
Instrument transformers - Part 1: Current transformers

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[SIST EN 60044-1:2001/A2:2003](https://standards.iteh.ai/catalog/standards/sist/7fe96279-ed5c-4716-aaca-3abd8e83d1cc/sist-en-60044-1-2001-a2-2003)
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EUROPEAN STANDARD

EN 60044-1/A2

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2003

ICS 17.220.20; 29.180

English version

Instrument transformers
Part 1: Current transformers
(IEC 60044-1:1996/A2:2002)

Transformateurs de mesure
Partie 1: Transformateurs de courant
(CEI 60044-1:1996/A2:2002)

Messwandler
Teil 1: Stromwandler
(IEC 60044-1:1996/A2:2002)

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This amendment A2 modifies the European Standard EN 60044-1:1999; 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.

[https://standards.iteh.ai/catalog/standards/sist/7fe96279-ed5c-4716-aaca-](https://standards.iteh.ai/catalog/standards/sist/7fe96279-ed5c-4716-aaca-3abd8e83d1cc/cist-en-60044-1-2001-a2-2003)

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 38/285/FDIS, future amendment 2 to IEC 60044-1:1996, 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 60044-1:1999 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 60044-1:1996 was approved by CENELEC as an amendment to the European Standard without any modification.

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NORME
INTERNATIONALE
INTERNATIONAL
STANDARD

CEI
IEC
60044-1

1996

AMENDEMENT 2
AMENDMENT 2
2002-12

Amendement 2

Transformateurs de mesure –

Partie 1:

Transformateurs de courant

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Amendment 2

[SIST EN 60044-1:2001/A2:2003](https://standards.iteh.ai/catalog/standards/sist/en-60044-1-2001/a2-2003)

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Instrument transformers –

Part 1:

Current transformers

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International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
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For price, see current catalogue*

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
38/285/FDIS	38/289/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.

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2.1 General definitions

[SIST EN 60044-1:2001/A2:2003](https://standards.iteh.ai/catalog/standards/sist/7fe96279-ed5c-4716-aaca-3abd8e83d1cc/sist-en-60044-1-2001-a2-2003)

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[3abd8e83d1cc/sist-en-60044-1-2001-a2-2003](https://standards.iteh.ai/catalog/standards/sist/7fe96279-ed5c-4716-aaca-3abd8e83d1cc/sist-en-60044-1-2001-a2-2003)

Insert, after definition 2.1.16, the following new definition:

2.1.17

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 2.1.17 to 2.1.33 as 2.1.18 to 2.1.34.

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2.1.29

rated continuous thermal current

Renumber definition 2.1.29 and add, at the end of the title, the symbol, as follows:

2.1.30

rated continuous thermal current (I_{cth})

Add, after definition 2.1.34, the following new definition:

2.1.35

multi-ratio current transformer

current transformer on which more ratios are obtained by connecting the primary winding sections in series or parallel or by means of taps on the secondary winding

2.2 Additional definitions for measuring current transformers

2.2.3

instrument security factor (FS)

Add, below the definition, the following new note:

NOTE 1 Attention should be paid to the fact that the actual instrument security factor is affected by the burden.

Renumber the existing note as NOTE 2.

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4.3 Rated continuous thermal current

Replace the text of the existing subclause by the following (the amendment of the title concerns the French version only):

The standard value of rated continuous thermal current is the rated primary current.

When a rated continuous thermal current greater than rated primary current is specified, the preferred values should be 120 % to 150 % and 200 % of rated primary current.

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5.1 Insulation requirements

Add after 5.1.7 the following new subclause:

5.1.8 Transmitted overvoltages

These requirements apply to

- current transformers having primary winding with $U_m \geq 72,5$ kV;
- current transformers without primary winding and associated to equipment with $U_m \geq 72,5$ kV (i.e., GIS, transformer turrets, cable slip-over).

The overvoltages transmitted from the primary to the secondary terminals shall not exceed the values given in Table 16, under the test and measuring conditions described in 9.4.

NOTE 1 The wave-shape characteristics are representative of voltage oscillations due to switching operations.

NOTE 2 Other transmitted overvoltage limits may be agreed between manufacturer and purchaser.

Type A impulse requirement applies to current 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 16 and measured in accordance with the methods specified in 9.4, should ensure sufficient protection of electronic equipment connected to the secondary winding.

Table 16 – 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)	$0,50 \mu\text{s} \pm 20 \%$	-
- time to half-value (T_2)	$\geq 50 \mu\text{s}$	-
- front time (T_1)	-	$10 \text{ ns} \pm 20 \%$
- tail length (T_2)	-	$> 100 \text{ ns}$
Transmitted overvoltage peak value limits (U_s)	1,6 kV	1,6 kV

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[SIST EN 60044-1:2001/A2:2003](https://standards.iteh.ai/catalog/standards/sist/7fe96279-ed5c-4716-aaca-3abd8e83d1cc/sist-en-60044-1-2001-a2-2003)

6.3 Special tests <https://standards.iteh.ai/catalog/standards/sist/7fe96279-ed5c-4716-aaca-3abd8e83d1cc/sist-en-60044-1-2001-a2-2003>

Add to the list of tests the following new item:

e) measurement of transmitted overvoltages (see 9.4)

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8.4 Inter-turn overvoltage test

Add at the end of the subclause, page 47, the following new note:

NOTE The inter-turn overvoltage test is not a test carried out to verify the suitability of a current transformer to operate with the secondary winding open-circuited. Current transformers should not be operated with the secondary winding open-circuited because of the potentially dangerous overvoltages and overheating which can occur.

Page 47

9 Special tests

Add after 9.3 the following new subclause:

9.4 Transmitted overvoltages measurement

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

For single-phase current transformers for GIS metal-enclosed substations, the impulse shall be applied through a 50 Ω coaxial cable adapter according to Figure 7. 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 8.

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 between manufacturer and purchaser.

If the current transformer comprises more than one secondary winding, the measurement shall be successively performed on each 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 overvoltage (see Figure 9).

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

The current transformer is considered to have passed the test if the value of the transmitted overvoltage does not exceed the limits given in Table 16.

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10.2 Rating plate markings

Add the following new item:

- l) the rated continuous thermal current (for example $I_{cth} = 150 \%$).