
Zaščita pred električnim udarom - Skupni vidiki za inštalacijo in opremo (IEC 61140:2001/A1:2004, spremenjen)

(istoveten EN 61140:2002/A1:2006)

Protection against electric shock - Common aspects for installation and equipment
(IEC 61140:2001/A1:2004, modified)

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**Protection against electric shock -
Common aspects for installation and equipment
(IEC 61140:2001/A1:2004, modified)**

Protection contre les chocs électriques -
Aspects communs aux installations
et aux matériels
(CEI 61140:2001/A1:2004, modifiée)

Schutz gegen elektrischen Schlag -
Gemeinsame Anforderungen für
Anlagen und Betriebsmittel
(IEC 61140:2001/A1:2004, modifiziert)

This amendment A1 modifies the European Standard EN 61140:2002; it was approved by CENELEC on 2006-05-01. 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 Central Secretariat or to any CENELEC member.

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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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the 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 amendment 1:2004 to the International Standard IEC 61140:2001, prepared by IEC TC 64, Electrical installations and protection against electric shock, together with the common modifications prepared by the Technical Committee CENELEC TC 64, Electrical installations and protection against electric shock, was submitted to the formal vote and was approved by CENELEC as amendment A1 to EN 61140:2002 on 2006-05-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2007-05-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2009-05-01

In this document the common modifications to the International Standard are indicated by a vertical line in the left margin of the text.

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1 Scope

Add the following NOTE:

NOTE Z1 Requirements of this standard may be used by technical committees as a basis for their publications.

2 Normative references

Insert the following two new references:

IEC 60038:1983 + A1:1994 + A2:1997, *IEC standard voltages*

EN 62271-102:2002 + corr. March 2005, *High-voltage switchgear and controlgear – Part 102: Alternating current disconnectors and earthing switches* (IEC 62271-102:2001 + corr. April 2002 + corr. May 2003)

3 Definitions

Add the following two new definitions:

3.41

isolation

function intended to make dead for reasons of safety all or a discrete section of the electrical installation by separating the electrical installation or section from every source of electric energy

[IEV 826-17-01]

3.42

impulse withstand voltage

highest peak value of impulse voltage of prescribed form and polarity which does not cause breakdown of insulation under specified conditions

8 Special operating and servicing conditions

Add, after 8.2, the following new subclause:

8.3 Devices for isolation

8.3.1 General

Devices suitable for isolation shall effectively isolate the circuit concerned from all live supply conductors.

NOTE 1 With regard to low voltage, see also 8.3.2.

The position of the contacts or other means of isolation shall, in the isolated position, be either externally visible or clearly and reliably indicated.

NOTE 2 The indication may be achieved by suitable marking to indicate the isolated and closed positions respectively.

Devices suitable for isolation shall be designed and/or erected to prevent unintentional or unauthorized operation.

NOTE 3 Such operation might be caused for example by shocks and vibrations.

8.3.2 Devices for isolation for low voltage

Devices suitable for isolation shall effectively isolate the circuit concerned from all live supply conductors including the neutral. However in TN-S systems where the supply system conditions are

such that the neutral conductor can be regarded as being reliably at earth potential, the neutral conductor need not to be isolated.

Devices for isolation shall comply with the following two conditions:

- a) When in the new, clean and dry condition, with the contacts in the position for isolation, the device shall withstand between the line and load terminals, the impulse withstand voltage given in Table 2.

Table 2 – Minimum impulse withstand voltage of devices for isolation related to the nominal voltage

Nominal voltage of the supply system ^a		Minimum impulse withstand voltage ^b	
V		kV	
Three-phase systems	Single-phase systems with middle point	Overvoltage category III	Overvoltage category IV
	120 – 240	3	5
230/400, 277/480		5	8
400/690		8	10
1 000		10	15

^a According to IEC 60038.

^b Equipment of overvoltage category II and I are not applicable for isolation.

NOTE 1 For an explanation of the overvoltage categories, see 2.2.2.1.1 of EN 60664-1:2003.

NOTE 2 The impulse withstand voltages are referred to an altitude of 2 000 m.

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- b) The leakage current across open poles shall under no circumstances exceed:

- 0,5 mA per pole in the new, clean and dry condition, and
- 6 mA per pole, at the end of the conventional service life of the device,

when tested across the terminals of each pole with a voltage value equal to 110 % of the voltage between line to neutral corresponding to the rated voltage of equipment, when the starpoint or midpoint of the supply is connected to earth. In all other cases the voltage value shall be equal to 110 % of the line-to-line voltage of the supply system.

In the case of d.c. testing, the value of the d.c. voltage shall be the same as the r.m.s. value of the a.c. test voltage.

NOTE Tests to verify this requirement may be specified by the relevant technical committee.

8.3.3 Devices for isolation for high voltage

8.3.3.1 General

Every isolating device shall be suitable for the assigned purpose.

All general requirements, e.g. earthing arrangements and if necessary the special requirements of the location, e.g. altitude, shall be stated and taken into consideration.

All isolated parts of the main circuit to which access is required or provided shall be capable of being earthed prior to becoming accessible. This requirement does not necessarily apply to removable parts that become accessible after being separated from the installation.

The corresponding specifications for the assigned equipment shall be designed taking into account the network configuration, the local particular conditions and the experiences of operation and maintenance.

It shall be considered that the expected electrical stresses are not only the stresses found in normal operation, but also additional stresses, for example in case of a short-circuit fault.

Lightning and switching overvoltages shall be also taken into consideration.

Mechanical, climatic and other special stresses which belong to external influences at the site of installation shall be considered during the design process of the equipment.

NOTE 1 Besides these stresses, it is important to pay attention to EN 60071-1, Insulation co-ordination, by the selection of a suitable switching device.

To avoid unintentional operation, means of preventing the operation of the isolating device shall be available in the "on" and "off" position.

NOTE 2 For the construction or installation of devices for isolation it should be taken into consideration, that electric arcs or hot ionizing gases may be generated when switching off. Therefore equipment should be designed or installed in such a way that ionized gas released during switching does not result in damage to the equipment or in danger to operating personnel. This is valid also if there is a secondary flashover by ionization to parts which are not live parts.

8.3.3.2 Characteristics of devices for isolation

The rated impulse withstand voltage levels across the isolating distance shall be higher than the rated impulse withstand voltage level for line-to-line or line-to-earth insulation (see EN 62271-102).

For safety reasons, devices for isolation shall be designed so that any earth leakage current which may flow from one contact to the terminal on the other side of the isolator is limited to an acceptable level. This safety requirement is fulfilled, if this leakage current is reliably dissipated to earth via a special connector.

NOTE 1 For devices for isolation which contain a dielectric different from air with atmospheric pressure, the dielectric conditions for the isolating distance may be agreed between manufacturer and user.

NOTE 2 Tests for verification of the effectiveness of the protection against pollution and the performance of the insulation materials with regard to leakage current should be considered.

NOTE 3 For high voltage rated impulse withstand voltages, see EN 60071-1.