SIST

SLOVENSKI STANDARD
SIST HD 60364-5-551:2010/A11:2016

01-junij-2016

Nizkonapetostne električne inštalacije - 5-55. del: Izbira in namestitev električne opreme - Druga oprema - 551. točka: Nizkonapetostni generatorji (IEC 60364-5-55:2001/A2:2008 (Točka 551)) - Dopolnilo A11

Low-voltage electrical installations - Part 5-55: Selection and erection of electrical equipment - Other equipment - Clause 551: Low-voltage generating sets

Errichten von Niederspannungsanlagen - Teil 5-55: Auswahl und Errichtung elektrischer Betriebsmittel - Andere Betriebsmittel - Abschnitt 551: Niederspannungsstromerzeugungseinrichtungen

Installations électriques à basse tension - Partie 5-55: Choix et mise en oeuvre des matériels électriques - Autres matériels - Article 551: Groupes générateurs à basse tension

Ta slovenski standard je istoveten z: HD 60364-5-551:2010/A11:2016

ICS:

29.160.40	Električni agregati	Generating sets
91.140.50	Sistemi za oskrbo z elektriko	Electricity supply systems

SIST HD 60364-5-551:2010/A11:2016 en,fr

HARMONIZATION DOCUMENT
DOCUMENT D'HARMONISATION
HARMONISIERUNGSDOKUMENT

HD 60364-5-551:2010/A11

May 2016

ICS 91.140

English Version

Low-voltage electrical installations - Part 5-55: Selection and erection of electrical equipment - Other equipment - Clause 551: Low-voltage generating sets

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This amendment A11 modifies the Harmonization Document HD 60364-5-551:2010; it was approved by CENELEC on 2016-02-29. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for implementation of this amendment at national level.

Up-to-date lists and bibliographical references concerning such national implementations 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).

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Ref. No. HD 60364-5-551:2010/A11:2016 E

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European foreword

This document (HD 60364-5-551:2010/A11:2016) was prepared by CLC/TC 64 “Electrical installations and protection against electric shock”.

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) 2017-03-01
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2019-03-01

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.

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 60364-5-55:2001/A2:2008 (Clause 551) are prefixed “Z”.

1 Modification to Foreword

In the last but one paragraph, replace "Annex ZA" by "Annex ZB".

2 Modification to Clause 551.2 General requirements

***Add** the following new subclause after 551.2.4:*

551.2.Z1 Annex ZC details additional requirements

– for stand-alone generating sets not connected to the mains supply and

– for stand-alone generating sets for supplying energy in a fixed installation that is disconnected from the mains supply.

3 Modification to Annex ZA

***Add** the following new references:*

Publication	Year	Title	EN/HD	Year
IEC 60309-2	-	Plugs, socket-outlets and couplers for industrial purposes - Part 2: Dimensional interchangeability requirements for pin and contact-tube accessories	EN 60309-2	-
IEC 61557-8	-	Electrical safety in low voltage distribution systems up to 1 000 V a.c. and 1 500 V d.c. - Equipment for testing, measuring or monitoring of protective measures - Part 8: Insulation monitoring devices for IT systems	EN 61557-8	-

4 Modification to Annex ZB

Add the following SNC:

ZC.3.2.2.2 **Germany**

Instead of the requirements of the second paragraph of ZC.3.2.2.2, in Germany the standards DIN 14685-1, DIN 14685-2, DIN 14686 and DIN 14687 apply for single-phase socket-outlets for emergency cases.

5 Addition of Annex ZC

***Add** the following new Annex:*

Annex ZC
(normative)

Additional requirements for stand-alone generating sets not connected to the mains supply and for stand-alone generating sets for supplying energy in a fixed installation disconnected from the mains supply

ZC.1 General

Especially for generating sets standing alone, provisions shall be made to disconnect any generating set or a combination of generating sets in case of failure of the connecting cables or of the supplied equipment. In this case, the requirements of HD 60364-4-41 shall be met except as modified for the particular cases given in Clauses ZC.2 and ZC.3.

ZC.2 General requirements

The stand-alone generating set shall be suitable for the intended use (e.g. performance rating).

NOTE Special requirements apply for stand-alone generating sets that are switched in parallel.

The prospective short-circuit current and prospective earth fault current shall be assessed for each stand-alone generating set or combination of stand-alone generating sets which can operate independently of other sources or combinations. The short-circuit-breaking capacity of protective devices shall not be exceeded for any of the intended methods of operation of the stand-alone generating set(s).

The capacity and operating characteristics of the stand-alone generating set shall be such that danger or damage to equipment does not arise after the connection or disconnection of any intended load as a result of deviation of the voltage or frequency from the intended operating range.

Protective devices shall be provided to disconnect automatically the sets, if the capacity of the stand-alone generating set is exceeded.

The sum of each load relative to the maximum performance of the stand-alone generating set and the motor starting current should be considered.

Provisions to disconnect any stand-alone generating set or a combination of stand-alone generating sets are required and shall meet the requirements of HD 60364-4-41.

ZC.3 Protective measures

ZC.3.1 Automatic disconnection of supply

ZC.3.1.1 General

Where the protective measure ‘automatic disconnection of supply’ is used for protection against electric shock, the requirements of HD 60364-4-41:2007, Clause 411 apply, except as modified for the particular cases given in the following.

ZC.3.1.2 Additional requirements for stand-alone generating sets incorporating static converters

Where fault protection for parts of the distribution system, supplied by the stand-alone generating set with static converter, relies upon the operation of protective devices, the disconnection time shall be according to HD 60364-4-41:2007, Table 41.1. If it is not within that time, supplementary equipotential bonding shall be provided between simultaneously accessible exposed conductive-parts and extraneous-conductive-parts on the load side of the static converter in accordance with HD 60364-4-41:2007, 415.2.

The resistance of supplementary equipotential bonding conductors required between simultaneously accessible conductive-parts shall fulfil the following condition in case of a.c.:

$$R(\Omega) \leq \frac{50V}{I_a(A)}$$

where

I_a is the maximum earth fault current that can be supplied by the static converter alone for a period of up to 5 s.

Precautions shall be taken or equipment shall be selected so that the correct operation of protective devices or the measuring principle of the insulation monitoring devices (IMD) are not impaired by d.c. currents generated by a static converter or by the presence of filters.

ZC.3.1.3 Use of the TN system for stand-alone generating sets

The short-circuit power supply of the stand-alone generating set should be such that the overcurrent protective device or the residual current device are able to disconnect the circuit in accordance with the requirements of HD 60364-4-41:2007, 411.4.

For practical reasons, it is recommended that the operating instructions of stand-alone generating sets contain a recommendation of the maximum rated current value.

ZC.3.1.4 Use of the IT system for stand-alone generating sets

The use of the IT system for stand-alone generating sets shall be in accordance with HD 60364-4-41:2007, 411.6. In addition, the following requirements shall apply:

– all exposed-conductive-parts shall be interconnected by a protective conductor sized adequately to withstand the prospective fault current. An earth resistance of $R_A \leq 1\,000\ \Omega$ is sufficient;

– in the case of a first insulation fault where the insulation resistance drops below 100 Ω/V (referred to line-to-earth voltage U_0 in a fault-free system), an alarm shall be generated by the insulation monitoring device (IMD) according to EN 61557-8;

– for requirements in case of a second insulation fault, see HD 60364-4-41:2007, 411.6.4.

ZC.3.2 Use of electrical separation in connection with stand-alone generating sets

ZC.3.2.1 Electrical separation with only one item of current-using equipment

Where only one item of current-using equipment is connected to the stand-alone generating set, the requirements of HD 60364-4-41:2007, Clause 413, shall be applied.

ZC.3.2.2 Electrical separation with more than one item of current-using equipment

ZC.3.2.2.1 General

For electrical separation with more than one item of current-using equipment, the following alternatives are available.

It is recommended that the product of the line-to-earth voltage U_0 of the circuit in volts and the length in metres of the wiring system should not exceed 100 000 Vm, and that the length of the wiring system should not exceed 500 m.

ZC.3.2.2.2 Electrical separation with insulation monitoring device (IMD) and automatic disconnection

An insulation monitoring device (IMD) according to EN 61557-8 shall be installed. If the insulation resistance between active parts and the unearthed equipotential bonding conductor drops below 100 Ω/V (referred to line-to-earth voltage U_0 in a fault-free system), the circuits of the current-using equipment shall be disconnected automatically within 1 s. The response time should be verified in accordance with EN 61557-8.

This protective measure may be designed in such a way that after the system has been switched-off, one 1-phase socket-outlet continues to be supplied, e.g. for emergency cases. This socket-outlet shall be marked permanently and be un-detachable such that principally only one item of current-using equipment shall ever be connected to it.

The exposed-conductive-parts of the stand-alone generating set, if any, shall be connected to the unearthed equipotential bonding conductor, providing the stand-alone generating set is not class II equipment or is not set up with equivalent insulation.

Limiting the length of the electrical system extension and automatic disconnection at a second insulation fault on two different live conductors is not required, because the stand-alone generating set is already being disconnected at the first fault.

If the insulation resistance is permanently monitored during operation by an IMD according to EN 61557-8, the measurement of the insulation resistance according to HD 60364-6 for periodic verification can be omitted.

ZC.3.2.2.3 Electrical separation with RCD and automatic disconnection

One RCD per circuit or socket-outlet shall be used so that only one item of current-using equipment is protected.

NOTE In general, a first insulation fault cannot be detected by the RCD. In case of a second insulation fault on another live conductor, one of the RCDs will disconnect the faulty circuit.

The operating characteristics of the RCDs shall be selected according to HD 60364-4-41:2007, Table 41.1.

In this application, only RCDs type B shall be used for 1-phase and 3-phase systems. If there is no risk of d.c. fault currents > 6 mA occurring for all possible connected current-using equipment, RCDs type A may be used.

In stand-alone generating sets with 1-phase and 3-phase socket-outlet supplied by the same source, all RCDs shall have the same characteristics – being either RCD type B or RCD type A.

In stand-alone generating sets with a 3-phase system with distributed N-conductor, the 1-phase-equipment connected between a phase and the neutral should be insulated against the voltage between