

**Harmonized system of quality  
assessment for electronic components**

**Generic specification:  
Quartz crystal units**

The European Standard EN 168000:1993, together with its amendments A1:1993 and A2:1998, has the status of a British Standard

ICS 31.140

# Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Electronic Components Standards Policy Committee (ECL/-) to Technical Committee ECL/11, upon which the following bodies were represented:

- British Telecommunications plc
- EEA (the Electronics and Business Equipment Association)
- Electronic Components Industry Federation
- Institution of Electrical Engineers
- Ministry of Defence
- National Supervising Inspectorate
- Society of British Aerospace Companies Limited
- Telecommunication Engineering and Manufacturing Association

This British Standard, having been prepared under the direction of the Electronic Components Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on 31 December 1990

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## National foreword

This British Standard has been prepared by Technical Committee EPL/49 (formerly ECL/11), and is the English language version of EN 168000:1993 *Generic specification: Quartz crystal units*, together with its amendment A1:1993 and amendment A2:1998, published by the CENELEC Electronic Components Committee (CECC).

EN 168000 has been prepared by CECC Working Group 17, Piezoelectric devices for frequency control and selection, and the United Kingdom participation in the drafting was provided by Technical Committee EPL/49, Piezoelectric devices for frequency control and selection. EN 168000:1993 is based on CECC:1989 together with its amendment 1:1990.

### Cross-references

| Publication referred to                  | Corresponding British Standard                                                                                                            |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
|                                          | BS EN 60068: <i>Environmental testing</i>                                                                                                 |
|                                          | BS EN 60068-2: <i>Test methods</i>                                                                                                        |
| EN 60068-1:1994<br>(IEC 68-1:1988)       | BS EN 60068-1:1995<br>BS 2011: <i>Environmental testing</i>                                                                               |
| N 60068-2-1:1993<br>(IEC 68-2-1:1990)    | BS EN 60068-2-1:1993 <i>Tests A. Cold</i>                                                                                                 |
| EN 60068-2-2:1993<br>(IEC 68-2-2:1974)   | BS EN 60068-2-2:1993 <i>Tests B. Dry heat</i>                                                                                             |
| EN 60068-2-6:1995<br>(IEC 68-2-6:1995)   | BS EN 60068-2-6:1996 <i>Test Fc. Vibration (sinusoidal)</i>                                                                               |
| EN 60068-2-7:1993<br>(IEC 68-2-7:1983)   | BS EN 60068-2-7:1993 <i>Test Ga and guidance. Acceleration, steady state</i>                                                              |
| EN 60068-2-17:1992<br>(IEC 68-2-17:1991) | BS EN 60068-2-17:1995                                                                                                                     |
| EN 60068-2-27:1993<br>(IEC 68-2-27:1987) | BS EN 60068-2-27:1993 <i>Environmental testing procedures. Tests. Test Ea and guidance. Shock</i>                                         |
| EN 60068-2-29:1993<br>(IEC 68-2-29:1987) | BS EN 60068-2-29:1993 <i>Environmental testing procedures. Tests. Test Eb and guidance. Bump</i>                                          |
| EN 60068-2-32:1993<br>(IEC 68-2-32:1975) | BS EN 60068-2-32:1993 <i>Test Ed. Free fall.</i>                                                                                          |
| EN 60068-2-45:1992<br>(IEC 68-2-45:1980) | BS EN 60068-2-45:1993 <i>Environmental testing. Tests. Test Xa and guidance. Immersion in cleaning solvents</i>                           |
| IEC 68-2                                 | Part 2.1 <i>Tests</i>                                                                                                                     |
| IEC 68-2-3:1969                          | Part 2.1Ca:1977 <i>Test Ca. Damp heat, steady state</i>                                                                                   |
| IEC 68-2-11:1981                         | Part 2.1Ka:1982 <i>Test Ka. Salt mist</i>                                                                                                 |
| IEC 68-2-14:1984                         | Part 2.1N:1985 <i>Test N. Change of temperature</i>                                                                                       |
| IEC 68-2-20:1979                         | Part 2.1T:1981 <i>Test T. Soldering</i>                                                                                                   |
| IEC 68-2-21:1983                         | Part 2.1U:1984 <i>Test U. Robustness of terminations and integral mounting devices</i>                                                    |
| IEC 68-2-30:1980                         | Part 2.1Db:1981 <i>Test Db and guidance. Damp heat, cyclic (12 + 12 hour cycle)</i><br>BS 5069 <i>Dimensions of piezoelectric devices</i> |

|                                  |                                                                                                                              |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| IEC 122-3:1977 and<br>IEC 122-3A | Part 1:1980 <i>Specification for standard outlines and pin connections for quartz crystal units</i>                          |
| IEC 617                          | BS 3939 <i>Graphical symbols for electrical power, telecommunications and electronics diagrams.</i>                          |
| ISO 1000:1992                    | BS 5555:1993 <i>Specification for SI units and recommendations for the use of their multiples and of certain other units</i> |

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

**Compliance with a British Standard does not of itself confer immunity from legal obligations.**

**Summary of pages**

This document comprises a front cover, an inside front cover, pages i to iv, the EN title page, pages 2 to 28, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.



Descriptors: Quality, electronic components, quartz crystal units

English version

## Generic specification: Quartz crystal units

(Includes amendment A1:1993 and amendment A2:1998)

Spécification générique:  
Résonateurs à quartz  
(Inclut les amendements A1:1993  
et A2:1998)

Fachgrundspezifikation:  
Schwingquarze  
(Enthält Änderungen A1:1993  
und A2:1998)

This European Standard was approved by the CENELEC Electronic components Committee (CECC) on 14th January 1992. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the General Secretariat of the CECC 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 CECC General Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom. The membership of the CECC is identical, with the exception of the national electrotechnical committees of Greece, Iceland and Luxembourg.

## CECC

European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

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

Foreword

The CENELEC Electronic Components Committee (CECC) is composed of those member countries of the European Committee for Electrotechnical Standardization (CENELEC) who wish to take part in a harmonized System for electronic components of assessed quality.

The object of the System is to facilitate international trade by the harmonization of the specifications and quality assessment procedures for electronic components, and by the grant of an internationally recognized Mark, or Certificate, of Conformity. The components produced under the System are thereby acceptable in all member countries without further testing.

This European Standard was prepared by CECC WG 17, Piezoelectric devices for frequency control and selection.

The text of the draft based on document CECC 68 000 Issue 1:1989 (with A1) and CECC (Secretariat) 2851 was submitted to the formal vote for conversion to a European Standard; together with the voting report, circulated as document CECC (Secretariat) 2961 it was approved by CECC as EN 168 000 on 14 January 1992.

The following dates were fixed:

- latest date of announcement of the EN at national level (doa) 1992-12-08
- latest date of publication of an identical national standard (dop) 1993-06-08
- latest date of declaration of national standards obsolescence 1993-06-08
- latest date of withdrawal of conflicting national standards (dow) 2002-12-08

Foreword to amendment A2

This amendment to the European Standard EN 168000:1993 was prepared by CLC/TC CECC/SC 49 (former WG 17).

The text of the draft based on document CECC (Secretariat) 3332 was submitted to the formal vote; together with the voting report, circulated as document CECC (Secretariat) 3453, it was approved as amendment A2 to EN 168000:1993 on 1993-11-02.

NOTE Amendment A1:1993 is included in EN 168000.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement(dop) 1998-08-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 1999-08-01

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## Section 1. Scope

This document specifies the methods of test and general requirements for quartz crystal units of assessed quality using either capability approval or qualification approval procedures.

## Section 2. General

### 2.1 Order of precedence

Where any discrepancies occur for any reason, documents shall rank in the following order of precedence:

- the detail specification the
- sectional specification
- the generic specification
- the FEN internal regulations
- any other international documents (for example of the IEC) to which reference is made

The same order of precedence shall apply to equivalent national documents.

### 2.2 Related documents

|              |                            |                                                                                                                  |  |
|--------------|----------------------------|------------------------------------------------------------------------------------------------------------------|--|
| ISO 1000     | (1973)                     | SI units and recommendations for the use of their multiples and of certain other units                           |  |
| IEC 27-1     | (1971)                     | Letter symbols to be used in electrical technology: Part 1: General                                              |  |
| IEC 27-2     | (1972)                     | Letter symbols to be used in electrical technology: Part 2: Telecommunications and electronics                   |  |
| IEC 50 (561) | —                          | International Electrotechnical Vocabulary Chapter 561: Piezoelectric devices for frequency control and selection |  |
| IEC 68       | —                          | Basic environmental testing procedures                                                                           |  |
| IEC 68-1     | (1988)                     | Part 1: General and guidance                                                                                     |  |
| IEC 68-2     | —                          | Part 2: Tests                                                                                                    |  |
| IEC 68-2-1   | (1990)                     | Test A: Cold                                                                                                     |  |
| IEC 68-2-2   | (1974)<br>(1976)           | Tests B: Dry heat<br>Supplement A                                                                                |  |
| IEC 68-2-3   | (1969)<br>(1984)           | Test Ca: Damp heat, steady state<br>Amendment No. 1                                                              |  |
| IEC 68-2-6   | (1982)<br>(1983)<br>(1985) | Test Fc and guidance: vibration (sinusoidal)<br>Amendment No. 1<br>Amendment No. 2                               |  |
| IEC 68-2-7   | (1983)<br>(1986)           | Test Ga: Acceleration, steady state<br>Amendment No. 2                                                           |  |
| IEC 68-2-11  | (1981)                     | Test Ka: Salt mist                                                                                               |  |
| IEC 68-2-14  | (1984)<br>(1986)           | Test N: Change of temperature<br>Amendment No. 1                                                                 |  |
| IEC 68-2-17  | (1978)<br>(1989)           | Test Q: Sealing<br>Amendment No. 3                                                                               |  |
| IEC 68-2-20  | (1979)<br>(1986)<br>(1987) | Test T: Soldering<br>Amendment No. 1<br>Amendment No. 2                                                          |  |
| IEC 68-2-21  | (1983)<br>(1985)           | Test U: Robustness of terminations<br>Amendment No. 1                                                            |  |