

Display Wall System

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1. Introduction

We have been developing display units and systems to meet demands for higher resolutions, larger screens and more compact display wall systems. This paper introduces the state-of-the-art technologies of display units and display wall controllers for display systems

2. Features of the Product

2.1 Higher reliability

Surveillance systems must be easy to use and work reliably and incessantly for five to ten years.

(1) Image sticking resistance

We use Digital Light Processing (DLP®)¹⁾ as the imaging device to avoid burn-in effect. DLP® is a light modulation device that consists of just over 10 μm fine mirrors, which achieves high burn-in resistance throughout the operation in an appropriate temperature.

(2) Fast lamp changer

The industry's first automatic lamp changer system enables continuous operation with two lamps. The latest fast auto-lamp changer achieves fast image output just in a few seconds after a lamp blowout.

2.2 Higher performance

In a large surveillance and display system, uneven pictures tend to appear on the screens. Accurate adjustment of brightness and color in individual display units is necessary. The main technology to satisfy this requirement is Color Space Control (CSC).

Figure 1 shows video image before and after the CSC correction.



A) Before CSC correction B) After CSC correction

Fig. 1 Image before and after CSC correction

2.3 Smart lamp systems

The smart lamp system incorporates the following functions to suppress brightness deterioration on screens due to lamp aging and to facilitate maintenance:

- (1) New brightness sensor feedback
- (2) Automatic brightness and chromaticity correction at lamp and color wheel replacement

2.4 Space saving

We have commercialized front accessible display units that can be maintained from the front and be installed against the wall. It can consequently save spaces, in particular, in small surveillance systems.

2.5 Installation and adjustment properties

6-axis adjusters ensure accurate adjustment of the positional relationship between the optical engine and screen. Electrical 6-axis adjusters have enabled the adjustment with remote control, although conventional 6-axis adjustment was done manually.

2.6 Screen

As a diffusion material for screens, a rare-earth metal is used to improve the viewing angle and to reduce color shift. Figure 2 compares the color shift characteristics between our screen and general screens.

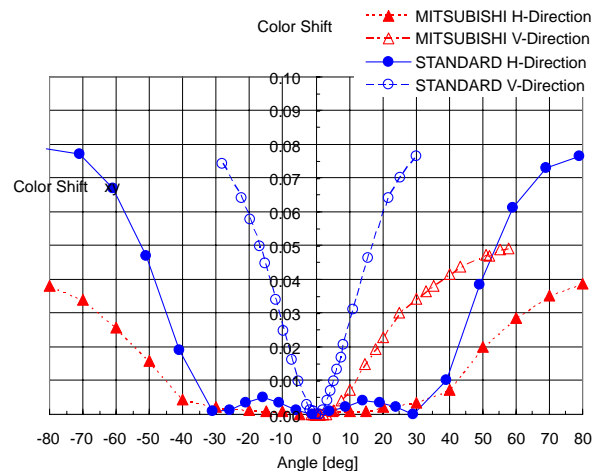


Fig. 2 Color shift characteristic

¹⁾ DLP (Digital Light Processing) is a registration symbol of Texas Instruments, Inc.

3. Solution as System

In the display wall system, display wall controllers that process the display images is important as well as the display unit itself. This section describes VC-MK3000 and VC-X3000, which are currently commercially available.

3.1 VC-MK3000

The VC-MK3000 can take 32 RGB and video inputs to overlay 4 windows per screen on 16 screens in any sizes at any positions with high image quality in real time. Using multiple VC-MK3000s enable to output up to 80 screens.

3.2 VC-X3000

The VC-X3000 is a PC-based wall controller; it enables to display images on up to 24 screens, and can take 48 video inputs to overlay 16 windows per screen. It also has power, fans and hard drives (HDD) redundancy functions as well as a system monitoring function for improved reliability. Figure 3 shows an example of a display wall system configuration using the VC-MK3000 and VC-X3000.

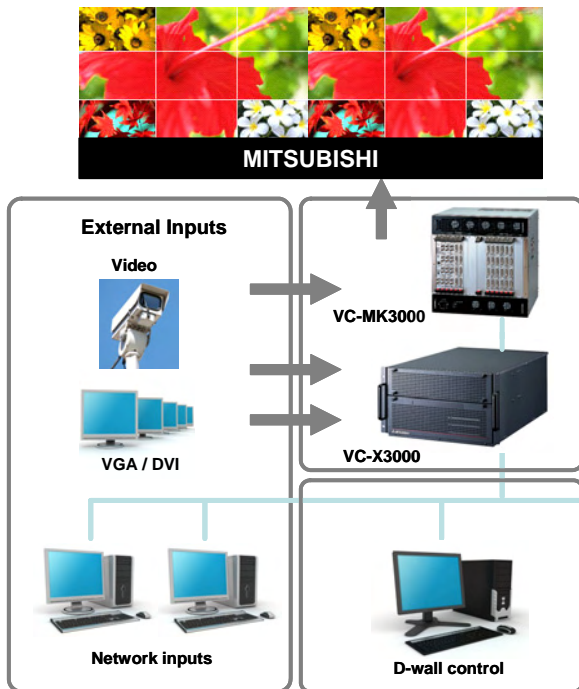


Fig. 3 Example of wall display system configuration

3.3 Integrated control software

In the display wall controllers, not only hardware but also the software is important. Figure 4 shows a screen image of the wall control software “D-WALL Control.”

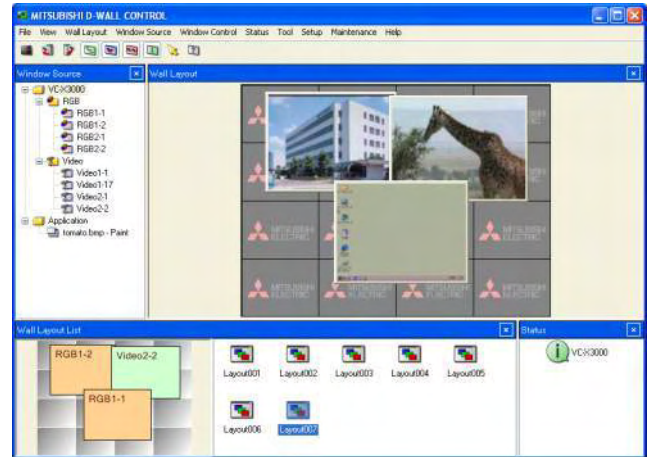


Fig. 4 Control software screen

This software is designed for ease of use and reliability, and can control the VC-MK3000 and VC-X3000 together; it is structured to eliminate the need to know the hardware. A tree structure lists show input image signals which can be dragged and dropped on the display screen area to be displayed. The image sizes, positions, quality, etc. can be adjusted in the control software.

4. Conclusion

We will continue developing user-oriented products to increase customer satisfaction by enhancing the performance, reliability and functionality.