



IEC 61747-4-1

Edition 2.0 2014-10

INTERNATIONAL STANDARD

**Liquid crystal display devices –
Part 4-1: Matrix colour LCD modules – Essential ratings and characteristics**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

PRICE CODE

J

ICS 31.120

ISBN 978-2-8322-1890-7

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

CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references	6
3 Matrix colour liquid crystal display modules	6
3.1 Principles and material used	6
3.2 Modes of operation	6
3.2.1 Addressing mode of operation	6
3.2.2 Optical mode of operation.....	6
3.3 Details of outline.....	6
3.3.1 Material, mechanical description.....	6
3.3.2 Method of connection	6
3.3.3 Outline drawing and dimensions	7
3.3.4 Pin layout and/or assignment.....	7
3.3.5 Preferred or designed viewing direction	7
3.4 Limiting values (absolute maximum rating system) over the operating temperature range, unless otherwise stated.....	7
3.4.1 Minimum and maximum ambient operating temperature (T_{Op})	7
3.4.2 Minimum and maximum storage temperature (T_{stg}).....	7
3.4.3 Minimum and maximum value of supply voltages for logic and LCD drive or supply voltage(s) for module	7
3.4.4 Minimum and maximum value of input signal voltage (V_{IN}).....	7
3.4.5 Where appropriate, minimum and maximum value of integrated light source voltage (V_{LS})	7
3.4.6 Where appropriate, maximum soldering temperature (T_{sld})	7
3.5 Electrical and optical characteristics	7
3.6 Supplementary information	9
3.6.1 Timing characteristics, timing of logic voltages and data/format interface specification	9
3.6.2 Supply voltages sequence condition, where appropriate	9
3.6.3 Operating voltage range, if appropriate, as a function of temperature at specified contrast ratio	9
3.6.4 Handling and operating information	9
3.6.5 Precautions with respect to electrostatic discharges	9
3.6.6 Precautions of installation, mechanical and/or electrical	9
3.6.7 Safety information	9
3.6.8 Characterization of diffused and regular reflectance and transmittance.....	9
Table 1 – Electrical and optical characteristics of matrix colour LCD modules.....	7

INTERNATIONAL ELECTROTECHNICAL COMMISSION

LIQUID CRYSTAL DISPLAY DEVICES –**Part 4-1: Matrix colour LCD modules –
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.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 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.
- 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 61747-4-1 has been prepared by IEC technical committee 110: Electronic display devices.

This second edition cancels and replaces the first edition published in 2004. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition: Adding the contents of the IEC 61747 series, adding the TFT technical kinds, revising the electrical and optical characteristics in Table 1 and correcting some editorial errors.

This standard is to be read in conjunction with IEC 61747-1-1.

The text of this standard is based on the following documents:

FDIS	Report on voting
110/589/FDIS	110/611/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61747 series, published under the general title *Liquid crystal display devices*, can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

The National Committees are requested to note that for this publication the stability date is 2020.

THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE PUBLICATION STAGE.

INTRODUCTION

IEC 61747 consists of the following parts, under the general title “Liquid crystal display devices”:

- Part 1-1: Generic – Generic specification;
- Part 1-2: Generic – Terminology and letter symbols;
- Part 2: Liquid crystal display modules – Sectional specification¹;
- Part 2-1: Passive matrix monochrome LCD modules – Blank detail specification;
- Part 2-2: Matrix colour LCD modules – Blank detail specification;
- Part 3: Liquid crystal display (LCD) cells – Sectional specification²;
- Part 3-1: Liquid crystal display (LCD) cells – Blank detail specification³;
- Part 4: Liquid crystal display modules and cells – Essential ratings and characteristics;
- Part 4-1: Matrix colour LCD modules – Essential ratings and characteristics;
- Part 10-1: Environmental, endurance and mechanical test methods – Mechanical;
- Part 10-2: Environmental, endurance and mechanical test methods – Environmental and endurance;
- Part 20-1: Visual inspection – Monochrome liquid crystal display cells (excluding all active matrix liquid crystal display cells);
- Part 20-2: Visual inspection – Monochrome matrix liquid crystal display modules (excluding all active matrix liquid crystal display modules)⁴;
- Part 20-3: Visual inspection – Active matrix colour liquid crystal display modules⁵;
- Part 30-1: Functional measurement methods for liquid crystal display modules – Transmissive type;
- Part 30-4: Measuring methods of LCD modules with dynamic backlight units⁶;
- Part 40-1: Mechanical testing guidelines for display cover glass for mobile devices;
- Part 40-2: Mechanical testing of display cover glass for mobile devices – Uni-axial flexural strength (4-point bend)⁷;
- Part 40-3: Mechanical testing of display cover glass for mobile devices – Biaxial flexural energy-to-failure (ball drop)⁸;
- Part 40-4: Mechanical testing of display cover glass for mobile devices – Biaxial flexural strength (ring-on-ring)⁹;

¹ To be published.

² To be published.

³ To be published.

⁴ To be published.

⁵ Under consideration.

⁶ Under consideration.

⁷ To be published.

⁸ To be published.

⁹ To be published.

LIQUID CRYSTAL DISPLAY DEVICES –

Part 4-1: Matrix colour LCD modules – Essential ratings and characteristics

1 Scope

This part of IEC 61747 describes the essential ratings and characteristics of matrix colour liquid crystal display (LCD) modules.

2 Normative references

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.

IEC 61747-1-1, *Liquid crystal display devices – Part 1-1: Generic – Generic specification*