SLOVENSKI STANDARD
SIST EN 50123-7-2:2003

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Ģelezniġke naprave ï Stabilne naprave elektriļne vleke ï Stikalne naprave za enosmerni tok ï 7-2. del: Merilne, krmilne in zaġļitne naprave za izkljuļno uporabo v vleļnih sistemih za enosmerni tok, Izolacijski tokovni pretvorniki in druge naprave za merjenje toka

Railway applications - Fixed installations - D.C. switchgear -- Part 7-2: Measurement, control and protection devices for specific use in d.c. traction systems - Isolating current transducers and other current measuring devices

Bahnanwendungen - Ortsfeste Anlagen - Gleichstrom-Schalteinrichtungen -- Teil 7-2: Mess-, Steuer- und Schutzeinrichtungen in Gleichstrom-Bahnanlagen - Messumformer für Strommessung und andere Strommesseinrichtungen

Applications ferroviaires - Installations fixes - Appareillage à courant continu -- Partie 7-2: Appareils de mesure, de commande et de protection pour usage spécifique dans les systèmes de traction à courant continu - Transducteurs et autres appareils de mesure de courant

Ta slovenski standard je istoveten z: **EN 50123-7-2:2003**

ICS:

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29.280	Elektriļ na vleļ na oprema	Electric traction equipment

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EUROPEAN STANDARD

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English version

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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 50123-7-2 on 2002-09-01.

This European Standard supersedes EN 50123-7-2:1999.

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- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2005-09-01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 7-2 is to be used in conjunction with EN 50123-1:2003.

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1 Scope

This European Standard gives the requirements for isolating current transducers and other current measuring devices used in d.c. railway applications, fixed installations.

This transducer is normally positioned between the sensor in the live switchboard conductor or rail and the secondary device, giving galvanic insulation between the input and the output.

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

Where the equipment described in this standard is mounted on devices or in assemblies covered by the EN 50123 series , then the service conditions of the devices or assemblies apply.

In this European standard the pollution degree PD4 and overvoltage categories (see notes to Table 1 of EN 50123-1), as described in EN 50124-1, are considered to be normal conditions.

The normal service requirements are given in Annex B of EN 50123-1.

5 Characteristics

5.1 Electrical characteristics

5.1.1 General

The isolating transducer has an insulation level between its primary terminals and secondary terminals which is the same as that of the main circuit.

An isolating transducer shall have an insulation level in accordance with Table 1 of EN 50123-1.

Transducers shall be suitable for use providing inputs to measuring devices and/or protection devices. The output impedance, accuracy, linearity of response and phase shift between input and output shall be compatible with its designated application

The purchaser shall indicate whether the transducer is to be used for measurement purposes or for protection or both. He shall also indicate the accuracy range desired.

The sensor(s) for the current transducers shall be of one of the types described in 3.1.8 to 3.1.12 of EN 50123-1. It may be of a design suitable for temporary insertion or permanent connection onto live primary circuit conductors.

The frequency range shall be from d.c. to a minimum of 1 kHz.

A current transducer shall operate correctly up its continuous thermal current I_{th}, which shall be at maximum ambient temperature, at two times the specified main or primary circuit thermal current and shall be able to withstand I_{Ncw} of the main or primary circuit for the time specified. Rated accuracy, within specified tolerances, shall apply within the range from 0 to 1,2 I_{th} for measuring transducers and in the range from 0 to 2 I_{th} for protection transducers. Performance requirements different from these shall be by agreement between supplier and purchaser.

NOTE Attention should be paid to EMC emissions and immunity in locating the sensor.

Preferred secondary signal may either be a voltage in the range from 0 V to 10 V or a current in the range from 4 mA to 20 mA (e.g. 0 mA to 20 mA, 4 mA to 20 mA or 0 mA to 10 mA).

When the transducer uses an auxiliary power supply, means shall be provided to indicate that the power supply is not available. If the principle of operation of the transducer is electronic, then self-checking means shall be provided. The need for this requirement depends on the duty of the transducer and shall be specified by the purchaser.

Due consideration shall be given to providing adequate protection of the transducer and associated circuits against overloads and short circuits. Care shall be taken that inductive circuits can alter the inherent *di/dt* response.

5.1.2 Isolating transducer requirements

The following requirements characterise the isolating transducer:

a) rated input voltage (V);
b) rated insulation voltage (V);
c) input signal at 100 % signal (mV);
d) input impedance at 100 % signal (Ω);
e) output signal at 100 % signal (mA or mV or V);
f) output impedance at 100 % signal (Ω);
g) accuracy range at 100 % signal (%);

h) accuracy (± %);
i) upper limit of response frequency (kHz);
j) power frequency withstand (60 s) (kV);
k) impulse withstand voltage (if applicable) (kV_{cr});
l) power consumption (W);
m) auxiliary voltage (V).
n) loss of auxiliary power signal [1)]
o) electronic circuitry self checking required [1)]

5.1.3 d.c. shunt requirements

The following requirements characterise the shunt:

a) normal current rating (A);
b) rated insulation voltage [2)] (V);
c) output signal at I_{th} (V);
d) accuracy range based on I_{th} (%);
e) accuracy (± %);
f) rated short-time withstand current I_{New} (A);
g) upper limit of response frequency (kHz);
h) overload capability ;
i) ambient temperature to which rating refers (°C).

5.1.4 Hall effect sensor requirements

The same as for an isolating transducer with the addition of

p) number of Hall effect devices.

5.2 Mechanical characteristics

The enclosure of the transducer may be metal enclosed, or of insulating material. Both may have earthed metal mounting feet.

Mechanical stress caused by the operation of other devices within the switchgear or adjacent to the transducer shall not cause damage or loss of accuracy to the transducer.

Transducers intended for location near live conductors shall be provided with an insulated enclosure, unless alternative arrangements are agreed with the purchaser.

[1)] Requirement to be specified by the purchaser.
[2)] Refers to insulation mounting, if any.

6 Information to be exchanged between purchaser and supplier

The supplier shall give the requirements specified in 5.1.2, 5.1.3 and 5.1.4 as far as applicable and the purchaser shall confirm or complement these requirements as necessary.

If requested the following information shall be provided by the supplier in addition to the requirements specified above:

a) insulation levels of the circuits;

b) short time withstand current of the primary circuit I_{Ncw} in kA;

c) overload capability (current and time);

d) linearity range and tolerances;

e) thermal deviation of the secondary signal expressed per °C;

f) *di/dt* correctly followed in A/µs;

g) residual output (expressed in %) of the last signal, if any, value of the offset current (in order to control the transducer);

h) if inversion of polarity in the auxiliary supply may damage the device;

i) burden;

j) value of the input impedance of the device connected to the secondary side of the transducer.

A rating plate shall be provided with at least the following: conversion ratio, insulation level, serial number and manufacturer's name.

7 Tests

7.1 Dielectric tests

Power-frequency voltage withstand test shall be a routine test. The voltage shall be applied between all auxiliary power supply terminals and the primary side and between the secondary terminals and the auxiliary power supply.

An impulse test for transducers used on systems having U_{Nm} greater than 2,5 kV, is a type test made between input terminals and all other terminals including the transducer mounting feet.

Power frequency test values shall be taken from Table 1 of EN 50123-1.

7.2 Calibration test

This is a routine test.

Linearity shall be checked against the declared accuracy in the range from 0 and 1, 2 I_{th} when used for measurement purposes or in the declared accuracy range (at least from 0 to 2 I_{th})when used for protection purposes.