

# TECHNICAL SPECIFICATION

**Piezoelectric, dielectric and electrostatic devices and associated materials for  
frequency control, selection and detection – Glossary –  
Part 3: Piezoelectric and dielectric oscillators**



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**PIEZOELECTRIC, DIELECTRIC AND  
ELECTROSTATIC DEVICES AND ASSOCIATED MATERIALS  
FOR FREQUENCY CONTROL, SELECTION AND DETECTION –  
GLOSSARY –****Part 3: Piezoelectric and dielectric oscillators**

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Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC 61994-3, which is a technical specification, has been prepared by IEC technical committee 49: Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection.

This second edition of IEC 61994-3 cancels and replaces the first edition published in 2004. This edition constitutes a technical revision.

The main changes with respect to the previous edition are listed below:

- definitions updated,
- terminology given in orderly sequence,
- new terminologies are added,
- drawings inserted for easier understanding.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
49/928/DTS	49/949/RVC

Full information on the voting for the approval of this technical specification can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 61994 series, under the general title *Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection – Glossary*, can be found on the IEC website.

NOTE Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of next edition.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- transformed into an International standard,
- reconfirmed,
- withdrawn,
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- amended.

# PIEZOELECTRIC, DIELECTRIC AND ELECTROSTATIC DEVICES AND ASSOCIATED MATERIALS FOR FREQUENCY CONTROL, SELECTION AND DETECTION – GLOSSARY –

## Part 3: Piezoelectric and dielectric oscillators

### 1 Scope

This part of IEC 61994 specifies the terms and definitions for piezoelectric dielectric oscillators representing the state-of-the-art, which are intended for use in the standards and documents of IEC TC 49.

### 2 Normative references

Void

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 3.1

##### **adjustment frequency**

frequency to which an oscillator must be adjusted, under a particular combination of operating conditions, in order to meet the frequency tolerance specification over the specified range of operating conditions, i.e. adjustment frequency = nominal frequency + frequency offset

[IEC 60679-1: 2007, 3.2.10]

#### 3.2

##### **Allan variance of fractional frequency fluctuation**

unbiased estimate of the preferred definition in the time domain of the short-term stability characteristic of the oscillator output frequency:

$$\sigma_y^2(\tau) \equiv \frac{1}{M-1} \sum_{k=1}^{M-1} \frac{(Y_{k+1} - Y_k)^2}{2}$$

where

$Y_k$  are the average fractional frequency fluctuations obtained sequentially, with no systematic dead time between measurements;

$\tau$  is the sample time over which measurements is averaged;

$M$  is the number of measurements.

NOTE The confidence of the estimate improves as  $M$  increases.

[IEC 60679-1: 2007, 3.2.23, modified]

#### 3.3

##### **amplitude modulation distortion**

non-linear distortion in which the relative magnitudes of the spectral components of the modulating signal waveform are modified