



Current Issue

Practical Tips for Monitor Calibration by Jack and Sue Drafahl *Minimize human error in the color equation*

The weakest link in the digital editing process is the computer monitor. There is nothing wrong with the manufacturing of the monitors, but rather with the human who sits viewing the screen.



Corel stock photo image with small section of computer screen enlarged. Full red, green and blue make up white on the computer monitor.

THE PROBLEM WITH relying on your own eyes for accuracy is that the human eye sees color in variations that differ considerably from one person to the next. Add to the equation the fact that computer monitors require calibration of the color and image controls. If one or both issues are out of whack, then there is no way you can achieve consistent image editing.

When digital image editing first began, there was very little stability of image quality during the process from input to output. Images that looked good on one workstation ended up too light or too dark on the next workstation or in the final printed piece. Today, we have more sophisticated color management programs to help monitor images throughout the process.

Nevertheless, the most subjective part of the process is the human eye viewing the image on the computer monitor. Like many products in the computer industry, there are both software and hardware options available to minimize the bias of the human eye and balance it with the computer monitor. The software solutions are less expensive but not quite as accurate as the hardware devices, but, not to worry—we'll review both options.

Environmental Controls

Before we look at the two methods of monitor calibration, we need to talk about controlling environmental conditions that can affect your editing. Image editing monitors need to be in a location away from full room lighting.

The room light should be subdued but not in total darkness. The monitor should be in a location where you can achieve consistency in lighting from one editing session to the next. If sunlight streams through a window during part of the day, you may have to change the monitor's location so that the light level remains constant.

When editing stations are too dark, there is a tendency to darken the images, as they seem too bright to the editor and vice versa. These conditions should be established before you do any monitor calibration, otherwise all your efforts will be in vain.

Step-by-Step Calibration

The easiest and most cost effective method for monitor calibration is Adobe Gamma, which is included with Photoshop 6.0. This small program has a step-by-step control panel for advanced monitor adjustments.

When you start the program, it will first ask you to set the contrast to the highest level. Once this is completed, you visually adjust the brightness until a dark gray box in the center of a larger black box appears black, while still maintaining a pure white in the white area. When asked to set the phosphors in the monitor, refer to the tech sheet in your manual or use the default setting.

The next step is to adjust the gamma portion of the monitor. Adjust the gamma with the slider so the center gray area achieves the same tonal value as the surrounding gray area. You can also uncheck the View Single Gamma Only button and individually adjust each of the

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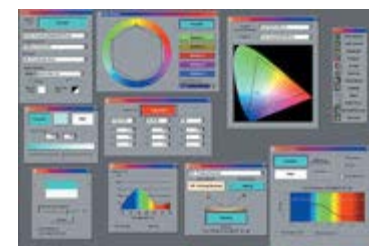
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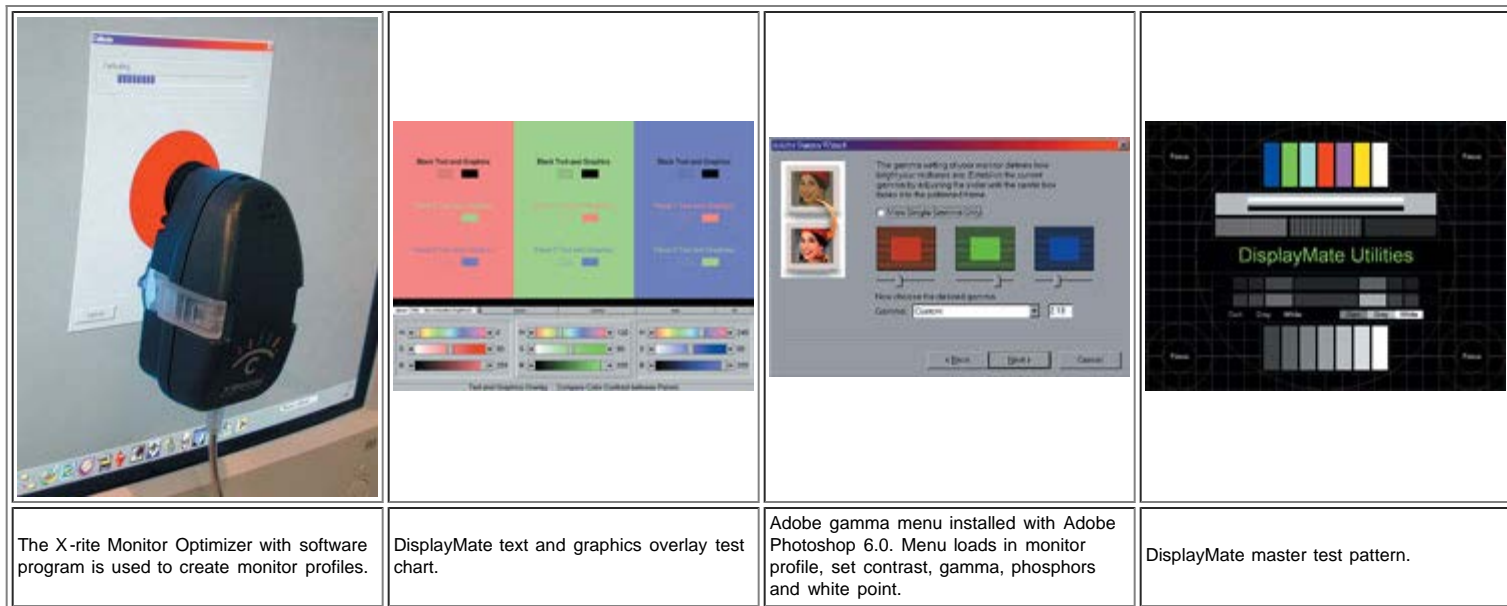
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Some of the color charts from DisplayMate used to adjust computer monitors.

three colors until they match the surrounding areas.



If you know the Kelvin temperature of your monitor, select it and move on to the final saving step. If not, select the Measure button, and keep selecting the most balanced gray square until the best choice is in the middle square.

You will now be asked to save your monitor settings as a specific file name. To keep your monitor calibration consistent, you need to run this entire process periodically and check to see if you need any visual readjustment.

There are even more sophisticated monitor adjustment programs like the reasonably priced DisplayMate for Windows. This program guides you step-by-step through brightness and contrast adjustments followed by white-to-gray verification tests. If that were not enough, they offer an adjustment to set your monitor's black level using 32 gray-to-black squares.

There are additional tests for adjusting text, reducing moire patterns, monitor glare, standard screen colors, intensity scales, screen size, centering, pincushion, geometric distortion, image focus and color registration. Wow!

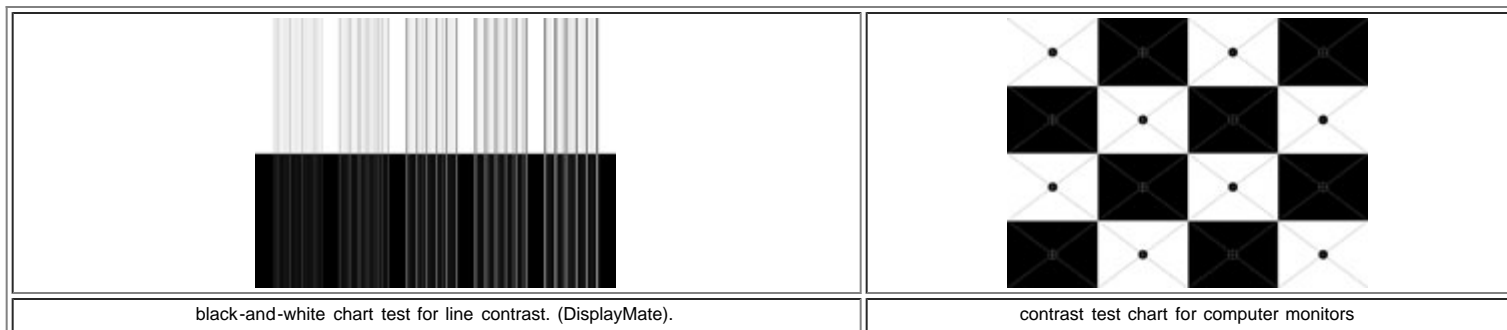
The purpose of each step is carefully explained and the expected results are clearly presented which makes DisplayMate a great program for all experience levels. They offer Novice, Express, Standard and Complete Programs to allow you to configure the monitor adjustments to your specific needs.

If you don't mind spending more money, various hardware devices (called colorimeters) will provide more exacting results. X-Rite Incorporated makes the Monitor Optimizer and ColorVision Incorporated has the Monitor Spyder, either of which will do the trick.

These devices look like a computer mouse, except they attach to your color monitor screen instead. They are positioned over a color target area that flashes colors that are measured by the colorimeter.

The software included with these calibration devices leads you through all the steps necessary to adjust your monitor and much, much more.

The ColorShop program sold with the X-Rite Monitor Optimizer gives you total control over the colors displayed on your computer screen. This program has a main color toolbox that expands into a dozen color management programs. You can compare the color gamut of two different profiles, compare similarities in Pantone colors, or even do a spectral comparison of two different monitor colors.



The Monitor Spyder has eight sensors and seven filters designed to closely match the human eye response. Combined with its PhotoCal software, the team measures your monitor's display characteristics and provides a quick calibration. Once completed, your new profile is ready to be saved.

You need to understand that the color on your computer monitor is very fragile. Power fluctuations, new software installation, screen resolution changes, and a variety of other computer tasks can change your monitor calibration. It is important that you recheck your monitor calibration often. It doesn't take much time to check your calibration, and it can save you days of re-editing due to error.

For further information on monitor calibration, check out these Web pages:

Adobe Photoshop 6.0 (www.adobe.com); ColorVision Monitor Spyder (www.colorcal.com); DisplayMate for Windows (www.displaymate.com); X-Rite Monitor Optimizer (www.x-rite.com).

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