

TECHNICAL SPECIFICATION

Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection – Glossary –
Part 5: Piezoelectric sensors

[IEC TS 61994-5:2019](https://standards.iteh.ai/catalog/standards/sist/ed3d2fd5-8434-48ff-8d68-72693a134ecb/iec-ts-61994-5-2019)

<https://standards.iteh.ai/catalog/standards/sist/ed3d2fd5-8434-48ff-8d68-72693a134ecb/iec-ts-61994-5-2019>



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2019 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 000 terminological entries in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

[IEC TS 61994-5:2019](https://standards.iec.ch/catalog/standards/sist/ed5d2fd5-8434-48ff-8d68-72693a134ecb/iec-ts-61994-5-2019)

<https://standards.iec.ch/catalog/standards/sist/ed5d2fd5-8434-48ff-8d68-72693a134ecb/iec-ts-61994-5-2019>

TECHNICAL SPECIFICATION

**Piezoelectric, dielectric and electrostatic devices and associated materials for
frequency control, selection and detection – Glossary –
Part 5: Piezoelectric sensors**

[IEC TS 61994-5:2019](https://standards.iteh.ai/catalog/standards/sist/ed3d2fd5-8434-48ff-8d68-72693a134ecb/iec-ts-61994-5-2019)

<https://standards.iteh.ai/catalog/standards/sist/ed3d2fd5-8434-48ff-8d68-72693a134ecb/iec-ts-61994-5-2019>

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 01.040.31; 31.140

ISBN 978-2-8322-7104-9

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references	5
3 Terms and definitions	5
Bibliography.....	8

iTeh STANDARD PREVIEW **(standards.iteh.ai)**

[IEC TS 61994-5:2019](#)

<https://standards.iteh.ai/catalog/standards/sist/ed3d2fd5-8434-48ff-8d68-72693a134ecb/iec-ts-61994-5-2019>

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PIEZOELECTRIC, DIELECTRIC AND ELECTROSTATIC DEVICES
AND ASSOCIATED MATERIALS FOR FREQUENCY CONTROL,
SELECTION AND DETECTION –
GLOSSARY –****Part 5: Piezoelectric sensors**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

The main task of IEC technical committees is to prepare International Standards. In exceptional circumstances, a technical committee may propose the publication of a Technical Specification when

- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

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

IEC TS 61944-5, 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.

The text of this Technical Specification is based on the following documents:

Draft TS	Report on voting
49/1295/DTS	49/1296/RVDTS

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

A list of all parts in the IEC 61994 series, published 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.

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 the next edition.

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

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)

A bilingual version of this publication ~~may be issued at a~~ later date.

<https://standards.iteh.ai/catalog/standards/sist/ed3d2fd5-8434-48ff-8d68-72693a134ecb/iec-ts-61994-5-2019>

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

Part 5: Piezoelectric sensors

1 Scope

This part of IEC 61994 gives the terms and definition for sensors representing the state of the art, which are intended for manufacturing piezoelectric elements, cells and the modules.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

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>

3.1

delay line type sensor element

piezoelectric sensor component using a delay-line of surface acoustic wave (SAW) transversal filter type

[SOURCE: IEC 63041-1:2017, 3.2.3, modified – The phrase has been rewritten in an easy-to-understand manner using a well-known term.]

3.2

non-acoustic type sensor element

piezoelectric sensor component using the electrical charge induced by a quasi-static force, torque or the like

[SOURCE: IEC 63041-1:2017, 3.2.4, modified – Note 1 to entry has been deleted.]

3.3

piezoelectric biochemical sensor element

piezoelectric sensor component including a receptive layer (target recognition material), which is necessary for the practical measurement of complex biological molecules in quantity, and which works mainly in aqueous media and detects biomolecules therein

[SOURCE: IEC 63041-1:2017, 3.3.2]

3.4**piezoelectric chemical sensor element**

piezoelectric sensor component including a sensitive layer (target recognition material), which is necessary for the practical measurement of simple non-biological molecules in quantity, and which works and detects chemical substances mainly in the gas phase

[SOURCE: IEC 63041-1:2017, 3.3.1, modified – Note 1 to entry has been deleted.]

3.5**piezoelectric film-thickness sensor element**

piezoelectric sensor component whose resonance frequency is used for film-thickness measurement

[SOURCE: IEC 63041-1:2017, 3.4.6]

3.6**piezoelectric force sensor element**

piezoelectric sensor component whose resonance frequency, delay or electrical charge/voltage is used for force measurement

[SOURCE: IEC 63041-1:2017, 3.4.1]

3.7**piezoelectric pressure sensor element**

piezoelectric sensor component whose resonance frequency, delay or electrical charge/voltage is used for pressure measurement

[SOURCE: IEC 63041-1:2017, 3.4.2]

3.8**piezoelectric sensor**

generic term that includes a sensor element, cell and module

[SOURCE: IEC 63041-1:2017, 3.2.7]

3.9**piezoelectric sensor cell**

sensor element equipped with necessary mechanical accessories and attachments to correctly detect the parameters to be measured

[SOURCE: IEC 63041-1:2017, 3.2.5]

3.10**piezoelectric sensor element**

electronic component which is able to detect physical quantities as a change in its frequency, phase, delay, electrical charge, resistance, Q-value, bandwidth, etc.

[SOURCE: IEC 63041-1:2017, 3.2.1, modified – Note 1 to entry has been deleted.]

3.11**piezoelectric sensor module**

sensor element or cell equipped with electronic accessories for interfacing to external data acquisitions

[SOURCE: IEC 63041-1:2017, 3.2.6]

3.12**piezoelectric temperature sensor element**

piezoelectric sensor component whose resonance frequency or delay is used for temperature measurement

[SOURCE: IEC 63041-1:2017, 3.4.5]

3.13**piezoelectric torque sensor element**

piezoelectric sensor component whose resonance frequency, delay or electrical charge/voltage is used for torque measurement

[SOURCE: IEC 63041-1:2017, 3.4.3]

3.14**piezoelectric viscosity sensor element**

piezoelectric sensor component whose resonance frequency, delay or insertion loss/gain is used for viscosity measurement

[SOURCE: IEC 63041-1:2017, 3.4.4]

3.15**QCM****quartz crystal microbalance**

one of the families of chemical and biochemical sensors using crystal resonators

[SOURCE: IEC 63041-1:2017, 3.2.8, modified – Note 1 to entry has been deleted.]

[IEC TS 61994-5:2019](https://standards.iteh.ai/catalog/standards/sist/ed3d2fd5-8434-48ff-8d68-72693a134ecb/iec-ts-61994-5-2019)

3.16**resonator type sensor element**

piezoelectric sensor component using acoustic resonances

[SOURCE: IEC 63041-1:2017, 3.2.2]