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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**CONCEPTUAL MODEL OF MULTI-SCREEN LCD DISPLAY SYSTEM
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CONCEPTUAL MODEL OF MULTI-SCREEN LCD DISPLAY SYSTEM

1 Scope

This specification defines the conceptual model of multi-screen LCD display system

This specification is applies in multi-screen LCD display system which is composed of multiple LCD units, other splicing display system also can refer to it.

2 Normative references

None

3 Terms, definitions, symbols and units

3.1 LCD unit

LCD device that can display images and video signals independently

3.2 Splicing

Multiple units are connected and form a new system

3.3 LCD splicing screen

Display device, which are composed of multiple liquid crystal display units

3.4 Splicing processors

A image processing equipment which can divide a picture or image into several areas,assign and control relevent units display the picture according customers' requirement

3.5 LCD splicing system

Display system which are composed of LCD splicing screen and splicing processors

3.6 Roam

The window signal can be displayed at any position on the splicing screen.

3.7 Physical gap

Gap between two adjacent unit screen sides in multi-screen LCD display system.

3.8 Optical gap

Gap between two adjacent unit image sides in multi-screen LCD display system.

3.9 Optical dark strip

Visible distance between active area to physical bezel

3.10 Video matrix

A matrix which can switch video input signal to standard format signal and transfer to splicing processor

3.11 RGB matrix

A matrix which can switch RGB input signal to standard format signal and transfer to splicing processor

3.12 Image distortion

The distortion level of displayed image in multi-screen LCD display system.

3.13 Multi-screen LCD display system installation deviation

The flatness of multi-screen LCD display system in vertical and horizontal direction.

4 Basic features

4.1 Multi-screen LCD display system Basic frame

Multi-screen LCD display system basic frame refer to figure 1 as below:

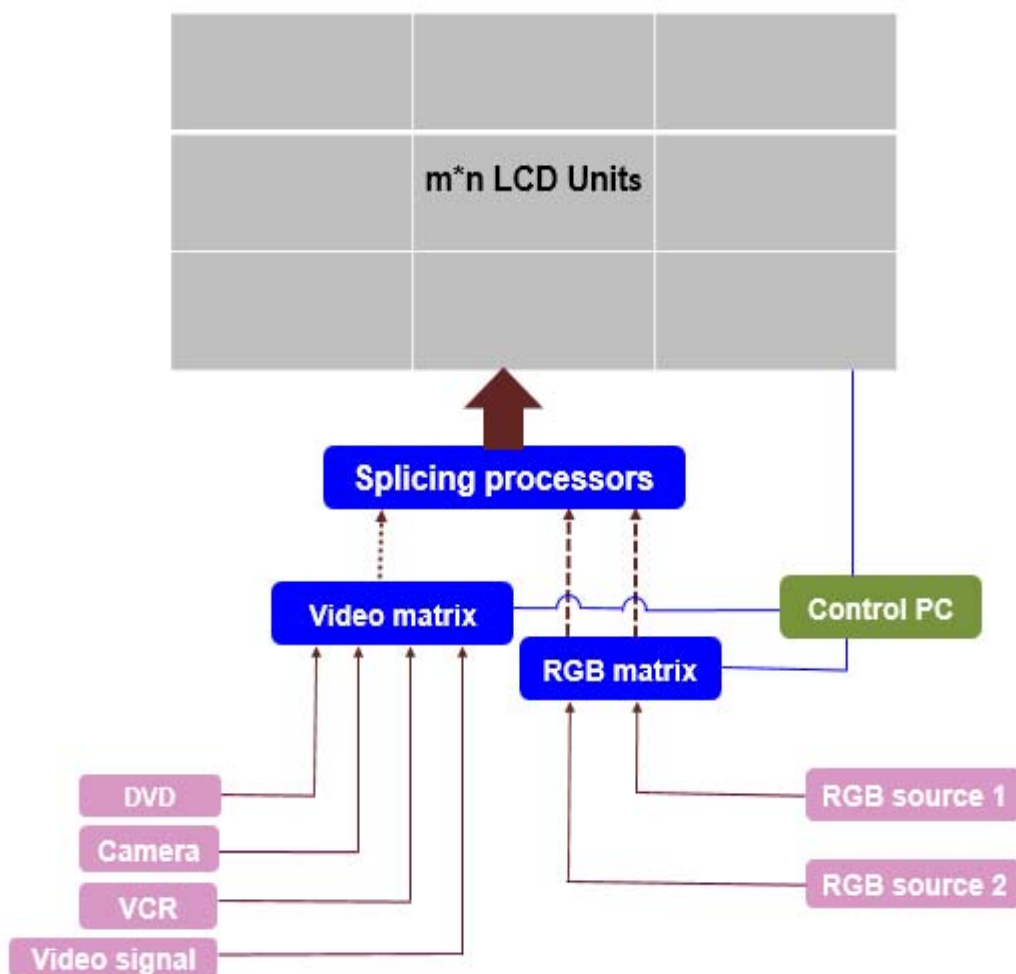


Figure 1 Multi-screen LCD display system Basic frame

Note :

Video matrix is responsible for video input signal switching

Video input signal including: DVD signal、Camera signal、VCR signal and other video source signal

RGB matrix is responsible for RGB input signal switching

RGB input signal including: Various independent RGB signal which main signals are PC signal

4.2 Multi-screen LCD display system components and function

4.2.1 Multi-screen LCD display system components

Multi-screen LCD display system are composed by the following parts: LCD splicing screen、splicing processors、control (application) software、video (RGB) matrix、input signal source、cables and additional equipment.

4.2.2 Multi-screen LCD display system parts function

4.2.2.1 LCD splicing screen

Terminal consists of multiple LCD units which can display final image in various combined type

4.2.2.2 Splicing processor

According to requirements, the input signal is divided into multiple regions, output to the different display unit, control LCD splicing screen and display the image

4.2.2.3 RGB matrix/video matrix :

Switching input signal and transfer to splicing processor

RGB matrix is responsible for RGB input signal switching

Video matrix is responsible for video input signal switching

4.2.2.4 Control (application) software

The control software running in the multi-screen system responsible for the overall control, including:

- 1) Set multi-screen system configuration parameter , for example: brightness、colour、contrast、power on/off setting
- 2) Control of video matrix/RGB matrix switch, such as: select video /RGB matrix
- 3) Control of video source/RGB input source switch, such as: select DVD/Camera input, select RGB source 1 input or RGB source 2 input.

4) Control all kinds of display mode and fast display, the user demand patterns, etc. for example: fast switching resolution、fast switching input source, switching typical application mode program.

4.2.2.5 Signal source and additional equipment

Input source signal can be connected to the computer or all kinds of video signal, the cable are selected according to the height of the multi-screen system and actual installation.

5 Typical application

5.1 Application place

5.1.1 Transport information display terminal

For real-time display multi capacity information content

5.1.2 Financial and securities information display terminal

For wide environment, multi audience conditions display

5.1.3 Commercial, media advertising, product display

For long-term, high quality display

5.1.4 Fire protection, weather 、 maritime、 traffic control system

For command and monitor

5.1.5 Mining, energy and safety monitoring system

For wide range, high definition display

5.1.6 Education training and multimedia conference system

For wide range, high definition interactive display

5.1.7 Other

5.2 Application mode

5.2.1 Full screen display

5.2.1.1 General

The whole multi-screen LCD system display a complete image: it can be a video signal, RGB signal or other supported standard form signal

5.2.1.2 Example

Full screen display as shown in figure 2



Figure 2 Full screen display

5.2.2 Split-screen display

5.2.2.1 General

In multi-screen LCD display system, each LCD unit display a signal. The input signal format can be set separately. The numbers of display image are not more than the numbers of LCD screen units.

5.2.2.2 Example

Split-screen display as shown in figure 3





Figure 3 Split-screen display

5.2.3 Combined screen display

5.2.3.1 General

The multi-screen system is divided into several areas, each area include one or more units, and each area can be controlled and displayed independently.

5.2.3.2 Example

Combined screen display as shown in figure 4



Figure 4 Combined screen display

5.2.4 Roam display

5.2.4.1 General

Image can be displayed on the multi-screen system in any position and at any size.

5.2.4.2 Example

Roam display as shown in figure 5

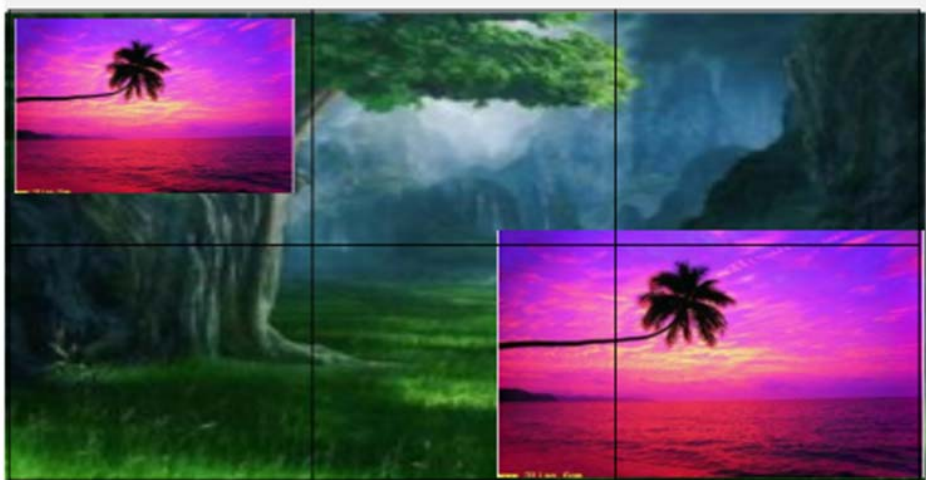


Figure 5 Roam display

6 Key index

In order to measure the general level of multi-screen display system, the following items are necessary for testing

- 6.1 Physical gap
- 6.2 Optical gap
- 6.3 Image distortion
- 6.4 Multi-screen LCD display system installation tolerances
- 6.5 Multi-screen LCD display system brightness uniformity
- 6.6 Multi-screen LCD display system colour uniformity

