SLOVENSKI STANDARD

SIST EN 61243-1:2007

januar 2007

Delo pod napetostjo - Napetostni detektorji - 1. del: Kapacitivni tip za uporabo pri izmeničnih napetostih nad 1 kV (IEC 61243-1:2003, spremenjen)

(istoveten EN 61243-1:2005)

Live working - Voltage detectors - Part 1: Capacitive type to be used for voltages exceeding 1 kV a.c. (IEC 61243-1:2003, modified)

ICS 13.260

Referenčna številka
SIST EN 61243-1:2007(en)

EUROPEAN STANDARD **EN 61243-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM March 2005

ICS 29.240.99 Supersedes EN 61243-1:1997 + A1:1997

English version

Live working – Voltage detectors Part 1: Capacitive type to be used for voltages exceeding 1 kV a.c.

(IEC 61243-1:2003, modified)

Travaux sous tension – Détecteurs de tension Partie 1: Type capacitif pour usage sur des tensions alternatives de plus de 1 kV (CEI 61243-1:2003, modifiée)

Arbeiten unter Spannung – Spannungsprüfer Teil 1: Kapazitive Ausführung für Wechselspannungen über 1 kV (IEC 61243-1:2003, modifiziert)

This European Standard was approved by CENELEC on 2005-03-01. 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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, 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

Ref. No. EN 61243-1:2005 E

Foreword

The text of the International Standard IEC 61243-1:2003, prepared by IEC TC 78, Live working, together with the common modifications prepared by the Technical Committee CENELEC TC 78, Equipment and tools for live working, was submitted to the formal vote and was approved by CENELEC as EN 61243-1 on 2005-03-01.

This European Standard supersedes EN 61243-1:1997 + A1:1997 + corrigendum June 1999.

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)	2006-03-01
–	latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2008-03-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61243-1:2003 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

2 Normative references

Delete the reference to IEC 61318.

4 Requirements

4.5 Markings

Replace the last indent by:

- number of the relevant European Standard immediately adjacent to the symbol (EN 61243-1).

8 Quality assurance plan and acceptance test

8.1 General

Replace the second sentence by:

In the absence of an accepted quality assurance plan as specified above, Annex D provides pieces of information related to the quality assurance plan.

Annex D (normative) **- Sampling procedure**

Replace (normative) by (informative).

Annex F (normative) **- Acceptance tests**

Replace (normative) by (informative).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

Publication	Year	Title	EN/HD	Year
IEC 60060-1 + corr. March	1989 1990	High-voltage test techniques Part 1: General definitions and test requirements	HD 588.1 S1	1991
IEC 60068-1	- [1]	Environmental testing Part 1: General and guidance	EN 60068-1	1994 [2]
IEC 60068-2-6 + corr. March	1995 1995	Part 2: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	1995
IEC 60068-2-14 + A1	1984 1986	Part 2: Tests - Test N: Change of temperature	EN 60068-2-14	1999
IEC 60068-2-32 + A2	1975 1990	Part 2: Tests - Test Ed: Free fall (Procedure 1)	EN 60068-2-32	1993
IEC 60071-1	1993	Insulation co-ordination Part 1: Definitions, principles and rules	EN 60071-1	1995
IEC 60417	database	Graphical symbols for use on equipment	-	-
IEC 60942	- [1]	Electroacoustics - Sound calibrators	EN 60942	2003 [2]
IEC 61260	1995	Electroacoustics - Octave-band and fractional-octave-band filters	EN 61260	1995
IEC 61477 A1	2001 2002	Live working - Minimum requirements for the utilization of tools, devices and equipment	EN 61477 A1	2002 2002
IEC 61672-1	2002	Electroacoustics - Sound level meters Part 1: Specifications	EN 61672-1	2003
ISO 286-1	1988	ISO system of limits and fits Part 1: Bases of tolerances, deviations and fits	EN 20286-1	1993
ISO 286-2	1988	Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts	EN 20286-2	1993
ISO 3744	1994	Acoustics - Determination of sound power levels of noise sources using sound pressure - Engineering method in an essentially free field over a reflecting plane	EN ISO 3744	1995
CIE 15.2 [3]	1986	Colorimetry	-	-

[1] Undated reference.

[2] Valid edition at date of issue.

[3] CIE = International Commission on Illumination.

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
61243-1

Deuxième édition
Second edition
2003-10

Travaux sous tension –
Détecteurs de tension –

Partie 1:
Type capacitif pour usage sur des tensions alternatives de plus de 1 kV

Live working –
Voltage detectors –

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

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch

Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE XA

Pour prix, voir catalogue en vigueur
For price, see current catalogue

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

LIVE WORKING – VOLTAGE DETECTORS –

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

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. 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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International Standard IEC 61243-1 has been prepared by IEC technical committee 78: Live working.

This second edition cancels and replaces the first edition published in 1993 and amendment 1 (1997).

This edition includes the following major technical changes from the previous edition:

a) the Scope has been extended to cover the use on electrical systems for voltages up to 765 kV a.c.;
b) the notion of family of voltage detectors which are identical in terms of design and dimensions and only differ by their nominal voltages (or nominal voltage ranges) has been included;

c) the classification in terms of the setting of the threshold voltage to give a clear indication has been eliminated;

d) a new test set-up with bars has been introduced. Depending on the nominal voltage of the voltage detector, it is required or becomes an alternative test set-up for checking the influence of interference fields, the influence of interference voltages, the protection against bridging and the spark resistance;

e) the revision of specific dielectric tests has been included;

f) some test procedures (clear perceptibility of audible indication, drop resistance, climatic dependence) have been improved and completed.

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

FDIS	Report on voting
78/527/FDIS	78/537/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.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

IEC 61243 consists of the following parts, under the general title *Live working – Voltage detectors:*

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

Part 2: Resistive type to be used for voltages of 1 kV to 36 kV a.c.

Part 3: Two-pole low-voltage type

Part 5: Voltage detecting systems (VDS)

The committee has decided that the contents of this publication will remain unchanged until 2007. At this date, the publication will be

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

The contents of the corrigendum of October 2005 have been included in this copy.

INTRODUCTION

This International Standard has been prepared according to the requirements of IEC 61477, where applicable.

LIVE WORKING – VOLTAGE DETECTORS –

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

1 Scope

This part of IEC 61243 is applicable to portable voltage detectors, with or without built-in power sources, to be used on electrical systems for voltages of 1 kV to 765 kV a.c., and frequencies of 50 Hz and/or 60 Hz.

This part applies only to voltage detectors of capacitive type used in contact with the part to be tested, as a complete device including its insulating element or as a separate device, adaptable to an insulating stick which, as a separate tool, is not covered by this standard (see 4.4.1 for general design).

Other types of voltage detectors are not covered by this part of the standard.

Some restrictions on their use are applicable in the case of factory-assembled switchgear and on overhead systems of electrified railways (see Annex B, instructions for use).

NOTE Except where otherwise specified, all the voltages defined in this standard refer to values of phase-to-phase voltages of three-phase systems. In other systems, the applicable phase-to-phase or phase-to-earth (ground) voltages should be used to determine the operating voltage.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60060-1:1989, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60068-1, *Environmental testing -Part 1: General and guidance*

IEC 60068-2-6:1995, *Environmental testing – Tests – Test Fc and guidance: Vibration (sinusoidal)*

IEC 60068-2-14:1984, *Environmental testing – Tests – Test N: Change of temperature*
Amendment 1 (1986)

IEC 60068-2-32:1975, *Environmental testing – Tests – Test Ed: Free fall*
Amendment 2 (1990)

IEC 60071-1:1993, *Insulation co-ordination – Part 1: Terms, definitions, principles and rules*

IEC 60417-DB:2002[1], *Graphical symbols for use on equipment*

IEC 60942, *Electroacoustics – Sound calibrators*

IEC 61260:1995, *Electroacoustics – Octave-band and fractional-octave-band filters*

IEC 61318:2003, *Live working – Quality assurance plans applicable to tools, devices and equipment*

IEC 61477:2001, *Live working – Minimum requirements for the utilization of tools, devices and equipment*
Amendment 1 (2002)[2]

IEC 61672-1:2002, *Electroacoustics – Sound level meters – Part 1: Specifications*

ISO 286-1:1988, *ISO system of limits and fits – Part 1: Bases of tolerances, deviations and fits*

ISO 286-2:1988, *ISO system of limits and fits – Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts*

ISO 3744:1994, *Acoustics – Determination of sound power levels of noise sources using sound pressure – Engineering method in an essentially free field over a reflecting plane*

CIE (International Commission on Illumination) 15.2:1986, *Colorimetry*

3 Terms and definitions

For the purposes of this part of IEC 61243, the following terms and definitions apply.

3.1
voltage detector
portable device used to detect the presence or the absence of the operating voltage (high and low voltage at a.c. or d.c.) and used to verify that the installation is ready for earthing

NOTE These devices are generally described as either capacitive type or resistive type.

[Definition 11.2.5 of IEC 60743]

3.2
voltage detector of capacitive type
device whose operation is based on the current passing through the stray capacitance to earth (ground)

NOTE The term voltage detector is used in this document for voltage detector of capacitive type.

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[1] "DB" refers to the IEC on-line database.

[2] There exists a consolidated edition 1.1 (2002) that includes edition 1 and its amendment.

3.3
designs of voltage detectors
different constructions of voltage detectors, either as a complete device with or without contact electrode extension, or as a separate device intended to be equipped with an insulating stick, with or without contact electrode extension

NOTE Some parts such as the contact electrode, the contact electrode extension (if existing), or the insulating element of a voltage detector as a complete device may be dismantled.

3.4
family of voltage detectors
voltage detectors that are identical in terms of design and dimensions and only differ by their nominal voltages (or nominal voltage ranges). A family of voltage detectors is limited by a minimum and a maximum voltage within which the nominal voltages (or voltage ranges) of the voltage detectors will be selected

3.5
contact electrode
bare conductive part of the conductive element which establishes the electric connection to the component to be tested

[IEV 651-10-09]

3.6
contact electrode extension
externally insulated conductive element between the indicator and the contact electrode, intended to achieve the correct position of the indicator relative to the installation being tested

3.7
indicator
part of the voltage detector which indicates the presence or absence of the operating voltage at the contact electrode

[IEV 651-10-08, modified]

3.8
adaptor
part of a voltage detector as a separate device which permits attachment of an insulating stick

3.9
insulating element
part of a voltage detector as a complete device that provides adequate safety distance and insulation to the user

3.10
insulating stick
separate tool attached to a voltage detector as a separate device in order to provide the length to reach the installation to be tested and adequate safety distance and insulation to the user

3.11
limit mark
distinctive location or mark to indicate to the user the physical limit to which the voltage detector may be inserted between live parts or may touch them