IEC TR 62595-1-5

Edition 1.0 2022-12

TECHNICAL REPORT

colour inside

Display lighting unit –
Part 1-5: Electrical signal interface of LED BLU



IEC TR 62595-1-5:2022-12(en)



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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 31.120; 31.260

ISBN 978-2-8322-6269-6

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DISPLAY LIGHTING UNIT –

Part 1-5: Electrical signal interface of LED BLU

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IEC TR 62595-1-5 has been prepared by IEC technical committee 110: Electronic displays. It is a Technical Report.

The text of this Technical Report is based on the following documents:

Draft	Report on voting
110/1445/DTR	110/1465A/RVDTR

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

The language used for the development of this Technical Report is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts in the IEC 62595 series, published under the general title *Display lighting unit*, can be found on the IEC website.

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

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DISPLAY LIGHTING UNIT –

Part 1-5: Electrical signal interface of LED BLU

1 Scope

This part of IEC 62595, which is a Technical Report, provides information for the future standardization of the electrical signal interface of LED backlight units for liquid crystal display television sets, which include control signals, control data and LED driver interface. This document only provides information about 2-D local dimming LED backlight units, with or without local boosting.

NOTE All values and parameters of this document are examples.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62595-1-2:2016, *Display lighting unit – Part 1-2: Terminology and letter symbols*

3 Terms, definitions, and abbreviated terms

For the purposes of this document, the terms and definitions given in IEC 62595-1-2 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1 Terms and definitions

3.1.1
local dimming
manipulation of luminance over an area of a two-dimensionally divided backlight unit in response to the image that is going to be displayed on the LC device at the same area

Note 1 to entry: In this document, "local dimming" refers to 2-D dimming.

[SOURCE: IEC 62595-1-2:2016,3.7.4, modified – in the terms “block dimming, two-dimensional dimming and 2-D dimming” have been removed, the term “(spatially)” has been deleted in the definition and Note 1 to entry has been added.]

3.1.2
local boosting
<LED backlight unit> dynamic and location-specific increase to peak luminance across the backlight unit in response to image content

3.1.3
LED driver unit
circuit board providing driving current to the LED backlight unit

3.1.4
video processing unit
circuit board including video decoder, scalar, and deinterlacing for video signal from input devices

Note 1 to entry: The input devices are, for example, TV set-top box, over the top (OTT) set-top box, disc player.

3.1.5
LED matrix
2-D array LED light sources in the LED light board

3.1.6
LED strings, pl.
LED strip light sources in the LED light bar

3.2 Abbreviated terms

AM	active matrix
BLU	backlight unit
IC	integrated circuit
I^2C	inter-integrated circuit
LCD	liquid crystal display
LED	light emitting diode
MOSI	master output slave input
OTT	over the top
PSU	power supply unit
PWM	pulse-width modulation
SCL	serial clock (for I^2C)
SCLK	serial clock (for SPI)
SDA	serial data
SoC	system on chip
SPI	serial peripheral interface
TCON	timing controller
VPU	video processing unit
VSYNC	vertical synchronization signal

4 Electrical interfaces configuration

4.1 General

One of the current hot topics of LCD-TV sets is how to improve image quality and reduce power consumption. Local dimming technology can improve the image quality and reduce power consumption by controlling the luminance of backlight, so it has been widely studied in LCD-TVs for nearly two decades [1] [2][1]. LCD-TV sets with local dimming LED backlight units are currently on the market, quickly becoming the medium- and high-end products of major TV brands. At the same time, with the application of local dimming technology, the electrical signal

[1] Numbers in square brackets refer to the Bibliography.