Introduction

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Introduction

To achieve the holy grail of digital photography - accurate, consistent, repeatable color for your images & photos, it is important to setup the color settings in your applications correctly. This includes your scanner software, digital camera software, and most importantly Adobe Photoshop.

Because applications, scanners, digital cameras, and printers think they know best when it comes to color, they can sometimes use their own or different color spaces or gamuts (see the DTG document “color management – defined” at http://www.dtgweb.com/support for definitions of common color management terms). This causes apps to misinterpret your photos ultimately causing the colors to be off when displayed or printed. Therefore, it is important that we set them up to recognize embedded profiles and to use the same “working space”.

In this document we are going to discuss our recommendations for setting up color management on your computer. We will also show you how to set color settings in the more common applications like Adobe Photoshop, popular digital camera software, and printer drivers. Finally, we will also show you how to set up color management on the ImagePrint RIP, the RIP DTG recommends for digital photography.

These recommendations are a very good starting point and should work in most applications. They are by no means the “only” way to achieve great color or the results you are looking for.

Section I – Setting up Color for Adobe Photoshop

We will start at the centerpiece of this workflow, Adobe Photoshop. Out of the box, the initial installation of Photoshop sets up your color settings assuming that you are designing web graphics. Hmm, Photoshop…for web graphics, not for photography, yeah that makes a lot of sense. I don’t know what Adobe was thinking here so the first thing we need to do is correct Photoshop’s own identity crisis.

This is done in Photoshop’s Color Settings menu. This is located under the “Edit” menu or the “Photoshop” menu in Mac OSX. Figure 1 shows DTG’s recommended set up in Photoshop for digital photography production. Once you set up these settings they will hold until someone changes them.
However, it may be a good idea to save these settings and give them a name like “My Digital Photography Settings”.

Figure 1

So, just set your settings like that and don’t ask any questions. Just kidding we’ll now give you a brief overview of why we chose those settings.

“Working Spaces” Section – the specific color space (gamut) that we choose to work in when we create new files or convert files in Photoshop.

**RGB**  We choose Adobe RGB (1998) because it is a very popular, standard, and broad color gamut space that is ideal for photographers who want the capability of producing the maximum number of colors on a variety of output devices including thermal (dye sub), inkjet, and digital lab printers. Picking another profile with a smaller gamut, like sRGB, can limit the number of colors you can print. Picking a profile with a larger gamut space like Kodak ProPhoto RGB can lead to false expectations or “neon” like colors on output.

**CMYK**  CMYK is generally not used in a digital photography workflow but is important if you plan to eventually take your photography to an offset printer or to publication. Therefore we need to set this setting to U.S. Web Coated (SWOP) v2, which is the default CMYK space for Photoshop and a standard for the traditional offset printing industry. Now when you choose
“Image...Mode...CMYK” your files are converted to this space, ideal for printing on a printing press.

**Gray** Since gray doesn’t have any color information you’re probably wondering why we need to pick a space for gray. It’s important because gray has a dark point, light point and contrast or tonal range, and **RIPs** especially need this information to accurately reproduce that range. Gray Gamma 2.2 is good for nice, punchy, black & white prints.

**Spot** This is for defining a dot gain on a Spot (additional color other than C,M,Y, or K) on a printing press for offset printing. It’s very rarely used, if ever, by photographers and you can just leave it at it’s default setting of “Dot Gain 20%”.

**“Color Management Policies” Section** – how Photoshop “polices” or handles icc profiles in your images and files.

For the RGB, CMYK, and Gray drop down boxes you need to select “Preserve Embedded Profiles”. This ensures that Photoshop does not automatically convert or alter your files in any way. The thing to think about here is that the more you “convert” your files to other spaces the progressively more you can “degrade” the image. This setting also ensures that Photoshop doesn’t just ignore profile mismatches.

The 3 checkboxes below the dropdowns are feedback tools. Keep these checked so Photoshop warns you about possible profile mismatches & missing profiles, and asks you what to do about it.

**“Conversion Options” Section** – Please refer to the “Color Management – defined” document for more info. It would take a few pages to describe this section so trust us and set your settings accordingly.

**Engine** Adobe (ACE)

**Intent** Perceptual

Check the “Use Black Point Compensation” and “Use Dither (8bit/Channel)” Check Boxes.

**“Advance Controls” Section** – These allow you to alter how your monitor displays images on your screen. Do not check either of these because you were smart and purchased a Sony Artisan Color Monitor or a monitor calibrator like the MonacoOptix for your monitor.

So, that’s it for setting up Photoshop’s color settings. We’ll now move on to setting up your digital camera and camera software’s settings.

**Section II – Setting up Color for Input Devices - Digital Cameras & Scanners**

Now that we’ve chosen Adobe RGB (1998) as our working RGB space, we need to make sure that our cameras, camera software, and scanner software are all using that space as well.

**Cameras:** If you must shoot directly into JPEG or TIFF on your camera, some cameras allow you to pick a color space directly on the camera. Obviously, pick Adobe RGB (1998) if you have that choice. If your camera doesn’t allow you to choose any color space, more than
likely it shoots into the sRGB space or its own “raw” space. For the best color possible we recommend that you set your digital camera to shoot into “RAW” mode. If you shoot into the RAW format it does not matter what you select on the camera as your space (your camera may not even allow you to select a space) because the camera’s software driver on your computer handles this. The software allows you to take the raw file (like a digital negative), adjust exposure & color temperature, and process it into a specific color space like Adobe RGB (1998).

Camera S/W: Digital camera applications vary greatly as far as color management features and options, so pay attention to your specific s/w and set it up as best you can. Most professional digital camera software drivers allow you to select a working space (destination space) to process your pictures into. Again, if they give you this option than choose Adobe RGB (1998). Most high-end camera apps give you the option to set and use your monitor profile for soft proofing your images in their software. Some camera software may also give you the option to select an input or source profile. This is the profile for the camera itself and if it gives you this option you need to pick the appropriate profile. For example, the Kodak DCS ProBack software, Capture Studio, ships with a few source profiles for daylight & flash shooting and you can even create your own source profiles based on your lighting. Finally, if they give you the option to embed the profile than always choose yes because this tells other applications (Photoshop), what color space the file is actually in so it can display or translate it correctly. Below are some screen captures of a few popular drivers for professional digital cameras and their color settings.

Figure 2 – Kodak Capture Studio

![Kodak Capture Studio Preferences](image1)

- Monitor Profile: Use system profile
- Create Profile Target Type:
  - GretagMacbeth™ ColorChecker®
  - GretagMacbeth™ ColorChecker® DC
- Default Source Profile: DCS/Pro Daylight Source Correction
- Default Look Profile: Kodak DCS Product Look
- Default Destination Profile: Adobe RGB (1998)

Figure 3 – Kodak DCS Photodesk

![Kodak DCS Photodesk Preferences](image2)

- TIFF Options:
  - Render to RGB Working Space
  - Render GPS Information in TIFF Files
- JPEG Options:
  - Size: 100%
  - Quality: Best
- Embed RGB Working Space Profile In TIFF Files
- Embed RGB Working Space Profile In JPEG Files
- Send To Folder
  - Macintosh HDD/Desktop Folder: Choose...
Figure 4 – Fuji S2 Raw File Converter EX Options

Convert CCD Raw data to general image format. Select destination file format.

- **16-bit/8 TIFF with Adobe RGB (1998) ICC profile**
  - Adobe RGB (1998) is better for color gamut and wider than sRGB. Suitable for printing. Excellent in cooperation with Photoshop(R). Can not use image properly in applications not supporting ICC profile and 16-bit TIFF.

- **16-bit/8 TIFF with FUJIFILM FinePix RGB 1.8 ICC profile**
  - FUJIFILM FinePix RGB 1.8 has a color space having gamma changed to 1.8 in Adobe RGB (1998). Suitable for monitor of gamma 1.8. Martinotech. Can not use image properly in applications not supporting ICC profile and 16-bit TIFF.

- **Exit RGF TIFF (8-bit/8) with sRGB.IEC 61966-2.1 color space**
  - sRGB color space is used. Available for many general purposes, such as Windows or others.

   - Use ICC profile setting of monitor.

Adobe RGB is a trademark of Adobe Systems Inc. registered in USA and other countries.

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Figure 4 – Canon FileViewer Utility Options

The Canon FileViewer Utility options include:

- **Shot Settings**
  - Selection options for different shot settings:
    - AdobeRGB
    - EOS 10D
    - Single Frame Transfer

- **File Name**
  - Includes shooting date/time, image size, etc.

Selects image 6 of 6.
**Scanners:** Scanner plug-in software drivers and stand-alone apps have pretty much the same options that you see in digital camera software. It is very important however that you set the input or source profile for scanners. This will usually be specific to the scanner model and to reflective or transparent media. So follow the usual routine, set your input, working space (destination space), & monitor (if available) profiles, and embed the profile. Figure 5 shows the Imacon FlexColor software that is used both for Imacon scanners and cameras.

*Figure 5 – Imacon FlexColor*
Section III – Setting up Color for Printing

Setting up your printer drivers and/or RIPs properly is the last step to achieve the color you want. This can be a rather long and detailed process and I will only cover the basics here. If you want a detailed explanation and description on setting up color management on Epson printer drivers and the ImagePrint RIP than please refer to the documents “Using ICC Profiles…” and “ImagePrint Color Management” on the Support page of dtgweb.com.

Basically, to print accurate and pleasing photos you need to give your printer driver or RIP the necessary information. In a nutshell, you need to tell it what color space your file is in and what color space you want to print in (the type of paper your printing on). So if you’ve followed all of the long drawn-out information above we know that your file is in Adobe RGB 1998. And if we’ve embedded that profile than most RIPs and drivers will utilize that information. So all we have to do is set the driver or RIP to use the profile of the paper type we’re printing on. Below are some screen captures of how to set those settings in the Epson driver (for Photoshop) and the ImagePrint RIP (see both figures 7&8 for ImagePrint). Again, there is a little more to it than this so we would definitely advise you to refer to the printing documents at http://www.dtgweb.com/support.

Don’t forget to set your Epson printer driver to the appropriate media type and turn off any color management options in the driver. This is done in the advanced section of the driver.
For setting up color management in ImagePrint go to the Edit menu and choose color management. Set your options to the below settings (you will need to select the appropriate paper/media profile for the printer drop-down on the “system tab”).

*Figure 7 – Image Print System Tab (assigning the media profile in the printer)*

*Figure 8 - Image Print Bitmap Tab (assigning the source profile of the file)*

Congratulations! You are on your way to achieving the results you want for your photography. At this time if you have any other computers you need to set them up exactly the same way. We encourage you to download DTG’s other technical documents from the Support page on our web site at [http://www.dtgweb.com/support](http://www.dtgweb.com/support) for additional information and guides on color management.