

### SLOVENSKI STANDARD SIST EN 61747-4:2013

01-marec-2013

Nadomešča:

SIST EN 61747-4:2002

Prikazovalniki s tekočimi kristali - 4. del: Moduli in celice s tekočimi kristali - Bistvene vrednosti in karakteristike

Liquid crystal display devices - Part 4: Liquid crystal display modules and cells - Essential ratings and characteristics

# iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 61747-4:2013

https://standards.iteh.ai/catalog/standards/sist/50a0e09f-135d-40ff-beb7-

Ta slovenski standard je istoveten 2:3ef4/siEN-61747-4:2012

ICS:

31.120 Elektronske prikazovalne

Electronic display devices

naprave

SIST EN 61747-4:2013

en,fr,de

SIST EN 61747-4:2013

# iTeh STANDARD PREVIEW (standards.iteh.ai)

<u>SIST EN 61747-4:2013</u> https://standards.iteh.ai/catalog/standards/sist/50a0e09f-135d-40ff-beb7-88414c0c3ef4/sist-en-61747-4-2013

### **EUROPEAN STANDARD**

### EN 61747-4

### NORME EUROPÉENNE EUROPÄISCHE NORM

December 2012

ICS 31.120

Supersedes EN 61747-4:1998

English version

# Liquid crystal display devices Part 4: Liquid crystal display modules and cells Essential ratings and characteristics

(IEC 61747-4:2012)

Dispositifs d'affichage à cristaux liquides -Partie 4: Modules et cellules d'affichage à cristaux liquides -Valeurs limites et caractéristiques essentielles (CEI 61747-4:2012) Flüssigkristall-Anzeige-Bauelemente -Teil 4: Flüssigkristall-Anzeigemodule und zellen -Wesentliche Grenz- und Kennwerte (IEC 61747-4:2012)

## iTeh STANDARD PREVIEW (standards.iteh.ai)

This European Standard was approved by CENELEC on 2012-10-31. CENELEC members are bound to comply with the 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

### **CENELEC**

European Committee for Electrotechnical Standardization Comité Européen de Normalisation Electrotechnique Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

#### **Foreword**

The text of document 110/349/CDV, future edition 2 of IEC 61747-4, prepared by IEC/TC 110 "Electronic display devices" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61747-4:2012.

The following dates are fixed:

•	latest date by which the document has	(dop)	2013-07-31
	to be implemented at national level by		
	publication of an identical national		
	standard or by endorsement		
•	latest date by which the national standards conflicting with the	(dow)	2015-10-31

This document supersedes EN 61747-4:1998.

document have to be withdrawn

EN 61747-4:2012 includes the following significant technical changes with respect to EN 61747-4:1998:

- 2.1 and 3.1 of EN 61747-4:1998 were deleted because these items are defined in EN 61747-1;
- 2.7.6, in 2.7, Supplementary information, of EN 61747-4:1998 was deleted because the scope of this standard is about passive matrix monochrome liquid crystal display modules;
- the item "Gray scale: digital or analog" in 2.3.1 of EN 61747-4:1998 was changed to "Gray scale: number" because it is more accurate;

  SIST EN 61747-4:2013
- contrast mode: light symbol on dark background ("LOD") or "positive image") or dark symbol on light background ("DOL" or "negative image") was introduced in this part of EN 61747 to replace the description in 2.3.1 and 3.3.1 of EN 61747-4:1998.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

#### **Endorsement notice**

The text of the International Standard IEC 61747-4:2012 was approved by CENELEC as a European Standard without any modification.

EN 61747-4:2012

- 3 -

## Annex ZA (normative)

## Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	EN/HD	<u>Year</u>
IEC 61747-1	1998	Liquid crystal and solid-state display devices Part 1: Generic specification	- EN 61747-1	1999

# iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 61747-4:2013 https://standards.iteh.ai/catalog/standards/sist/50a0e09f-135d-40ff-beb7-88414c0c3ef4/sist-en-61747-4-2013 SIST EN 61747-4:2013

# iTeh STANDARD PREVIEW (standards.iteh.ai)

<u>SIST EN 61747-4:2013</u> https://standards.iteh.ai/catalog/standards/sist/50a0e09f-135d-40ff-beb7-88414c0c3ef4/sist-en-61747-4-2013



IEC 61747-4

Edition 2.0 2012-09

## INTERNATIONAL STANDARD

## NORME INTERNATIONALE

Liquid crystal display modules and cells – Essential ratings and characteristics

SIST EN 61747-4:2013

Dispositifs d'affichage à cristaux liquides stat/50a0e09f-135d-40ff-beb7-Partie 4: Modules et cellules d'affichage à cristaux liquides – Valeurs limites et caractéristiques essentielles

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

PRICE CODE CODE PRIX



ICS 31.120 ISBN 978-2-83220-352-1

Warning! Make sure that you obtained this publication from an authorized distributor.

Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.

### CONTENTS

FΟ	REWC	)RD	3			
1	Scope					
2	Normative references					
3	Liquid crystal display modules					
	3.1					
	3.2	Modes of operation				
	3.3	Details of outline	5			
	3.4	Limiting values (absolute maximum rating system) over the operating temperature range, unless otherwise stated	6			
	3.5	Electrical and optical characteristics	6			
	3.6	Supplementary information	7			
4	Liquid crystal display cells (LCD cells)					
	4.1	Principle and material used	8			
	4.2	Modes of operation	8			
	4.3	Details of outline	8			
	4.4	Limiting values (absolute maximum rating system) over the operating temperature range, unless-otherwise stated	8			
	4.5					
	4.6	Electrical and optical characteristics Supplementary information	9			
		SIST EN 61747-4:2013				
		Electrical and optical characteristics of dLCD modules 35d-40ff-beb7	6			
Tab	ole 2 –	Electrical and optical characteristics of LCD cells 13	9			

#### INTERNATIONAL ELECTROTECHNICAL COMMISSION

#### LIQUID CRYSTAL DISPLAY DEVICES -

## Part 4: Liquid crystal display modules and cells – Essential ratings and characteristics

#### **FOREWORD**

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter. https://standards.iteh.ai/catalog/standards/sist/50a0e09f-135d-40ff-beb7-
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61747-4 has been prepared by IEC technical committee 110: Electronic display devices.

This second edition cancels and replaces the first edition published in 1998. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- 2.1 and 3.1 of IEC 61747-4:1998 were deleted because these items are defined in IEC 61747-1;
- 2.7.6, in 2.7, Supplementary information, of IEC 61747-4:1998 was deleted because the scope of this standard is about passive matrix monochrome liquid crystal display modules;
- The item "Gray scale: digital or analog" in 2.3.1 of IEC 61747-4:1998 was changed to "Gray scale: number" because it is more accurate;