



SLOVENSKI STANDARD
oSIST prEN 50212:2019
01-maj-2019

Priključki za termoelektrične senzorje

Connectors for thermoelectric sensors

Steckverbindungen für Thermoelemente

Connecteurs pour capteurs thermoélectriques

Ta slovenski standard je istoveten z: prEN 50212

<https://standards.iteh.ai/catalog/standards/sist/b3daa422-a308-46f0-8519-eacf823bff2e/sist-en-50212-2020>

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Connectors for thermoelectric sensors

Connecteurs pour couples thermoelectriques

Steckverbindungen für Thermoelemente

This draft European Standard is submitted to CENELEC members for enquiry.
Deadline for CENELEC: 2019-05-31.

It has been drawn up by CLC/TC 65X.

If this draft becomes a European Standard, CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CENELEC 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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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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European foreword

This document (prEN 50212:2019) has been prepared by CLC/TC 65X "Industrial-process measurement, control and automation".

The following dates are proposed:

- latest date by which the existence of this document has to be announced at national level (doa) dor + 6 months
- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) dor + 12 months
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) dor + 36 months (to be confirmed or modified when voting)

This document will supersede EN 50212:1996.

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prEN 50212:2019**1 Scope**

The object of this document is to determine composition, nature of materials, manufacturing tests and thermoelectronic behaviour, of connectors for sensors using thermocouples according to EN 60584-3:2008.

This document does not cover such special thermocouples as U, L and W types; nevertheless the user of such special thermocouples may use the connectors described hereafter with some restrictions mentioned in the relevant paragraphs.

2 Normative References

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

4 General**4.1 Connector types****4.1.1 Connectors with specified dimensional characteristics**

They are defined in this standard by their dimensional, physical, electrical and chemical characteristics.

The types retained in this standard are:

- A type: connectors with cylindrical pins and cylindrical sockets;
- B type: connectors with flat pins and flat sockets.

4.1.2 Other connectors

The electrical characteristics are identical to those defined for connectors described in 4.1.1. Withdrawal tests, waterproof and dustproof tests, corrosion tests, test for resistance to heat, will be stated by the manufacturer as list of technical characteristics.

The dimensional physical and chemical characteristics peculiar to each manufacturer are not specified.

4.2 Marking for identification and polarities

The connectors shall comprise a permanent colour marking, e.g. either indelible superficial or mass colouring, or recessed coloured dots or coloured rings, etc.

At least the + polarity shall be indicated by permanent marking. Though non-compulsory, to avoid confusion with previous markings, or markings in other standards, the thermocouple type may be also additionally indicated.

Table 1

CODE	COLOUR
T	brown
J	black
E	violet
K	green
S	orange
R	orange
B	grey
N	pink

5 Electrical characteristics

5.1 Maximum allowable error when a temperature gradient is present

This test is only performed as a type test and is only relevant to a plug and socket assembly.

The maximal allowable errors with a temperature gradient of 40 K between temperatures Q_1 and Q_2 (see Figure 1) are stated in IEC 60584 series.

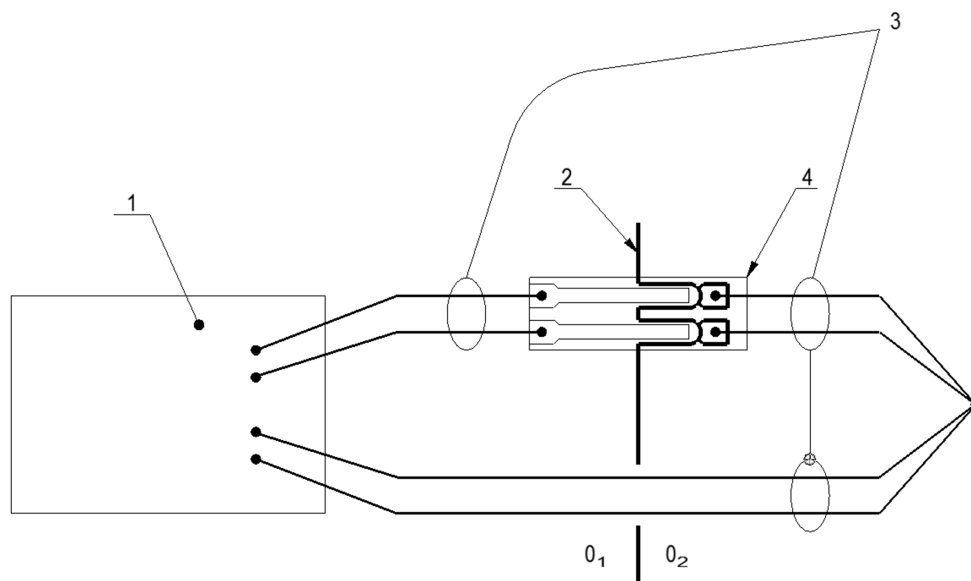
To measure them, the following methods shall be used:

- a) Schematic representation

Refer to Figure 1.

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**Key**

- 1 millivoltmeter
- 2 insulating barrier
- 3 connections cut out of the same reel of thermocouple corresponding to the nature of the connector to be tested
- 4 connector

NOTE 1 $\theta_2 - \theta_1 = 40 \text{ K} \pm 2 \text{ K}$ (see Clause 6)

NOTE 2 $0^\circ \text{C} \leq \theta_1 \leq 100^\circ \text{C}$

Figure 1 — Test set up for insertion error verification

b) Results

The measurements shall be made using a millivoltmeter having a metrological quality related to the error to be measured. The temperature/millivolt correspondence is stated in the relevant standard (1).

- The first measurement is made by direct connection by the thermocouple.
- The second measurement is made through the connector.
- The insertion error is the difference between the two values noted down one when directly connected by the thermocouple, and the other when connected through the connector.

5.2 Contact quality stability test

The error shall remain within the limits stated in Clause 6 after 250 plugging in and 250 plugging out of connector.

5.3 Insulation resistance

5.3.1 The insulation resistance between each pin and the other(s) and between each socket and the other(s) shall be at least 10 Mohms measured with 100 V DC, at the maximum temperature of the housing as specified by the manufacturer.

5.3.2 The insulation resistance between each positive and negative pin or each positive and negative socket and an aluminium foil wrapping the connector housing shall be at least 10 Mohms measured with 100 V DC. This test may not apply to the earth pin or the earth socket.

5.4 Earth connection continuity

The earth connection continuity shall be maintained after 250 plugging in and 250 plugging out of the connector.

6 Dimensional characteristics

The dimensional characteristics:

- on the one hand A type connectors with 2 or 3 pins;
- on the other hand of B type connectors with 2 pins,

are given in the following Figures 2, 3 and 4.

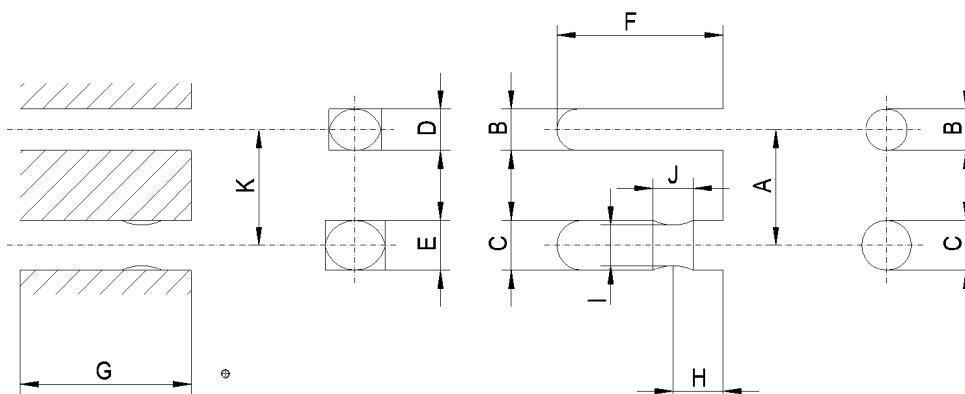
As to B type connectors with 3 pins, no dimensional characteristics are presently standardized, but such connectors shall fulfil the following prescriptions:

- it shall be possible to plug any B type plug with 3 pins, into a standardized B type socket with two socket contacts, a faulty insertion leading to a thermoelectric error being prevented. Removal of the earth-pin prior to such a plugging in is allowed;
- it shall be possible to plug into any B type socket with 3 socket contacts, a standardized B type plug with 2 pins, a faulty insertion leading to a thermoelectric error being prevented.

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Key

A	11,1	+0,1 -0,1	mm
B	4,0	+0,1 -0,2	mm
C	4,8	+0,1 -0,2	mm
D	$\leq 4,4$ mm (maximum insertion diameter)		
E	left open to the manufacturer's choice (to allow for the insertion and contact of C)		
F	16,0	+0 -2,0	mm
G	16,5	+2,0 -0	mm
H	4,8	+0,3 -0,3	mm
I	3,9	+0,4 -0,4	mm
J	1,5	+1,0 -0	mm
K	left open to the manufacturer's choice (to allow for the insertion and contact of the male pins with respect to the standardized pins and plug dimensions)		

Figure 2 — A type connector with 2 pins