
Splošne specifikacije: ojačevalne elektronke na potujoče valove

Generic specification: travelling wave amplifier tubes

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UDC:

Descriptors: Quality, electronic components, travelling wave amplifier tubes

English version

Generic Specification:
Travelling wave amplifier tubes

Spécification Générique:
Tubes amplificateurs à onde
progressive

Fachgrundspezifikation:
Wanderfeld-Verstärkerröhren

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This European Standard was approved by the CENELEC Electronic Components Committee (CECC) on 14 January 1992. The text of this standard consists of the text of CECC 35 000 Issue 1 1977 (with Amdt. 1) of the corresponding CECC Specification. CENELEC members are bound to comply with 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

CENELEC Electronic Components Committee
Comité des Composants Electroniques du CENELEC
CENELEC Komitee für Bauelemente der Elektronik
General Secretariat: Gartenstr. 179, D- 6000 Frankfurt/Main 70

<p>Cette page bleue doit être insérée après la page de garde de la CECC 35 000 Edition 1 (1977)</p> <p>MODIFICATION 1 DE LA CECC 35 000 (Edition 1):</p> <p>SPECIFICATION GÉNÉRIQUE:</p> <p>TUBES AMPLIFICATEURS A ONDE PROGRESSIVE</p> <p>Retirer les pages 7/8 et insérer les nouvelles pages 7/8 de la Modification 1.</p> <p>La modification suivante a été effectuée à la page 8:</p> <p>- Paragraphe 4.5.16: "... à chaud ou à froid" a été ajouté.</p> <p>Le texte de cette modification a été soumis au vote du CECC dans les documents indiqués ci-dessous et a été ratifié par le Président du CECC pour être publié comme Modification 1.</p> <p>Document: CECC(Secrétariat)1945</p> <p>Date de Vote: 12 novembre 1986</p> <p>Rapport de Vote: CECC(Secrétariat)2041</p> <p>Enregistrer les modifications sur la feuille jaune "Enregistrement de modifications".</p>	<p>This blue page should be inserted after the title page of CECC 35 000 Issue 1 (1977)</p> <p>AMENDMENT 1 TO CECC 35 000 (Issue 1):</p> <p>GENERIC SPECIFICATION:</p> <p>TRAVELLING WAVE AMPLIFIER TUBES</p> <p>Remove pages 7/8 and insert new pages 7/8 of Amendment 1.</p> <p>The following amendment was made on page 8:</p> <p>- Clause 4.5.16: "... hot or cold ." has been added.</p> <p>The text of this amendment was circulated to the CECC for voting in the documents listed below and was ratified by the President of the CECC for printing as Amendment 1.</p> <p>Document: CECC(Secretariat)1945</p> <p>Voting date: 12 November 1986</p> <p>Report on the Voting: CECC(Secretariat)2041</p> <p>Enter these amendments on the yellow "Record of Amendments" sheet.</p>	<p>Dieses blaue Blatt ist nach dem Titelblatt CECC 35 000 Ausgabe 1 (1977) einzufügen</p> <p>ÄNDERUNG 1 ZU CECC 35 000 (Ausgabe 1):</p> <p>FACHGRUNDSPEZIFIKATION:</p> <p>WANDERFELD-VERSTÄRKERRÖHREN</p> <p>Die Seiten 7/8 sind herauszunehmen und durch die neuen Seiten 7/8 der Änderung 1 zu ersetzen.</p> <p>Die folgende Änderung wurde auf Seite 8 vorgenommen:</p> <p>- Abschnitt 4.5.16 wurde ergänzt: "Reflexionskoeffizient oder kalter oder warmer Welligkeitsfaktor am Eingang und Ausgang".</p> <p>Der Text dieser Änderung wurde dem CECC mit den unten aufgeführten Schriftstücken zur Abstimmung vorgelegt und vom Präsidenten des CECC zur Herausgabe als Änderung 1 freigegeben.</p> <p>Schriftstück: CECC(Sekretariat)1945</p> <p>Abstimmdatum: 12. November 1986</p> <p>Abstimmbericht: CECC(Sekretariat)2041</p> <p>Diese Änderung ist auf dem gelben Blatt "Verzeichnis der Änderung" einzutragen.</p>
CECC 35 000	Edition 1	Modification 1 (1987)
CECC 35 000	Issue 1	Amendment 1 (1987)
CECC 35 000	Ausgabe 1	Änderung 1 (1987)

SECTION 4 - TEST AND MEASUREMENT PROCEDURES

4.1 General

This section contains the test methods which shall be included in each harmonized national specification system. Not all the tests are applicable to all detail specifications. Blank detail specifications shall quote which of the tests are applicable to a particular family of tubes.

Additional test methods included in harmonized national detail specifications shall be clearly indicated as non-harmonized.

4.2 Alternative methods

Measurements shall be carried out by using the methods specified, or any other method giving compatible results, but in case of dispute, only the specified method shall be used.

Note: By "compatible" is meant that the value of the characteristic established by such other method will fall within the specified limits when measured by the specified method.

4.3 Standard conditions for testing

Unless otherwise specified, all tests shall be carried out under standard atmospheric conditions for testing as specified in IEC 68-1:2000:2004

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4.4 Visual inspection and check of dimensions

4.4.1 Visual inspection

Unless otherwise specified, visual inspection shall be performed under normal factory lighting conditions and without visual aids. Visual inspection shall be carried out for good appearance and workmanship and shall include the following items where applicable:

- quality of the surfaces of the terminations and insulating materials.
- straightness of pins, if applicable
- freedom from loose elements
- clarity, correctness and position of marking
- finish.

4.4.2 Dimensions

The specified dimensions of the tube shall be checked according to a detailed drawing given in the detail specification.

4.5 Electrical measurement procedures

The following properties shall be measured in accordance with the IEC Publication specified (see also 4.1 and 4.2):

4.5.1	Saturation power	IEC 235-2	Sub-clause 16.2
4.5.2	Fundamental output power	IEC 235-2	Sub-clause 16.1
4.5.3	Heater current	IEC 151-2	
4.5.4	Electrode currents	IEC 151-1	
4.5.5	Available power gain at specified output power	IEC 235-2	Sub-clause 14.2
4.5.6	Gain flatness	IEC 235-2	Sub-clause 15.2
4.5.7	Gain ripple	IEC 235-2	Sub-clause 15.3
4.5.8	Gain slope	IEC 235-2	Sub-clause 15.4
4.5.9	Phase linearity	Document in preparation	
4.5.10	Stability	IEC 235-2	Sub-clause 20.3
4.5.11	Noise	IEC 235-2A	Clause 25
4.5.12	Instantaneous bandwidth	IEC 235-2	Sub-clause 15.1
4.5.13	Operating loss	IEC 235-2	Sub-clause 18.2
4.5.14	Phase sensitivity to voltage	IEC 235-2	Clause 19
4.5.15	Inter-electrode insulation	IEC 151-15	Clause 8
4.5.16	Input and output reflection coefficient or hot or cold v.s.w.r.	IEC 235-2	Clause 17

4.6 Environmental test and measurement procedures

4.6.1	Robustness of terminations	IEC 68-2-21	Test U
4.6.2	Shock	IEC 68-2-27	Test E _a
4.6.3	Vibration	IEC 68-2-6	Test F _c
4.6.4	Damp heat steady state	IEC 68-2-3	Test C _a

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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 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 TRAVELLING WAVE AMPLIFIER TUBES. 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, Germany, France, Ireland, Italy, the Netherlands, Norway, Sweden, Switzerland and the United Kingdom, and copies of it can be obtained from the National Committees of the CENELEC in these countries.

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PREFACE

This generic specification was prepared by CECC Working Group 13: "Microwave Tubes".

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In accordance with the requirements of document CECC 00 100 it is based, wherever possible, on the Recommendations of the International Electrotechnical Commission and in particular on IEC Publication 235: Measurement of the electrical properties of microwave tubes.

The text of this specification was circulated to the CECC for voting in the documents below and was formally approved by the CECC for printing as a CECC Specification.

Document

Voting date

CECC(Secretariat)266
CECC(Secretariat)266A

15 Nov 1974
7 Nov 1975

This specification will be supplemented by blank detail specifications specific to each sub-family of travelling wave amplifier tubes.

SECTION 1 - SCOPE

This document relates to travelling wave amplifier tubes. At present, it is limited to CW power amplifier tubes up to 500 watts power output.

SECTION 2 - GENERAL

2.1 Order of precedence

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

- the detail specification
- the generic specification
- the rules of procedure of document CECC 00 100 or any other international (for example IEC) documents to which reference is made.

NOTE: 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		Letter symbols to be used in electrical technology.
-1	(1971)	Part 1. General.
-1A	(1976)	First supplement to Publication 27-1 (1971).
IEC 50	-	International Electrotechnical Vocabulary.
IEC 68	-	Basic environmental testing procedures. (See CECC 00 006.)
IEC 117	-	Recommended graphical symbols.
IEC 134	(1961)	Rating systems for electronic tubes and valves and analogous semiconductor devices.
IEC 151		Measurements of the electrical properties of electronic tubes.
-1	(1963)	Part 1. Measurement of electrode current.
-2	(1963)	Part 2. Measurement of heater or filament current.
-13	(1966)	Part 13. Methods of measurement of emission current from hot cathodes for high-vacuum electronic tubes and valves.
-15	(1967)	Part 15. Methods of measurement of spurious and unwanted electrode currents.