



SLOVENSKI STANDARD

SIST EN 60584-2:1999

01-januar-1999

Thermocouples - Part 2: Tolerances (IEC 60584-2:1982 + A1:1989)

Thermocouples -- Part 2: Tolerances

Thermopaare -- Teil 2: Grenzabweichungen der Thermospannungen

Couples thermoélectriques -- Partie 2: Tolérances

Ta slovenski standard je istoveten z: EN 60584-2:1993

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ICS:

17.200.20	Instrumenti za merjenje temperature	Temperature-measuring instruments
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EUROPEAN STANDARD

EN 60584-2

NORME EUROPEENNE

EUROPÄISCHE NORM

April 1993

UDC 621.362.1.015:537.32:001.4

Supersedes HD 446.2 S2:1990

Descriptors: Thermocouples, tolerances with regard to reference tables

ENGLISH VERSION

Thermocouples
Part 2: Tolerances
(IEC 584-2:1982 + A1:1989)

Couples thermoélectriques
Deuxième partie: Tolérances
(CEI 584-2:1982 + A1:1989)

Thermopaare
Teil 2: Grenzabweichungen der
Thermospannungen
(IEC 584-2:1982 + A1:1989)

This European Standard was approved by CENELEC on 1993-03-09.
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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

Central Secretariat: rue de Stassart 35, B-1050 Brussels

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EN 60584-2:1993

FOREWORD

At the request of CENELEC Reporting Secretariat SR 65B, HD 446.2 S2:1990 (IEC 584-2:1982 + A1:1989) was submitted to the CENELEC voting procedure for conversion into a European Standard.

The text of the International Standard was approved by CENELEC as EN 60584-2 on 9 March 1993.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1994-03-01
- latest date of withdrawal of conflicting national standards (dow) -

ENDORSEMENT NOTICE

The text of the International Standard IEC 584-2:1982 and its amendment 1:1989 was approved by CENELEC as a European Standard without any modification.

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NORME INTERNATIONALE INTERNATIONAL STANDARD

**CEI
IEC
584-2**

Première édition
First edition
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Couples thermoélectriques

Deuxième partie: Tolérances

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Thermocouples
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Part 2: Tolérances

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International Electrotechnical Commission
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

THERMOCOUPLES

Part 2: Tolerances

FOREWORD

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

PREFACE

This standard has been prepared by Sub-Committee 65B: Elements of Systems, of IEC Technical Committee No. 65: Industrial-process Measurement and Control.

It forms Part 2 of IEC Publication 584: Thermocouples. Part 1: Reference Tables, contains thermocouple reference tables for use in converting thermocouple voltages into their equivalent measured temperatures, and vice versa. Part 2: Tolerances, contains manufacturing tolerances for thermocouples manufactured in accordance with e.m.f.-temperature relationships of Part 1 of the standard.

A first draft was discussed at the meeting held in Philadelphia in 1979. A revised draft, Document 65B(Central Office)23, was submitted to the National Committees for approval under the Six Months' Rule in March 1980.

The National Committees of the following countries voted explicitly in favour of publication:

Austria	Israel
Belgium	Italy
Brazil	Netherlands
Bulgaria	Poland
Canada	South Africa (Republic of)
China	Sweden
Czechoslovakia	Switzerland
Denmark	Turkey
Egypt	Union of Soviet
Finland	Socialist Republics
France	United Kingdom
Germany	

THERMOCOUPLES

Part 2: Tolerances

1. Scope

This standard contains the manufacturing tolerances for both noble and base metal thermocouples manufactured in accordance with e.m.f.-temperature relationships of Part 1 of the standard. The tolerance values are for a thermocouple manufactured from wires, normally in the diameter range 0.25 mm to 3 mm, as delivered to the user and do not allow for calibration drift during use.

2. Definitions

2.1 Thermoelectric (Seebeck) effect

The thermoelectric effect is the production of an electromotive force (e.m.f.) due to the difference of temperature between two junctions of different metals or alloys forming part of the same circuit.

2.2 Thermocouple

A thermocouple is a pair of conductors of dissimilar materials joined at one end and forming part of an arrangement using the thermoelectric effect for temperature measurement.

2.3 Measuring junction

The measuring junction is that junction referred to in Sub-clause 2.2 which is subjected to the temperature to be measured.

2.4 Reference junction

The reference junction is that junction of the thermocouple which is at a known (reference) temperature to which the measuring temperature is compared.

2.5 Tolerance

The tolerance of a thermocouple is a specified maximum deviation in degrees Celsius from the e.m.f.-temperature values in the reference tables of Part 1 of the standard, when the temperature of the reference junction is at 0 °C and the measuring junction is at the appropriate temperature (t °C).

3. Tolerances

Thermocouple tolerances shall be as specified in Table I.

Notes 1. — The temperature limits referred to in Table I are not necessarily recommended operating temperature limits.

2. — For the purpose of testing there should be no discontinuity of conductors between the measuring and the reference junction.

TABLE I

Tolerance classes for thermocouples (reference junction at 0 °C)

Tolerance class	1	2	3 ²⁾
Tolerance values ¹⁾ (±)	0.5 °C or $0.004 \cdot t $	1 °C or $0.0075 \cdot t $	1 °C or $0.015 \cdot t $
	<i>Temperature limits for validity of tolerances</i>		
Type T	–40 °C to 350 °C	–40 °C to 350 °C	–200 °C to 40 °C
Tolerance values ¹⁾ (±)	1.5 °C or $0.004 \cdot t $	2.5 °C or $0.0075 \cdot t $	2.5 °C or $0.015 \cdot t $
	<i>Temperature limits for validity of tolerances</i>		
Type E	–40 °C to 800 °C	–40 °C to 900 °C	–200 °C to 40 °C
Type J	–40 °C to 750 °C	–40 °C to 750 °C	—
Type K	–40 °C to 1 000 °C	–40 °C to 1 200 °C	–200 °C to 40 °C
Tolerance values ¹⁾ (±)	1 °C or $[1 + 0.003 (t-1100)]$ °C	1.5 °C or $0.0025 \cdot t $	4 °C or $0.005 \cdot t $
	<i>Temperature limits for validity of tolerances</i>		
Type R or S	0 °C to 1 600 °C	0 °C to 1 600 °C	—
Type B	—	600 °C to 1 700 °C	600 °C to 1 700 °C

¹⁾ The tolerance is expressed either as a deviation in degrees Celsius or as a percentage of the actual temperature. The greater value applies.

²⁾ Thermocouple materials are normally supplied to meet the manufacturing tolerances specified in the table for temperatures above –40 °C. These materials, however, may not fall within the manufacturing tolerances for low temperatures given under Class 3 for Types T, E and K thermocouples if thermocouples are required to meet limits of Class 3, as well as those of Class 1 and/or Class 2. The purchaser shall state this, and selection of materials is usually required.

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**CEI
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584-2**

1982

**AMENDEMENT 1
AMENDMENT 1**

1989-06

Amendement 1

Couples thermoélectriques

Deuxième partie:

Tolérances

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Amendment 1

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Thermocouples

Part 2:

Tolerances

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