



SLOVENSKI STANDARD
SIST EN 61936-1:2011/A1:2014
01-junij-2014

**Elektroenergetski postroji za izmenične napetosti nad 1 kV - 1. del: Skupna pravila
- Dopolnilo A1 (IEC 61936-1:2010/A1:2014)**

Power installations exceeding 1 kV a.c. - Part 1: Common rules

Starkstromanlagen mit Nennwechselspannungen über 1 kV - Teil 1: Allgemeine Bestimmungen

Installations électriques en courant alternatif de puissance supérieure à 1 kV - Partie 1: Règles communes

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SIST EN 61936-1:2011/A1:2014

Ta slovenski standard je istoveten z: **EN 61936-1:2010/A1:2014**

<https://standards.iteh.ai/catalog/standards/sist/e5f3c704-8df1-40e3-b370-64755053894f/sist-en-61936-1-2011-a1-2014>

ICS:

29.240.01	Omrežja za prenos in distribucijo električne energije na splošno	Power transmission and distribution networks in general
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SIST EN 61936-1:2011/A1:2014

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 61936-1/A1

April 2014

ICS 29.020; 29.080.01

English version

**Power installations exceeding 1 kV a.c. -
Part 1: Common rules
(IEC 61936-1:2010/A1:2014)**

Installations électriques en courant
alternatif de puissance supérieure à 1 kV -
Partie 1: Règles communes
(CEI 61936-1:2010/A1:2014)

Starkstromanlagen mit
Nennwechselfspannungen über 1 kV -
Teil 1: Allgemeine Bestimmungen
(IEC 61936-1:2010/A1:2014)

This amendment A1 modifies the European Standard EN 61936-1:2010; it was approved by CENELEC on 2014-04-02. 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
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 99/129/FDIS, future IEC 61936-1:2010/A1, prepared by technical committee 99 IEC/TC 99 "System engineering and erection of electrical power installations in systems with nominal voltages above 1 kV a.c. and 1,5 kV d.c., particularly concerning safety aspects" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61936-1:2010/A1:2014.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2015-01-02
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-04-02

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 61936-1:2010/A1:2014 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:

Add the following references to the existing list IEC 61936-1:2011/A1:2014

- <https://standards.iteh.ai/catalog/standards/sist/e53c704-8df4-40e3-b370-047350558948/en-61936-1-2014-a1-2014>
- IEC 60092 (Series) NOTE Harmonised as EN 60092 (Series) (not modified).
- IEC 61892 (Series) NOTE Harmonised as EN 61892 (Series) (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

Replacement and addition in Annex ZA of EN 61936-1:2010:

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
Add, to the existing list, the title of the following standards :				
IEC 62271-206	-	High-voltage switchgear and controlgear - Part 206: Voltage presence indicating systems for rated voltages above 1 kV and up to and including 52 kV	EN 62271-206	-
IEC 62271-207	-	High-voltage switchgear and controlgear - Part 207: Seismic qualification for gas-insulated switchgear assemblies for rated voltages above 52 kV	EN 62271-207	-
IEC 82079-1	-	Preparation of instructions for use - Structuring, content and presentation - Part 1: General principles and detailed requirements	EN 82079-1	-
IEC/TS 61463	-	Bushings - Seismic qualification	-	-
IEC/TR 62271-300	-	High-voltage switchgear and controlgear - Part 300: Seismic qualification of alternating current circuit-breakers	-	-

Replace, the reference to IEC 62271-1:2007 by the following new reference :

IEC 62271-1	2007	High-voltage switchgear and controlgear - Part 1: Common specifications	EN 62271-1	2008
+ A1	2011	Part 1: Common specifications Amendment 1:2011	+ A1	2011

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IEC 61936-1

Edition 2.0 2014-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 1
AMENDEMENT 1

Power installations exceeding 1 kV a.c. –
Part 1: Common rules
(standards.iteh.ai)

Installations électriques en courant alternatif de puissance supérieure à 1 kV –
Partie 1: Règles communes

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

R

ICS 29.020; 29.080.01

ISBN 978-2-8322-1384-1

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FOREWORD

This amendment has been prepared by IEC technical committee 99: System engineering and erection of electrical power installations in systems with nominal voltages above 1 kV a.c. and 1,5 kV d.c., particularly concerning safety aspects.

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

FDIS	Report on voting
99/129/FDIS	99/131/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 this amendment and the base publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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

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[SIST EN 61936-1:2011/A1:2014](https://standards.iteh.ai/catalog/standards/sist/e5Bc704-8df4-40e3-b370-64735055894f/sist-en-61936-1-2011-a1-2014)

Foreword

[https://standards.iteh.ai/catalog/standards/sist/e5Bc704-8df4-40e3-b370-](https://standards.iteh.ai/catalog/standards/sist/e5Bc704-8df4-40e3-b370-64735055894f/sist-en-61936-1-2011-a1-2014)

[64735055894f/sist-en-61936-1-2011-a1-2014](https://standards.iteh.ai/catalog/standards/sist/e5Bc704-8df4-40e3-b370-64735055894f/sist-en-61936-1-2011-a1-2014)

Insert, in the existing list of differences in some countries, the following new items:

- 7.2.6: 50 mm × 200 mm mesh is not accepted (Australia)
- 7.2.6: Guidance regarding fence construction can be found at ENA Doc 015 (Australia)
- 8.7.1: Fire rating of barriers must be a minimum fire rating of 120 minutes (Australia)
- 8.7.2: The dimensions G_1 and G_2 are to be measured from the inside edge wall of any bund wall rather than the measured point shown in Figure 7a) and 7b) from the transformer where the bund wall is wider than the transformer (Australia)
- 8.8.1.3: Spill containment should extend by 50 % of the height of the transformer (Australia)
- Figure 7a): The dimensions G_1 and G_2 are to be measured from the inside edge wall of any bund wall rather than the measured point shown in Figure 7a) from the transformer where the bund wall is wider than the transformer (Australia)
- Figure 7b): The dimensions G_1 and G_2 are to be measured from the inside edge wall of any bund wall rather than the measured point shown in Figure 7b) from the transformer where the bund wall is wider than the transformer (Australia)
- Clause 10: For requirements regarding earthing refer to AS 2067, Substations and High Voltage Installations (Australia)

1 Scope

Add the following new item e) after d):

- e) Electrical installations erected on offshore platforms e.g. offshore wind power farms.

Modify the fifth dashed item in the last list of this clause as follows:

- installations on ships according to IEC 60092 [34] series and offshore units according to IEC 61892 [35] series, which are used in the offshore petroleum industry for drilling, processing and storage purposes.

Modify the first paragraph after the last list of this clause as follows:

This standard does not apply to the design of prefabricated, type-tested switchgear and high voltage/low voltage prefabricated substation, for which separate IEC standards exist.

2 Normative references

Add, to the existing list, the title of the following standards:

IEC/TS 61463, *Bushings – Seismic qualification*

IEC 62271-206, *High-voltage switchgear and controlgear – Part 206: Voltage presence indicating systems for rated voltages above 1 kV and up to and including 52 kV*

IEC 62271-207, *High-voltage switchgear and controlgear – Part 207: Seismic qualification for gas-insulated switchgear assemblies for rated voltages above 52 kV*

IEC/TR 62271-300, *High-voltage switchgear and controlgear – Part 300: Seismic qualification of alternating current circuit-breakers*

IEC 82079-1, *Preparation of instructions for use – Structuring, content and presentation – Part 1: General principles and detailed requirements*

Replace the reference to IEC 62271-1:2007 by the following new reference:

IEC 62271-1:2007, *High-voltage switchgear and controlgear – Part 1: Common specifications Amendment 1:2011*

4.1.2 Agreements between supplier (manufacturer) and user

Add the following four new lines to the existing table:

Subclause	Item
4.3.9	Special conditions and requirements for seismic environment
4.4.3.5	Special conditions and requirements for vibrations
8.7.2.1	Reduction of distances G_1/G_2
10.2.1	Fundamental requirements for design of the earthing system

4.2.4 Short-circuit current

Add the following Note 1 after the first paragraph:

NOTE 1 Where an installation has on-site generation, motors or parallel operation with a network (co-generation), fault levels can increase.

Change the existing Note 1 to Note 2, and the existing Note 2 to Note 3.

4.2.7 Electric and magnetic fields

Modify the existing note as follows:

NOTE National and/or international regulations may specify acceptable levels. Further information is available from International Commission on Non-Ionizing Radiation Protection (ICNIRP) or IEEE.

4.3.1 Equipment and supporting structures

Replace the existing Note 1 by the following normal text:

Consideration shall be given to temporary stresses and loads that may be applied during construction or maintenance procedures. Specific equipment can be affected by cyclic loads and stresses due to thermal expansions (refer to specific equipment standards).

Delete Note 2.

Add, at the end of the second list, the following new item:

- seismic loads.

4.3.9 Vibration

Replace the existing title and text of this subclause with the following:

4.3.9 Seismic loads **STANDARD PREVIEW**

Special conditions and requirements shall be agreed between user and supplier. (See also 4.4.3.5 Vibration).

Installations situated in a seismic environment shall be designed to take this into account.

Where load specifications apply to the installation of civil work or equipment to meet seismic conditions, then these specifications shall be observed.

Seismic loads shall be dealt with in accordance with appropriate standards for power installations: e.g. IEC 62271-207 for GIS, IEC/TR 62271-300 for circuit-breakers and IEC/TS 61463 for bushings.

The following measures shall be taken into account:

- a) Any individual equipment shall be designed to withstand the dynamic forces resulting from the vertical and horizontal motions of the soil. These effects may be modified by the response of the foundation and/or the supporting frame and/or the floor in which this equipment is installed. The response spectrum of the earthquake shall be considered for the design of the equipment.
- b) The layout shall be chosen in order to limit the loads due to interconnections between adjoining devices needing to accommodate large relatively axial, lateral, torsional or other movements to acceptable values. Attention should be paid to other stresses which may develop during an earthquake.

4.4.3.5 Vibration

Replace the existing text of this subclause with the following:

Special conditions and requirements shall be agreed between user and supplier. (See also 4.3.9 Seismic loads).

Vibration caused by wind, electromagnetic stresses, traffic (e. g. temporary road and railway traffic) and industrial processes shall be considered. The withstand capability of equipment against vibrations shall be given by the manufacturer.

The service stresses of equipment, which may be transmitted through a common monolithic foundation or floor (for example opening/reclosing of circuit-breakers) shall be taken into account.

5.4.1 General

Replace the first sentence of the second paragraph with the following:

If parts of an installation can be separated from each other by a disconnecter, these parts shall be tested at the rated impulse withstand voltage for the isolating distance (see Tables 1a and 1b as well as Tables 2a and 2b of IEC 62271-1:2007, Amendment 1:2011).

Table 2 – Minimum clearances in air – Voltage range II ($U_m > 245$ kV)

Replace the existing Table 2 with the following new Table 2:

**Table 2 – Minimum clearances in air – Voltage range II
($U_m > 245$ kV)**

Voltage range	Highest voltage for installation	Rated lightning impulse withstand voltage ^a	Rated switching impulse withstand voltage	Minimum phase-to-earth clearance		Rated switching impulse withstand voltage	Minimum phase-to-phase clearance	
	U_m r.m.s.	U_p 1,2/50 μ s (peak value)	U_s Phase-to-earth 250/2 500 μ s (peak value)	Conductor structure	Rod structure N	U_s Phase-to-phase 250/2 500 μ s (peak value)	Conductor - conductor parallel	Rod - conductor
	kV	kV	kV	mm		kV	mm	
II	300	850/950	750	1 600 1 700 ^b	1 900	1 125	2 300	2 600
		950/1 050	850	1 800 1 900 ^b	2 400	1 275	2 600	3 100
	362	950/1 050	850	1 800 1 900 ^b	2 400	1 275	2 600	3 100
		1 050/1 175	950	2 200	2 900	1 425	3 100	3 600
	420	1 050/1 175	850	1 900 2 200 ^b	2 400	1 360	2 900	3 400
		1 175/1 300	950	2 200 2 400 ^b	2 900	1 425	3 100	3 600
		1 300/1 425	1 050	2 600	3 400	1 575	3 600	4 200
	550	1 175/1 300	950	2 200 2 400 ^b	2 900	1 615	3 700	4 300
		1 300/1 425	1 050	2 600	3 400	1 680	3 900	4 600
		1 425/1 550	1 175	3 100	4 100	1 763	4 200	5 000
	800	1 675/1 800	1 300	3 600	4 800	2 210	6 100	7 400
		1 800/1 950	1 425	4 200	5 600	2 423	7 200	9 000
1 950/2 100		1 550	4 900	6 400	2 480	7 600	9 400	