

PLASMA DISPLAY PANELS, SHADOWING & BURN-IN

Strategies & Solutions From Pioneer New Media Technologies

As the worldwide leader in plasma, Pioneer New Media Technologies continues to be at the forefront in addressing issues impacting the ongoing evolution of this emerging display technology. One of the most important of these is the so-called “shadowing” and “burn-in” effects created by still images. This fact sheet provides a synopsis of plasma’s market significance, a brief discussion on the industrywide issues of shadowing and burn-in, and solutions and strategies developed by Pioneer to avoid these potentially damaging effects.

WHAT IS PLASMA?

Plasma is the future of flat-panel displays. Unlike conventional big-and-bulky CRTs, plasma uses a revolutionary phosphor-based emissive gas technology to deliver bright and even colors, better contrast ratios, high resolution and 160-degree viewing angles – all in space-saving thin and lightweight panels. With their size and versatility, plasma display panels, or PDPs, allow users to maximize space and expand on display applications since they can be hung, mounted, flown or tilted from booths, exhibits, walls, ceilings, countertops and more.

HOW DOES PLASMA WORK?

Plasma technology is unique in that it creates its own light source in every pixel. This reduces the required space typical of most other traditional CRT-based displays. Each pixel contains a red, blue and green light source and is individually charged to produce light. A gas between each pixel reacts by exciting phosphors to produce the light, which in turn creates color in each pixel.

WHAT IS SHADOWING?

An industrywide issue for plasma technology, shadowing is caused by still images – such as a computer graphic or static photo – which remain on the screen for an extended amount of time. This effect typically occurs when an image previously displayed at a higher brightness level remains visible under subsequent lower brightness images. The result is a ghost-like image, or shadow, that remains on the plasma screen. This so-called shadowing will eventually disappear after displaying motion video for a brief length of time.

WHAT IS BURN-IN?

Burn-in is when an image becomes permanently etched onto the display panel. Burn-in usually occurs when a pixel, each of which contains a red, green and blue light source, is activated for long periods. When this happens, the pixel begins to age prematurely. This is due to the shorter life span of the blue phosphor gas which, as it ages, generates a yellowish tint. That tint creates the permanent “etched” image, or burn-in.

WHAT'S THE DIFFERENCE BETWEEN SHADOWING AND BURN-IN?

Simply put, shadowing is temporary and burn-in is permanent. While similar to shadowing, burn-in is much more devastating to a plasma display.

HOW CAN SHADOWING AND BURN-IN BE AVOIDED?

While shadowing and burn-in are issues for all plasma displays, Pioneer has taken the lead in researching and developing strategies to avoid these issues. These solutions include:

- **Avoid displaying 100 percent static blue images.** This helps offset the naturally shorter life span of the blue phosphor gas.
- **Switch between a static image and motion video frequently.** This will limit the potential of an image shadowing and, ultimately, burning in. For example, for every 10 minutes of static image display, there should 30 to 50 minutes of motion video that follow, and so on.
- **Display motion video three to five times longer than a data filled image.** Doing so is a good rule of thumb. Again, when displaying one minute of non-moving data, it is a good idea to then display three to five minutes of full-motion video.
- **Rotate still data images continuously.** Avoiding the use of the same data images for long periods of time helps reduce the possibility of image shadowing or burn-in. This can be achieved by rotating the image on the plasma display one pixel at a time in a circular motion every five minutes or so.
- **Use a screen saver.** Just like those used on most computers today, screen savers will help avoid displaying the same still image for extended periods.
- **Adjust the image brightness.** Lowering the level of brightness intensity helps decrease the amount of time it takes for shadowing and burn-in to occur on the display.

HOW CAN YOU LEARN MORE ABOUT PLASMA DISPLAY TECHNOLOGY?

For more information on plasma display technology strategies and solutions, call Pioneer New Media Technologies at (800) 926-4329. Or log onto Pioneer's web site at (WWW.PIONEERUSA.COM).