



SLOVENSKI STANDARD  
SIST EN 61243-1:2001  
01-september-2001

**Live working - Voltage detectors - Part 1: Capacitive type to be used for voltages exceeding 1 kV a.c. and up to 52 kV**

Live working - Voltage detectors -- Part 1: Capacitive type to be used for voltages exceeding 1 kV a.c. and up to 52 kV

Arbeiten unter Spannung - Spannungsprüfer -- Teil 1: Kapazitive Ausführung für Wechselspannungen über 1 kV und bis 52 kV

Travaux sous tension - Détecteurs de tension -- Partie 1: Détecteurs de type capacitif pour usage sur des tensions alternatives de plus de 1 kV et jusqu'à 52 kV

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**Ta slovenski standard je istoveten z: EN 61243-1:1997**

**ICS:**

13.260 Protection against electric shock. Live working

**SIST EN 61243-1:2001**

**en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 61243-1**

February 1997

ICS 13.260

Descriptors: Live working, capacitive type voltage detectors, voltage exceeding 1 kV a.c.

English version

**Live working - Voltage detectors**  
**Part 1: Capacitive type to be used for voltages exceeding 1 kV a.c.**  
(IEC 1243-1:1993, modified)

Travaux sous tension - Détecteurs  
de tension  
Partie 1: Détecteurs de type capacitif  
pour usage sur des tensions  
alternatives de plus de 1 kV  
(CEI 1243-1:1993, modifiée)

Arbeiten unter Spannung  
Spannungsprüfer  
Teil 1: Kapazitive Ausführung für  
Wechselspannungen über 1 kV  
(IEC 1243-1:1993, modifiziert)

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This European Standard was approved by CENELEC on 1996-10-01. 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 the International Standard IEC 1243-1:1993, prepared by IEC TC 78, Tools for live working, together with the common modifications prepared by the Technical Committee CENELEC TC 78, was submitted to the CENELEC formal vote and was approved by CENELEC as EN 61243-1 on 1996-10-01.

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) 1997-09-01
- latest date by which national standards  
conflicting with the EN have to be withdrawn (dow) 1997-09-01

Annexes designated "normative" are part of the body of the standard. Annexes designated "informative" are given only for information. In this standard, annexes A, B, C, D, E and ZB are normative, annexes F and ZA are informative. Annexes ZA and ZB have been added by CENELEC.

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**Endorsement notice**

The text of the International Standard IEC 1243-1:1993 was approved by CENELEC as a European Standard with agreed common modifications as given below.

**COMMON MODIFICATIONS****Contents****Add:**

- 8 Assurance quality plan and acceptance test
- 8.1 General
- 8.2 Sampling procedure
- 8.3 Acceptance tests

Annex ZA - Acceptance tests

Annex ZB - Normative references to international publications with their corresponding European publications

**1 Scope**

Replace the second paragraph by:

This part applies only to capacitive voltage detectors used in contact with the part to be tested, as a single unit including its insulating pole as covered in IEC 855 or IEC 1235, or separate device completed by an adaptable insulating pole covered in IEC 855 or IEC 1235. Other types of voltage detectors are not covered by this part of standard.

**2 Normative references****Add:**

IEC 1235:1993, Live working - Insulating hollow tubes for electrical purposes

**3 Definitions**

3.3 Replace, in the second line, "resistance" by "resistive".

3.19 Replace, in the first line, "affecting" by "which may affect".

Add, in the first dash, third line, "and/or configuration" after "dimensions".

**4 Requirements**

**4.2.1.1** Add, in the second dash, second line, "min." after "2 U<sub>n</sub>".

Delete the third dash and begin the sentence by "The threshold ..."

**4.2.1.3** Modification of the French text only.

**4.2.1.4** Add, in the second line, "for use" after "instructions".

**4.5.1** Add, in the last dash, "(in service care in case of maintenance)" after "dielectric properties".

**4.5.2** Replace the text of this subclause by:

Each detector shall be accompanied by the manufacturer's instructions for use (see annex B).

**6 Tests**

**6.2.1.1** Replace, in the seventh line, "foreign" by "unwanted".

**Table 4** Replace the notes by:

## NOTES

$a_g$ : distance between test electrode and ring electrode for a detector with contact electrode extension (category S) (see figure 2a).

$a_o$ : distance between test electrode and ring electrode for a detector without contact electrode extension (category L) (see figure 2b).

**6.3.1.2** Replace "(see 7.1)" by "(see 7.2.1)".

**6.3.2** Replace, in the first line, "figure 7" by "figure 7c".

Replace the last fourth paragraphs by:

**6.3.2.1 Insulation - Radial stress test**

At the narrow point  $d_1$ , the detector shall be placed on the front bar with the contact electrode pressing against the rear bar. The detector is then rolled along the bars, (see figure 7a) in the direction of position 1, with the contact electrode remaining in contact with the rear bar, until the limit mark is on the front bar.

The test shall be considered as passed if no flashover or breakdown occurs.

### 6.3.2.2 Insulation - Surface stress test

The detector shall be placed on the bars at narrow point  $d_1$  with the insulation adjacent to the contact electrode on the rear bar (see figure 7a, position 2). It is then, without rolling, continuously rotated and at the same time pushed forward until the limit mark is on the rear bar. The length of insulation under test is always  $d_1$ .

The test is considered as passed if no flashover or breakdown occurs.

For a detector without a contact electrode extension and for which the insertion depth  $A_i$  is shorter than  $d_1$ , only the test 6.3.2.2 is done, and at the initial position. An additional test is required according to 7.2.1.

**6.3.3** Replace, in the last paragraph, second line, "a<sub>3</sub>" by "d<sub>3</sub>".

**6.4.7** Replace, in the second line, the "trifluorotrchloroethane (CF<sub>2</sub>ClCFCl<sub>2</sub>)" by "ethyl alcohol".

Add a new clause 8:

## 8 Quality assurance plan and acceptance test

### 8.1 General

In order to assure the delivery of products that meet this standard, the manufacturer shall employ an approved quality assurance plan that complies with the provisions of the ISO 9000 series.

The quality assurance plan shall ascertain that the products meets the requirements contained in this standard.

In the absence of an accepted quality assurance plan as specified above the sampling tests detailed in annex C shall be carried out.

### 8.2 Sampling procedure

The sampling procedure shall be in accordance with the type test in 6.1.4 and as specified in annex C.

### 8.3 Acceptance tests

The manufacturer shall keep for inspection by the customer all test results in accordance with the manufacturer's quality control procedures (see annex G).

## Figures

**Figure 1** Delete "8 Contact electrode extension".

**Figure 2** Replace, in the title of figure 2a, "without contact" by "with contact";

Replace, in the title of figure 2b, "with contact" by "without contact".

**Figure 3** Replace, in figure 3a, the reference "1 178/93" by "1 180/93" and keep the wording of the title.

Replace, in figure 3b, the reference "1 179/93" by "1 178/93" and keep the wording of the title.

Replace, in figure 3c, the reference "1 180/93" by "1 179/93" and keep the wording of the title.

**Figure 4** Replace, in figure 4a, "10 000 x 1 000" by "1 000 x 1 000".

**Figure 5** Modification of the French text only.

**Figure 6** Replace, in figure 6c,  
- after P<sub>0</sub>, "test voltage not present" by "voltage not present", and  
- after P<sub>1</sub>, "test voltage present" by "voltage present".

**Figure 7** Replace, in figure 7b,  
- "a<sub>1</sub>" by "d<sub>1</sub>", [SIST EN 61243-1:2001](https://standards.iteh.ai/catalog/standards/sist/8e68f243-dcfe-4ac6-bf8b-4090caf370a4/sist-en-61243-1-2001)  
- "a<sub>2</sub>" by "d<sub>2</sub>",  
- "3a<sub>2</sub>" by "3d<sub>2</sub>" and  
- "e ≥ a<sub>1</sub> x 100, max. 1 000" by "e ≥ d<sub>1</sub> + 100, max. 1 000".

**Figure 10** Add on the dotted line, the temperature value of "25 °C ± 10 °C".



**Annexes**

**Annex A** Replace "Figure A.1" by "Table A.1".

Add for subclause 6.3.4, an "X" in the "sample" column.

Add for subclause 6.2.4, an "X" in the "sample" column.

Delete "7.1.2", but keep the wording "Test for leakage current" and delete the "X" in the "type" column.

Replace "8.1" by "7.2.1" and keep the wording.

Replace the note by:

- 1) Routine tests shall only be carried out in dry conditions for indoor and outdoor type detectors.

**Annex E** Replace "Figure E" by "Figure E.1".

Add the following new annexes:

**iTeh STANDARD PREVIEW**  
**Annex ZA**  
**(standards.iteh.ai) (informative)**

**Acceptance tests**

As defined in IEC 60384-1, an acceptance test is a contractual test to prove to the customer that the device meets certain conditions of its specification. These tests may be carried out on every unit (routine tests) or on a sampling of the units (sampling tests).

If a customer indicates in his specification that the device meet this standard only, the acceptance tests are those (both routine and sampling) which are specified in this document.

The customer may wish to witness the tests, have someone witness them, or simply accept the results of the tests as carried out by the manufacturer. He may also specify that the tests be carried out in an independent laboratory of his choosing or even in his own laboratory.

Further, the customer may specify the additional tests or larger sampling sizes, when he is purchasing from a new manufacturer, because he has experienced problems with a particular manufacturer, or he is purchasing a new product or a new design.

## 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 50(151)	1978	International Electrotechnical Vocabulary (IEV) Chapter 151: Electrical and magnetic devices	-	-
IEC 50(601)	1985	Chapter 601: Generation, transmission and distribution of electricity - General	-	-
IEC 60-1	1989	High-voltage test techniques Part 1: General definitions and test requirements	HD 588.1 S1 <sup>1)</sup>	1991
IEC 68-1	1988	Environmental testing Part 1: General and guidance	EN 60068-1 <sup>2)</sup>	1994
IEC 68-2-6	1982	Part 2: Tests - Test Fc and guidance: Vibration (Sinusoidal)	HD 323.2.6 S2 <sup>3)</sup>	1988
IEC 68-2-14	1984	Part 2: Tests - Test N: Change of temperature	HD 323.2.14 S2 <sup>4)</sup>	1987
IEC 68-2-32 + A2	1975 1990	Part 2: Tests - Test Ed: Free fall	EN 60068-2-32	1993
IEC 71-1	1976 <sup>5)</sup>	Insulation co-ordination Part 1: Terms, definitions, principles and rules	-	-
IEC 410	1973	Sampling plans and procedures for inspection by attributes	-	-

1) HD 588.1 S1 includes the corrigendum March 1990 to IEC 60-1.

2) EN 60068-1 includes the corrigendum October 1988 and A1:1992 to IEC 68-1.

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

4) HD 323.2.14 S2 includes A1:1986 to IEC 68-2-14.

5) IEC 71-1:1993 is harmonized as EN 60071-1:1995.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 651	1979	Sound level meters	EN 60651	1994
IEC 855 (mod)	1985	Insulating foam-filled tubes and solid rods for live working	EN 60855	1996
IEC 1235 (mod)	1993	Live working - Insulating hollow tubes for electrical purposes	EN 61235	1995
ISO 3745	1977	Acoustics - Determination of sound power levels of noise sources - Precision methods for anechoic and semi-anechoic rooms	-	-
ISO 9000	series	Quality management and quality assurance standards - Guidelines for selection and use	EN 29000 EN ISO 9000	series series

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## Corrigendum to EN 61243-1:1997

English version

Title

**Add** at the end of the title : " ...and up to 52 kV".

Clause 1, Scope

In the first paragraph, **replace** "420 kV" by "52 kV" (twice).

Subclause 4.4.2

In Table 2, **replace** "72,5 kV" by "52 kV" and **delete** the lines corresponding to voltages higher than 52 kV.

In Table 3, **delete** the lines corresponding to voltages higher than 52 kV.

Subclause 6.2.1.1

**Delete** the note in the first paragraph.

In the fifth paragraph, **delete** the end of the sentence after "... within a space of 1 m".

In Table 4, **delete** the lines corresponding to voltages higher than 52 kV.

Subclause 6.3.2

**Delete** the fourth paragraph ("The test voltage shall be  $0,8 U_r$  ...fault factor  $< 1,4$ .").

In Table 5, **delete** the lines corresponding to voltages higher than 52 kV.

Subclause 6.3.3

In the ninth paragraph, **delete** the second sentence ("In the case of ... shall be  $0,8 U_r$ .").

Subclause 7.1.2

In the third paragraph, **delete** the first sentence ("For detectors ... shall be  $0,8 U_r$ .").

Figures 2a and 2b

**Delete** in the tables the two last lines corresponding to voltages higher than 52 kV.

**NORME  
INTERNATIONALE  
INTERNATIONAL  
STANDARD**

**CEI  
IEC  
1243-1**

Première édition  
First edition  
1993-11

**Travaux sous tension –  
DéTECTEURS DE TENSION –**

**Partie 1:**

**DéTECTEURS DE TYPE CAPACITIF POUR USAGE  
SUR DES TENSIONS ALTERNATIVES DE PLUS DE 1 kV**

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**Live working –**

<https://standards.iteh.ai/catalog/standards/sist/8e68f243-dcfe-4ac6-bf8b-703022441201/sist-en-61243-1-2001>

**Voltage detectors –**

**Part 1:**

**Capacitive type to be used  
for voltages exceeding 1 kV a.c.**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## LIVE WORKING – VOLTAGE DETECTORS –

## Part 1: Capacitive type to be used for voltages exceeding 1 kV a.c.

## 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.
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- 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.
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- 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 1243-1 has been prepared by IEC technical committee 78: Tools for live working.

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

Six Months' Rule	Report on voting	Two Months' Procedure Amendment to DIS	Reports on voting
78(CO)30	78(CO)37	78(CO)42 78(CO)49 78(CO)62	78(CO)47 78(CO)53 78(CO)73

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

IEC 1243-1 forms part of a series of publications under the general title: Voltage detectors.

Further parts are under consideration.

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

Annex F is for information only.