

European Committee for Electrotechnical Standardization (CENELEC)
Cenelec Electronic Components Committee

CECC

Système Harmonisé d'Assurance de la Qualité
des Composants Electroniques

SPECIFICATION PARTICULIERE CADRE:

RESISTANCES FIXES A FORTE DISSIPATION

(Niveau d'assurance de qualité M)

Harmonized System of Quality Assessment for
Electronic Components

BLANK DETAIL SPECIFICATION:

FIXED POWER RESISTORS

(Assessment level M)

Harmonisiertes Gütebestätigungssystem für
Bauelemente der Elektronik

VORDRUCK FÜR
BAUARTSPEZIFIKATION:

HOCHBELASTBARE FESTWIDERSTÄNDE

(Gütebestätigungsstufe M)



1

Edition
Issue
Ausgabe

CECC 40 202

1981



Documents

Document Sharing Hub

Cette page bleue doit être insérée après la page de garde de la CECC 40 202 Edition 1 (1981)

MODIFICATION 1 A LA CECC 40 202 (Edition 1) :

SPECIFICATION PARTICULIERE CADRE:

RESISTANCES FIXES A FORTE DISSIPATION
(Niveau d'assurance de qualité M)

Insérer la nouvelle page 1a de la CECC 40 202 Edition 1 Modification 1.

Les modifications suivantes doivent être effectuées à la main:

TABEAU 2

(page 6)

En sous-groupe B1, essai "4.15.1 Soudure - Soudabilité", colonne 2, après "(voir Note 6)", insérer: "Méthode ----" et en colonne 5, supprimer le texte existant et insérer "Comme en 4.15.1.2.2".

(page 8)

En sous-groupe D1, essai "4.15.2 Soudure - Résistance à la chaleur", modifier la référence du document CEI et lire "CEI 68-2-20" et en colonne 6, modifier "4.15.2.4" en "4.15.2.3".

This blue page shall be inserted after the title page of CECC 40 202 Issue 1 (1981)

AMENDMENT 1 TO CECC 40 202 (Issue 1) :

BLANK DETAIL SPECIFICATION :

FIXED POWER RESISTORS
(Assessment level M)

Insert new page 1a of CECC 40 202 Issue 1 Amendment 1.

The following amendments shall be made in manuscript:

TABELE 2

(page 6)

In Sub-Group B1, Test "4.15.1 Soldering - Solderability", Column 2, after "(see Note 6)" insert "Method ----" and in Column 5 delete the existing text and insert "As in 4.15.1.2.2".

(page 8)

In Sub-Group D1, Test "4.15.2 Soldering - Resistance to heat", Column 2, amend the reference of the IEC document to "IEC 68-2-20" and in Column 6, amend "4.15.2.4" to read "4.15.2.3".

Dieses blaue Blatt ist nach dem Titelblatt der CECC 40 202 Ausgabe 1 (1981) einzusetzen

ÄNDERUNG 1 ZU CECC 40 202 (Ausgabe 1) :

VORDRUCK FÜR BAUARTSPEZIFIKATIONEN:

HOCHBELASTBARE FESTWIDERSTÄNDE
(Gütebestätigungsstufe M)

Die neue Seite 1a der CECC 40 202 Ausgabe 1 Änderung 1 ist einzusetzen.

Folgende Änderungen sind handschriftlich vorzunehmen:

TABELLE 2

(Seite 6)

In Untergruppe B1, Prüfung "4.15.1 Löten - Lötbarkeit", Spalte 2, ist unterhalb von "(siehe Anmerkung 6)" einzusetzen "Verfahren ----" und in Spalte 5 ist der bestehende Text zu ersetzen durch "Wie in 4.15.1.2.2".

(Seite 7)

In Untergruppe D1, Prüfung "4.15.2 Löten - Lötwärmebeständigkeit", Spalte 2, ist der Verweis auf das IEC-Schriftstück zu ändern in "IEC 68-2-20" und in Spalte 6 ist "4.15.2.4" zu berichtigen in "4.15.2.3".

CECC 40 202 Edition 1 Modification 1 1986

CECC 40 202 Issue 1 Amendment 1 1986

CECC 40 202 Ausgabe 1 Änderung 1 1986

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*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

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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 recognised Mark, or Certificate, of Conformity. The components produced under the System are thereby accepted by all member countries without further testing.

This document has been formally approved by the CECC, and has been prepared for those member countries taking part in the System who wish to issue national harmonized specifications for FIXED POWER RESISTORS. It should be read in conjunction with document CECC 00 100 , Basic Rules (1974).

At the date of printing of this document the member countries of the CECC are Belgium, Denmark, France, Germany, Ireland, Italy, the Netherlands, Norway, Sweden, Switzerland and the United Kingdom, and copies of it can be obtained from the addresses shown on the inside cover.

PREFACE

This blank detail specification was prepared by CECC Working Group 4 : "Resistors".

It is one of a series of blank detail specifications for fixed power resistors, all relating to the generic specification printed as CECC 40 000 and the sectional specification printed as CECC 40 200.

The text of this specification has been prepared from the information contained in CECC 40 000 and 40 200. It was circulated to the CECC for voting in the documents listed below and was approved by the CECC Management Committee for printing as a CECC specification :

<u>Document</u>	<u>Date of Vote</u>	<u>Report on the Voting</u>
CECC(Secretariat)60	10 January 1972	CECC(Secretariat)89
CECC(Secretariat)83	30 June 1972	CECC(Secretariat)118
CECC(Secretariat)330	20 March 1975	CECC(Secretariat)393
CECC(Secretariat)339	8 June 1975	CECC(Secretariat)403
CECC(Secretariat)504	20 August 1976	CECC(Secretariat)603
CECC(Secretariat)505	20 August 1976	CECC(Secretariat)604
CECC(Secretariat)709	28 June 1978	CECC(Secretariat)752
CECC(Secretariat)949	15 June 1980	CECC(Secretariat)977



Amendment 1 to Issue 1 of this blank detail specification results from amendments to the generic specification CECC 40 000 which were circulated to the CECC for voting in the document indicated below and were approved by the President of the CECC for publication:

Voting document
CECC(Secretariat)1447

Date of voting
March 1984

Report on the voting
CECC(Secretariat)1611

IMPLEMENTATION

This amendment shall become effective for all new qualification approvals on 1 May 1986. It shall become effective for all other qualification approvals by 1 May 1987.

Key for page 3

The numbers between square brackets on the first page correspond to the following indications which should be given :

Identification of the harmonized detail specification

- [1] The name of the National Standards Organization under whose authority the detail specification is drafted.
- [2] The CECC Symbol and the number allotted to the national detail specification by the CECC General Secretariat.
- [3] The number and issue number of the national generic and sectional specification.
- [4] The national number of the detail specification, date of issue and any further information required by the national system.

Identification of the resistor

- [5] A short description of the type of resistor.
- [6] Information on typical construction (where applicable) e.g. wirewound vitreous enamel protection.
- [7] Outline drawing with main dimensions which are of importance for interchangeability and/or reference to the national or international documents for outlines. Alternatively, this drawing may be given in an appendix to the detail specification.
- [8] Application or group of applications covered, or, preferably, the level of quality assessment covered by the detail specification.
- [9] Reference data on the most important properties, to allow comparison between the various resistor types.

Specification available from :- [1]	CECC 40 202-XXX [2] 
ELECTRONIC COMPONENTS OF ASSESSED QUALITY IN ACCORDANCE WITH :- [3]	[4]
Outline and dimensions :- (See Table 1) (First angle projection) [7]	FIXED POWER RESISTORS [5]
	[6]
	ASSESSMENT LEVEL "M" [8]

NOTE 1 : Other shapes are permitted within the dimensions given.

NOTE 2 : These resistors are (not) suitable for printed wiring applications.

Table 1

[9]

Style	Rated dissipation (W at 70°C)	Limiting element voltage (V d.c. or a.c. rms.)	Isolation voltage (V d.c. or a.c. peak)	Maximum dimensions		d		
				L	D	min.	nom.	max

All dimensions in millimetres.

1. RATINGS AND CHARACTERISTICS

*Resistance range ---Ω to ---Ω

Standard selection tolerances ± -- %

Climatic category -/-/-

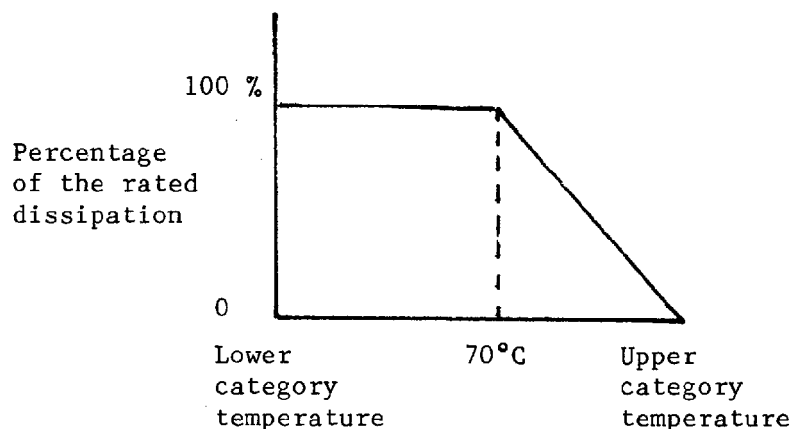
*The preferred values are those of the E--- series of IEC 63. Where the use of intermediate values is essential, they should, wherever possible, be chosen from a series in that document.

See the relevant Qualified Products List for the availability of components qualified to this detail specification.

Vibration severity	-- Hz to -- Hz; 0,75 mm or 98 m/s ² (Whichever is the less severe)
Low air pressure	8,5 kPa (85 mbar)
Bump (or shock) severity	--- ---
Limit of resistance change after 1 000 h endurance test	$\pm$ (-- %R+ -- Ω)
Temperature characteristic of resistance (20° to 70°C)	$\Delta R : \leq \pm$ --- %R ($\Delta R/R \Delta T : \leq \pm$ --- ppm/K)

1.1 Derating

Resistors covered by this specification are derated according to the curve :



NOTE : Various parameters have been precisely specified for this component. It should not be assumed that any parameter not specified will remain unchanged from one component to another.

Should for any reason it be necessary for further parameter(s) to be controlled, then a new fuller specification should be used. The additional test method(s) shall be fully described, and appropriate limits, AQL's and Inspection Levels specified.

2. MARKING

The marking of the component and package shall be in accordance with the requirements of 2.4 of CECC 40 000.

3. RELATED DOCUMENTS

National Authorized Institutions will complete this section, making reference to any documents, recommendations or specifications directly referred to in their national equivalent of this document.

4. ORDERING INFORMATION

Orders for resistors covered by this specification shall contain the following information :

- Resistance value
- Tolerance
- Style and national specification number of this detail specification.

5. CERTIFIED TEST RECORDS

National Authorized Institutions shall indicate in this clause whether certified test records shall be prepared in accordance with 3.5 of CECC 40 000.

6. ADDITIONAL INFORMATION (not for inspection purposes)

Temperature rise $T \leq \text{--- K}$

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 needed for the clarification of the detail specification.

7. INSPECTION REQUIREMENTS (See Table 2)

7.1 When drying is called for, Procedure I of 4.2 of CECC 40 000 shall be used.

7.2 When the manufacturer desires to obtain qualification approval by adopting the fixed sample size procedure (See 3.3.3 of CECC 40 000) use shall be made of the test schedule given in Table A2 of the Appendix to CECC 40 200. The conditions of test and the performance requirements shall be identical to those prescribed for quality conformance inspection in the detail specification.

TABLE 2

(See Notes 1 and 2)

Clause Number and Test	Conditions of Test	IL	AQL	Performance Requirements
<u>GROUP A INSPECTION</u>				
To be conducted on a sampling basis, lot-by-lot				
<u>Sub-Group A1</u> (Non-destructive)		S-3	1,5%	
4.3.1 Visual examination				As in 4.3.1
4.3.2 Marking				As in 4.3.2
<u>Sub-Group A2</u> (Non-destructive)		S-3	1,5%	
4.4 Resistance				As in 4.4.2
<u>GROUP B INSPECTION</u>				
To be conducted on a sampling basis, lot-by-lot				
<u>Sub-Group B1</u> (Destructive)		S-3	2,5%	
4.15.1 Soldering - solderability	(See Note 6) "Method ----" (The detail specification shall indicate whether the terminations are suitable for printed wiring)			As in 4.15.1.2.2".

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(See Notes 1 and 3)

(See Notes 1 and 3)

Clause Number and Test	Conditions of Test	Sample size & criterion of acceptability			Performance Requirements
		P	n	c	
GROUP C INSPECTION					
To be conducted on a sampling basis at the periodicity given in column 'P'					
Sub-Group C1 (Destructive)		3	20	1	
4.21 Damp heat, steady state	Visual examination Resistance Insulation resistance (Insulated resistors only)				As in 4.21.4 ΔR: $\leq \pm(-- \%R+ --\Omega)$ R : $\geq 100 M\Omega$
Sub-Group C2 (Destructive)		3	20	1	
4.24.2 Endurance at room temperature	Duration : 1 000 h Examination at 48, 500 and 1 000 h Visual examination Resistance Examination at 1 000h Insulation resistance (Insulated resistors only)				As in 4.24.2.6 ΔR: $\leq \pm(-- \%R+ --\Omega)$ R : $\geq 1 G\Omega$
Sub-Group C3 (Non-destructive)		3	20	1	
4.3.3 Dimensions (gauging)					As specified in the detail specification
GROUP D INSPECTION					
To be conducted on a sampling basis at the periodicity given in column 'P'					
Sub-Group D1 (Destructive)		36	20	1	
<u>Half of the sample</u>					
4.14 Robustness of terminations	Tensile, bending and torsion tests. Visual examination Resistance				As in 4.14.6.1 ΔR: $\leq \pm(-- \%R+ --\Omega)$

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(See Notes 1 and 3)

Clause Number and Test	Conditions of Test	Sample size & criterion of acceptability			Performance Requirements
		P	n	c	
4.15.2 Soldering - Resistance to heat	(The detail specification shall indicate whether Method 1A or Method 1B of Test Tb of IEC 68-2-20 shall apply). Visual examination Resistance				As in 4.15.2.3 $\Delta R: \leq \pm(-- \%R+ --\Omega)$
<u>Other half of the sample</u>					
4.16 Rapid change of temperature	T _A : Lower category temperature T _B : Upper category temperature Visual examination Resistance				As in 4.16.4 $\Delta R: \leq \pm(-- \%R+ --\Omega)$
4.17 Bump (See Note 5)	Acceleration : 390 m/s ² No. of bumps : 4 000 (See Note 4) Visual examination Resistance				As in 4.17.3 $\Delta R: \leq \pm(-- \%R+ --\Omega)$
4.18 Shock (See Note 5)	Acceleration : 490 m/s ² Pulse duration : 11 ms Waveform : Half sine Severity : 3 successive shocks to be applied in each sense of the three mutually perpendicular directions specified in the detail specification (total 18 shocks) (See Note 4) Visual examination Resistance				As in 4.18.4 $\Delta R: \leq \pm(-- \%R+ --\Omega)$

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(See Notes 1 and 3)

Clause Number and Test	Conditions of Test	Sample size & criterion of acceptability			Performance Requirements
		P	n	c	
4.19 Vibration	Procedure : B4 Frequency range : --- Hz to --- Hz Amplitude : 0,75 mm or 98 m/s ² (which- ever is the less severe) Sweep endurance : Total duration : 6 h (See Note 4) Visual examination Resistance				As in 4.19.3 $\Delta R: \leq \pm(-- \%R+ --\Omega)$
4.20 Climatic sequence					
- Dry heat					
- Damp heat, cyclic, first cycle					
- Cold					
- Low air pressure	8,5 kPa (85 mbar)				
- Damp heat, cyclic, remaining cycles					
- Final measure- ments	Visual examination Resistance Insulation resistance (Insulated resistors only)				As in 4.20.8 $\Delta R: \leq \pm(-- \%R+ --\Omega)$ $R : \geq 100 M\Omega$
<u>Sub-Group D2 (Destructive)</u>		36	20	1	
4.3.4 Dimensions (detail)					As specified in the detail specification
4.24.3 Endurance at upper category temperature	Duration : 1 000 h Examination at 48, 500 and 1 000 h				

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(See Notes 1 and 3)

(See Notes 1 and 5)

Clause Number and Test	Conditions of Test	Sample size & criterion of acceptability			Performance Requirements						
		P	n	c							
	Visual examination Resistance Examination at 1 000 h Insulation resistance (Insulated resistors only)				As in 4.24.3.7 $\Delta R: \leq +(-\%R+ --\Omega)$ $R : \geq 1\text{ G}\Omega$						
<u>Sub-Group D3</u> (Non-destructive) 4.7 Temperature characteristic of resistance		36	20	1	<table><tr><td>LCT/20</td><td>20/UCT</td></tr><tr><td colspan="2">$\Delta R : \leq$</td></tr><tr><td>-- %R</td><td>-- %R</td></tr></table>	LCT/20	20/UCT	$\Delta R : \leq$		-- %R	-- %R
LCT/20	20/UCT										
$\Delta R : \leq$											
-- %R	-- %R										
<u>Sub-Group D4</u> (Non-destructive) 4.6 Voltage proof	Insulated resistors only	36	20	1	As in 4.6.3						

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