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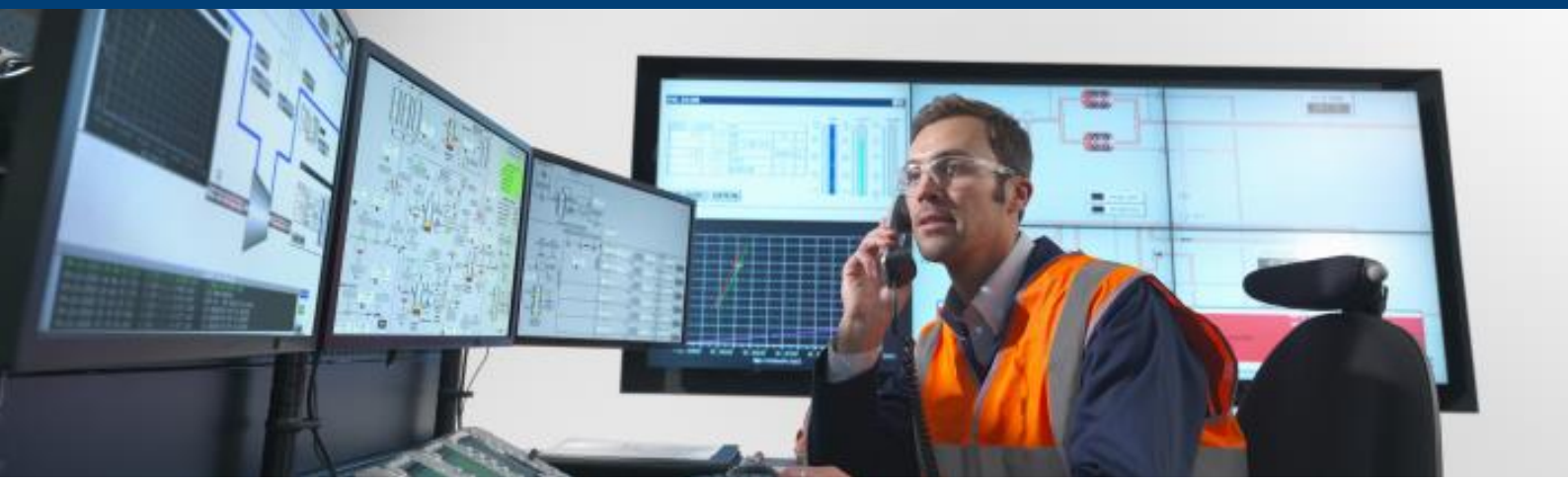
NEC MultiSync® Desktop Series

NEC Operational Guidelines



NEC Desktop Displays are designed to perform reliably over the long term. However, our desktop displays are primarily designed for standard office use, and use a variety of technologies depending on actual application and user requirements. This document provides further detailed information and recommendations for maintaining image quality.

Information on 24/7 operation

NEC recommends the avoidance of actual 24/7 use of Desktop Displays. If such use is deemed inevitable, NEC approves the following products to be used in such conditions:

MultiSync® EX241UN	MultiSync® PA242W / PA242W-SV2	MultiSync® PA302W / PA302W-SV2
MultiSync® P242W	MultiSync® PA272W / PA272W-SV2	MultiSync® PA322UHD-2-SV2

Recommendations for optimised 24/7 operation

- Content should not be of static nature (Image retention is not covered by either standard warranty nor warranty extension).
- Operating temperature should be as low as possible (ideal: room temperature).
- If possible, reduce brightness (reduces wear on the LCD panel and minimizes power consumption). All the aforementioned desktop display products require a maximum brightness setting of 70% to be compliant with the 24/7 warranty extension.
- Where possible minimize the contrast of the content (sharp black/white contrasts should be avoided).

Helping prevent image retention on a LCD display

LCDs can show image burn in when static information is displayed for an extended period of time which is commonly called image retention. Image retention is not covered by warranty as the user can avoid image rete tion by taking certain measures.

Be extra careful with modified screens

When a protection sheet (glass, acrylic/touch screen) is installed over the LCD surface, or the Desktop Display is mounted in a wall or separate housing, take special care to ensure ambient temperature is within the monitor usage speci cation. Using an LCD display in areas with ambient temperatures above 35 degrees Celsius can reduce the time period in which image persistence may occur. The monitor's ventilation holes must be free of dust and dirt in all locations.

Power save or power OFF

NEC Display Solutions recommends that the display enters the power saving mode, or is turned off, when not in use. Leaving the unit on – even with a blank screen – decreases the overall lifetime of the display. Turning off, or using power management, for 6-8 hours per day can considerably extend the life of the product and minimize image persistence.

Screen saver control for fixed images

In those rare instances when xed images over a long period of time cannot be avoided, NEC Display Solutions insists that the display's "Screen Saver" control be activated. This feature is selected via Advanced OSD (on screen display) under "Screen Saver"/ "Motion".

Tips for optimised content design

a) Keeping the operating temperature as close to "room" temperature as possible

b) Avoiding high brightness levels which is closely related to a)

c) Avoiding bright background colour.

d) Horizontal scrolling of characters / images at regular, periodic intervals.

e) Movement of characters / images at periodicintervals. Applying movement to the screen content is one of the most effective ways of reducing image persistence. This can easily be achieved by having the whole screen move, or just portions that are usually static.

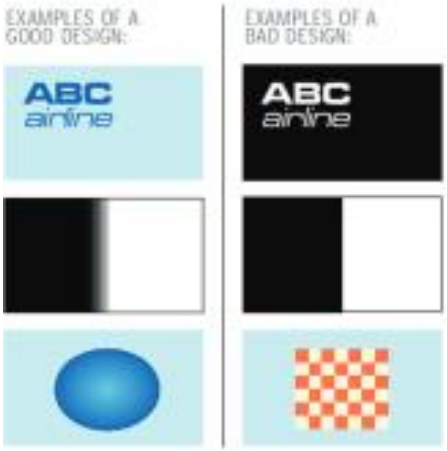
Please note: When showing the same static content for an extended period of time, showing a different content for a few seconds will not help reduce image retention. The best effects are achieved when different contents are shown for an equal period of time. Switching the displays off for a few hours per day also supports efforts to minimize image retention effectively.

f) Avoid vertical lines, borders or frames next to high contrast pictures.

g) Avoid high contrast image patterns. High contrast patterns should not be positioned side by side in a xed image. This type of pattern increases the risk of image persistence due to the presence of charged ions in the LCD in adjacent areas.

Displays operating under 24/7 conditions (or more than 7000 hours/year) are very likely to experience accelerated aging effects (e.g. staining, image retention, brightness non-uniformity), which cause visible deterioration of image quality.

Consequently NEC considers that displays, which are operated as 24/7 (or more than 7000 hours/ year), and which have visible image deterioration are nonetheless still offering an acceptable performance within the expected ageing processes, and will not be considered defective.



Not recommended: Black / White combinations of fonts and sharp borders with rapid changes

Recommended: Characters scrolling in horizontal direction / logo in vertical direction

Recommended: Insert moving pictures between fixed images

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