

Display Wall

Operational Guidelines for Long-term Usage of our LCD Display Walls

These guidelines provide detailed information and tips for users of our LCD display wall products, particularly in relation to 24/7 usage applications. Mitsubishi Electric approves use of the products under such conditions and our LCD display walls are mechanically and electronically designed and manufactured to ensure long-term use.

In fact, for our LCD display walls incorporating the super narrow bezel technology, we only use commercial-grade liquid-crystal display (LCD) panels.



Background Information

Unlike LCD panels for standard televisions, the LCD panels used in Mitsubishi Electric's LCD display walls are designed for heavy-use applications. Although these panels are highly reliable, even the latest LCD panel technologies are not flawless. For example, when a static image is continuously displayed on a LCD display wall over a long period, image persistence and accelerated aging issues (e.g., brightness inconsistency, non-uniformity and image staining) are likely to occur. These issues are part and parcel of LCD technology; at this stage, they are unavoidable. Therefore, Mitsubishi Electric cannot cover these issues in a warranty as such. Nevertheless, through the following points outlined in these guidelines, users can minimize the risk of these problems occurring and prolong the service life of their LCD display walls.

Image Persistence (Short- and Long-term)

After a static image is continuously displayed on a LCD display wall for a certain period, traces of the image may remain on the screen even after a different image is displayed. This effect is known as short-term image persistence. One way of avoiding this is to switch off LCD display walls as much as possible when they are not in use.

When static images are continuously displayed for even longer periods, it can result in long-term image persistence, which is very hard to remedy and may include dark patterns remaining at the edges of letters and boundaries of objects.

Image Staining

Continuously displaying a static image for more than 20 hours per day (LM55S1: more than 18 hours per day) is likely to lead to accelerated aging issues, LCD panel deterioration or image staining ("photo leakage") due to the effect of heat/light intensity from the backlight. Once image staining occurs, LCD display walls cannot be restored to their original state. The affected area appears dark (inconsistent), and there is a possibility that the staining will be visible regardless of the images displayed (static and moving images).

Tips for Long-term Use of LCD Display Walls

The extent and speed of deterioration in the display quality of LCD panels (e.g., brightness inconsistency, non-uniformity and image staining) largely depends on usage and installation conditions. In most cases other than severe ones, image persistence does not cause permanent damage to the screen. In other words, it can be fixed or delayed. The following tips are designed to help users minimize image persistence and image staining, and secure use of LCD display walls for as long as possible.

Recommended usage:

- 1) Limit the time that LCD display walls are in operation to less than 20 hours per day (LM55S1: less than 18 hours per day).
- 2) Switch off LCD display walls when they are not in use either via the remote control or the power switch on the LCD display wall.
- 3) Reduce brightness as much as possible.
- 4) Reduce operating temperature as much as is practical (e.g., room temperature).
- 5) Use the screensaver feature.

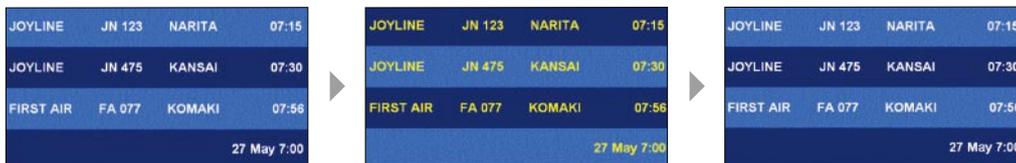
Recommendations for Content Design:

- 1) We recommended design content comprised mainly of moving images. When displaying static images, insert moving images at appropriate intervals as a means to refresh the liquid-crystal materials. For the screensaver image, use a moving image or fully black pattern:

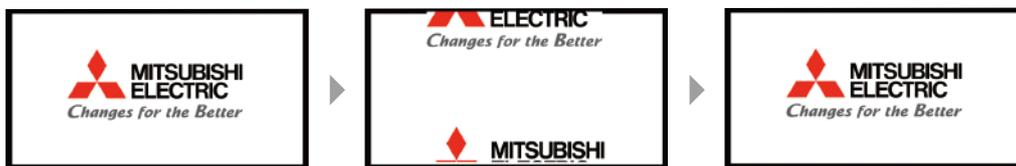


(Insert moving pictures such as promotional videos)

- 2) Change the background pattern and letter-colors regularly:



- 3) Refresh images such as company logos and those with letters at regular intervals:



Examples of Problematic Content Design:

1) When an on-screen window is displayed for a long period, image persistence may occur at the window edges. Shift the position of windows regularly; that is, avoid displaying windows in the same position on the screen.



On-screen window
(there are high-contrast areas at the window edges).

2) When simultaneously displayed patterns have significantly different brightness levels, image persistence may occur at the boundary line between the patterns. Avoid placing these kinds of display contents side-by-side.



High-brightness and low-brightness patterns
placed side-by-side.

3) Image staining and image persistence tend to stand out on a gray background. Avoid excess use of gray, and where possible, use primary colors for the background.



Image with a gray background.

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
www.MitsubishiElectric.com/bu/displaywall/