

INTERNATIONAL STANDARD



Display lighting unit – **STANDARD PREVIEW**
Part 1-2: Terminology and letter symbols
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DISPLAY LIGHTING UNIT –

Part 1-2: Terminology and letter symbols

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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- withdrawn,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.

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

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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*

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3 Terms and definitions (standards.iteh.ai)

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

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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.

3.2.2 backlight unit BLU

display lighting unit that is set at the rear of a non-emissive electronic display device such as a transmissive or transfective liquid crystal (LC) device

Note 1 to entry: For an example, see Figure A.1.

3.2.3 edge-lit backlight unit side-lit backlight unit edge-light backlight unit side-light backlight unit

backlight unit in which an optically transparent medium (typically light-guide plate) is used in proximity with the light source(s) for introducing the light into the medium from one or several sides of the medium to illuminate an LC device

Note 1 to entry: For an example, see Figure A.2.

3.2.4 direct-lit backlight unit direct-view backlight unit

backlight unit in which a light chamber is used in combination with light source(s) that are mounted inside the chamber, for illuminating a transmissive LC device mounted on the light chamber for the purpose of image recognition

Note 1 to entry: For an example, see Figure A.3.

3.2.5 side-driven direct-lit backlight unit

backlight unit in which a light chamber is used in combination with light sources(s) that are mounted on the inner sides of the light chamber for illuminating a panel mounted on the light chamber for the purpose of image recognition

3.2.6 static backlight unit

single or integrated flat illumination system that operates with direct or alternative current and possesses a unique optical characteristic

3.2.7 dynamic backlight unit

single or integrated illumination units that possess a unique electro-optical characteristic which is synchronized with the local picture and its contents displayed on an LC device

3.2.8 blinking backlight unit

backlight unit that is periodically switched on and off for synchronically illuminating an LC device

3.2.9 scanning backlight unit

backlight unit that is divided optically or spatially into several line blocks and is periodically switched on and off, block by block, for synchronous illumination of an LC device

3.2.10 directional backlight unit D-BLU

backlight unit that collimates emergent light into an arbitrary solid angle or directs the collimated emergent light toward a spatial zone or surface on the back side of the LC device

3.2.11**multi-directional backlight unit**

backlight unit in which the light sources (LEDs or LDs) are spatially mounted in an array around a micro- or submicro-featured (structured) light-guide plate (LGP) or light-guide film (LGF), for sequentially switching to create spatially and/or angularly directed light for rendering a 3D image on the LC device

Note 1 to entry: LED and LD are defined later.

3.2.12**scanning directional backlight unit
scanning D-BLU**

D-BLU that illuminates continuously or distinctively a wide solid angle and/or an area in front of the backlight unit, i.e. the backside of the LC device, by consecutively switching (on and off) the spatially distributed light source array on the side surfaces of the light-guide plate (LGP)

3.2.13**spatio-temporal switching backlight unit**

backlight unit that is divided optically or spatially into several horizontal blocks and periodically switched on and off from top to bottom under a time table for illuminating or flashing red, green, or blue light in synchronization with a field-sequential colour LC device with or without micro colour filters

3.2.14**field alternate LCD backlight unit
top and bottom flashing**

backlight unit that includes a single light-guide plate (single or spatially divided into top and bottom) with distinctive upper and lower light source groups for illuminating an LC device in which an image is divided into top and bottom parts that are displayed alternately on the LC device in order to compensate the slow response time of the LC device

3.2.15**field alternate LCD backlight unit
left and right alternate flashing**

backlight unit that includes a single light-guide plate (LGP) or stacked LGPs for illuminating an LC device in which an image is divided into a left and right image in which the two images are oriented in different directions and where the left and right images are displayed alternately on the LC device in order to create a 3D image display

3.2.16**single-side light emission backlight unit**

backlight unit that emits light from a front surface or rear surface (i.e. from a single side) for illuminating a single LC device

3.2.17**double-sides light emission backlight unit**

backlight unit that emits light from both the front and the rear surface for illuminating two LC devices

3.2.18**segmented backlight unit**

backlight unit that is divided into blocks or segments in two dimensions for synchronization with an LC device for illuminating individually each block or segment of the LC device

3.2.19**quasi-monochromatic backlight unit**

backlight unit that uses a single quasi-monochromatic light source for illuminating a transmissive LC device

3.2.20**multi-colour backlight unit**

backlight unit that consists of multiple primaries or multiple quasi-monochromatic light sources for illuminating an LC device for displaying a wide colour gamut that is used for a printer, professional design monitor or field alternative wide colour gamut LC device

3.2.21**portability enhanced backlight unit**

backlight unit the optical components of which are thin and lightweight to enhance portability

3.2.22**corner driven backlight unit**

edge-lit backlight unit in which the light is driven from one or several flattened corners of a rectangular light-guide plate using single or multiple light sources

3.2.23**stack backlight unit**

backlight unit in which more than one single light control medium or light-guide plate is used in stack form in the structure for light direction controlling or light shaping

3.2.24**colour reproduction backlight unit**

backlight unit that uses light sources of three or more primaries in order to produce a wide colour gamut on an LC device

3.2.25**light-emitting diode backlight unit****LED backlight unit**

backlight unit that uses LEDs as light sources

3.2.26**laser backlight unit**

backlight unit that uses laser(s) as light source(s)

3.2.27**laser diode backlight unit****LD backlight unit**

laser backlight unit that uses LD(s) as light source(s)

3.2.28**RG-white backlight unit**

backlight unit that uses light sources such as LEDs or LDs that emit light of red, green and white (i.e. RG-white) colours

3.2.29**RGW backlight unit**

backlight unit that uses distinct red, green and pseudo-white LEDs or LDs as light sources

3.2.30**three primaries (R,G,B) backlight unit**

backlight unit that uses three primary colours of red, green, and blue quasi-monochromatic LEDs or monochromatic LDs as light sources

3.2.31**six primaries (R₁,G₁,B₁,R₂,G₂,B₂) backlight unit**

backlight unit employing two groups of red, green and blue light sources for illuminating an LC device which is used for reproduction of colours of photographs

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3.2.32**single-flash backlight unit**

backlight unit that flashes periodically and is synchronized with an LC device for the purpose of inserting a black or grey frame in order to enhance the moving image quality on the display

3.2.33**multi-flash backlight unit**

spatially linear segmented backlight unit for scanning or field-sequential colour display that flashes periodically and is synchronized with the LC device for the purpose of inserting colour fields (displayed image with single colour) or black or grey fields in order to enhance the displayed image quality on the display or spatially mix the colours for displaying coloured images

3.2.34**multi-primary colours backlight unit**

backlight unit that employs multiple LEDs or LDs which have different peak wavelengths of primaries

3.2.35**tandem backlight unit**

backlight unit that is an integration of multiple distinct and overlapped edge-lit backlight units

3.2.36**quantum dot backlight unit****QD backlight unit**

edge-lit or direct-lit backlight unit in which blue light source(s) such as LEDs or LDs stimulate the film set on the backlight unit or a glass tube filled with quantum dot materials to create white light with three primaries spectra on the backlight unit

3.3 Terms related to passive optical components**3.3.1****light-guide plate****LGP**

optically transparent medium with thick and solid structure that is generally employed in an edge-lit backlight unit for forming the required light distribution spatially for transmissive or transmissive LC devices

Note 1 to entry: For an example, see Figure A.4.

3.3.2**light-guide film****LGF**

optically transparent medium with thin and flexible structure that is employed instead of light-guide plate (LGP) in an edge-lit backlight unit for forming the required light distribution spatially for a transmissive or transmissive LC device

3.3.3**functional light-guide plate****functional light-guide film**

optically transparent medium characterized by optical micro- or submicro-structures for shaping spatially or angularly the required light distribution in an edge-lit backlight unit for illuminating a transmissive or transmissive LC device

3.3.4**slab light-guide plate****slab light-guide film**

light-guide plate or light-guide film that has a slab geometrical shape

3.3.5

wedge light-guide plate
wedge light-guide film

light-guide plate or light-guide film with a wedge shape (single or double wedge) introducing the light from the thicker side

3.3.6

inverted wedge light-guide plate
inverted wedge light-guide film

light-guide plate or light-guide film with a single or double wedge in which the light is introduced from the thinner side

3.3.7

double-side functional light-guide plate
double-side functional light-guide film

light-guide plate or light-guide film structured with micro- or submicro-structure(s) on the rear and front surfaces for light shaping on the backlight unit

3.3.8

single-side functional light-guide plate
single-side functional light-guide film

light-guide plate or light-guide film structured with light reflecting micro-reflectors or light deflecting micro-deflectors arrays on the rear or front surface for shaping and extracting the propagating light

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3.3.9

diffusing light-guide plate (standards.iteh.ai)
diffusing light-guide film

light-guide plate or light-guide film structured with light diffusing micro-structures on its rear and front or both surfaces for light shaping or the resin of which is filled with diffusing materials such as beads

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3.3.10

reflective light-guide plate
reflective light-guide film

light-guide plate or light-guide film structured with optical micro-reflectors on the rear surface for extracting light from the front surface

3.3.11

deflective light-guide plate
deflective light-guide film

light-guide plate or light-guide film structured with optical micro-deflective elements on the front surface for the purpose of deflecting the emergent light rays from the front surface of the light-guide plate or light-guide film

3.3.12

dispersive light-guide plate
dispersive light-guide film

light-guide plate or light-guide film structured with micro-optical elements for dispersing the emergent light on the light-guide plate or light-guide film

3.3.13

polarizing light-guide plate
polarizing light-guide film

light-guide plate or film with micro- or submicro-structures for generating polarized light on its front surface