SLOVENSKI STANDARD
SIST EN 50123-6:2003/A1:2015

01-april-2015

Železniške naprave - Stabilne naprave električne vleke - Stikalne naprave za enosmerni tok - 6. del: Oprema stikalnih naprav za enosmerni tok

Railway applications - Fixed installations - D.C. switchgear -- Part 6: D.C. switchgear assemblies

Bahnanwendungen - Ortsfeste Anlagen - Gleichstrom-Schalteinrichtungen -- Teil 6: Gleichstrom-Schaltanlagen

Applications ferroviaires - Installations fixes - Appareillage à courant continu -- Partie 6: Ensembles d'appareillage

Ta slovenski standard je istoveten z: **EN 50123-6:2003/A1:2014**

ICS:

29.130.99	Druge stikalne in krmilne naprave	Other switchgear and controlgear
29.280	Električna vlečna oprema	Electric traction equipment

SIST EN 50123-6:2003/A1:2015 **en**

EUROPEAN STANDARD

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EN 50123-6:2003/A1

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ICS 29.130.99; 29.280

English Version

Railway applications - Fixed installations - D.C. switchgear - Part 6: D.C. switchgear assemblies

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This amendment A1 modifies the European Standard EN 50123-6:2003; it was approved by CENELEC on 2014-11-17. 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.

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

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Foreword

This document (EN 50123-6:2003/A1:2014) has been prepared by CLC/SC 9XC "Electric supply and earthing systems for public transport equipment and ancillary apparatus (Fixed installations)".

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2015-11-17
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2017-11-17

This amendment was elaborated to provide guidance to the requirement of 6.6.3, Internal arcing, that gas or vapour escaping under pressure does not endanger operating staff.

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.

2 Normative references

Add *the following reference:*

EN 50123-1:2003, *Railway applications – Fixed installations – D.C. switchgear – Part 1: General*

3 Definitions

Replace *Clause 3 by the following:*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 50123-1:2003 and the following apply.

3.1
internal arc
arcing within a switchgear assembly arising from a fault between active parts and/or between active parts and other conductive parts

3.2
rated short-circuit current under internal arcing conditions (I_{Narc})
current, during the test duration/150 ms, indicating the maximum allowable value of sustained short-circuit current at the terminals of the incoming unit for which the requirements of this test specification are fulfilled

Note 1 to entry: The value is the maximum value of the prospective sustained short-circuit current.

3.3
compartment under test
compartment of a switchgear assembly which is subject to an internal arc test

8 Tests

8.2 List of the applicable tests

Add *the following at the end of Table 2:*

Internal arc test	Type, optional	8.3.9

8.3 Performance of tests

Add *the following after 8.3.8:*

8.3.9 Internal arc test

The internal arc test is an optional type test. The test shall be performed according to the procedure specified in Annex B. The criteria for successful passing are given in B.5.

***Add** the following after Annex A:*

Annex B
(normative)

Method for testing under conditions of arcing due to an internal fault

B.1 Purpose of the test

Annex B applies to metal-enclosed d.c. switchgear assemblies - hereafter called ASSEMBLIES - used in indoor stationary installations.

The test procedure described below is intended

— to assess the ability of the ASSEMBLY to limit the risk of personal injury,

— to verify the effectiveness of the design in protecting persons,

in case of an internal arc.

The testing conditions take into account that ASSEMBLIES are installed in areas restricted to authorized personnel.

NOTE This is equivalent to accessibility class A of EN 62271-200:2012.

B.2 Characteristics – Rated short-circuit current under internal arcing conditions (I_{Narc})

Value of the rated short-circuit current current under internal arcing conditions I_{Narc} shall be equal to the rated earth fault current I_{Ncwe}. The peak of the short-circuit current value is conventionally assumed to be 1,42 times the prospective sustained short-circuit current (fault of negligible impedance).

NOTE The current level during internal arcing depends on the earthing of the switchboard frame (see EN 50123-7-1:2003, 6.5.7). High fault currents can be expected where the switchboard frame is

– directly connected to the return circuit as shown in EN 50123-7-1:2003, 6.5.7, Figure 4b, or

– connected to substation earth as shown in EN 50123-7-1:2003, 6.5.7, Figure 4a, and a voltage limiting device is installed between substation earth and the return circuit.

Lower fault currents can be expected where the bedding resistance of the track and the earth resistance limit the fault current.

B.3 Test arrangements

B.3.1 Test specimen

The test shall be carried out on representative samples. In case of an ASSEMBLY with a continuous main busbar, consisting of extensible (modular) standalone units, the test specimen shall consist of minimum two units connected together as in service.

The following points shall be observed.

— The test shall be carried out on a test specimen not previously subjected to an arcing test or on a specimen cleaned and prepared accordingly. The specimen and the equipment in it may be repaired or replaced before each test.

NOTE Degradation of insulation due to carbonisation or moderate erosion of metal parts is not necessarily considered to render a unit unsuitable for a further test.

— The test specimen shall be placed in an open area and shall be fixed by its designed means.

— Vertical indicators shall be installed all around.

— A ceiling shall be located at a distance of (200 ± 50) mm from the upper part of the test specimen unless differently stated by the manufacturer.

If a test specimen includes a roof according to the following specification and as shown in Figure B.1 it shall be tested with the roof installed and an additional ceiling is not required. The roof

— covers the top surface completely and

— is of a protection degree of IPX1 or higher and

— is mounted at minimum distance d_c to the top of the ASSEMBLY of no more than 200 mm.

— The test specimen shall be fully equipped. Earthing and bonding shall be as for normal service.

— Mock-ups of internal components are permitted provided that

  — they have the same volume and shape as the original items,

  — similar external materials, with any metallic external material is earthed in a similar manner to normal service.

— All doors and covers provided are closed.

— The test specimen shall be earthed at the earthing point provided.

— Secondary devices need not be installed if inside a separate compartment for control circuits. Means for wiring from the control compartment to the compartment under test shall be installed.

B.3.2 Test circuit

A typical diagram of the test circuit is shown in EN 50123-1:2003, Figure A.1, with typical calibration and characteristics shown in EN 50123-1:2003, Figure A.2. The supply source S feeds a circuit comprising adjustable resistors R, adjustable reactors L and the test object A.

If the supply source is not a generator, then the minimum converter pulse number shall be 6 with a minimum supply frequency of 50 Hz.

The test circuit shall produce a peak current with the characteristic illustrated as calibration 1 in EN 50123-1:2003, Figure A.2.

B.3.3 Voltage

The applied voltage of the test circuit shall be equal to the rated voltage U_{Ne}.

B.3.4 Duration of the test

The test duration shall be 150 ms.

B.4 Test procedure

B.4.1 Supply circuit

The test sample is connected and supplied corresponding to the normal service arrangement. The earthing of the enclosure is to be connected to the negative conductor of the supply source.

Infeed and earth connection shall be to the same switchgear panel.

Any device (for example, protection relay or direct overcurrent release) that may automatically trip the circuit before the end of the prospective duration of the test shall be made inoperative or ineffective during the test.

If compartments or functional units are equipped with devices intended to limit the duration of the arc itself by other means (for example, by transferring the current to a metallic short circuit), they shall be made inoperative or ineffective during the test.

B.4.2 Arc initiation

Each compartment containing main supply voltage shall be tested in a typical configuration. Tests with the following locations for arc initiation shall be performed:

— main busbar to closest earthed part;

— cable connection to closest earthed part;

— circuit breaker or disconnector to closest earthed part.

The compartment under test and inside the point of initiation shall be located at the furthest point, downstream in the current path from the supply.

NOTE 1 it is assumed that the most onerous conditions are met by using the furthest point downstream.

An additional test on the main busbar shall be performed in the panel next to panel under test if an open busbar system without or with reduced segregation is used.