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REDLINE VERSION

**Piezoelectric sensors -**
**Part 3: Physical sensors**

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# Piezoelectric sensors - Part 3: Physical sensors

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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 63041-3:2020. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 63041-3 has been prepared by IEC technical committee TC 49: Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection. It is an International Standard.

This second edition cancels and replaces the first edition published in 2020. This edition constitutes a technical revision.

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

a) Some terms in Clause 3 have been updated to be consistent with IEC TS 61994-5:2023 [1].

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

| Draft | Report on voting |
|---|---|
| 49/1526/FDIS | 49/1530/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 http://www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at http://www.iec.ch/publications.

A list of all parts in the IEC 63041 series, published under the general title *Piezoelectric sensors*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,

– withdrawn, or

– revised.

## 1 Scope

This part of IEC 63041 is applicable to piezoelectric physical sensors mainly used in the field of process control, wireless monitoring, dynamics, thermodynamics, vacuum engineering, and environmental sciences. This document provides users with technical guidelines as well as basic knowledge of common physical sensors.

Piezoelectric sensors covered herein are those applied to the detection and measurement of physical quantities such as force, pressure, torque, viscosity, temperature, film thickness, acceleration, vibration, and tilt angle.

## 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 60027 (all parts), *Letter symbols to be used in electrical technology*

IEC 60050–561, *International electrotechnical vocabulary – Part 561: Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection*

IEC 60617:2012, *Graphical symbols for diagrams* ~~(database available at http://std.iec.ch/iec60617)~~

IEC 63041-1~~:2017~~, *Piezoelectric sensors - Part 1: Generic specifications*

IEC 63041-2, *Piezoelectric sensors - Part 2: Chemical and biochemical sensors*

ISO 80000–1, *Quantities and units – Part 1: General*

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IEC 60068 (all parts), *Environmental testing*

IEC 60122-1, *Quartz crystal units of assessed quality – Part 1: Generic specification*

IEC 60122-2-1, *Quartz crystal units for frequency control and selection – Part 2: Guide to the use of quartz crystal units for frequency control and selection – Section one: Quartz crystal units for microprocessor clock supply*

IEC 60444-1, *Measurement of quartz crystal unit parameters by zero phase technique in a pi-network – Part 1: Basic method for the measurement of resonance frequency and resonance resistance of quartz crystal units by zero phase technique in a pi-network*

IEC 60444-5, *Measurement of quartz crystal unit parameters – Part 5: Methods for the determination of equivalent electrical parameters using automatic network analyzer techniques and error correction*

IEC 60444-9, *Measurement of quartz crystal unit parameters – Part 9: Measurement of spurious resonances of piezoelectric crystal units*

IEC 60642, *Piezoelectric ceramic resonators and resonator units for frequency control and selection – Chapter I: Standard values and conditions – Chapter II: Measuring and test conditions*

IEC 60679 (all parts), *Piezoelectric, dielectric and electrostatic oscillators of assessed quality*

IEC 60758:2016, *Synthetic quartz crystal – Specifications and guidelines for use*

IEC 60862-1, *Surface acoustic wave (SAW) filters of assessed quality – Part 1: Generic specification*

IEC 61019-1, *Surface acoustic wave (SAW) resonators – Part 1: Generic specification*

IEC 61240:2016, *Piezoelectric devices – Preparation of outline drawings of surface-mounted devices (SMD) for frequency control and selection – General rules*

IEC 61760 (all parts), *Surface mounting technology*

IEC 61837 (all parts), *Surface mounted piezoelectric devices for frequency control and selection – Standard outlines and terminal lead connections*

IEC TS 61994 (all parts), *Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection – Glossary*

IEC 62276:2016, *Single crystal wafers for surface acoustic wave (SAW) device applications – Specifications and measuring methods*

ISO 2859-1:1999, *Sampling procedures for inspection by attributes – Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

ISO 11843-1: 1997, *Capability of detection – Part 1: Terms and definitions*

ISO 11843-2: 2000, *Capability of detection – Part 2: Methodology in the linear calibration case*

~~ISO/IEC Guide 99:2007, *International vocabulary of metrology – Basic and general concepts and associated terms (VIM)*~~

~~ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*~~

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[1] IEC TS 61994-5:2023, *Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection - Glossary - Part 5: Piezoelectric sensors*