 *Nominal range of use*

See Part 1 and Table II-4.