

Förderverein für Elektrotechnische Normung (FEN) e. V.
Cenelec Electronic Components Committee

CECC

Système Harmonisé d'Assurance de la Qualité
des Composants Electroniques

SPECIFICATION PARTICULIERE CADRE:

RESONATEURS A QUARTZ (Homologation)

Harmonized System of Quality Assessment for
Electronic Components

BLANK DETAIL SPECIFICATION:

QUARTZ CRYSTAL UNITS (Qualification Approval)

Harmonisiertes Gütebestätigungssystem für
Bauelemente der Elektronik

VORDRUCK FÜR BAUARTSPEZIFIKATION:

SCHWINGQUARZE (Bauartzulassung)



1

Edition
Issue
Ausgabe

CECC 68 201

1990

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Cette page bleue doit être insérée après la page de garde de la CECC 68 201 (Edition 1) 1990

SPECIFICATION PARTICULIERE CADRE:

RESONATEURS A QUARTZ (Homologation)

ERRATUM

Supprimer les pages 3/4 et insérer les nouvelles pages 3/4.
(En Section 5, article 2, l'expression "ou client" a été supprimée).

Enregistrer cette modification sur la feuille jaune "Enregistrement de modifications".

CECC 68 201 Edition 1 ERRATUM

This blue page should be inserted after the title page of CECC 68 201 (Issue 1) 1990

BLANK DETAIL SPECIFICATION:

QUARTZ CRYSTAL UNITS (Qualification Approval)

ERRATUM

Remove pages 3/4 and insert the new pages 3/4.
(In Section 5, item 2, the words "or customer" have been deleted).

Enter this amendment on the yellow "Record of amendments" sheet.

CECC 68 201 Issue 1 ERRATUM

Dieses blaue Blatt ist nach dem Titelblatt der CECC 68 201 (Ausgabe 1) 1990 einzufügen

VORDRUCK FÜR BAUARTSPEZIFIKATION:

SCHWINGQUARZE (Bauteilzulassung)

ERRATUM

Die Seiten 3/4 sind zu entfernen und durch die neuen Seiten 3/4 zu ersetzen.
(In Abschnitt 5, Punkt 2 wurden die Worte "oder Kunden-" gestrichen).

Diese Änderung ist auf dem gelben Blatt "Verzeichnis der Änderungen" einzutragen.

CECC 68 201 Ausgabe 1 ERRATUM

Information about the System may be obtained from:



FEN e.V. Secretariat
and
CECC General Secretariat
Gartenstraße 179
D - 6000 Frankfurt am Main 70
Telephone: Int. + 49 69 639171
Telex: 4 032 175 cecc d
Telefax: Int. + 49 69 639427

or from the National Authorized Institutions
of the participating countries listed
who can supply copies of:

- 1 The Internal Regulations of the FEN e.V.
- 2 The Rules of Procedure of the System
- 3 CECC Specifications of the FEN and National Specifications for the System
- 4 CECC 00 200: Qualified Products List (QPL)
- 5 CECC 00 300: CECC Publications and their related national documents
- 6 Other CECC Publications and publicity documents

AUSTRIA

Österreichischer Verband für Elektrotechnik (ÖVE)
Eschenbachgasse 9
A-1010 VIENNA

BELGIUM

Comité Electrotechnique Belge
Galerie Ravenstein 3 (Boîte 11)
B-1000 BRUSSELS

DENMARK

Dansk Elektroteknisk Komite
Strandgade 36
DK-1401 COPENHAGEN K

FINLAND

Finnish Electrotechnical Standards Association (SESKO)
P.O. Box 134
SF-00211 HELSINKI 21

FRANCE

Union technique de l'Electricité
Participation française au CECC
F-92052 PARIS La Défense Cedex 64

GERMANY

Deutsche Elektrotechnische Kommission im DIN und VDE (DKE)
Stresemannallee 15
D-6000 FRANKFURT/Main 70

IRELAND

EOLAS - The Irish Science and Technology Agency
Glasnevin
IRL-DUBLIN 9

ITALY

Comitato Elettrotecnico Italiano (CEI)
Viale Monza, 259
I-20126 MILAN

NETHERLANDS

Nederlands Elektrotechnisch Comité (NEC)
Kalfjeslaan 2
P.O. Box 5059
NL-2600 GB DELFT

NORWAY

Norsk Elektroteknisk Komite (NEK)
P.O. Box 280
Skøyen
N-0212 OSLO 2

PORTUGAL

Instituto Português da Qualidade
Rua José Estevão, 83A
P-1199 LISBOA CODEX

SPAIN

Asociación Electrotécnica y Electrónica Española (AEE)
Avda. de Brasil, 7
E-28020 MADRID

SWEDEN

Svenska Elektriska Kommissionen (SEK)
Box 1284
S-16428 KISTA-STOCKHOLM

SWITZERLAND

Schweizerischer Elektrotechnischer Verein (SEV)
Postfach
CH-8008 ZÜRICH

UNITED KINGDOM

British Electrotechnical Committee
British Standards Institution
2, Park Street
GB-LONDON W1A 2BS



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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 accepted by all member countries without further testing.

This specification has been formally approved by the CECC, and has been prepared for those countries taking part in the System who wish to issue national harmonized specifications for **Quartz Crystal Units (Qualification approval)**. It should be read in conjunction with the current regulations for the CECC System.

At the date of printing of this specification, the member countries of the CECC are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom, and copies of it can be obtained from the addresses shown on the blue fly sheet.

PREFACE

This specification was prepared by CECC WG 17: Piezoelectric devices for frequency control and selection.

It is based, wherever possible, on the Publications of the International

Electrotechnical Commission and in particular on IEC 122-1: Quartz crystal units for frequency control and selection: Part 1: Standard values and test conditions.

The text of this specification was circulated to the CECC for voting in the document(s) indicated below and was ratified by the President of the CECC for printing as a CECC Specification.

Document
CECC (Secretariat) 2431

Date of voting
October 1989

Report on the voting
CECC (Secretariat) 2522

Blank detail specification

A blank detail specification is a supplementary document to the sectional specification and contains requirements for style and layout and minimum content of detail specifications. In the preparation of detail specifications the content of section 2 of CECC 68 000 shall be taken into account. This specification may be inappropriate for small batch production quartz crystal units in which case the capability approval approach is recommended.

Identification of the DS and the component

The first page of the DS should have the layout recommended on page 3. The numbers in square brackets correspond to the indications to be completed thereunder:

- [1] The name of the National Standards Organization under whose authority the DS is published and, if applicable, the organization from whom the DS is available
- [2] The CECC symbol and the number allotted to the DS by the CECC General Secretariat.
- [3] The number and issue number of the CECC generic and sectional specification as relevant; also national reference if different.
- [4] If different from the CECC number, the national number of the DS, date of issue and any further information required by the national system, together with any amendment numbers.
- [5] A brief description of the component or range of components; for example: frequency, order, cut, mode.
- [6] Information on typical construction (where applicable); for example: resistance welded, cold welded.

For [5] and [6] the text to be given in the DS should be suitable for an entry in CECC 00 200 (QPL) and CECC 00 300 (Library List).

- [7] An outline drawing with main dimensions which are of importance for interchangeability, and/or reference to the appropriate national or international document for outlines. Alternatively, this drawing may be given in an annex to the DS, but [7] should always contain an illustration of the general outer appearance of the component.
- [8] The level(s) of quality assessment covered by the DS.
- [9] Reference data giving information on the most important properties of the component which allow comparison between the various component types intended for the same, or for similar, applications.

Specification available from : [1]	[2] CECC 68 201-XXX Issue Date Page 1 of
ELECTRONIC COMPONENTS OF ASSESSED QUALITY BY QUALIFICATION APPROVAL IN ACCORDANCE WITH : [3]	[4]
Outline and dimensions - (first angle projection) :  [7] Dimensions in mm	QUARTZ CRYSTAL UNITS [5]
	ENCLOSURE [6] ASSESSMENT LEVEL [8]

1. RATINGS (see 2.4 of CECC 68 000 for preferred ratings)

Operating temperature range

Circuit condition

Maximum Drive level

Measurement Drive level

Climatic category

Mechanical test severities

Information about manufacturers who have components qualified to this detail specification is available in the current CECC 00 200 :
Qualified Products List.

2. CHARACTERISTICS (see 2.3 of CECC 68 000)

Nominal frequency/range

Reference temperature

Frequency tolerance(s)

Maximum resonance resistance

In addition other characteristics including the following may be stated

Shunt capacitance

Motional parameters or Frequency pulling range

Unwanted responses

Ageing rate

Drive level dependency.

Note: Information on the above characteristics may be given in tabular form.

3. RELATED DOCUMENTS

Generic specification CECC 68 000

Sectional specification CECC 68 200

4. MARKING

The marking of the quartz crystal unit and the primary package shall be in accordance with the requirements of 2.5 of CECC 68 000. Full details shall be given in the detail specification.

5. ORDERING INFORMATION

The following ordering information shall be specified

- (1) Quantity
- (2) CECC detail specification number, issue number and date

and where applicable

- (3) Nominal frequency expressed in kHz or MHz and overtone order
- (4) Enclosure type
- (5) Frequency tolerance(s) and operating temperature range
- (6) Circuit condition
- (7) Full description of any additional requirements

An example of ordering information shall be given.

6. CERTIFIED TEST RECORDS

The detail specification shall state whether certified test records are required/not required in accordance with 3.11 of CECC 68 000.

7. ADDITIONAL INFORMATION (not for inspection purposes)

The detail specification may include information (which is not required to be verified by the inspection procedure) such as circuit diagrams, curves, drawings and notes for the clarification of the detail specification.

8. INSPECTION REQUIREMENTS

Clause numbers of tests and performance requirements refer to CECC 68 000

The ILs and AQLs given in table 1 are selected from IEC 410

In this table

p = periodicity (in months)
n = sample size
c = acceptance criterion (permitted number of defectives)
D = destructive
ND = non-destructive
IL = inspection level
AQL = acceptable quality level.

TABLE 1

Clause number and Test	D or ND	Conditions of test	IL	AQL %	PERFORMANCE REQUIREMENTS
<u>100 % INSPECTION</u>	ND				
4.5.1 Visual test A		as 4.5.1			as 4.5.1
4.7.1 Frequency and resonance resistance		as 4.7.1			Frequency tolerance and maximum resistance
<u>GROUP A INSPECTION</u>					
To be conducted on a sampling basis, lot-by-lot					
<u>Sub-Group A1</u>	ND		II	0,25	
4.7.9 Insulation resistance		as 4.7.9			as 4.7.9
<u>Sub-Group A2</u>	ND		II	0,25	
4.7.2 Drive level dependency		as 4.7.2			as 2.4.6
4.7.3 Test A Frequency and resonance resistance as a function of temperature		as 4.7.3 Test A			Frequency tolerance and/or variation and maximum resonance resistance
4.7.3 Test B Frequency and resonance resistance as a function of temperature (except for evacuated glass enclosures)		as 4.7.3 Test B			as 4.7.3 Test B

Clause number and Test	D or ND	Conditions of test	IL	AQL %	PERFORMANCE REQUIREMENTS
<u>Sub-Group A3</u>	ND		II	0,25	
4.7.4 Unwanted responses		as 4.7.4			response ratios or minimum resonance resistance of unwanted response(s)
4.7.5 Shunt capacitance		as 4.7.5			shunt capacitance limits
4.7.8 Motional parameters		as 4.7.8			tolerances to be specified
Motional capacitance C ₁ or Motional inductance L ₁ and Motional resistance R ₁					
<u>GROUP B INSPECTION</u>					
To be conducted on a sampling basis, lot-by-lot					
<u>Sub-Group B1</u>	ND		II	0,25	
4.6.2 Dimensions Test B		as 4.6.2			as 4.6.2
4.8.2(2) Sealing Fine leak test (except for evacuated glass enclosures)		as 4.8.2(2)			as 2.4.11
4.8.2(1) Sealing Gross leak test (except for evacuated glass enclosures)		as 4.8.2(1)			as 4.8.2(1)

Clause number and Test	D or ND	Conditions of test	IL	AQL %	PERFORMANCE REQUIREMENTS
4.8.2(3) Vacuum test for evacuated crystal units (glass enclosures only)		as 4.8.2(3)			as 4.8.2(3)
4.7.1 Frequency and resonance resistance		as 4.7.1			as specified in the detail specification
<u>Sub-Group B2</u>	ND		II	0,25	
4.8.5 Rapid change of temperature thermal shock in air (except for evacuated glass enclosures)		as 4.8.5			
4.8.4 Rapid change of temperature severe shock by liquid immersion (glass enclosures only)		as 4.8.4			
<u>Final Inspection</u>					
4.5.2 Visual test B		as 4.5.2			as 4.5.2
4.8.2(2) Sealing Fine leak test (except for evacuated glass enclosures)		as 4.8.2(2)			as 2.4.11
4.8.2(1) Sealing Gross leak test (except for evacuated glass enclosures)		as 4.8.2(1)			as 4.8.2(1)
4.8.2(3) Vacuum test for evacuated crystal units (glass enclosures only)		as 4.8.2(3)			as 4.8.2(3)

Clause number and Test	D or ND	Conditions of test	Sample size and criterion of acceptability			PERFORMANCE REQUIREMENTS
			p	n	c	
<u>GROUP C INSPECTION</u>						
To be conducted on a sampling basis						
<u>Sub-Group C1</u>	D		3	8	0	
4.8.16 Immersion in cleaning solvents		as 4.8.16				marking shall be legible
4.8.1(1)Tensile and Thrust on terminations		as 4.8.1(1)				as 4.8.1(1)
4.8.1(2)Flexibility of wire terminations		as 4.8.1(2)				as 4.8.1(2)
4.8.1(3)Terminal Bend test (for undercut pins only)		as 4.8.1(3)				as 4.8.1(3)
<u>Final Inspection</u>						
4.5.2 Visual test B		as 4.5.2				as 4.5.2
4.8.2(2)Sealing Fine leak test (except for evacuated glass enclosures)		as 4.8.2(2)				as 2.4.11
4.8.2(1)Sealing Gross leak test (except for evacuated glass enclosures)		as 4.8.2(1)				as 4.8.2(1)

Clause number and Test	D or ND	Conditions of test	Sample size and criterion of acceptability			PERFORMANCE REQUIREMENTS
			p	n	c	
4.7.3 Test B Frequency and resonance resistance as a function of temperature (except for evacuated glass enclosures)		as 4.7.3 Test B				as 4.7.3 Test B
4.8.2(3) Vacuum test for evacuated crystal units (glass enclosures only)		as 4.8.2(3)				as 4.8.2(3)
<u>Sub-Group C2</u>	D		3	8	0	
4.8.3(1) Solderability		as 4.8.3(1)				as 4.8.3(1)
4.8.3(2) Resistance to solder heat		as 4.8.3(2)				as 4.8.3(2)
4.5.2 Visual test B		as 4.5.2				as 4.5.2
4.7.1 Frequency and resonance resistance		as 4.7.1				Frequency tolerance and/or variation and maximum resonance resistance
<u>Sub-Group C3</u>	ND		3	8	0	
4.9.1 Ageing		as 4.9.1				Maximum permissible change in frequency and resonance resistance

Clause number and Test	D or ND	Conditions of test	Sample size and criterion of acceptability			PERFORMANCE REQUIREMENTS
			p	n	c	
<u>Sub-Group C4</u>	D		12	8	0	
4.8.14 Climatic sequence		as 4.8.14				
<u>Final Inspection</u>						
4.7.9 Insulation resistance		as 4.7.9				as 4.7.9
4.7.3 Test B Frequency and resonance resistance as a function of temperature (except for evacuated glass enclosures)		as 4.7.3 Test B				as 4.7.3 Test B
4.8.2(3) Vacuum test for evacuated crystal units (glass enclosures only)		as 4.8.2(3)				as 4.8.2(3)
4.7.1 Frequency and resonance resistance		as 4.7.1				Maximum permissible change in frequency and resonance resistance
4.5.2 Visual test B		as 4.5.2				as 4.5.2
4.5.3 Visual test C		as 4.5.3				as 4.5.3