
Okvirna podrobna specifikacija: prikazovalniki s tekočimi kristali – Enobarvni LCD brez elektronskega vezja

Blank Detail Specification: Liquid crystal displays – Monochrome LCDs without electronic circuit

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UDC:

Descriptors: Quality, electronic components, LCDs

English version

Blank Detail Specification:

Liquid cristal displays

Monochrome LCDs without electronic circuit

Spécification Particulière Cadre:

Dispositifs de visualisation à
cristaux liquides

LCD monochromes sans circuit
électronique

Vordruck für Bauartspezifikation:

Flüssigkristallanzeigen

Monochrome LCDs ohne

Ansteuer Elektronik

STANDARD PREVIEW
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This European Standard was approved by the CENELEC Electronic Components Committee (CECC) on 20 February 1992. The text of this standard consists of the text of CECC 20 007 Issue 1 1991 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

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 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 LIQUID CRYSTAL DISPLAYS. 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 blank detail specification was prepared by CECC WG 20: Semiconductor optoelectronic and liquid crystal devices.

It is based, wherever possible, on the Publications of the International Electrotechnical Commission.

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

CECC(Secretariat)2090

Date of Voting

January 1988

Report on the Voting

CECC(Secretariat)2201

LIQUID CRYSTAL DISPLAYS		
[Name (address) of responsible ONH (1) (and possibly of body from which specification is available)]	Page 2 of 10	CECC 20 007-xxx (2) [CECC detail specification number plus issue number and/or date]
ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH: CECC 20 000, issue .. [and national refe- rences if different] (3)	[National number of detail specification. (4) This box may not be used if National number includes CECC number]	
1. <u>MECHANICAL DESCRIPTION</u> (7) OUTLINE DRAWING AND DIMENSIONS e.g. - outline overall - viewing area - symbols CONNECTION TYPE - pin identification - without connector - with connector e.g. bonded pin snap-on pin elastomeric flexible board MARKING [see 2.5 of CECC 20 000]	<u>DETAIL SPECIFICATION FOR:</u> (5) [Type number (s) of relevant device (s) and, if appropriate structurally similar devices] ORDERING INFORMATION: see clause 7 of this specification	
	2. <u>SHORT DESCRIPTION</u> (6) Monochrome LCD without electronic circuit - Type of display: e.g. character, dot matrix - Principle and material used: e.g. TN-cell - Optical mode of operation: illumination mode: reflective, transreflective, transmissive coloured or monochrome - image mode: bright symbols on dark background (negative) dark symbols on bright background (positive) - Electrical mode of operation, preferred viewing direction: e.g. - static mode; multiplex mode - with/without heater APPLICATION e.g. indoor or outdoor DIRECTION of front polarization	
	3. <u>LEVEL (S) OF QUALITY ASSESSMENT</u> (8) [if relevant]	

Note: Texts between brackets give guidelines how to fill in the blank detail specification.

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

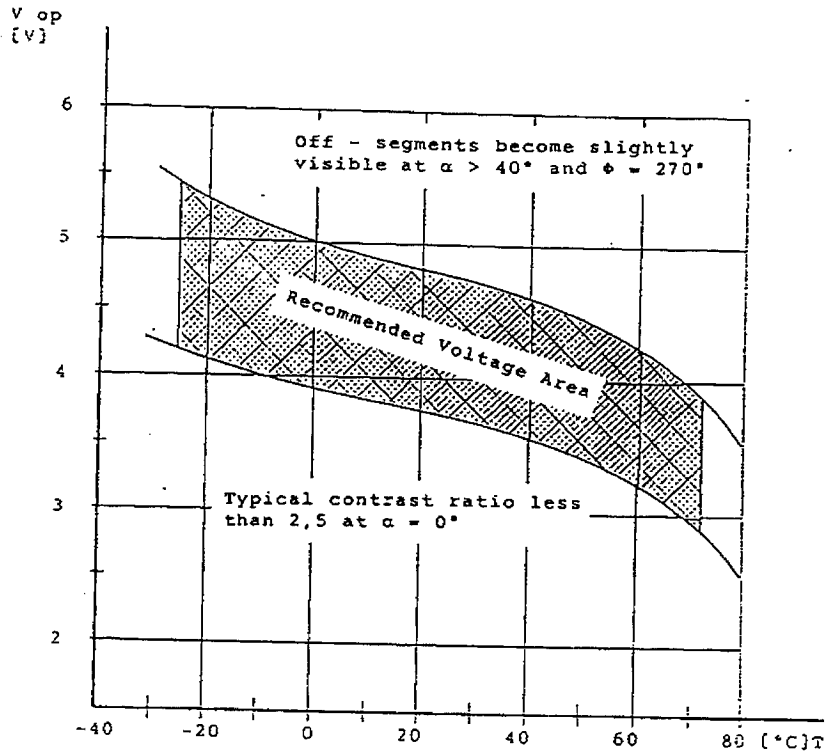
4. LIMITING VALUES (Absolute maximum rating system) (9)

These apply over the operating temperature range unless otherwise stated.
 [X denotes that a value shall be inserted in the detail specification]

Clause CECC 20 007	Repeat only clause numbers used, with text. Additional values, if any, shall be given at the appropriate place without clause number (s). Curves should preferably be given in clause 9 of this specification	Symbol	Value		Unit
			min	max	
4.1	CLIMATIC RATINGS				
4.1.1	Operating ambient temperature	T _{amb}	X	X	°C
4.1.2	Storage temperature	T _{stg}	X	X	°C
4.1.3	Soldering temperature soldering conditions (where appropriate)	T _{sld}		X	°C
4.1.4	Humidity	R.H.		X	%
4.2	MECHANICAL RATINGS				
4.2.1	Atmospheric pressure	p	X	X	hPa
4.2.2	Shock	g		X	cm/s ²
4.2.3	Vibration	g		X	cm/s ²
4.2.4	Acceleration	g		X	cm/s ²
4.2.5	Bending Strength of the cell			X	
4.2.6	Torsional Strength of the cell			X	Nm
4.3	ELECTRICAL RATINGS				
4.3.1	RMS-Value of the operating voltage eg. square wave	V _{op(rms)}		X	V
4.3.2	Peak to Peak Voltage	V _{pp}		X	V
4.3.3	DC-Voltage offset of operating voltage	V _{dc}		X	V

5. OPERATING RANGE AND ELECTRICAL AND OPTICAL CHARACTERISTICS
 See clause 8 of this document for inspection requirement (Groups A und C)

5.1	RECOMMENDED OPERATION RANGE (referred for specified viewing and contrast conditions). See figures.	Symbol	Value		Unit
			min	max	
5.1.1	Operating voltage range in the recommended operation mode at T _{amb} = 25 °C	V _{op(rms)}	X	X	V
5.1.2	Operating frequency range in the recommended operation mode at T _{amb} = 25 °C	f	X	X	Hz
5.1.3	Operating temperature range at specified V _{op}	T _{amb}	X	X	°C



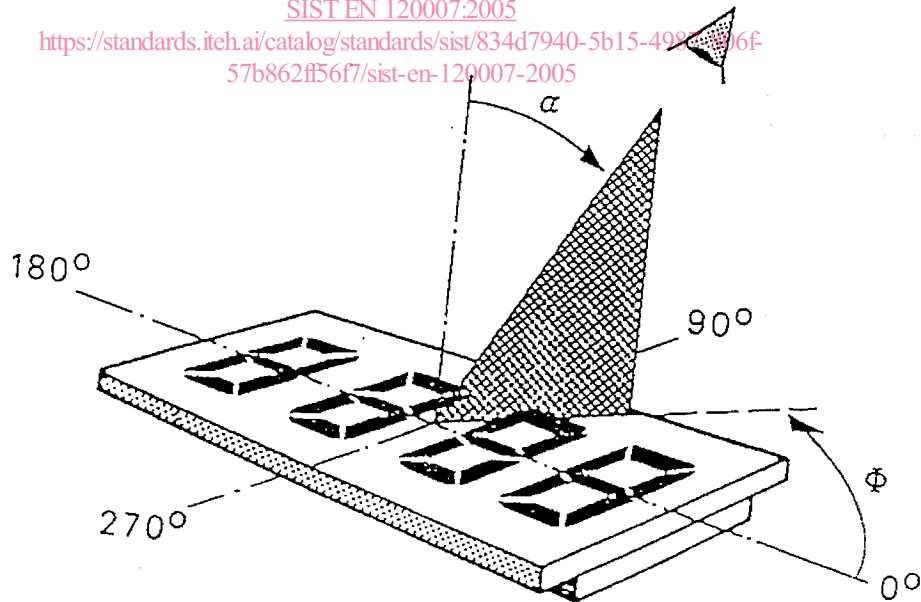
Recommended operation range

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Viewing angles α and ϕ are defined according to the above figure

5.2 ELECTRICAL AND OPTICAL CHARACTERISTICS

[Signs between brackets correspond to characteristics given as "where appropriate" or as alternatives:

- Those characteristics marked "where appropriate" in this clause and in the inspection section shall either be omitted or, if specified, shall then be measured.
- For equivalent characteristics given as alternatives, the choice should preferably be left open to allow the use of the same detail specification by different manufacturers or countries.

Repeat only clause numbers used, with text. Any additional characteristics to be given at appropriate place but without clause number.

When several devices are defined in the same detail specification, the relevant values should be given on successive lines, avoiding repetition of identical values.]

Clause CECC 20 007	Measured	Characteristics and conditions, at $T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise stated	Symbol	Value		Unit
				min	max	
5.2.1	A3	Threshold voltage at specified viewing angle and at 10 % of max. relative contrast	V_{th}	X	X	V
5.2.2	A3	Saturation voltage at specified viewing angle and at 90 % of max. relative contrast	V_{sat}	X	X	V
5.2.3		Operating current at specified frequency and operating voltage all segments operating	I_s		X	μA
5.2.4	C2a	DC-Resistance (at specified voltage) all segments connected	R_{tot}	X		$\text{M}\Omega$
5.2.5	C2a	Capacitance (at specified voltage and for a specified connection) all segments connected	C_{tot}		X	nF
5.2.6	A2b	Contrast ratio at specified viewing angles and electrical mode of operation	CR	X		
5.2.7	A2b	Turn on time at specified electrical mode of operation; (T_{amb} specified)	t_{on1}		X	ms
5.2.8		Turn on time at specified electrical mode of operation at $T_{amb\ min}$	t_{on2}		X	ms
5.2.9	A2b	Turn off time at specified electrical mode of operation; (T_{amb} specified)	t_{off1}		X	ms
5.2.10		Turn off time at specified electrical mode of operation at $T_{amb\ min}$	t_{off2}		X	ms
5.2.11		Transmission factor of the non activated display; The transmission/reflection factors should be measured in C2b where appropriate.		X		
5.2.12		Reflection factor of the non activated display; The transmission/reflection factors should be measured in C2b where appropriate.		X	X	
5.2.13	C2b	Angular contrast distribution. Specified isocontrast diagram and minimum contrast ratio (see 9.1)		X		

6. MARKING

[Any particular information other than given in box (7) on front page and/or 2.5 of CECC 20 000 shall be specified here.]

7. ORDERING INFORMATION

The following minimum information is necessary to order a specified device, unless otherwise specified:

- precise type number
- CECC reference of detail specification with issue number and/or date when relevant
- any other particulars.

8. TEST CONDITIONS AND INSPECTION REQUIREMENTS

These are given in the following tables, where the values and exact test conditions to be used should be specified as required for a given type, and as required by the relevant test in CECC 20 000.

[When several devices are included in the same detail specification, the relevant conditions and/or values should be given on successive lines, where possible avoiding repetition of identical conditions and/or values.

The choice between alternative tests should preferably be left open, unless very sound technical reasons forbid this, although such tests are not strictly equivalent, they were meant to achieve the same results: assess the correct manufacture of a device; alternatives were provided to take into account different equipments or methods of measurement used in various countries.]

In this section, reference to clause numbers are made with respect to CECC 20 000, unless otherwise stated.

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GROUP A - Lot by Lot

All tests are non destructive (3.5.6) [\(standards.iteh.ai\)](https://standards.iteh.ai/)

EXAMINATION OR TEST and reference	Conditions at $T_{amb} = 25^{\circ}C$ unless otherwise stated	INSPECTION				
		LIMITS			ASSESSMENT	
		min	max	Unit	IL	AQL
SUB-GROUP A1 Visual inspection (no electrical connection)	Annex G: 1; 2; 3; 4; 5				I	0,15 %
SUB-GROUP A2a -Missing segments/symbols -Deviations between ener- gized and visible segments/ symbols	Annex G: 6.1				II	0,15 %
SUB-GROUP A2b Contrast (0-003) t_{on} } (0-004) t_{off} } Segment/symbol Visual defect	5.2.6 5.2.7 5.2.9 Annex G: 6.1; 6.2; 6.3	X	X	ms	II	0,15 %
SUB-GROUP A3 V_{th} (0-005) V_{sat} (0-005) I_s (0-001)	5.2.1 5.2.2 5.2.3	X	X	V	I	0,65 %
		X	X	V		
			X	μA		