

**Live working - Phase comparators - Part 1: Capacitive type to be used for voltages exceeding 1 kv a.c.**

**EESTI STANDARDI EESSÕNA****NATIONAL FOREWORD**

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English Version

Live working - Phase comparators -  
Part 1: Capacitive type to be used for voltages  
exceeding 1 kV a.c.  
(IEC 61481-1:2014)

Travaux sous tension - Comparateurs de phase -  
Partie 1: Type capacitif pour usage sur des tensions  
alternatives de plus de 1 kV  
(CEI 61481-1:2014)

Arbeiten unter Spannung - Phasenvergleich -  
Teil 1: Kapazitive Ausführung für Wechselspannungen  
über 1 kV  
(IEC 61481-1:2014)

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Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Foreword

The text of document 78/1051/FDIS, future edition 1 of IEC 61481-1, prepared by IEC/TC 78 "Live working" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61481-1:2014.

The following dates are fixed:

- latest date by which the document has to be (dop) 2015-08-28  
implemented at national level by  
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standard or by endorsement
- latest date by which the national (dow) 2017-11-28  
standards conflicting with the  
document have to be withdrawn

This document supersedes EN 61481:2001 (partially).

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## Endorsement notice

The text of the International Standard IEC 61481-1:2014 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60071-1:2006	NOTE	Harmonized as EN 60071-1:2006 (not modified).
IEC 60743:2013	NOTE	Harmonized as EN 60743:2013 (not modified).
IEC 61235:1993	NOTE	Harmonized as EN 61235:1995 (modified).
IEC 61936-1:2010	NOTE	Harmonized as EN 61936-1:2010 (modified).
ISO/IEC 17025	NOTE	Harmonized as EN ISO/IEC 17025 (not modified).

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
CISPR 11	-	Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement	EN 55011	-
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 60304	-	Standard colours for insulation for low-frequency cables and wires	HD 402 S2	-
IEC 60417-DB	-	Graphical symbols for use on equipment	-	-
IEC 60942	-	Electroacoustics - Sound calibrators	EN 60942	-
IEC 61000-4-2	-	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2	-
IEC 61000-4-3	-	Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	EN 61000-4-3	-
IEC 61260	-	Electroacoustics - Octave-band and fractional-octave-band filters	EN 61260	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61318	-	Live working - Conformity assessment applicable to tools, devices and equipment	EN 61318	-
IEC 61326-1	-	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements	EN 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	-
ISO 354	-	Acoustics - Measurement of sound absorption in a reverberation room	EN ISO 354	-
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
ISO 3745	-	Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Precision methods for anechoic rooms and hemi-anechoic rooms	EN ISO 3745	-
CIE 15	-	Colorimetry	-	-

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## INTRODUCTION

This International Standard has been prepared in accordance with the requirements of IEC 61477.

Taking into consideration the two different functioning principles of portable *phase comparators* of capacitive type available on the market, the maximum a.c. *nominal voltage* to be associated with each of them has been considered for delimiting the scope of this standard.

The following table presents the rationale for the resulting maximum *nominal voltage* to be associated with each functioning principle of *phase comparator of capacitive type*.

Functioning principle	Maximum nominal voltage kV rms	Rationale
Single-pole <i>phase comparators</i> operating with a memory system	36	<ul style="list-style-type: none"> <li>– With this principle of functioning, the <i>clear indication</i> of the <i>phase comparator</i> is limited by the <i>memory holding time</i>.</li> <li>– With higher <i>nominal voltages</i>, the distance between phases of the installation increases and the time necessary to move the pole of the <i>phase comparator</i> between the two parts to be compared becomes the limitation.</li> </ul>
Two-pole <i>phase comparators</i> operating with a wireless connection	245	<ul style="list-style-type: none"> <li>– With this principle of functioning, there is no theoretical limit for the maximum <i>nominal voltage</i>.</li> <li>– The definition of 245 kV corresponds to the present limit of validation of the electric test set-up.</li> </ul>

The product covered by this standard may have an impact on the environment during some or all stages of its life cycle. These impacts can range from slight to significant, be short-term or long-term, and occur at the global, regional or local level.

In terms of environmental improvement, this standard includes neither requirements nor test provisions for the manufacturers of the product nor recommendations to the users of the product. However, all parties intervening in its design, manufacture, packaging, distribution, use, maintenance, repair, reuse, recovery and disposal are invited to take account of environmental considerations.