

INTERNATIONAL STANDARD



Display lighting unit – Part 1-2: Terminology and letter symbols



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2016 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing 20 000 terms and definitions in English and French, with equivalent terms in 15 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

65 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

INTERNATIONAL STANDARD



Display lighting unit – Part 1-2: Terminology and letter symbols

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 31.120; 31.260

ISBN 978-2-8322-3170-8

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

CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions	5
3.1 Classification of terms	5
3.2 Fundamental terms	5
3.3 Terms related to passive optical components.....	9
3.4 Terms related to solid-state light sources.....	13
3.4.1 Light-emitting diode (LED).....	13
3.4.2 LED light bar.....	14
3.5 Terms related to frontlight units	15
3.6 Terms related to performances and specifications.....	16
3.7 Terms related to backlight dimming	18
4 Letter symbols (quantity symbols / unit symbols)	20
Annex A (informative) Supplementary figures	21
Figure A.1 – Backlighting concept for transmissive and transreflective LCDs.....	21
Figure A.2 – Examples of edge-lit backlight units.....	21
Figure A.3 – Example of a direct-lit backlight unit	22
Figure A.4 – Visual definition of the terms related to passive optical components such as bezel and case.....	22
Figure A.5 – Luminance uniformity on a backlight unit	23
Figure A.6 – Polar coordinate system for evaluation of the angular luminance distribution.....	23
Figure A.7 – Angular luminance on a backlight unit.....	24
Figure A.8 – Examples of spectral power distribution of a display lighting unit.....	24
Figure A.9 – Incoherent light spread function for evaluation of optical characteristics of a block in a block-wise dynamic backlight unit	24
Figure A.10 – Light spread functions of three BLUs with different optical structures.....	25
Figure A.11 – Checkerboard pattern for evaluation of the luminance uniformity in a BLU	26
Table 1 – Letter symbols (quantity symbols / unit symbols)	20

INTERNATIONAL ELECTROTECHNICAL COMMISSION

DISPLAY LIGHTING UNIT –

Part 1-2: Terminology and letter symbols

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 62595-1-2 has been prepared by IEC technical committee 110: Electronic display devices.

This second edition cancels and replaces the first edition published in 2011. This edition constitutes a technical revision.

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

- a) change in the series title in order to handle frontlight units;
- b) new terms are added considering recent advances in display lighting unit (DLU) technology;
- c) some of terms and definitions are corrected and revised, particularly to be consistent with IEC 62595-2;
- d) some of the terms and definitions are corrected and revised, particularly to be consistent with IEC 60050 policy;

- e) clause structure is rectified for categorizing terms correctly;
- f) some of figures in Annex A are added or revised for better understanding.

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

FDIS	Report on voting
110/720/FDIS	110/734/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 the parts in the IEC 62595 series, under the general title *Display lighting unit*, 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 website 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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

DISPLAY LIGHTING UNIT –

Part 1-2: Terminology and letter symbols

1 Scope

This part of IEC 62595 gives the preferred terms, their definitions and symbols for display lighting units (DLUs) such as backlight units (BLUs) of transmissive and transreflective LCDs, and frontlight units (FLUs) of reflective LCDs and electronic paper (E-paper) displays, with the object of using the same terminology when publications are prepared in different countries.

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 60050-845, *International Electrotechnical Vocabulary – Part 845: Lighting*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-845¹ as well as the following apply.

3.1 Classification of terms

Terms for display lighting units (DLUs), such as backlight units (BLUs) and frontlight units (FLUs) are classified as follows:

- a) fundamental terms related to display lighting units (3.2);
- b) terms related to passive optical components used in display lighting units (3.3);
- c) terms related to solid-state light sources used in display lighting units (3.4);
- d) terms related particularly to frontlight units (3.5);
- e) terms related to performances and specifications (3.6);
- f) terms related to backlight dimming (3.7).

The following definitions are applied for international standardization of the backlight units.

3.2 Fundamental terms

3.2.1

display lighting unit

DLU

lighting unit for recognition of the displayed images on a non-emissive electronic display device

¹ Identical to CIE 17.4.