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Industrial platinum resistance thermometers and platinum temperature sensors

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 04/22

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and corrigenda (if any)

English Version

**Industrial platinum resistance thermometers and platinum
temperature sensors
(IEC 60751:2022)**Thermomètres à résistance de platine et capteurs
thermométriques de platine industriels
(IEC 60751:2022)Industrielle Platin-Widerstandsthermometer und Platin-
Temperatursensoren
(IEC 60751:2022)

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EN IEC 60751:2022 (E)**European foreword**

The text of document 65B/1210/FDIS, future edition 3 of IEC 60751, prepared by SC 65B "Measurement and control devices" of IEC/TC 65 "Industrial-process measurement, control and automation" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60751:2022.

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IEC 61298-1 NOTE Harmonized as EN 61298-1

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-6	-	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	-
IEC 61152	-	Dimensions of metal-sheathed thermometer elements	EN 61152	-
IEC 61515	2016	Mineral insulated metal-sheathed thermocouple cables and thermocouples	EN 61515	2016



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Edition 3.0 2022-01

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Industrial platinum resistance thermometers and platinum temperature sensors

Thermomètres à résistance de platine et capteurs hermométriques de platine industriels



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IEC 60751

Edition 3.0 2022-01

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Industrial platinum resistance thermometers and platinum temperature sensors

Thermomètres à résistance de platine et capteurs hermométriques de platine industriels

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

INDUSTRIAL PLATINUM RESISTANCE THERMOMETERS AND PLATINUM TEMPERATURE SENSORS

FOREWORD

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IEC 60751 has been prepared by subcommittee 65B: Measurement and control devices, of IEC technical committee 65: Industrial-process measurement, control and automation. It is an International Standard.

This third edition cancels and replaces the second edition published in 2008. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) formula of resistance versus temperature relationship become the standard specification and the numerical table ceases to be the standard,
- b) new clause "Compliance and requirement" is introduced,
- c) tolerance acceptance test is modified,
- d) an expanded marking system is introduced to accommodate special valid temperature range,
- e) vibration test method is revised,
- f) cold seal is introduced as an additional type test,

g) numerical table of resistance versus temperature is included in Annex A as information.

The text of this International Standard is based on the following documents:

Draft	Report on voting
65B/1210/FDIS	65B/1214/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INDUSTRIAL PLATINUM RESISTANCE THERMOMETERS AND PLATINUM TEMPERATURE SENSORS

1 Scope

This International Standard specifies the requirements, in addition to the resistance versus temperature relationship, for both industrial platinum resistance thermometers (later referred to as "thermometers") and industrial platinum resistance temperature sensors (later referred to as "platinum resistors") whose electrical resistance is derived from defined functions of temperature.

Values of temperature in this document are in terms of the International Temperature Scale of 1990, ITS-90. A temperature in the unit °C of this scale is denoted by the symbol t , except in Table A.1 where the full nomenclature t_{90} /°C is used.

This document applies to platinum resistors whose temperature coefficient α , defined as

$$\alpha = \frac{R_{100} - R_0}{R_0 \cdot 100^\circ\text{C}},$$

is conventionally written as $\alpha = 3,851 \cdot 10^{-3} \text{ }^\circ\text{C}^{-1}$, where R_{100} is the resistance at $t = 100 \text{ }^\circ\text{C}$ and R_0 is the resistance at $t = 0 \text{ }^\circ\text{C}$.

This document covers platinum resistors and thermometers for the temperature range $-200 \text{ }^\circ\text{C}$ to $+850 \text{ }^\circ\text{C}$ with different tolerance classes. It can also cover particular platinum resistors or thermometers for a part of this temperature range.

For resistance versus temperature relationships with uncertainties less than $0,1 \text{ }^\circ\text{C}$, which are possible only for platinum resistors or thermometers with exceptionally high stability and individual calibration, a more complex interpolation equation than is presented in this document can be necessary. The specification of such equations is outside the scope of this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60068-2-6, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 61152, *Dimensions of metal-sheathed thermometer elements*

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