



SLOVENSKI STANDARD

SIST EN 61268:1997

01-april-1997

Statični števci električne jalove energije izmeničnega toka (IEC 1268:1995)

Alternating current static var-hour meters for reactive energy (classes 2 and 3)

Elektronische Wechselstrom-Blindverbrauchsähler (Genauigkeitsklassen 2 und 3)

Compteurs statiques d'énergie réactive pour courant alternatif (classes 2 et 3)

Ta slovenski standard je istoveten z: **EN 61268:1996**

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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
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 61268

February 1996

ICS 17.220.20

Descriptors: Var-hour meters for reactive energy, static meters, meters for alternating current, class 2, class 3

English version

**Alternating current static var-hour meters for reactive energy
(classes 2 and 3)
(IEC 1268:1995)**

Compteurs statiques d'énergie réactive
pour courant alternatif
(classes 2 et 3)
(CEI 1268:1995)

Elektronische Wechselstrom-
Blindverbrauchsähler
(Genauigkeitsklassen 2 und 3)
(IEC 1268:1995)

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This European Standard was approved by CENELEC on 1995-09-20. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 13/1069/DIS, future edition 1 of IEC 1268, prepared by IEC TC 13, Equipment for electrical energy measurement and load control, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61268 on 1995-09-20.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1996-07-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1996-07-01

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexes A, B, C, D, ZA and ZB are normative and annexes E and F are informative.

Annexes ZA and ZB have been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 1268:1995 was approved by CENELEC as a European Standard without any modification.

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Annex ZA (normative)

Normative references to international publications
with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-------------|--|------------------------------|--------------|
| IEC 38 (mod) | 1983 | IEC standard voltages ¹⁾ | HD 472 S1 | 1989 |
| IEC 50(301) | 1983 | International Electrotechnical Vocabulary (IEV) Chapter 301: General terms on measurements in electricity | - | - |
| IEC 50(302) | 1983 | Chapter 302: Electrical measuring instruments | - | - |
| IEC 50(303) | 1983 | Chapter 303: Electronic measuring instruments | - | - |
| IEC 60 | series | High-voltage test techniques | HD 588.1 S1 EN 60060-2 | 1991 1994 |
| IEC 68-2-1 | 1990 | Environmental testing Part 2: Tests - Tests A: Cold | EN 60068-2-1 | 1993 |
| IEC 68-2-2 | 1974 | Part 2: Tests - Test B: Dry heat | EN 60068-2-2 ²⁾ | 1993 |
| IEC 68-2-5 | 1975 | Part 2: Tests - Test Sa: Simulated solar radiation at ground level | HD 323.2.5 S1 | 1988 |
| IEC 68-2-6 | 1982 | Part 2: Tests - Test Fc and guidance : Vibration (Sinusoidal) | HD 323.2.6 S2 ³⁾ | 1988 |
| IEC 68-2-11 | 1981 | Part 2: Tests - Test Ka: Salt mist | HD 323.2.11 S1 | 1988 |
| IEC 68-2-27 | 1987 | Part 2: Tests - Test Ea and guidance: Shock | EN 60068-2-27 | 1993 |
| IEC 68-2-30 | 1980 | Part 2: Tests - Test Db and guidance: Damp heat, cyclic (12 + 12 hour cycle) | HD 323.2.30 S3 ⁴⁾ | 1988 |

1) The title of HD 472 S1 is: Nominal voltages for low voltage public electricity supply systems.

2) EN 60068-2-2 includes supplement A:1976 to IEC 68-2-2.

3) HD 323.2.6 S2 is superseded by EN 60068-2-6:1995, which is based on IEC 68-2-6:1995.

4) HD 323.2.30 S3 includes A1:1985 to IEC 68-2-30.

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|--------------------|--------------------|--|----------------------------|--------------|
| IEC 85 | 1984 | Thermal evaluation and classification of electrical insulation | HD 566 S1 | 1990 |
| IEC 145 | 1963 | Var-hour (reactive energy) meters | - | - |
| IEC 185 (mod) | 1987 | Current transformers | HD 553 S2 ⁵⁾ | 1993 |
| IEC 186 (mod) | 1987 | Voltage transformers | HD 554 S1 ⁶⁾ | 1992 |
| IEC 269-1 | 1986 | Low-voltage fuses Part 1: General requirements | EN 60269-1 | 1989 |
| IEC 359 | 1987 | Expression of the performance of electrical and electronic measuring equipment | - | - |
| IEC 375 | 1972 | Conventions concerning electric and magnetic circuits | - | - |
| IEC 387 | 1992 | Symbols for alternating-current electricity meters | EN 60387 | 1992 |
| IEC 417C | 1977 | Graphical symbols for use on equipment Index, survey and compilation of the single sheets | HD 243 S12 ⁷⁾ | 1995 |
| IEC 514 (mod) | 1975 | Acceptance inspection of Class 2 alternating-current watt-hour meters | EN 60514 | 1995 |
| IEC 529 | 1989 | Degrees of protection provided by enclosures (IP Code) | EN 60529 + corr. May | 1991 1993 |
| IEC 695-2-1 | 1991 ⁸⁾ | Fire hazard testing Part 2: Test methods Section 1: Glow-wire test and guidance | - | - |
| IEC 721-3-3 | 1987 | Classification of environmental conditions Part 3: Classification of groups of environmental parameters and their severities - Stationary use at weatherprotected locations | EN 60721-3-3 ⁹⁾ | 1993 |
| IEC 736 | 1982 | Testing equipment for electrical energy meters | - | - |

5) HD 553 S2 includes A1:1990 to IEC 185.

6) HD 554 S1 includes A1:1988 to IEC 186.

7) HD 243 S12 is based on IEC 417:1973 and its supplements A:1974 to M:1994.

8) IEC 695-2-1:1991 is superseded by IEC 695-1-1/0 to 1/3:1994, which are being harmonized by CENELEC.

9) EN 60721-3-3 includes A1:1991 to IEC 721-3-3.

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-------------|--|---------------------------|--------------|
| IEC 801-2 | 1991 | Electromagnetic compatibility for industrial-process measurement and control equipment Part 2: Electrostatic discharge requirements | EN 60801-2 | 1993 |
| IEC 801-3 | 1984 | Part 3: Radiated electromagnetic field requirements | HD 481.3 S1 | 1987 |
| IEC 801-4 | 1988 | Part 4: Electrical fast transient/burst requirements | - | - |
| IEC 817 | 1984 | Spring-operated impact-test apparatus and its calibration | HD 495 S1 | 1987 |
| IEC 1036 (mod) | 1990 | Alternating current static watt-hour meters for active energy (Classes 1 and 2) | EN 61036 + corr. March | 1992 1994 |
| CISPR 22 | 1993 | Limits and methods of measurement of radio disturbance characteristics of information technology equipment | EN 55022 | 1994 |
| ISO 75-2 | 1993 | Plastics - Determination of temperature of deflection under load - Part 2: Plastic and ebonite | - | - |

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Annex ZB (normative)

Special national conditions

Special national condition: National characteristic or practice that cannot be changed even over a long period, e.g. climatic conditions, electrical earthing conditions. If it affects harmonization, it forms part of the European Standard or Harmonization Document.

For the countries in which the relevant special national conditions apply these provisions are normative, for other countries they are informative.

| <u>Clause</u> | <u>Special national condition</u> |
|---------------|-----------------------------------|
|---------------|-----------------------------------|

| | |
|-----|--------------------------------------|
| 4.4 | Austria, Germany, Netherlands |
|-----|--------------------------------------|

Additional subclause:

4.4.7 Immunity to earth fault
(only for meters to be used in networks equipped with earth fault neutralizers)

For three-phase four-wire transformer-operated meters, connected to distribution networks which are equipped with earth neutralizers or in which the star point is isolated (in the case of an earth fault and with 10 % overvoltage the line to earth voltages of the two lines which are not affected by the earth fault will rise to 1,9 times the nominal voltage), the following requirements apply:

During a test under a simulated earth fault condition in one of the three lines, all voltages are increased to 1,1 times the nominal voltages during 4 hours. The neutral terminal of the meter under test is disconnected from the ground terminal of the meter test equipment (MTE) and is connected to the MTE's line terminal at which the earth fault has to be simulated (see Annex X). In this way the two voltage terminals of the meter under test which are not affected by the earth fault are connected to 1,9 times the nominal phase voltages. During this test the current circuits are set to 50 % of the rated current I_n , power factor 1 and symmetrical load. After the test, the meter shall show no damage and shall operate correctly.

The variation of error measured when the meter is back at nominal working temperature shall not exceed the limits given in table XX. For testing see 5.4.7.

Table XX - Variations due to earth fault

| Value of current | sin ϕ (inductive or capacitive) | Limits of variation in percentage error for meters of class | |
|------------------|---|---|-----|
| | | 2 | 3 |
| I_n | 1 | 1,0 | 1,5 |

| | |
|-----|--------------------------------------|
| 5.4 | Austria, Germany, Netherlands |
|-----|--------------------------------------|

Additional subclause:

5.4.7 Test of immunity to earth fault

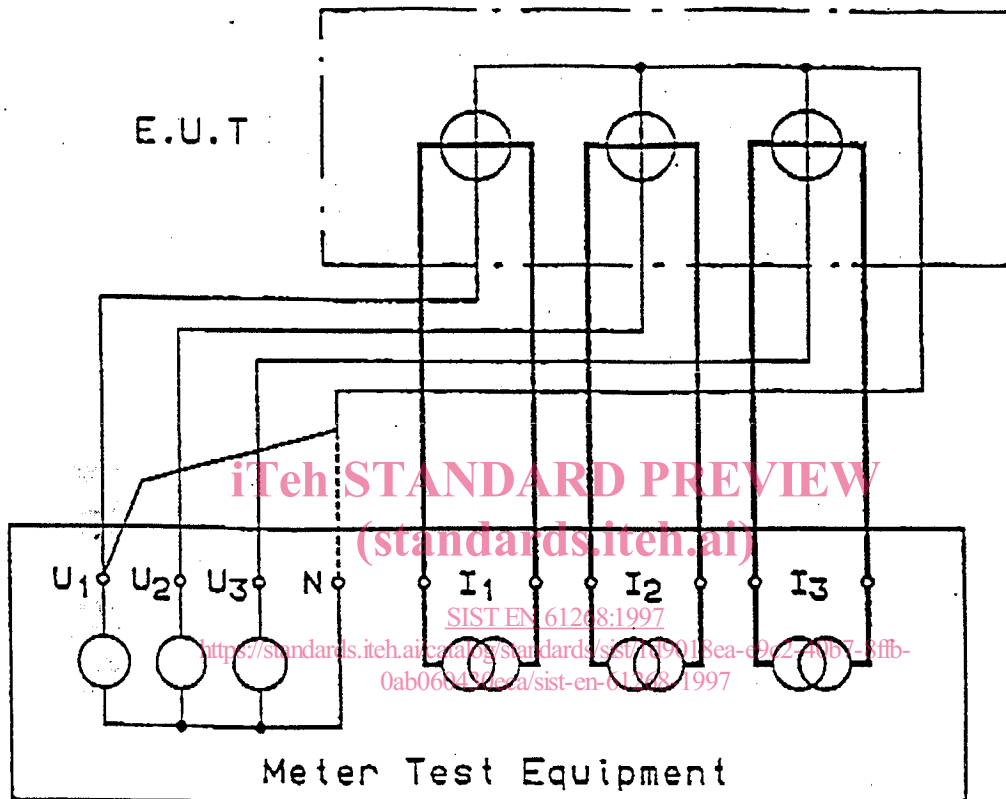
It shall be verified that the earth fault requirements as specified under 4.4.7 are satisfied. Test diagram, see annex X.

Clause Special national condition

Additional annex:

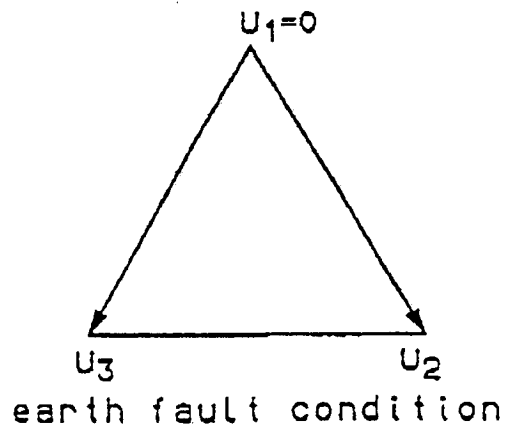
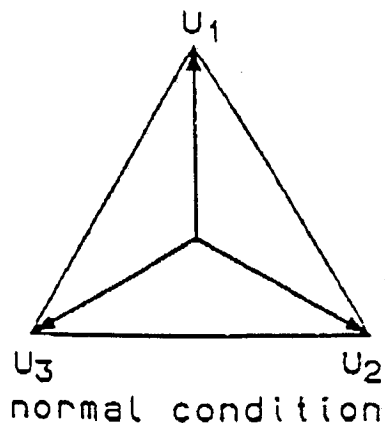
Annex X (normative)

Test circuit diagram for the test of immunity to earth fault



Circuit to simulate earth fault condition in phase 1

Voltages at the meter under test



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NORME
INTERNATIONALE
INTERNATIONAL
STANDARD

CEI
IEC
1268

Première édition
First edition
1995-09

Compteurs statiques d'énergie réactive
pour courant alternatif (classes 2 et 3)

iTeh STANDARD PREVIEW
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Alternating current static var-hour meters
for reactive energy (classes 2 and 3)

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For price, see current catalogue

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ALTERNATING CURRENT STATIC VAR-HOUR METERS
FOR REACTIVE ENERGY
(CLASSES 2 AND 3)**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international cooperation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) 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.
- 3) They have the form of recommendations for international use published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.

International Standard IEC 1268 has been prepared by IEC technical committee 13: Equipment for electrical energy measurement and load control.

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

| DIS | Report on voting |
|-------------|------------------|
| 13/1069/DIS | 13/1081/RVD |

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

Annexes A, B, C and D form an integral part of this standard.

Annexes E and F are for information only.

ALTERNATING CURRENT STATIC VAR-HOUR METERS FOR REACTIVE ENERGY (CLASSES 2 AND 3)

1 Scope

This International Standard applies only to newly manufactured static var-hour meters of accuracy classes 2 and 3 for the measurement of alternating current electrical reactive energy of a frequency in the range 45 Hz to 65 Hz and, like IEC 687 and IEC 1036, it includes type tests only. The accuracy requirements for the meters of class 2 are based on IEC 1036. The values for the meters of class 3 are based on IEC 145. For practical reasons this standard is based on a conventional definition of reactive energy for sinusoidal currents and voltages containing the fundamental frequency only.

It applies only to static var-hour meters for indoor and outdoor application consisting of a measuring element and register(s) enclosed together in a meter case. It also applies to operation indicator(s) and test output(s).

It does not apply to:

- a) var-hour meters where the voltage across the connection terminals exceeds 600 V (line-to-line voltage for meters for polyphase systems);
- b) portable meters;
- c) data interfaces to the register of the meter.

Where the display and/or the memory(ies) is/are external or where other elements are enclosed in the meter case (such as maximum demand indicators, telemetering, time switches or remote control, etc.), this standard applies only to the metering section.

This standard does not cover the acceptance tests and the conformity tests (both testing procedures are connected with legal requirements of the different countries and could only be taken care of partially). Regarding acceptance tests, a basic guideline is given in IEC 514.

The test levels are regarded as minimum values to guarantee the proper function of the meter under normal working conditions. For special applications, other test levels might be necessary and might have to be fixed between the user and the manufacturer.

NOTE – This standard is written to cover meters using both analogue and/or digital measuring techniques and phase-shifting methods where included in the meter.

This standard also covers requirements of meters, where phase-shifting is realized by appropriate external connection.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 38: 1983, *IEC standard voltages*