

Taming the Desktop Beast Using ColorSync

By Casandra Oppman and Dr. Jerry Waite

ColorSync is a color management program designed by Apple Computer to assist in calibrating colors on computer monitors, scanners, and on a variety of output and printing devices. ColorSync controls color through the use of mathematical formulas that deliver consistent color to the desktop. ColorSync works at all levels of production, from the individual designer, to prepress service bureaus, to multimedia production firms, to high-quality printing companies.

As technology advances, creative people are using more images in their layouts. Graphics have been added to everyday documents, and the documents produced for the business environment are more attractive than ever. In addition, more illustrations are being printed in high-quality color. Customers want color that matches the original, is consistent, reliable, and affordable. Printers and publishers can now use ColorSync to meet clients' color needs and expectations. ColorSync makes color work more repeatable, more affordable and more profitable.

Calibrating your Monitor

Color management is the scientific approach to matching the color of the scanned original to the colors displayed on computer monitors, proofs, and printed pages. To use ColorSync to manage color, you need to follow several steps. First, you must calibrate your monitor. When you calibrate a monitor, it's smart to reduce as many variables from the environment as possible. Room glare or natural light from a window or skylight can affect the appearance of calibrated monitors. In the printing industry, a glare hood made of black mat board should be affixed to the monitor. You must also make the room lighting consistent. Lighting should be either always on at a consistent level of intensity or always off. Color experts recommend diffuse fluorescent lighting with complete spectrum tubes. A suggestion by Apple is to calibrate your monitor on a regular basis. Once each month is usually adequate.

One way to accomplish monitor calibration is to create a custom profile. A “profile” is a file that contains data representing the color reproduction characteristics of a device. There are printer profiles, monitor profiles, scanner profiles, or general device profiles. A monitor profile is created by using either calibration or characterization, or a combination of both methods. A profile created by characterization is based on the average of several identical devices. For example, profiles are created by manufacturers when random monitors of the same brand and model are tested. Characterized profiles are generally included on a disk when you purchase a monitor. Calibrated profiles, on the other hand, include the color characteristics of a *specific* device. If possible, it is best to use profiles created by calibration rather than by characterization because a characterized profile does not take into account the peculiarities of your *individual* monitor. You can build a monitor profile by using a colorimeter or spectrophotometer. For example, the Colortron (by Light Source/X-Rite) is a hand-held 32-band spectrophotometer that can be attached to a monitor. In conjunction with special software, the Colortron conducts a series of tests to determine the characteristics of the monitor. These characteristics are saved in a monitor profile file.

Once a monitor profile has been created, you must instruct the Macintosh operating system to use it. From the Apple Menu, choose “Control Panels,” then select “Color Sync System Profile.” Click “Set Profile,” then locate and choose the profile for your monitor. ColorSync then uses the saved monitor profile to preset the Macintosh and its monitor so that accurate colors are displayed.

Calibrating your Scanner

ColorSync can also use scanner profiles to correct color casts or other color defects caused by the peculiarities of individual desktop scanners. A scanner profile is created by measuring the color performance of a given scanner. To profile a scanner, scan a standard color target known in the photographic industry as an IT-8. This target contains rows of color patches that are scanned by the color scanner to create a file for analysis. It’s important to set all the scanner’s controls to neutral before you scan. Profiling software is then used to analyze the scanner test file. This software compares the color values of a standard IT-8 data file to the color values in the scanned file to determine the unique characteristics of the scanner. The results, stored in a scanner profile, are used

as a filter for all images scanned on the particular scanner. When a scanner profile is applied to a scanned image, ColorSync automatically corrects the colors in the image. As a result, the scanned image closely matches the original.

Calibrating your Output Device

Proofing and printing with ColorSync is the final opportunity to put profiles to work. This process requires the output of a special target on a specified proofer or printing device. A four-color file is made for a printing press, while an RGB file is made for a color film recorder that produces transparent film. The target file is printed on the device—color proofer, color printer, or printing press—then measured with a spectrophotometer and evaluated using special software. A ColorSync profile is then created that describes the color capabilities of the device. This profile, which can become part of the output file, adjusts the color of the file as it is output.

Putting It all Together

After ColorSync profiles have been created for your monitor, scanner, and output devices, they are used together to insure consistent color reproduction. For example, you can make extensive use of ColorSync in Adobe Photoshop (to use some ColorSync features in Photoshop, you must obtain and install three Photoshop plug-ins—ColorSync Acquire, Export, and Filter Modules—from Apple or Apple’s web site at www.apple.com). Photoshop uses ColorSync in four ways. First, ColorSync automatically sets Photoshop’s monitor setup dialog box based on the selected monitor profile. Second, Photoshop uses ColorSync to compensate for the peculiarities of the scanner that was used to capture the image,. From Photoshop’s Filter menu, choose “Color Match,” then select “ColorSync Filter.” Choose the Source profile (the scanner profile) and the Output profile (proofer or printing device). The image will be automatically corrected by passing it through the scanner’s profile. Third, when separating RGB images into CMYK with Photoshop, you can build a color separation table that takes into account the reproduction characteristics of the output device. From the File menu, choose “Color Settings,” then select “Separation Tables.” In the Separation Tables Setup dialog box, click “Build Table Using Apple Color Sync,” then locate and select the appropriate output device profile. Once the color separation table is built, whenever you convert a file to CMYK,

the colors are automatically altered to match the characteristics of the output device. Fourth, profiles can be embedded into TIFF files. Simply choose "Export" from the file menu, select "Export TIFF with ColorSync Profiles," then complete the fields of the dialog box.

Conclusion

Companies that incorporate color management see immediate results in productivity. Printers and clients can begin to trust the image on the monitor. Color-managed monitors, proofs, and printing presses will help you to build customer confidence, which should result in increased business.

If you have an Apple Macintosh computer you already have ColorSync.¹ You might as well use it because it can help creative professionals and their suppliers exploit the capabilities of technology to produce reliable work.

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¹ Unfortunately, an integrated color management system is not yet available for Windows. Some pieces of the system are currently available and are known as the Kodak ICC System. Rumor has it that the next generation of the windows operating system will support a complete color management system.