

SLOVENSKI STANDARD
SIST EN 50123-5:1998/A1:1999
01-december-1999

Railway applications - Fixed installation - D.C. switchgear - Part 5: Surge arresturs and low-voltage limiters for specific use in d.c. systems; Amendment A1

Railway applications - Fixed installations - D.C. switchgear -- Part 5: Surge arresters and low-voltage limiters for specific use in d.c. systems

Bahnanwendungen - Ortsfeste Anlagen - Gleichstromschalteinrichtungen -- Teil 5: Überspannungsableiter und Niederspannungsbegrenzer für spezielle Verwendung in Gleichstromsystemen

Applications ferroviaires - Installations fixes - Appareillage à courant continu -- Partie 5: Parafoudres et limiteurs de tension pour usage spécifique dans les systèmes à courant continu

Ta slovenski standard je istoveten z: EN 50123-5:1997/A1:1999

ICS:

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

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 50123-5/A1

March 1999

ICS 29.120.60; 45.020

English version

**Railway applications - Fixed installations - D.C. switchgear
Part 5: Surge arresters and low-voltage limiters for specific use in
d.c. systems**

Applications ferroviaires - Installations
fixes - Appareillage à courant continu
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Teil 5: Überspannungsableiter und
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This amendment A1 modifies the European Standard EN 50123-5:1997; it was approved by CENELEC on 1998-08-01. 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.

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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and 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

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Foreword

This amendment was prepared by SC 9XC, Electric supply and earthing systems for public transport equipment and ancillary apparatus (fixed installations), of Technical Committee CENELEC TC 9X, Electrical and electronic applications for railways

The text of the draft (prAA) was submitted to the formal vote and was approved by CENELEC as amendment A1 to EN 50123-5:1997 on 1998-08-01.

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) 1999-10-01
- latest date by which the national standards conflicting
with the amendment have to be withdrawn (dow) 1999-10-01

Annexes designated “normative” are part of the body of the standard.
In this amendment, annex B is informative.

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Introduction

Add at the end of the text:

Annex A gives a guidance on Typical information given with enquiries and tenders. Further annexes are intended to provide specifications for field applications of surge arresters as part of a protection against overvoltages.

Annexes

Add the following annex B:

Annex B (informative)

High voltage filters for protection against voltage surges

B.1 Scope

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The filter consists of a surge arrester, a capacitor in series with charge and discharge resistors upstream and downstream of the capacitor. The use of this filter is to limit voltage surges. Alternative methods are acceptable, subject to agreement between purchaser and supplier.

The filter may be requested suitable for outdoor or indoor mounting.

The applicable parameters of the protection should be chosen by the designer of the protection and approved by the purchaser.

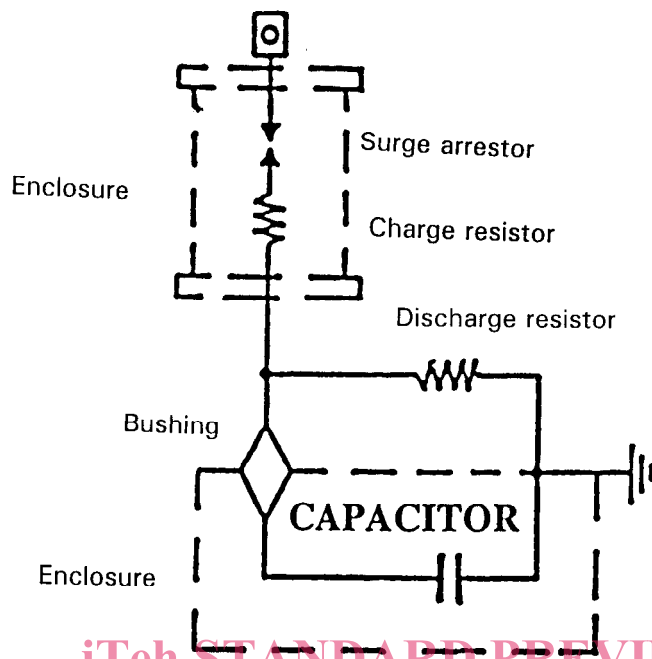
A typical diagram of the filter is given for information in figure B.1.

B.2 Normative references

For reference refer to the product standards for the individual components.

B.3 Definitions

See EN 50123-1:1995, EN 50123-5:1997 and product standards.



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Figure B.1: Typical diagram of the filter

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B.4 Characteristics

B.4.1 Surge arresters

Surge arresters, for installation indoor or outdoor as required, should be suitable for a maximum continuous operating voltage U_C as defined in 4.2.9.

The protective voltage level U_P is specified by the designer of the protection and should be of the order of $2 \cdot U_C$.

B.4.2 Charge resistor

The charge resistor should be preferably rated as per table B.1.

Table B.1: Preferred values for charge resistor

U_n of the system [kV]	Preferred value of the charge resistor [Ω]
up to 1	no preferred values are given
1,5	no preferred values are given
3	1

It should be non inductive.

It should be mounted in an outdoor or indoor enclosure with the surge arrester.

B.4.3 Capacitor

The capacitor should have a preferred capacity as per table B.2.

Table B.2: Preferred values for capacitor

U_n of the system [kV]	Preferred value of the capacity [μ F]
up to 1	no preferred values are given
1,5	no preferred values are given
3	4

It should be non inductive and contained in a metallic enclosure completely moisture proof and should be immersed in synthetic oil, bio-degrading and without Cl components. The supplier should indicate the number of elements in series and/or in parallel in the capacitor.

The capacitor will have one insulated terminal brought out by means of a bushing at the rated insulation voltage U_{Nm} specified by the purchaser in accordance with the insulation co-ordination of the system. The other terminal should be connected to the earthed enclosure and an earth terminal should be provided.

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B.4.4 Discharge resistor

The resistance and power ratings should be specified by the protection designer and approved by the purchaser for the discharge resistor.

Preferred values are given in table B.3.

Table B.3: Preferred values for discharge resistor rating

U_n of the system [kV]	resistance [Ω]	power [W • s]
up to 1	no preferred values are given	no preferred values are given
1,5	no preferred values are given	no preferred values are given
3	100 000	100 W • 1200 s

Unless otherwise agreed between the purchaser and the supplier, it should be for indoor or outdoor use as required, separately enclosed.

It should be connected across the capacitor and to earth.

B.5 Tests

B.5.1 Tests on capacitors

Each capacitor should be submitted to the following routine tests:

- a) Measurement of the capacity at U_C , 50 Hz and at ambient temperature. Maximum tolerance $\pm 5\%$.
- b) Measurement of $\tan \delta$ at ambient temperature and at the r.m.s. voltage equal to U_C , 50 Hz. $\tan \delta$ should not exceed 0,004.
- c) Test of the dielectric strength at ambient temperature, by applying U_a between terminals as given by EN 50124-1:199X, table 5 for 60 s.
- d) Repeat of the tests under a) and b) after test c). The capacity should not vary by more than 2 % and $\tan \delta$ not by more than 0,0004.

The following additional type tests should be made on an agreed number of capacitors (the recommended number to be agreed between the purchaser and the supplier is 4 % of the batch):

- e) Operation test for 60 s at an a.c. r.m.s. voltage of $2 \cdot U_C$, 50 Hz, with the capacitor previously heated at 60 °C.
- f) Same test as in e) but with the capacitor previously cooled to - 20 °C.
- g) 10 charges at $2 \cdot U_C$ d.c. and successive discharges by applying a solid short circuit between terminals; 120 s will be allowed between each charge and discharge.
- h) Ageing test consisting in submitting the capacitor to an a.c. r.m.s. voltage at $1,25 \cdot U_C$, 50 Hz for 100 consecutive hours. The test should be carried out at an ambient temperature of $60\text{ °C} \pm 2\text{ °C}$.
- i) After having carried out the tests under e) to h), test d) should be repeated and the same tolerances are allowed.

A disruptive type test should be carried out on one capacitor, which, unless otherwise agreed between the purchaser and the supplier, should have passed all previous tests:

- j) Puncture test obtained by applying a linearly increasing voltage. The puncture should not occur up to U_{Ni} as defined in EN 50124-1:199X.

B.5.2 Tests on surge arrester

Surge arresters should undergo the tests required in this standard.

B.5.3 Test on resistors

See the relevant product standards.