



SLOVENSKI STANDARD
SIST EN 60044-2:2001/A2:2003
01-september-2003

Merilni transformatorji - 2. del: Induktivni napetostnik (IEC 60044-2:1997/A2:2002)

Instrument transformers -- Part 2: Inductive voltage transformers

Messwandler -- Teil 2: Induktive Spannungswandler

Transformateurs de mesure -- Partie 2: Transformateurs inductifs de tension

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Ta slovenski standard je istoveten z: EN 60044-2:1999/A2:2003

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ICS:

17.220.20	T ^ b } b A ^ d a } a a { æ } ^ ç a a ^ a a	Measurement of electrical and magnetic quantities
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SIST EN 60044-2:2001/A2:2003 **en**

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EUROPEAN STANDARD

EN 60044-2/A2

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2003

ICS 17.220.20; 29.180

English version

Instrument transformers
Part 2: Inductive voltage transformers
(IEC 60044-2:1997/A2:2002)

Transformateurs de mesure
Partie 2: Transformateurs inductifs de
tension
(CEI 60044-2:1997/A2:2002)

Messwandler
Teil 2: Induktive Spannungswandler
(IEC 60044-2:1997/A2:2002)

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This amendment A2 modifies the European Standard EN 60044-2:1999; it was approved by CENELEC on 2002-12-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 amendment 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, 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 38/286/FDIS, future amendment 2 to IEC 60044-2:1997, prepared by IEC TC 38, Instrument transformers, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A2 to EN 60044-2:1999 on 2002-12-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2003-09-01
- latest date by which the national standards conflicting
with the amendment have to be withdrawn (dow) 2005-12-01

Endorsement notice

The text of amendment 2:2002 to the International Standard IEC 60044-2:1997 was approved by CENELEC as an amendment to the European Standard without any modification.

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**NORME
INTERNATIONALE
INTERNATIONAL
STANDARD**

**CEI
IEC**

60044-2

1997

AMENDEMENT 2
AMENDMENT 2
2002-12

Amendement 2

Transformateurs de mesure –

**Partie 2:
Transformateurs inductifs de tension**

Amendment 2

Instrument transformers –

**Part 2:
Inductive voltage transformers**

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FOREWORD

This amendment has been prepared by IEC technical committee 38: Instrument transformers.

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

FDIS	Report on voting
38/286/FDIS	38/290/RVD

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

The committee has decided that the contents of the base publication and its amendments will remain unchanged until 2005-12. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

Page 11

2.1 General definitions

Insert, after definition 2.1.18, the following definition:

2.1.19

highest voltage of a system

highest value of operating voltage which occurs under normal operating conditions at any time and at any point in the system.

Renumber the existing definitions 2.1.19 to 2.1.30, starting from 2.1.20.

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Table 2 – Standard values of rated voltage factors

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Add, at the bottom of table 2, before the existing note, the following new note:

NOTE 1 The highest continuous operating voltage of an inductive voltage transformer is equal to the highest voltage for equipment (divided by $\sqrt{3}$ for transformers connected between a phase of a three-phase system and earth) or the rated primary voltage multiplied by the factor 1,2, whichever is the lowest.

Renumber the existing note at the bottom of table 2 as NOTE 2.

6.1 Insulation requirements

6.1.2.3 Partial discharges

Move Table 7, which is inserted in 6.1.2.4, and insert it after the last paragraph of 6.1.2.3.

Add, after subclause 6.1.6, the following new subclause:

6.1.7 Transmitted overvoltages

These requirements apply to inductive voltage transformers having $U_m \geq 72,5$ kV.

The overvoltages transmitted from the primary to the secondary terminals shall not exceed the values given in Table 14, under the test and measuring conditions described in 10.4.

Type A impulse requirement applies to voltage transformers for air-insulated substations, while impulse B requirement applies to current transformers installed in gas insulated metal-enclosed substations (GIS).

The transmitted overvoltage peak limits given in table 14 and measured in accordance with the methods specified in 10.4, should ensure sufficient protection of electronic equipment connected to the secondary winding.

Table 14 – Transmitted overvoltage limits

Type of impulse	A	B
Peak value of the applied voltage (U_p)	$1,6 \times \frac{\sqrt{2}}{\sqrt{3}} \times U_m$	$1,6 \times \frac{\sqrt{2}}{\sqrt{3}} \times U_m$
Wave-shape characteristics :		
– conventional front time (T_1) ^a	0,50 μ s \pm 20 %	–
– time to half-value (T_2)	≥ 50 μ s	–
– front time (T_1)	–	10 ns \pm 20 %
– tail length (T_2)	–	>100 ns
Transmitted overvoltage peak value limits (U_e) ^b	1,6 kV	1,6 kV
<p>^a The wave-shape characteristics are representative of voltage oscillations due to switching operations.</p> <p>^b Other transmitted overvoltage limits may be agreed between manufacturer and purchaser.</p>		

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7.1 Type tests

Item g): delete the word "test" at the end of the line.

7.3 Special tests

Replace, in the first line, the words "shall be" by the word "are".

Add in the list of the tests the following new item:

d) transmitted overvoltage measurement (see 10.4).

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8.5 Radio interference voltage measurement

Figure 17 – Measuring circuit

Delete, in figure 17, the reference L_2 .

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10 Special tests

Add, after the existing subclause 10.3, the following new subclause:

10.4 Transmitted overvoltage measurement

A low-voltage impulse (U_1) shall be applied between one of the primary terminals and earth.

For voltage transformers for GIS metal-enclosed substations, the impulse shall be applied through a 50 Ω coaxial cable adapter according to Figure 18. The enclosure of the GIS section shall be connected to earth as planned in service.

For other applications, the test circuit shall be as described in Figure 19.

The terminal(s) of the secondary winding(s) intended to be earthed shall be connected to the frame and to earth.

The transmitted voltage (U_2) shall be measured at the open secondary terminals through a 50 Ω coaxial cable terminated with the 50 Ω input impedance of an oscilloscope having a bandwidth of 100 MHz or higher which reads the peak value.

NOTE Other test methods to avoid the intrusion of the instrumentation may be agreed upon between the manufacturer and the purchaser.

If the voltage transformer comprises more than one secondary winding, the measurement shall be successively performed on each one of the windings.

In the case of secondary windings with intermediate tapplings, the measurement shall be performed only on the tapping corresponding to the full winding.

The overvoltages transmitted to the secondary winding (U_s) for the specified overvoltages (U_p) applied to the primary winding shall be calculated as follows:

$$U_s = \frac{U_2}{U_1} \times U_p$$

In the case of oscillations on the crest, a mean curve should be drawn, and the maximum amplitude of this curve is considered as the peak value U_1 for the calculation of the transmitted voltage (see Figure 20).

NOTE Amplitude and frequency of the oscillation on the voltage wave may affect the transmitted voltage.

The voltage transformer is considered to have passed the test if the value of the transmitted overvoltage does not exceed the limits given in Table 14.

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12.2 Limits of voltage error and phase displacement for measuring voltage transformers

Add, after the first paragraph, the following text:

For voltage transformers of accuracy class 0,1 and 0,2 and having a rated burden lower than 10 VA an extended range of burden can be specified. The voltage error and phase displacement shall not exceed the values given in table 11, when the secondary burden is any value from 0 VA to 100 % of the rated burden, at a power factor equal to 1.

NOTE This requirement may be requested for certified accuracy of energy measurements.

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12.5 Marking of the rating plate of a measuring voltage transformer

Add, after the second paragraph, the following note:

For voltage transformers having a rated burden not exceeding 10 VA and with an extended burden down to 0 VA, this rating shall be indicated immediately before the burden indication (for example, 0 VA-10 VA class 0,2).

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