SLOVENSKI STANDARD
SIST EN 50123-4:2003

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SIST EN 50123-4:1999

Ģelezniġke naprave ï Stabilne naprave elektriļne vleke ï Stikalne naprave za enosmerni tok ï 4. del: Odklopni loļilniki, loļilniki in enosmerna ozemljilna stikala za zunanjo vgradnjo

Railway applications - Fixed installations - D.C. switchgear -- Part 4: Outdoor d.c. disconnectors, switch-disconnectors and earthing switches

Bahnanwendungen - Ortsfeste Anlagen - Gleichstrom-Schalteinrichtungen -- Teil 4: Freiluft-Gleichstrom-Trennschalter, -Lasttrennschalter und -Erdungsschalter

Applications ferroviaires - Installations fixes - Appareillages à courant continu -- Partie 4: Interrupteurs-sectionneurs, sectionneurs et sectionneurs de terre pour l'extérieur

Ta slovenski standard je istoveten z: **EN 50123-4:2003**

ICS:

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29.280	Elektriļna vleļna oprema	Electric traction equipment

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EUROPEAN STANDARD **EN 50123-4**

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English version

Railway applications – Fixed installations – D.C. switchgear Part 4: Outdoor d.c. disconnectors, switch-disconnectors and earthing switches

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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 European Standard 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.

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

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Foreword

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

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 50123-4 on 2002-09-01.

This European Standard supersedes EN 50123-4:1999.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2003-09-01

- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2005-09-01

This Part 4 is to be used in conjunction with EN 50123-1:2003.

Annexes designated “informative” are given for information only.
In this standard, annex A is informative.

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1 Scope

This part of EN 50123 specifies requirements for outdoor d.c. switch-disconnectors, disconnectors and earthing switches for use in outdoor fixed installations of traction systems.

NOTE 1 EN 50121-5 specifies requirements for electromagnetic compatibility (EMC).

NOTE 2 In this document the word "unit" means "switch-disconnector and/or disconnector and/or earthing switch" as defined in 3.1.4, 3.1.5 and 3.1.6 of EN 50123-1.

2 Normative references

This European Standard incorporates by dated or undated references, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

See EN 50123-1:2003.

3 Definitions

For the purposes of this European Standard, the terms and definitions given in EN 50123-1 apply.

4 Service requirements

The equipment covered in this standard is mainly intended for outdoor installations.

The requirements given for outdoor equipment in EN 50125-2 or in 2.1.2 of EN 60694 may be used and EN 50119 may be taken into account. In this standard the pollution degree PD 4A (see EN 50124-1) is considered as normal condition.

Where service requirements and environmental class differ from those defined in the above standards, require to be specified or a particular environmental class is required, the purchaser shall state this fact in the tender specification. The supplier shall confirm that the unit is suitable for the service requirements specified.

5 Characteristics of the unit

5.1 Enumeration of the characteristics

The characteristics of the unit and its assigned designations and values (where applicable) are as follows:

- type of unit (5.2);
- rated values (5.3);

- class of use (5.4);
- control circuits (5.5).

5.2 Type of unit

A unit shall be defined by the following details (where applicable):

- whether the unit is a switch disconnector, disconnector, earthing switch or a combination of these types;
- number of poles;
- number of positions (if there are more than two);
- provision of an enclosure;
- degree of protection provided by the enclosure, if any (see EN 60529).

5.3 Rated values

5.3.1 General

The rated characteristic values shall be specified by the purchaser. Rated insulation voltage values shall be selected from the values indicated in Table 1 of EN 50123-1; current values should have one of the preferred values in 5.1.2 of EN 50123-1.

These values shall be confirmed by the manufacturer, who shall indicate the rated values for the type of unit proposed, and shall be complemented with other data.

All these values are to be stipulated in accordance with 5.3.2 to 5.3.4, but it is not necessary to specify all the listed rated values.

5.3.2 Voltages

A unit is defined by the following voltages.

The nominal voltages and the system voltages and limits shall be taken from EN 50163. The insulation values shall be taken from Table 1 of EN 50123-1:

- nominal voltage U_n (see 3.2.1.1 of EN 50123-1);
- system voltages and limits (see 3.2.1.2 of EN 50123-1);
- rated voltage U_{Ne} (see 3.2.3 of EN 50123-1);
- rated insulation voltage U_{Nm} (this value shall be equal to or higher than U_{max}) (see 3.2.2 of EN 50123-1);
- rated impulse withstand voltage U_{Ni} (see 3.2.4 of EN 50123-1);
- power-frequency voltage withstand level (dry and wet) U_a (see 3.2.5 of EN 50123-1);
- auxiliary and control supply voltages (see 3.2.3.1 of EN 50123-1).

5.3.3 Currents

A unit is defined by the following currents.

The current values shall be selected taking into account 5.1 of EN 50123-1:

- conventional thermal current I_{th}, I_{the} (see 3.2.8 and 3.2.9 of EN 50123-1);

  NOTE 1 Earthing switches are not required to be assigned this rating.

- rated service current I_{Ne} (see 3.2.10 of EN 50123-1);

  NOTE 2 Earthing switches are not required to be assigned this rating.

- rated breaking and making capacity (see 3.2.18 and 3.2.22 of EN 50123-1);

  - Switch-disconnectors and those disconnectors for which the manufacturer declares a making capacity, shall be able to make the stated prospective current at a voltage U equal to 1,2 U_{Ne}.

  - A rated breaking capacity requires the unit to be able to interrupt any current of a value lower than or equal to this rated breaking capacity.

- rated short-time withstand current I_{Ncw} (see 3.2.11 of EN 50123-1);

- overload capability: the purchaser shall inform the supplier of the load cycle requirements (see 3.2.10, note 2 of EN 50123-1).

5.4 Class of use

Disconnectors shall close and open at no-load except if otherwise declared by the manufacturer.

Switch-disconnectors shall close and open on-load, including highly inductive loads.

Both devices have either electrically latched or mechanically latched mechanisms.

The minimum breaking, making and short-time withstand currents of the units shall be at least those given in Table 1 for the appropriate category.

Table 1 – Categories of units

Category	Capacities (with $t_c \geq 0{,}01$ s)		Short-time withstand current	
	Making	Breaking	Current	Duration
I	0	0	I_{Ncw}/I_{Ncwe}	0,25 s
II	0	I_{Ne}	I_{Ncw}	0,25 s
III	I_{Ne}	I_{Ne}	I_{Ncw}	0,25 s
IV	3 I_{Ne}	3 I_{Ne}	I_{Ncw}	0,25 s
V	I_{Nss}	0	I_{Ncw}/I_{Ncwe}	0,25 s
VI	I_{Nss}	3 I_{Ne}	I_{Ncw}	0,25 s

NOTE 1 Unless otherwise specified I_{Nss} has the same rating as I_{Ncw} and I_{Ncwe} for earthing switches.

NOTE 2 A typical application of the above categories is the following:

- Category I: Disconnector and earthing switch used in locations where the purchaser has taken all precautions to inhibit making on to a fault current.
- Category II: Switch disconnector required for breaking load current only.
- Category III: Switch-disconnector in series with the feeder, required for making and breaking the rated current only.
- Category IV: Switch-disconnector as in III, but required for making and breaking the train starting current.
- Category V: Disconnector and earthing switch used in locations where the possibility exists of an inadvertent make on to a fault current.
- Category VI: Switch-disconnector as in IV, but required for making on to a fault current.

NOTE 3 For definition of t_c see 3.2.15 of EN 50123-1.

5.5 Control circuits

The control circuits are identified by the following:

- the voltage of the control circuits;
- the kind of current (d.c. or a.c.);
- the frequency, in case of a.c.

The voltage of the supply source and its frequency are the values on which the performance, the thermal behaviour and the insulation characteristics are based.

Unless otherwise required, the voltage shall be in accordance with 5.2 of EN 50123-1 and the rated insulation voltage shall be in accordance with EN 50124-1.

The supply voltage shall remain within 80 % and 110 % of the voltage in accordance with 5.2 of EN 50123-1.

When the control voltage is the same as in the main circuit, the same variations as in the main circuit apply.

The manufacturer shall indicate the value(s) of the current drawn by the control circuits at the specified voltage(s). In case of control circuits which draw current intermittently, the duration of the current flow shall be given.

5.6 Auxiliary contacts and circuits

Auxiliary circuits are mainly defined by the number of contacts provided, their rating (current and voltage) and by their characteristics (NO or NC or commutation). Unless otherwise required, the voltage shall be in accordance with 5.2 of EN 50123-1 and the rated insulation voltage shall be in accordance with EN 50124-1.

The purchaser shall specify the minimum number of auxiliary contacts required.

The auxiliary wiring connected to a circuit at 1 000 V a.c. or 1 500 V d.c. or above shall be physically separated from those connected to a circuit at a voltage below said limits.

For other characteristics of the auxiliary circuits, the requirements of 5.5 apply.

6 Construction

6.1 General

All apparatus and connections for the safe and satisfactory operation, control and protection of the equipment concerned, shall be provided whether or not specifically mentioned. The equipment shall be earthed, insulated, screened or enclosed as may be appropriate to ensure the protection of the equipment and safety of those concerned in its operation and maintenance.

Control and auxiliary circuits and contacts shall comply with the requirements of 5.2 of EN 50123-1.

6.2 Materials

No materials containing asbestos shall be used in the construction of the switchgear.

NOTE Special attention should be paid to the ability of the material used to resist moisture and fire: materials used should be of the self extinguishing type, so that the risk of propagation of fire is minimised (see Annex B of EN 50123-1).

6.3 Arcing contacts

Arcing contacts, if any, which are liable to be consumed during arc interruption shall be easy to replace.

6.4 Clearances and creepage distances

Clearances and creepage distances shall not be lower than those indicated in EN 50123-1, Table 1 and Annex D respectively.

NOTE Clearances and creepage distances may be increased to take into account the presence of foreign substances after the number of operations, in normal and short-circuit conditions, occurring during the normal life-span between cleaning procedures.