SLOVENSKI STANDARD
SIST EN 114001:2002

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Blank detail specification: Photomultiplier tubes

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Vordruck für Bauartspezifikation: Eine deutsche Version liegt zur Zeit nicht vor

Spécification particulière cadre: Tubes photomultiplicateurs

Ta slovenski standard je istoveten z: **EN 114001:1991**

ICS:

31.100	Elektronke	Electronic tubes

SIST EN 114001:2002 **en**

EUROPEAN STANDARD

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EN 114001

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Descriptors: Quality, electronic components, tubes

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This European Standard was approved by the CENELEC Electronic Components Committee (CECC) on 20 November 1991. The text of this standard consists of the text of CECC 14001 Issue 1 1984 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

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 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 PHOTOMULTIPLIER TUBES. It should be read in conjunction with document CECC 00100: *Basic Rules* (1974).

At the date of printing of this document 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.

Preface

This blank detail specification was prepared by CECC Working Group 11: "Electro-optical devices".

It is a blank detail specification for photomultiplier tubes relating to the generic specification CECC 14000.

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

Document	Voting Date	Report on the Voting
CECC(Secretariat) 994	June 1981	CECC(Secretariat) 1078

It is recognized that the layout proposed cannot be applied to all detail specifications based on this document.

The CECC Management Committee at its meeting in Copenhagen in March 1979 decided that as the German National Authorized Institution would not be implementing the requirements of this CECC specification, the text should be published in the English and French versions only.

Contents

Key for page 4

The numbers between square brackets on page 4 correspond to the following indications which should be given:

Identification of the detail specification

[1] The name of the National Standards Organization under whose authority the detail specification is published, and, if applicable, the organization from whom the detail specification is available

[2] The CECC Symbol and the number allotted to the detail specification by the CECC General Secretariat

[3] The number and issue number of the CECC generic or sectional specification as relevant; also national reference if different

[4] If different from the CECC number the national number of the detail specification, date of issue and any further information required by the national system, together with any amendment numbers.

Identification of the component

[5] A short description of the type of component

[6] Information on typical construction (where applicable)

For [5] and [6] the text to be given in the detail specification should be suitable for an entry in CECC 00200 (QPL) and CECC 00300 (Library List).

[7] Outline drawing and/or reference to the relevant document for outlines

[8] Application or group of applications covered (see Note below)

[9] Reference data on the most important properties, to allow comparison between the various component types

NOTE When a device is so designed that it can satisfy several applications, this should be stated in the detail specification, in which case the characteristics and inspection requirements relevant to these applications should be met simultaneously (these may appear in different columns of a detail specification or in different detail specifications, as the case may be).

[1]	Page: of	CECC 14001-XXX	[2]
ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH [3]			[4]
DETAIL SPECIFICATION FOR:	PHOTOMULTIPLIER TUBES		[5]
DESCRIPTION and CONSTRUCTION	Photocathode type, and window material Dimensions of photocathode window Number of stages, dynode geometry and type.		[6]
OUTLINE DRAWING [7] (Not for inspection purposes) Overall length; Base – Reference to IEC 67 or REFERENCE TO THE INSPECTION DRAWING		APPLICATIONS LEVEL OF QUALITY ASSESSMENT	[8]

DATA (Not for inspection purposes) [9]

Mechanical

Mounting position and accessories

Mass

Environmental (where applicable)

LIMITING VALUES (Absolute maximum rating system — IEC 134)	Min.	Max.	Unit
Overall voltage (subject to not exceeding the rated anode luminous sensitivity)		[a]	V
Cathode to first dynode voltage		[a]	V
Anode to last dynode voltage		[a]	V
Voltage between successive dynodes		[a]	V
Anode sensitivity		[a]	A/1m or A/W
Anode current (mean)		[a]	mA

Information about manufacturers who have components qualified to this detail specification is available in the current CECC 00200: Qualified Products List.

[a] Denotes that a value shall be inserted in the detail specification.

LIMITING VALUES (Contd.)	Min.	Max.	Unit
Anode power dissipation		[a]	W
Cathode current		[a]	µA
Storage temperature of specified duration	[a]	[a]	°C
Operating temperature of specified duration (ambient)	[a]	[a]	°C

The data and descriptions listed are examples only; the specification writer shall include data relevant to the tube application.

OPERATING CONDITIONS AND TYPICAL CHARACTERISTICS

(Specification writer to select from the following as required by the tube design).

When the tube is operated under the conditions given below, the characteristic values which follow them are attainable:

— Electrode voltages or dynode chain with total voltage[a]

— Anode sensitivity[a]

	Min.	Max.	Unit
Cathode sensitivity			µA/1m or mA/W
Transit time		[a]	ns
Capacitance, anode to all dynodes		[a]	pF
Anode dark current		[a]	nA
Anode pulse rise time		[a]	ns

[a] Indicates that a value/or values shall be inserted in the detail specification.

The characteristics listed are examples only, the specification writer shall include those characteristics which are relevant to the tube operation.

MARKING

ORDERING INFORMATION

RELATED DOCUMENTS

STRUCTURAL SIMILARITY

X-RADIATION

ADDITIONAL INFORMATION

— recommended precautions.

— spectral/characteristic curves

TEST CONDITIONS AND INSPECTION REQUIREMENTS

These are given in the following tables. The test conditions to be used shall be specified in the detail specification as required for a given type, in line with the requirements given in CECC 14000 for the relevant test.

ALL REFERENCES TO CLAUSE NUMBERS ARE MADE WITH RESPECT TO CECC 14000 UNLESS OTHERWISE STATED.

If the detail specification includes additional tests which are destructive, these shall be marked (D).

General test conditions

All potentials are defined with respect to[1] unless otherwise stated.

[1] To be completed in the detail specification.

The specification shall include the following tests unless precluded by the tube design.

All tests are non-destructive	GROUP A Lot by lot Defects do not cause lot rejection								
Examination or Test	**Ref**	**Conditions of test**		**Inspection requirements**					
				Limits			**Levels**	
				Min.	**Max.**	**Unit**	**IL**	**AQL**
Subgroup A1							100 %	
— Visual inspection	**4.3**			See **4.3**				
— Cathode sensitivity	**4.5.1** or **4.5.4**		+			µA/1m or mA/W		
— Anode sensitivity	**4.5.2** or **4.5.6**		+			A/1m or A/W		
— Anode dark current	**4.5.13**		+			nA		

Only tests marked (D) are destructive	GROUP B Lot by Lot			AQL: given in %				
Examination or Test	**Ref**	**Conditions of test**		**Inspection requirements**				
				Limits			**Levels**	
							IL	**AQL**
Subgroup B1							S-4	4,0
— Dimensions, major	**4.4**			See inspection drawing				

GROUP C

NOT APPLICABLE

+ To be given in the detail specification

Only tests marked (D) are destructive

The sample size and acceptance criterion shall be as 3.4 of CECC 14000

GROUP D

QUALIFICATION APPROVAL

+ To be given in the detail specification

Examination or Test	Ref.	Conditions of test		Inspection requirements			
				Limits			
				Min.	Max.	Unit	
— Dimensions, detail	4.4			See inspection drawing			
— Inter-electrode insulation	4.5.15		+			nA	
— Capacitance	2.2 — IEC 100		+			pF	
— Operating endurance (D)	4.8.2						
Post endurance tests:			a				
— Cathode sensitivity							
— Anode sensitivity							
— Anode dark current							

[a] The limits may be the Group A limits, wider or in terms of a permitted change from the original value at the discretion of the specification writer.