



**SLOVENSKI STANDARD**  
**SIST EN 61036:1997**

**01-april-1997**

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**Statični števci električne delovne energije izmeničnega toka (razreda 1 in 2) (IEC 1036:1990, spremenjen)**

Alternating current static watt-hour meters for active energy (Classes 1 and 2)

Elektronische Wechselstrom-Wirkverbrauchsähler (Genauigkeitsklasse 1 und 2)

Compteurs statiques d'énergie active pour courant alternatif (Classes 1 et 2)

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**Ta slovenski standard je istoveten z: EN 61036:1992**

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**ICS:**

91.140.50      Sistemi za oskrbo z elektriko    Electricity supply systems

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**Endorsement notice**

The text of the International Standard IEC 1036:1990 was approved by CENELEC as a European Standard with agreed common modifications as given below.

**COMMON MODIFICATIONS**

**Table 12, 13 (F) :** *replace* : "limites des variations d'erreur en pourcentage" by : "limites d'erreur en pourcentage". (*editorial*)

**2.1 and 5.5.2 Test of Immunity to electrostatic discharges :** *refer to the latest edition (1991) of IEC 801-2. Replace "test voltage : 15 kV" by "severity level 4"*

**5.5.3 Test of Immunity to HF electromagnetic fields :** *refer to the latest version of Publication IEC 801-3 (currently under révision, and at the DIS stage), which in particular extends the frequency range to 26-1000 MHz .*

**5.5.4 Fast transient burst test**

*Replace the whole paragraph by the following :*

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Two tests shall be carried out according to IEC 801-4, under the following conditions:

- meter in operating condition;
- voltage and auxiliary circuits energized with reference voltage;
- energization of the current circuits : see table below;
- duration of the test : minimum 60 s each.

The test voltage shall be applied in common mode to :

- the voltage circuits;
- the current circuits, if separated from the voltage circuits in normal operation;
- the auxiliary circuits, if separated from the voltage circuits in normal operation;
- any other independent circuit.

## Severity level and Evaluation of test results

Test N°	Severity level	Test voltage	Test conditions	Evaluation of test results
1	3	2 kV	<p><b>Alternative A</b> : without any current in the current circuits, the current terminals being in open circuit</p> <p><b>Alternative B</b> : meter operating normally, the current circuits being energized.</p>	<p>During the test the meter shall not produce a change in the register of more than 0,01 kWh and the test output shall not produce a signal equivalent to more than 0,01 kWh (for transformer-operated meters, equivalent values should be used taking into account the transformation ratios).</p> <p>To be defined by mutual agreement between user and manufacturer</p>
2	4	4 kV	Without any current in the current circuits, the current terminals being in open circuit	A temporary degradation or loss of function or performance which is self-recoverable is allowed ; the content of the memories (where the energy is recorded) shall not be affected.

## ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD  
WITH THE REFERENCES OF THE RELEVANT EUROPEAN PUBLICATIONS

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

IEC Publication -----	Date -----	Title -----	EN/HD -----	Date -----
38 (mod)	1983	IEC standard voltages	HD 472 S1	1989
50(301)	1983	International Electrotechnical Vocabulary (IEV) - Chapter 301: General terms on measurements in electricity	-	-
50(302)	1983	Chapter 302: Electrical measuring instruments	-	-
50(303)	1983	Chapter 303: Electronic measuring instruments	-	-
60	-	High-voltage test techniques	-	-
68-2-1	1974	Environmental testing	HD 323.2.1 S2	1987
68-2-1A + A1	1976 1983	Part 2: Tests - Tests A: Cold		
68-2-2	1974	Part 2: Tests - Test B: Dry heat	HD 323.2.2 S1*	1988
68-2-5	1975	Part 2: Tests - Test Sa: Simulated solar radiation at ground level	HD 323.2.5 S1	1988
68-2-6	1982	Part 2: Tests - Test Fc and guidance: Vibration (sinusoidal)	HD 323.2.6 S2*	1988
68-2-11	1981	Part 2: Tests - Test Ka: Salt mist	HD 323.2.11 S1	1988
68-2-27	1987	Part 2: Tests - Test Ea and guidance: Shock	HD 323.2.27 S2	1988
68-2-30	1980	Part 2: Tests - Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)	HD 323.2.30 S2*	1987
85	1984	Thermal evaluation and classification of electrical insulation	HD 566 S1	1990
185 (mod)	1987	Current transformers	HD 553 S1	1992
186 (mod)	1987	Voltage transformers	HD 554 S1*	1992
255-4	1976	Electrical relays - Part 4: Single input energizing quantity measuring relays with dependent specified time	-	-

\* HD 323.2.2 S1:1988 includes IEC 68-2-2A:1976  
 HD 323.2.6 S2:1988 includes A1:1983 + A2:1985 to IEC 68-2-6  
 HD 323.2.30 S2:1987 includes A1:1985 to IEC 68-2-30  
 HD 554 S1:1992 includes A1:1988 to IEC 186

IEC Publication	Date	Title	EN/HD	Date
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269-1	1986	Low-voltage fuses - Part 1: General requirements	EN 60269-1	1989
359	1987	Expression of the performance of electrical and electronic measuring equipment	-	-
387	1972*	Symbols for alternating-current electricity meters	-	-
417C	1977	Graphical symbols for use on equipment Index, survey and compilation of the single sheets - Third supplement	HD 243 S9*	1991
514 (mod)	1975	Acceptance inspection of Class 2 alternating-current watt hour meters	HD 309.2 S1	1979
521	1988*	Classes 0.5, 1 and 2 alternating-current watt-hour meters	-	-
529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529	1991
664	1980	Insulation co-ordination within low-voltage systems including clearances and creepage distances for equipment	-	-
687	1980*	Static watt-hour meters - Metrological specifications for Classes 0.2 S and 0.5 S	-	-
695-2-1	1980	Fire hazard testing - Part 2: Test methods - Glow-wire test and guidance	HD 444.2.1 S1	1983
721-3-3	1987	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Stationary use at weatherprotected locations (Corrigendum April 1988)	HD 478.3.3 S1	1989
736	1982	Testing equipment for electrical energy meters	-	-
801-2	1984	Electromagnetic compatibility for industrial-process measurement and control equipment - Part 2: Electrostatic discharge requirements	HD 481.2 S1	1987

\* IEC 387:1992 was harmonized as EN 60387:1992  
 HD 243 S9:1991 includes supplements A:1974 to J:1990 to IEC 417  
 IEC 521:1976, (mod) was harmonized as HD 309.1 S1:1979  
 IEC 687:1992 was harmonized as EN 60687:1992

IEC Publication	Date	Title	EN/HD	Date
801-3	1984	Part 3: Radiated electromagnetic field requirements	HD 481.3 S1	1987
801-4	1988	Part 4: Electrical fast transient/burst requirements	-	-
817	1984	Spring-operated impact-test apparatus and its calibration	HD 495 S1	1987
CISPR 14 (mod)	1985	Limits and methods of measurement of radio interference characteristics of household electrical appliances,	EN 55014	1987
+ A2 (mod)	1989	portable tools and similar electrical apparatus	+ A2	1990

Other publication

ISO 75:1987 - Plastics and ebonite - Determination of temperature of deflection under load

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## CONTENTS

	Page
FOREWORD .....	5
INTRODUCTION .....	7
Clause	
1 Scope .....	9
2 Normative references .....	9
3 Definitions .....	13
4 Requirements .....	23
5 Tests and test conditions .....	49
Annexes	
A Relationship between ambient air temperature and relative humidity .....	71
B Test circuit diagram for d.c. influence test .....	73
C Voltage wave-form for the tests of the effect of voltage dips and short interruptions .....	75
D Electromagnet for testing the influence of externally-produced magnetic fields .....	77
E Test schedule .....	79
Tables	
<u>SIST EN 61036:1997</u>	
1 Standard reference voltages .....	23
2 Standard basic currents .....	23
3 Clearances and creepage distances for the terminal block .....	29
4 Voltage marking .....	33
5 Temperature range .....	35
6 Relative humidity .....	35
7 Power consumption in voltage circuits including the power supply .....	37
8 Power consumption in current circuits .....	37
9 Voltage range .....	39
10 Variations due to short-time overcurrents .....	39
11 Variations due to self-heating .....	41
12 Percentage error limits (single-phase meters and polyphase meters with balanced loads) .....	43
13 Percentage error limits (polyphase meters carrying a single-phase load, but with balanced polyphase voltages applied to voltage circuits) .....	43
14 Influence quantities .....	45
15 Temperature coefficient .....	47
16 Starting current .....	47
17 A.C. voltage tests .....	61
18 Voltage and current balance .....	65
19 Reference conditions .....	67
20 Interpretation of test results .....	69

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ALTERNATING CURRENT STATIC WATT-HOUR METERS  
FOR ACTIVE ENERGY  
(CLASSES 1 AND 2)**

## 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.

SIST EN 61036:1997  
This standard has been prepared by IEC Technical Committee No. 13: Equipment for electrical energy measurement and load control.

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

Six Months' Rule	Report on Voting
13(CO)1006	13(CO)1009

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

The annexes A, B, C and D are normative.

## INTRODUCTION

This International Standard has been prepared using IEC 521 and 687 as reference standards. As many new requirements and tests had to be added, this new standard has been split into five clauses, namely:

- 1 Scope
- 2 Normative references
- 3 Definitions
- 4 Requirements
- 5 Tests and test conditions

For all tests which are not specified in this standard, reference must be made to existing IEC Publications.

This standard is a type test standard, in line with IEC 521 and 687. It covers the "standard meter", which will be used indoors and outdoors in big quantities world-wide. It does not deal with special executions (such as metering-part and display in separate housings). These will be covered in separate International Standards.

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

The static meter will face the same general environmental conditions as the electromechanical meter. Therefore, the specification must implement all the requirements fixed in IEC 521 wherever necessary, in particular also the mechanical requirements.

Regarding accuracy requirements and the errors due to other influence quantities, it is expected, that the electronic solutions will show a much better performance. Regarding long term stability and harmonics in the current circuits, the same error limits are being used as in IEC 521. This leaves also the door open for more economical and more reliable products and does not call for new definitions for class 1 and class 2 meters. In future revisions of this standard, the practical experience should be taken into account, in particular the influence of harmonics and suitable test procedures for this purpose.

The reliability aspects of equipment for electrical energy measurement and load control will be handled separately by a working group of TC 13.

For tests and test conditions, existing tests and test levels have been taken from IEC 521 and appropriate IEC specifications. New tests also had to be added with respect to EMC. As a guideline Publications 801-1, 801-2, 801-3 and 801-4 were used.

The IEC Publications referred to in this standard are listed in clause 2.

## ALTERNATING CURRENT STATIC WATT-HOUR METERS FOR ACTIVE ENERGY (CLASSES 1 AND 2)

### 1 Scope

This International Standard applies only to newly manufactured static watt-hour meters of accuracy classes 1 and 2, for the measurement of alternating current electrical active energy of a frequency in the range 45 Hz to 65 Hz and to their type tests only.

It applies only to static watt-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) watt-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 reliability aspect is also not covered in this standard as there are no short term test procedures available which would fit into type test documents to satisfactorily check this requirement.

### 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication of this standard, the editions indicated were valid. All standards 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 standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

#### 2.1 IEC standards

38: 1983, *IEC standard voltages*.

50(301, 302, 303): 1983, *International Electrotechnical Vocabulary (IEV) Chapter 301: General terms on measurements in electricity. Chapter 302: Electrical measuring instruments. Chapter 303: Electronic measuring instruments*.

60: *High-voltage test techniques*.

68-2-1: 1974, *Environmental testing, Part 2: Tests. Tests A: Cold*.