



NSAI
Standards

Irish Standard
I.S. EN IEC 61243-1:2021

Live working - Voltage detectors - Part 1:
Capacitive type to be used for voltages
exceeding 1 kV AC

I.S. EN IEC 61243-1:2021

Incorporating amendments/corrigenda/National Annexes issued since publication:

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National Foreword

I.S. EN IEC 61243-1:2021 is the adopted Irish version of the European Document EN IEC 61243-1:2021, Live working - Voltage detectors - Part 1: Capacitive type to be used for voltages exceeding 1 kV AC

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EUROPEAN STANDARD

EN IEC 61243-1

NORME EUROPÉENNE

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Supersedes EN 61243-1:2005 and all of its amendments
and corrigenda (if any)

English Version

**Live working - Voltage detectors - Part 1: Capacitive type to be
used for voltages exceeding 1 kV AC
(IEC 61243-1:2021)**

Travaux sous tension - Détecteurs de tension - Partie 1:
Type capacitif pour usage sur des tensions alternatives de
plus de 1 kV
(IEC 61243-1:2021)

Arbeiten unter Spannung - Spannungsprüfer - Teil 1:
Kapazitive Ausführung für Wechselspannungen über 1 kV
(IEC 61243-1:2021)

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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EN IEC 61243-1:2021 (E)

European foreword

The text of document 78/1253/CDV, future edition 3 of IEC 61243-1, prepared by IEC/TC 78 "Live working" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61243-1:2021.

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- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2022-02-26
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IEC 60743:2013	NOTE	Harmonized as EN 60743:2013 (not modified)
IEC 60855-1	NOTE	Harmonized as EN 60855-1
IEC 61235	NOTE	Harmonized as EN 61235
IEC 61481 (series)	NOTE	Harmonized as EN 61481 (series)
IEC 61936-1:2010	NOTE	Harmonized as EN 61936-1:2010 (modified)
IEC 61936-1:2010/A1:2014	NOTE	Harmonized as EN 61936-1:2010/A1:2014 (not modified)

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

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<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60060-1	2010	High-voltage test techniques - Part 1: General definitions and test requirements	EN 60060-1	2010
IEC 60068-1	-	Environmental testing - Part 1: General and guidance	EN 60068-1	-
IEC 60068-2-6	-	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	-
IEC 60068-2-14	-	Environmental testing - Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	-
IEC 60068-2-31	-	Environmental testing - Part 2-31: Tests - Test Ec: Rough handling shocks, primarily for equipment-type specimens	EN 60068-2-31	-
IEC 60068-2-75	-	Environmental testing - Part 2-75: Tests - Test Eh: Hammer tests	EN 60068-2-75	-
IEC 60071-1	2019	Insulation co-ordination - Part 1: Definitions, principles and rules	EN IEC 60071-1	2019
IEC 60417	-	Graphical symbols for use on equipment. Index, survey and compilation of the single sheets.	-	-
IEC 60942	-	Electroacoustics - Sound calibrators	EN IEC 60942	-
IEC 61000-6-2	2016	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments	EN IEC 61000-6-2	2019
IEC 61260	series	Electroacoustics - Octave-band and fractional-octave-band filters	-	-
IEC 61318	-	Live working - Conformity assessment applicable to tools, devices and equipment	EN 61318	-

EN IEC 61243-1:2021 (E)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61326-1	-	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements	EN IEC 61326-1	-
IEC 61477	-	Live working - Minimum requirements for the utilization of tools, devices and equipment	EN 61477	-
IEC 61672-1	-	Electroacoustics - Sound level meters - Part 1: Specifications	EN 61672-1	-
IEC 62271	series	High-voltage switchgear and controlgear	EN 62271	series
ISO 286-1	-	Geometrical product specifications (GPS) - ISO code system for tolerances on linear sizes - Part 1: Basis of tolerances, deviations and fits	EN ISO 286-1	-
ISO 286-2	-	Geometrical product specifications (GPS) - ISO code system for tolerances on linear sizes - Part 2: Tables of standard tolerance classes and limit deviations for holes and shafts	EN ISO 286-2	-
ISO 3744	2010	Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for an essentially free field over a reflecting plane	EN ISO 3744	2010
CISPR 11	-	Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement	EN 55011	-
CIE 015	-	Colorimetry	-	-



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INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Live working – Voltage detectors –
Part 1: Capacitive type to be used for voltages exceeding 1 kV AC**

**Travaux sous tension – Détecteurs de tension –
Partie 1: Type capacitif pour usage sur des tensions alternatives de plus de 1 kV**



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IEC 61243-1

Edition 3.0 2021-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Live working – Voltage detectors –
Part 1: Capacitive type to be used for voltages exceeding 1 kV AC**

**Travaux sous tension – Détecteurs de tension –
Partie 1: Type capacitif pour usage sur des tensions alternatives de plus de 1 kV**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LIVE WORKING – VOLTAGE DETECTORS –

Part 1: Capacitive type to be used for voltages
exceeding 1 kV AC

FOREWORD

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International Standard IEC 61243-1 has been prepared by IEC technical committee 78: Live working.

This third edition cancels and replaces the second edition published in 2003 and Amendment 1:2009. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) The scope is more precise, stating that only bare contact to the part to be tested is reliable for these contact *voltage detectors*. The rationale is that tests on painted or coated conductors have led to wrong indications, as this non-conductive paint or coat acts as a capacitor with different capacity according to the thickness. This capacity has an effect on the *threshold voltage*.
- b) A *contact probe* is introduced as a new type of non-conductive *contact electrode*.
- c) A new type "*exclusively outdoor type*" has been defined and implemented into the requirements and test procedure.

- d) A *selector* for voltage and frequency is allowed if foreseeable misuse is excluded.
- e) The marking for *voltage detectors* with low *interference voltage* has been made more precise.
- f) The indication groups have been made more precise and requirements and tests for the "*ready to operate state*" and "*stand-by state*" added.
- g) Requirements and tests for electromagnetic compatibility have been implemented.
- h) An example for good electrical connection for the tests is introduced.
- i) A new test set-up with one bar has been added for *voltage detectors* of category L for overhead line configuration.
- j) A dielectric test for tubes and rods has been implemented for those not covered by IEC 60855-1 or IEC 61235.
- k) Old Annex E (mechanical shock test – pendulum method) has been deleted (see IEC 60068-2-75 pendulum method) and replaced by an information and a guideline on the use of the *limit mark* and the *contact electrode extension*.
- l) Annex E and Annex F have swapped places to make it easier for the reader to combine the classification of defects (Annex D) and the rationale for this classification (new Annex E).
- m) A new informative Annex H has been created to give information for further developments of *voltage detectors* due to field experiences.
- n) Editorial changes have been made to harmonize with other new published standards.

The text of this International Standard is based on the following documents:

CDV	Report on voting
78/1253/CDV	78/1294/RVC

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

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

Terms defined in Clause 3 are given in *italic* print throughout this document.

A list of all parts in the IEC 61243 series, published under the general title *Live working – Voltage detectors*, can be found on the IEC website.

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INTRODUCTION

This document 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 AC

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 800 kV AC, and frequencies of 50 Hz and/or 60 Hz.

This document applies only to *voltage detectors* of capacitive type used in contact with the bare 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 document (see 4.4.2.1 for general design).

Other types of *voltage detectors* are not covered by this document.

NOTE Self ranging *voltage detectors* (formally "multi range *voltage detectors*") are not covered by this document.

Some restrictions or formal interdictions on their use are applicable in case of switchgear of IEC 62271 series design, due to insulation coordination, on overhead line systems of electrified railways (see Annex B) and systems without neutral reference. For systems without neutral reference, the insulating level is adapted to the maximum possible voltage to the earth (ground).

Products designed and manufactured according to this document contribute to the safety of users provided they are used by persons trained for the work, in accordance with the hot stick working method and the instructions for use.

Except where otherwise specified, all the voltages defined in this document 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 are used to determine the *operating voltage*.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60060-1:2010, *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, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-14, *Environmental testing – Part 2-14: Tests – Test N: Change of temperature*

IEC 60068-2-31, *Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens*

IEC 60068-2-75, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

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