

# TECHNICAL SPECIFICATION



LCD multi-screen display terminals –  
Part 1: Conceptual model

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# TECHNICAL SPECIFICATION



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**LCD multi-screen display terminals –  
Part 1: Conceptual model**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references .....	5
3 Terms and definitions .....	5
4 Basic features .....	6
4.1 LCD multi-screen display terminals' basic frame .....	6
4.2 Components and functions of LCD multi-screen display terminals.....	7
4.2.1 Components .....	7
4.2.2 Functions of components.....	7
5 Typical application.....	7
5.1 Application scenarios.....	7
5.1.1 General .....	7
5.1.2 Transport information display.....	7
5.1.3 Financial and security information display.....	8
5.1.4 Commercial, media advertising, product display .....	8
5.1.5 Fire protection, weather, maritime, traffic control system .....	8
5.1.6 Mining, energy and safety monitoring system.....	8
5.1.7 Education training and multimedia conference system .....	8
5.2 Application modes.....	8
5.2.1 Full-screen display .....	8
5.2.2 Single-screen display .....	8
5.2.3 Combined-screen display.....	9
5.2.4 Roaming display .....	10
6 Key index .....	10
Figure 1 – LCD multi-screen display terminals' basic frame .....	6
Figure 2 – Full-screen display.....	8
Figure 3 – Single-screen display.....	9
Figure 4 – Combined-screen display .....	9
Figure 5 – Roam display .....	10

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## LCD MULTI-SCREEN DISPLAY TERMINALS –

## Part 1: Conceptual model

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IEC TS 63181-1, which is a technical specification, has been prepared by IEC technical committee 100: Audio, video and multimedia systems and equipment.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
100/3243/DTS	100/3295/RVDTS

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

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

A list of all parts in the IEC 63181 series, published under the general title *LCD multi-screen display terminals*, 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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# LCD MULTI-SCREEN DISPLAY TERMINALS –

## Part 1: Conceptual model

### 1 Scope

This part of IEC 63181 specifies a conceptual model for LCD multi-screen display terminals. This document defines typical functional components to compose LCD multi-screen display terminals and describes the terminals' structure and signal flow. The document also clarifies signal processing in the terminals to create multi-screen sub-signals from a single video signal input.

### 2 Normative references

There are no normative references in this document.

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions 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

##### **LCD unit**

LCD device that can display input signals independently

#### 3.2

##### **optical gap**

gap between the boundaries of two adjacent active area units in the LCD multi-screen display terminals

Note 1 to entry: Unit: mm.

#### 3.3

##### **physical gap**

gap between the sides of two adjacent screen units sides in the LCD multi-screen display terminals

Note 1 to entry: Unit: mm.

#### 3.4

##### **splicing processors**

signal processing unit to break up original input signal into sub-signals, and assigning those sub-signals to LCD splicing screens according to the customer's requirement(s)

#### 3.5

##### **LCD splicing screen**

screen composed of a single/multiple/many LCD unit(s) to form the m-by-n LCD unit matrix

**3.6  
splicing**

procedure to connect and control multiple LCD units by splicing processors to make all the LCD units cooperate to perform as a complete LCD splicing screen

**3.7  
LCD multi-screen display terminals**

final product comprising an LCD splicing screen, splicing processors, control software, signal matrix, signal sources, cables, shelf, etc.

**3.8  
LCD multi-screen display terminals installation deviation**

splicing displacement of LCD splicing screen in vertical and horizontal directions, and the flatness on the overall surface of the LCD splicing screen

**3.9  
splicing deviation**

displacement of displayed sub-signals between adjacent active area units caused by the installation deviation

**3.10  
roam**

displayed input signal that can be wandering at any position on the LCD splicing screen

**3.11  
signal matrix**

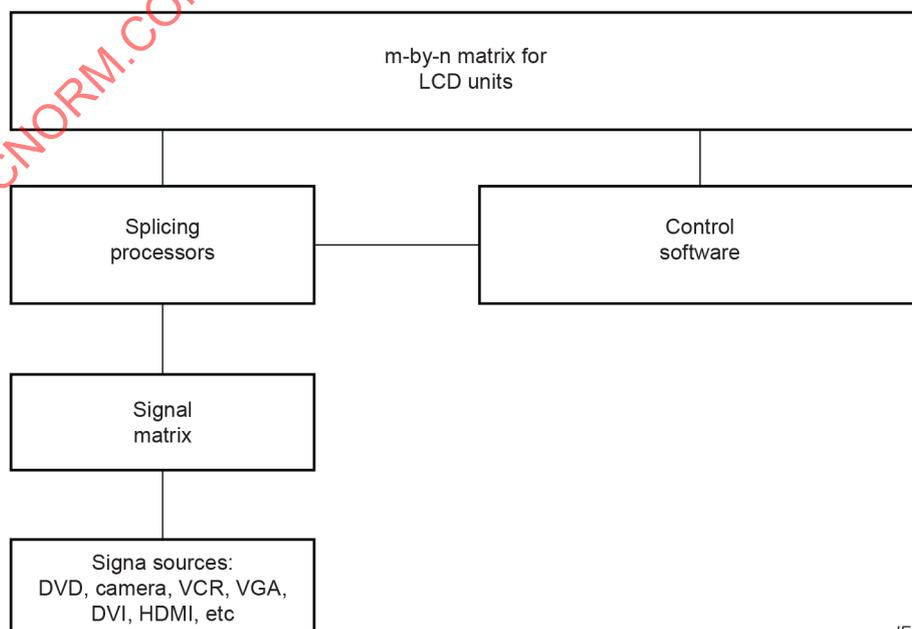
matrix that can switch input signal to standard format signal and transfer to splicing processors

Note 1 to entry: The input signal sources can be DVD, camera, VCR, VGA, DVI, HDMI, etc.

**4 Basic features**

**4.1 LCD multi-screen display terminals' basic frame**

See Figure 1 for the LCD multi-screen display terminals' basic frame.



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**Figure 1 – LCD multi-screen display terminals' basic frame**

## 4.2 Components and functions of LCD multi-screen display terminals

### 4.2.1 Components

The components are included but not limited to: LCD splicing screen, splicing processors, control software, signal matrix, signal sources, and additional equipment.

### 4.2.2 Functions of components

#### 4.2.2.1 LCD splicing screen

It can display the input signal in various application modes, which are described in 5.2.

#### 4.2.2.2 Splicing processors

According to customer requirements, the processors divide an original input signal into multiple sub-signals, and output to the different LCD units, controlling the LCD splicing screen to properly display the input signal that is merged from sub-signals.

#### 4.2.2.3 Signal matrix

Switch from different input signals and transfer to splicing processors.

#### 4.2.2.4 Control software

The control software running on an independent hardware in the LCD multi-screen terminals, it has the responsibility of overall operation control, including:

- a) setting up the configuration parameters of LCD multi-screen display terminals, such as: luminance, colour, contrast, power on/off;
- b) controlling the signal matrix switch, such as: select input signals from multiple signal sources;
- c) control all kinds of display modes, user demand patterns, etc., such as: fast switching resolution, fast switching input source, typical application mode program switching.

#### 4.2.2.5 Signal sources

An abstract set of input signals, it can import signals from various signal sources, such as: DVD, camera, VCR, VGA, DVI, HDMI, etc.

#### 4.2.2.6 Additional equipment

The cable is selected based on the height of the screen system and actual installation condition(s).

## 5 Typical application

### 5.1 Application scenarios

#### 5.1.1 General

The application scenarios for LCD multi-screen display terminals include, but are not limited to, the items defined in 5.1.2 to 5.1.7.

#### 5.1.2 Transport information display

Display multi-capacity information content in real-time.

### 5.1.3 Financial and security information display

Display relevant information content in a wide environment and multi-audience conditions.

### 5.1.4 Commercial, media advertising, product display

Display relevant content in high quality for a long time.

### 5.1.5 Fire protection, weather, maritime, traffic control system

Display relevant content for high-efficiency monitoring and fast response.

### 5.1.6 Mining, energy and safety monitoring system

Display relevant content in high definition for a wide range.

### 5.1.7 Education training and multimedia conference system

Display relevant content interactively in high definition for wide range.

## 5.2 Application modes

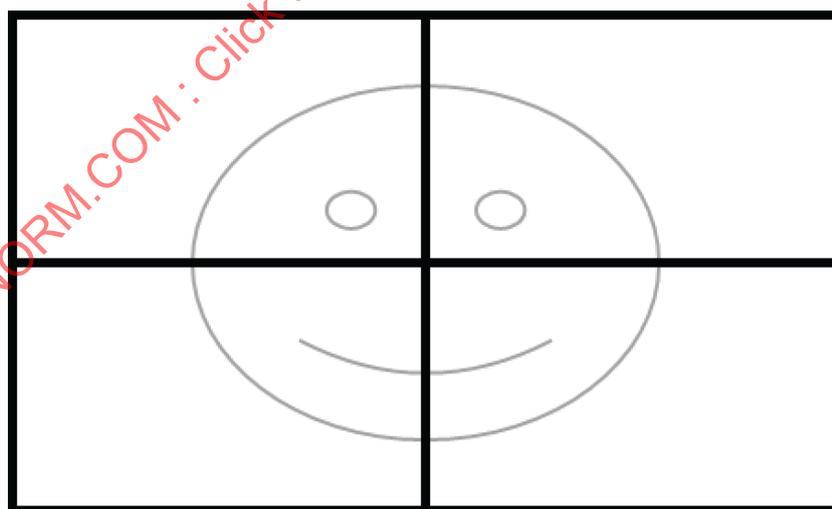
### 5.2.1 Full-screen display

#### 5.2.1.1 Definition

LCD multi-screen display terminals display a reformed input signal, which covers entire active areas of the LCD splicing screen. The original signal sources can be all supported from the standard signal that is noted in 3.11.

#### 5.2.1.2 Example

Figure 2 illustrates a full-screen display.



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Figure 2 – Full-screen display

### 5.2.2 Single-screen display

#### 5.2.2.1 Definition

An LCD splicing screen is divided into sub-LCD splicing screens, each sub-LCD splicing screen includes one or more LCD unit(s), and each sub-LCD splicing screen can be controlled

and displayed independently. The number of original input signals to be displayed shall be no greater than the number of LCD units of the LCD splicing screens.

### 5.2.2.2 Example

Figure 3 illustrates independent unit displays.

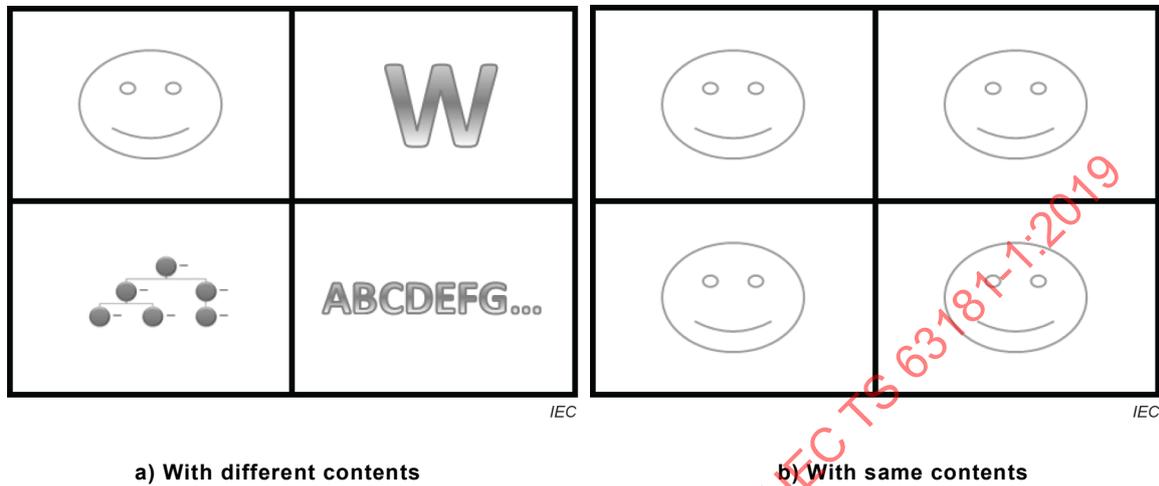


Figure 3 – Single-screen display

### 5.2.3 Combined-screen display

#### 5.2.3.1 Definition

An LCD splicing screen is divided into several sub-LCD splicing screens, each sub-LCD splicing screen includes one or more LCD unit(s), and each sub-LCD splicing screen can be controlled and displayed independently.

#### 5.2.3.2 Example

Figure 4 illustrates a combined display.

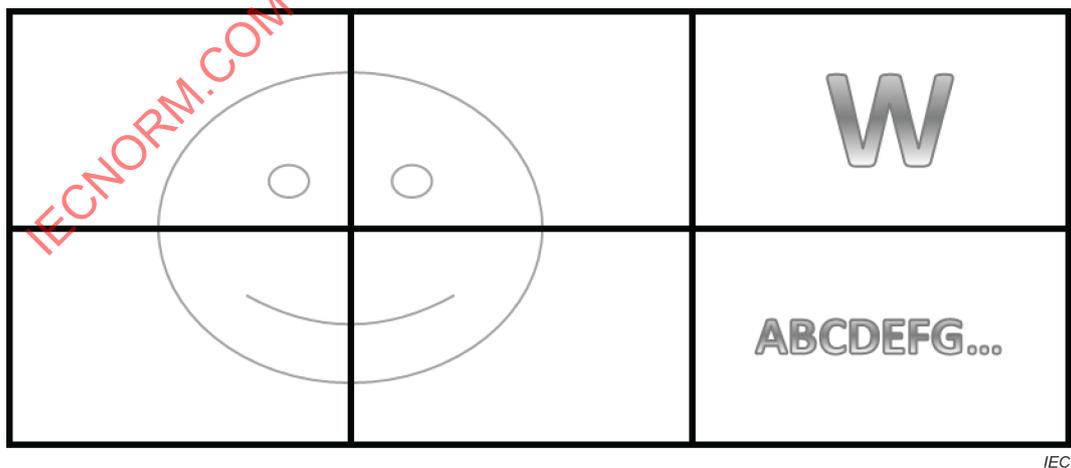


Figure 4 – Combined-screen display