

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**Liquid crystal display devices –  
Part 30-1: Measuring methods for liquid crystal display modules – Transmissive type**

**Dispositifs d'affichage à cristaux liquides –  
Partie 30-1: Méthodes de mesure pour les modules d'affichage à cristaux  
liquides – Type transmissif**





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International Standard IEC 61747-30-1 has been prepared by IEC technical committee 110: Electronic display devices.

This first edition cancels and replaces IEC 61747-6 published in 2004. This edition constitutes a technical revision.

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

- a) the document structure was brought in line with 61747-6-2; and
- b) various technical and editorial changes were made.

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

FDIS	Rapport de vote
110/364/FDIS	110/380/RVD

Full information on the voting for the approval on 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 the parts in the IEC 61747 series, 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.

This standard is to be read in conjunction with IEC 61747-1 (1998), to which it refers, which gives details of the quality assessment procedures, the inspection requirements, screening sequences, sampling requirements, and the test and measurement procedures required for the assessment of liquid crystal display modules.

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

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## INTRODUCTION

In order to achieve a useful and uniform description of the performance of liquid crystal display (LCD) devices, specifications for commonly accepted relevant parameters are put forward. These fall into the following categories:

- a) general type specification (e.g. pixel resolution, diagonal, pixel layout);
- b) optical specification (e.g. contrast ratio, response time, viewing-direction, crosstalk, etc.);
- c) electrical specification (e.g. power consumption, electromagnetic compatibility);
- d) mechanical specification (e.g. module geometry, weight);
- e) specification of passed environmental endurance test;
- f) specification of reliability and hazard / safety.

In most of the cases a) to f), the specification is self-explanatory. For some specification points however, notably in the area of optical and electrical performance, the specified value may depend on the measuring method.

The purpose of this standard is to indicate and list the procedure-dependent parameters and to prescribe the specific methods and conditions that are to be used for their uniform numerical determination. It is assumed that all measurements are performed by personnel skilled in the general art of radiometric and electrical measurements as the purpose of this standard is not to give a detailed account of good practice in electrical and optical experimental physics. Furthermore, it shall be assured that all equipment is suitably calibrated as is known to people skilled in the art and records of the calibration data and traceability are kept.

## LIQUID CRYSTAL DISPLAY DEVICES –

### Part 30-1: Measuring methods for liquid crystal display modules – Transmissive type

#### 1 Scope

This part of IEC 61747 is restricted to transmissive liquid crystal display-modules using either segment, passive or active matrix and achromatic or colour type LCDs. Furthermore, the transmissive modes of transreflective LCD modules with backlights ON are comprised in this document. An LCD module in combination with a touch-panel or a front-light-unit is excluded from the scope because measurements are frequently inaccurate. Touch-pans or front-light-units are removed before measurement. Throughout the main body of this standard, an integrated backlight is assumed to provide the illumination for the measurements. Deviations from this (e.g. segmented displays without integrated backlights) may usually be handled in the same way as display modules with integrated backlight, if an external backlight is provided. However, in the case where one of the two situations should be handled differently, this will be specifically stated.

#### 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 60050 (all parts), *International Electrotechnical Vocabulary* (available at <<http://www.electropedia.org>>)

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

IEC 61747-6-2, *Liquid crystal display devices – Part 6-2: Measuring methods for liquid crystal display modules – Reflective type*

ISO 9241-307, *Ergonomics of human-system interaction – Part 307: Analysis and compliance test methods for electronic visual displays*

ISO 11664-2 (CIE S 014-2/E:2006), *Colorimetry – Part 2: CIE Standard illuminants*

CIE 15-2004, *Colorimetry*

#### 3 Terms, definitions and abbreviations

##### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-845:1987 apply.

NOTE Several points of view with respect to the preferred terminology on "monochrome", "achromatic", "chromatic", "colour", "full-colour", etc. can be encountered in the field amongst spectroscopists, physicists, colour-perception scientists, physical engineers and electrical engineers. In general, all LCDs demonstrate some sort of chromaticity (e.g. as a function of viewing angle, ambient temperature or externally addressable means). Pending detailed official description of the subject, the pre-fix pertaining to the "chromaticity" of the display will be used so