Edition: November 2001

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Overview

ProfilerPLUS RGB is an Adobe® Photoshop® plug-in which creates custom RGB printer profiles for a wide range of color printers, papers and inks. It creates ICC compliant color profiles on Windows® and Macintosh for either platform.

Today’s color printers can be used with a wide variety of inks and papers. You can often make better prints by building your own “custom” profiles for specific combinations of printer, paper and ink, even if you use only the “standard” papers and inks provided by the printer’s manufacturer. Custom profiling is even more critical if you want, or need, to print on other manufacturers’ papers and (on certain printers) with other manufacturers’ inks. The standard profiles for the printer often fail to address those circumstances.

ProfilerPLUS RGB uses your flatbed scanner to “measure” an uncalibrated print that you will make of its 729 patch Calibration Chart. After you have printed the Calibration Chart and scanned the print, ProfilerPLUS RGB will use this information to build an RGB profile that can be custom tailored for optimal results on your printer/paper/ink combination.

ProfilerPLUS RGB is unique, in that it works with an uncalibrated scanner. There is no need to attach or tape an IT8 scanner calibration target to the Calibration Chart print when building a profile. This provides the simplest possible workflow: print the chart; scan the results; then build a profile from the scan.

ProfilerPLUS RGB is also unique in that it provides adjustment sliders which let you alter brightness, contrast, saturation and color balance as the profile is being built. This lets you make subtle adjustments to the profile, to take into account both personal preferences as well as differences in the wide variety of scanners that may be used.

ProfilerPLUS RGB is faster than any other calibration software. It can build a high quality printer profile in 10 seconds or less, once you’ve printed and scanned the Calibration Chart. By using the sliders, you can build several profile variations in under a minute.
System Requirements

To run ProfilerPLUS RGB, you will need:

Mac OS 8.6 to 9x; Windows® 98, ME, 2000; Adobe Photoshop 5.02 or greater (for both RGB and CMYK profiles) or Photoshop Elements (for RGB profiles only); color printer; 300 dpi flatbed scanner or better.

Installation

To install the ProfilerPLUS Plug-ins:

1. You must already have the full version of Adobe Photoshop 5.0 or later, or Photoshop Elements installed on your system. Photoshop LE is not supported. Photoshop Elements does not support CMYK mode and cannot be used with the ProfilerPLUS CMYK module. Photoshop Elements will support the ProfilerPLUS RGB module.

2. Double-click the ProfilerPLUS Installer application.

3. Under Windows, ProfilerPLUS should install automatically at the default settings. For single hard drive Mac configurations, the installer will automatically locate your Adobe Photoshop Plug-ins folder and ask you to continue. Simply click on the Install button. For more complex configurations, check that the installer has found the appropriate copy of Photoshop by using the "Select Folder" option in the drive selection section, and manually selecting the Plug-ins folder of the copy of Photoshop into which you wish to install. CMYK support files for your version of Photoshop can be copied to the designated locations for convenient use as well.

4. When you install ProfilerPLUS under Windows, you will be prompted to enter your serial number. When you run ProfilerPLUS RGB or CMYK for the first time on the Mac, it will ask you to enter the serial number before you are allowed to continue.
Configuring Your System

Macintosh

Even though Virtual Memory is turned on by default in recent Mac OS versions, we normally recommend turning Virtual Memory (in the Memory control panel) off. The virtual memory system in the Mac OS can sometimes conflict with Photoshop's own internal virtual memory system. A common symptom of this is getting "not enough memory" error messages when trying to build profiles.

You should not need to turn Virtual Memory on as long as you have at least 128 megabytes of RAM on your system. If you have only 64 megabytes of RAM, then leave it turned on; otherwise, your system performance will suffer.

Windows

(no current issues)
Configuring Adobe Photoshop

After you have installed ProfilerPLUS RGB, you should do some preliminary setup in Photoshop as follows (the screen shots are from the Macintosh versions of Photoshop; the Windows screens should look the same).

Photoshop 5

Use Photoshop 5’s File:Color Settings:RGB Setup command. You should see:

![RGB Setup dialog](image)

The RGB pop-up at the top lets you select what’s known as the “RGB Working Space” for Photoshop 5. This is the only setting in Photoshop 5 that directly affects the results that you get when you build profiles with ProfilerPLUS RGB.

Photoshop 5 comes with the RGB working space set to sRGB, which will produce lower quality profiles. We highly recommend changing this to Adobe RGB (1998) for the best results when building profiles. The other commonly used working space is ColorMatch. If you’re a Photoshop expert and prefer to work in and print with ColorMatch, feel free to set it this way, but for most people, Adobe RGB is the best choice.

After you’ve selected a working space in the topmost pop-up, Photoshop will fill in the remaining settings for you (Gamma, White Point and Primaries). Don’t touch these settings; leave them at the values that Photoshop sets.

At the bottom of the dialog, make sure that “Display Using Monitor Compensation” is checked.
Photoshop 6

Go to the Edit menu and use the Color Settings command. When the dialog below shows up, check the “Advanced Mode” box so that you can see all of the controls.
Photoshop 6 has a completely reworked, and more advanced, color management interface than Photoshop 5, although the controls we’re interested in work the same as in the older version.

The RGB pop-up at the top of the Working Space section lets you select what’s known as the “RGB Working Space” for Photoshop 6. This is the only setting in Photoshop 6 that directly affects the results that you get when you build profiles with ProfilerPLUS RGB.

Photoshop 6 comes with the RGB working space set to sRGB, which will produce lower quality profiles. We highly recommend changing this to Adobe RGB (1998) for the best results when building profiles. The other commonly used working space is ColorMatch. If you’re a Photoshop expert and prefer to work in and print with ColorMatch, feel free to set it this way, but for most people, Adobe RGB is the best choice.

About RGB Working Spaces

Regardless of what you choose as your working space, it is IMPORTANT to remember this: to avoid color shifts in your prints, you should use the same working space for both building profiles and subsequently printing images. If you build a profile with Adobe RGB as the working space, and print later on with your working space set to ColorMatch, there may be noticeable color shift in the output. Likewise, if you have images which are tagged as ColorMatch, you will probably want to set your Photoshop working space to ColorMatch, build a profile for your printer/paper/ink combination with ColorMatch in effect, and use this profile when printing.

The bottom line is: working space mismatches can cause color shift in prints. To avoid this, the safest thing to do is pick a working space you like (Adobe RGB, ColorMatch, or perhaps a custom working space such as the EktaRGB space); configure Photoshop with it; and then leave that space in effect when building your profiles, editing your images and printing.

The CMYK, Gray and Spot Color working spaces can be set any way you like; they have nothing to do with ProfilerPLUS RGB.
Set the **Color Management** controls as shown to take advantage of Photoshop 6’s new color management capabilities. However, when you run ProfilerPLUS RGB, it may automatically open small RGB support files from time to time, as well as the various Calibration Chart targets. All of these are tagged, by default, with Adobe RGB. With the Color Management controls set this way, Photoshop 6 may ask you what to do with these files every time that they open.

![Embedded Profile Mismatch](image)

Respond as shown above and click OK to continue. Do **not** click Cancel.

**Note:** If you click Cancel, then the process of opening the Calibration Chart, or other ProfilerPLUS RGB “support” image, will halt. The image in question won’t appear, and Photoshop will also put up a warning alert, saying that the image window could not be selected; this is normal.

**Note:** If you don’t need to use the new color management features in Photoshop 6, you can also turn the Color Management policies for RGB to **Off**. Photoshop will ignore any embedded tags in images when you open them, and it won’t issue the Missing Profile warning when you are running ProfilerPLUS RGB.

**Very Important:** Make sure that you check the “Ask When Opening” box for Profile Mismatches. This forces Photoshop to alert you if it is about to alter the colors of the ProfilerPLUS Calibration Chart when you load it; you do **not** want the RGB values in the chart to change.

In the **Conversion Options** section, set the Engine to Adobe and change the rendering intent from Relative Colorimetric to either Perceptual or Saturation. Check “Use Black Point Compensation.” The other controls don’t matter.

**Note:** Unlike Photoshop 5, there is no longer a “Display Using Monitor Compensation” checkbox. This feature is **always** turned “on” in Photoshop 6.
The Calibration Chart

ProfilerPLUS RGB provides a 729 patch target, or “Calibration Chart,” for you to print. After doing this, you will “measure” this print with your flatbed scanner by scanning it. Finally, you will open the scanned image into Photoshop and use ProfilerPLUS RGB to build a profile from the image window contents.

The Calibration Chart image is an RGB image file that is tagged with Adobe RGB.

The Calibration Chart in version 2.1 and later contains an ordered “quilt” of color squares, as shown below. **NOTE: You must use scans of the “ordered” chart with 2.1 software and later. You will not be able to build profiles from chart prints and/or scans that you may have saved with older versions.**

![Calibration Chart Image](image)

**Figure 1: The ProfilerPLUS Calibration Chart (Mac and Windows)**

When you use ProfilerPLUS RGB to open this chart with its “Load Calibration Chart” command, your copy of Photoshop may alert you – if so, always answer “Don’t Convert” (Photoshop 5); or “Use the embedded profile” or “Discard the embedded profile” (Photoshop 6). If Photoshop asks you whether you want to save any changes to these targets when you close them, always say “no.” The target file is locked/write protected and should remain that way; you should not overwrite it or change it in any way.
“Quick Start” Instructions For RGB Profiling

The Create RGB Profile command in the ProfilerPLUS RGB plug-in produces printer profiles that are optimized for the color output of your favorite printer for any paper and ink combination. On the Macintosh, these are saved as ColorSync profiles; under Windows, they are saved as ICM profiles. Once you have installed ProfilerPLUS RGB and configured your system as previously described:

• Start up Adobe Photoshop and run the ProfilerPLUS RGB plug-in (using the File —> Automate —> ProfilerPLUS RGB command).

• With the Create RGB Profile radio button selected, choose **a. Load Calibration Chart** from the pop-up menu and click OK. You will see the Calibration Chart image (previously described) open into an image window. (See the Step 1 documentation in the following sections for more details).

• Print the Calibration Chart using **no color adjustment**, and using the paper, ink and printer you want to profile. Set the printer driver to use the same resolution, paper type and other settings (i.e. media/paper type, 1440 dpi, error diffusion, high quality) that you will use when making “real” prints through the profile. (See the Step 2 documentation in the following sections for more information on Print dialog settings in both Photoshop 5 and 6.)

• Scan the printed chart using **no color adjustment**, and using the system default settings for the scanner. These settings should be RGB reflective, 300 dpi, no filters (such as sharpening), and **no automatic color correction**. Crop the Calibration Chart so that a small amount of white space remains around the squares, but don’t worry about alignment. (See the Step 3 documentation in the following sections for more information on particular scanner settings).

• Return to the ProfilerPLUS RGB plug-in as described above.

• With the Create RGB Profile radio button selected, choose **b. Build Profile** from the pop-up menu. The profile building controls and adjustment sliders will appear. Leave everything set to the defaults and click OK. (See the Step 4 documentation in the following sections for more information on using these ProfilerPLUS RGB settings to build profiles.)

• Save the profile under in the System:ColorSync Profiles folder (Macintosh) or C:\WINDOWS\SYSTEM\COLOR directory (Windows).

That’s it! You are now ready to print an image using the printer profile you just made.
Detailed Instructions for RGB Profiling

The following are detailed instructions using an Epson® 3000 printer as an example. Here we go: how to build a printer profile in four easy steps.

Step 1 - Load the Calibration Chart

The first step is to load the ProfilerPLUS Calibration Chart, which contains 729 color squares representing the entire range of colors that can be sent to your printer.

• Start up Adobe Photoshop and run ProfilerPLUS RGB (using File—>Automate—>ProfilerPLUS RGB).

The dialog box shown below appears:

![ProfilerPLUS RGB Dialog Box]

• With Create RGB Profile selected and a. Load Calibration Chart chosen from the pop-up menu, click OK. The Calibration Chart will load automatically. If Photoshop asks if you want to convert the chart to a color space, answer “Don’t Convert” (Photoshop 5); or “Use Embedded Profile” or “Discard Embedded Profile” (Photoshop 6).
Step 2 - Print the Calibration Chart

Once the chart is loaded, we need to send it to the printer, after turning off all existing printer calibration. This is crucial: you must turn off any “profiling,” “color adjustment,” or calibration for the printer before you print the chart.

The result will be an “uncalibrated” print of the chart squares, which represents the uncalibrated state of the printer. This is what the printer does without any profiling. Typically, the print of the chart squares will be darker and color shifted compared to what you would normally want, due to the “dot gain” of the printer, the effect of the printer inks, and the kind of paper on which you are printing. If you printed a normal (photographic) image without calibration, you wouldn’t like the results. This is the reason for building a profile: to adjust for the uncalibrated state of the printer so that images you print will look “correct” when you use the profile you’ve created.

Print the ProfilerPLUS Calibration Chart using no color adjustment, as shown in the pages that follow. There are specific screen captures in these examples, using the Epson 3000 and 1270 printers as examples.

If you’re trying to calibrate very coarse paper, you may want to print the Calibration Chart at a larger size, as long as the print you make fits onto your scanner. ProfilerPLUS RGB will automatically adjust for the size of the scan when you build a profile from it.

**Note:** Make sure that you use the paper, ink and printer you want to profile, and set the printer driver to use the same resolution, ink and paper type, error diffusion, quality and any other settings that you will use when making “real” prints through the profile you build. For example, if you are printing to an Epson, you might typically choose HeavyWeight Matte paper, color ink, 1440 dpi, error diffusion, high quality halftoning. **Do not** set the printer driver’s resolution at a lower dpi if you are going to be printing at 1440 dpi through the resulting profile!

**Note:** This has nothing to do with the internal resolution setting of any of the targets (the DPI that shows up in Photoshop if you use the Image Size command). That has been preset at 300 dpi so that the image will fit properly on a typical output page, and it does not need to be changed. The targets do not need to be resized or resampled after you open them.

**Note:** There are differences in the Print dialog controls you should use for Photoshop 5 and 6 when you are printing the calibration chart. Examples 1 and 2 for the Macintosh show these differences; you can apply these principles to Windows Photoshop 6 as well.
Example 1: Mac Photoshop 5, Epson 3000 settings

In Photoshop 5’s Print dialog, set the “Space” pop-up and “Printer Color Management” as shown above. Click on the “More Settings” button to be sure that color adjustment is turned off when you make this print. You should see:

Make sure that Media Type, Print Quality and Halftoning are set properly for the type of print and materials you’ll be using. Then go to the Color Management section and set Color Adjustment to “No Color Adjustment.”

After you have done this, click OK to return to the previous screen, and then Print. The Calibration Chart should then print on a single piece of paper.
Example 2: Mac Photoshop 6, Epson 1270 settings

In Photoshop 6’s Print dialog, Set “Source Space” and “Print Space” as shown above. Click on Advanced and you should see:

Click on “No Color Adjustment” and set the left side controls appropriately.
Example 3: Windows Photoshop 5, Epson 3000 Settings

Use Photoshop 5’s Print command. The following window appears:

Set the “Space” pop-up and “Printer Color Management” as shown above (we recommend turning Printer Color Management off for Windows).

You’ll need to click on the “Setup” button to be sure that color adjustment is turned off when you make this print. You should see:
Click on the **Properties** button and you should see:

![Properties Button](image1.png)

Choose the advanced radio button, click **More Settings** and you should see:

![More Settings](image2.png)

Make sure that Media Type, Print Quality and Halftoning are set properly for the type of print and materials you’ll be using. Then go to the Color Management section and set Color Adjustment to No Color Adjustment.

After you have done this, click OK to return to the previous screen, hit the apply button, and then hit the OK button. You are now at the Page Setup window. Hit OK and you are in the Print window. Hit the OK button to make a print. The Calibration Chart should then print on a single piece of paper.
Step 3 - Scan the Calibration Chart Print

Once the chart has been printed, you need to “measure” this print by running it through a flatbed scanner. Unless you have special software which lets you build a high quality custom profile for your scanner, you don’t want any profiling to happen in the scanner. You also don’t want color enhancements that attempt to “improve” the colors of the scan in any way – this can be desirable for scanning real photographs, but it is not desirable for building printer profiles. Likewise, you do not want any automatic adjustments by the scanner software.

Scan the print of the Calibration Chart as follows: RGB reflective, 300 dpi, no filters or sharpening, and no automatic color correction or enhancements.

The following pages show some recommended settings for commonly used flatbed scanners. Don’t worry if these settings produce scans that look lighter or more “washed out” than the calibration chart print itself. It’s better to have a lighter, “flatter” scan than one which is darker and more contrasty.

The chart print doesn’t have to be perfectly aligned in the scanner. ProfilerPLUS RGB is programmed to automatically locate the “corners” of the chart squares, adapt to this and extract the color data, regardless of whether the chart is rotated slightly, flipped horizontally or vertically, etc.

Before you scan the chart, crop the chart squares in the scanner’s preview window so that there's a thin white border around them. Make the width of the white border approximately equal to one or two calibration chart squares (see the scanner screen shots that follow as examples).

**Note:** If you have rough paper, or if bits of fluff or noise show up in the white area surrounding the chart squares, ProfilerPLUS RGB might not be able to properly locate the corners. If so, you will usually get an error message; if not, ProfilerPLUS will build a profile that is incorrect (it will print with “wild” colors). If this happens, you can crop the scan more tightly in Photoshop after it is complete, using Photoshop Crop tool. You can crop right down to the edges of the chart squares if you are careful to crop, align and rotate the tool exactly.

After you scan the chart, it’s generally a good idea to save the scanned image as a file. Name it so that you’ll be able to tell later on what printer/paper/ink combination was used when you printed it, for example, “Epson 1270 Hvy Matte.” You can save the scan as a TIFF, which will produce the largest file. It’s also acceptable to save it as a .JPG with a quality setting of 9 or 10 to keep the file size down. It doesn’t matter where you save the file, as long as you can find and reopen it at a later time if you want to build a new profile from it.
This software is normally shipped with the more expensive UMAX scanners, but if you have a SCSI-based UMAX, it can be installed and used as a replacement for the less-capable Vistascan™ software that ships with the less expensive UMAX models (reportedly, MagicScan will not work with USB scanners). It's a large download, available directly from the UMAX Web site. Our recommendation is to use MagicScan for building printer profiles if you have a SCSI UMAX scanner.

In the Settings menu, turn off 36 bit color (there’s no need to scan more than 8 bits per channel). In the Scanner Control window, select Manual Control (not MagicMatch™ or Auto Correctio/binuscan), and set the pop-ups to Flatbed (Reflective), True Color RGB, 300 dpi, No Descreen, No Filter. Turn the Auto adjust, descreening and sharpening controls off. Set gamma to 1.5 for the Main (M) channel, Highlight to 255 and Shadow to 0. Some users report better results using a gamma of 1.0. Also click on the individual R, G, B color channels and set them up the same way. Click on the Color Enhancement button in the Preview window and make sure that there aren’t any additional adjustments being applied (don’t worry about the Histogram tab; in the Curves tab, all curves should be flat from 0 to 255; the remaining color adjustment tabs should have all their internal fields set to 0).
Epson Twain

There are many different models of Epson scanners, but they all share a similar interface. The controls will vary slightly from model to model, but these instructions should be sufficient for setting up all Epson scanners.

Make sure that you turn on “advanced” mode, if you have a choice between advanced and “easy,” so that you can see the more detailed controls.

Turn off sharpening. In the pop-up that lets you choose Destination, set it to "Screen" (the first item); not "Screen Vivid" or any of the printer related choices further down in the list. After setting Screen, manually set the resolution to 300 dpi.

Method 1:

In Settings, use: Exposure 0, Gamma 150, Highlight 255, Shadow 0. The Threshold control should be dimmed. Use Linear tone correction (straight lines sloping upward at 45 degrees, no curves), gray balance 0, saturation 0. After the software generates a preview of the Calibration Chart print, don’t do an Auto or Optimize. This would cause the software to evaluate the scan, make its own choices for the settings, and override the values that you've just input. Try this method first; if you can’t get good results, then go to Method 2.

Method 2:

Instead of the fixed settings listed in Method 1, use Auto or Optimize to let the Epson software automatically evaluate and adjust the scan. Those who have had difficulty with the settings in Method 1 have found that Method 2 will produce good profiles.

Ed Hamrick’s VueScan (used with various scanners)

Set color balance to "none." Set "Image Contrast" to 1.5, which appears to roughly correspond to a 1.5 gamma. Set “Image Brightness” for no additional brightening (it seems that 1.0 would be an appropriate multiplier). Set the “Color Space” setting in the Color Tab to whatever working space you're using in Photoshop, i.e., Adobe RGB, so that you're consistent all the way through. If there's a "None" option in Color Space, use that instead. In Options, make sure that Sharpening is turned off. In the Device tab, choose "Image" for Media Type and use 8 bits/pixel.
SilverFast® (used with various scanners)

In the main SilverFast window, under the **General** tab, set Scan Mode to "Normal," Original to "Reflective," Pos/Neg to "Positive." Don’t bother with a Frame Set. Under the **Frame** tab, set the Scan-Type to "36 Bit Color" (which will actually yield 8 bits/channel), Filter to "None," Image Type to "Standard," and scanning resolution to 300 dpi at 100% scale. Don’t bother to save settings.
With the Buttons at the top of the main Silverfast window, open Histogram, Curves, Global and Selective Color Correction, and reset each of the four by clicking on their reset buttons.
Under Options, select the **General** tab and set the Color Model to "RGB" and the Gamma to 1.5. Select the **Auto** tab and set the Thresholds and Highlight Offset to 0 and the Shadow Offset to 100. Select the **CMS** tab and set all choices to "None," except "Internal -> Output" which should be set to "RGB." Select the **Special** tab and set the Halftoning to "No Dither" and the Color Filter to "White."
Agfa® Arcus II® Scanner (FotoLook® 3.03)

The screen shot below is the user interface for FotoLook on an Agfa Arcus II scanner. Most of the controls are obvious; set them as shown above. When you scan the Calibration Chart, crop it as shown in the preview area.

There is an important color management control that is not obvious at all. When you click on the small red-and-green button to the right of the Mode: control pop-up (which is set to Color RGB), an additional dialog opens when lets you specify profiling for the scanner. Be sure to turn this off!

Agfa DuoScan (FotoLook, should look similar to Arcus)

300 ppi, 8 bit, color RGB
Gamma 1.5 (choices are 1.2, 1.5, 1.8, 2.2)
Shadows/Highlights 0.0 and 99.50 (the most allowed)
Use densities 0 and 2.3 (the max)
Exposure 100%
White point/Black point: Uncheck “Keep Color Balance,” but don’t use the mouse to select any colors, so all values are 0 and 255
Histogram: R, G and B individually set for 0 and 255
The following screen shots are recommended settings for the Microtek X12USL scanner, using the Microtek ScanWizard software:

Some users report that scanning at 600 dpi, instead of 300 dpi... and then downsampling the image in Photoshop to 300 dpi (using the Image Size command) produces better results in the highlights. This has not been verified, and it has not been reported for any other scanner.
Step 4 - Build a Profile

Before you can build a profile, you must have the scan of your Calibration Chart open as the “frontmost” image window in Photoshop. If you’ve just scanned the chart print as described in Step 3, you can continue directly. If not, you will need to open a previously saved copy of the chart scan. ProfilerPLUS RGB always builds a profile based on the contents of the image window.

Run ProfilerPLUS RGB. With Create RGB Profile selected, choose b. Build Profile from the pop-up menu. You will then see the following controls:

The controls at the bottom of the dialog affect the way that the profile is built. The default settings of “Normal” precision, Show Edits in Preview turned on, and 0 s for the six adjustments sliders are appropriate for building your first profile for a printer/paper/ink combination.

When you click “OK,” ProfilerPLUS RGB will ask you to enter a name for the profile you are going to build, and to specify where that profile will be stored. It will take about 10 seconds, more or less, to build a profile after you’ve entered its name and clicked “Save,” and then you’re done: the profile is built!
The general technique to build the best quality profiles is as follows:

- Build an initial profile as a “reference,” with the sliders set to 0, and print a sample photographic image through it as a test. Evaluate the print by looking at it under the lighting that you intend to view your final prints.

- If you want to adjust the color that the profile produces, you can change one or more of the sliders and subsequently rebuild different variations of the “reference” profile, based on your test prints. Reopen the Calibration Chart scan, if you need to; go back into ProfilerPLUS RGB, adjust the sliders, and build one or more new profiles. Make new test prints, evaluate, and repeat if needed.

- When building profile variations, change the sliders carefully after making test prints. Even with a calibrated monitor, the most accurate way to judge what the sliders will do is to look at an actual test print after you’ve built a new profile.
Profile Editing Sliders

These important tools let you “tweak,” or adjust a profile as *you build it*. ProfilerPLUS RGB is the only scanner-based profiling software available that provides these controls for you to use at profile building time. It’s important to understand that these sliders don’t let you tweak a profile that you’ve *already* built; you can only adjust a *new* profile as you build it. This technique produces higher quality results than what could be obtained by applying simple editing tools to existing profiles.

**Brightness**

This adjusts the brightness produced by the profile, similar to how Photoshop gamma adjustment in the Levels command works. It won’t suddenly blow your highlights out if you increase brightness, or suddenly block up your shadows if you decrease brightness. Typically, you will find that an increase or decrease of 5 is enough to produce a visible change in the output.

**Contrast**

This adjusts the contrast produced by the profile. You may use this control if you wish, but our recommendation is to make adjustments to the other sliders first, and to use this control only if you can’t obtain the results you want by adjusting brightness, saturation and color balance.

**Saturation**

This adjusts the saturation produced by the profile. This control is somewhat unique, in that it has a stronger affect on the colors in your prints which are *more saturated*, and less effect on colors which are *less saturated* (nearer to gray). This keeps saturation adjustments from emphasizing any slight color casts that might exist in the near-grays that might be in your images. The slider is fairly sensitive; an increase in saturation of +5 is enough to boost saturation visibly in the output, and you probably won’t need to go higher.

**Color Balance Sliders**

These let you adjust the color balance produced by the profile. If your reference profile prints with a slight yellow cast (typical for Epson 870/1270 prints on Epson paper), then dial in a blue +10 and rebuild a new profile to remove the yellow cast. Normally, you shouldn’t need to go higher than 10 or 15 on the sliders to produce an acceptable print.

**Note:** We recommend using the Color Balance sliders first, if you need to neutralize your print from the reference, before adjusting the other sliders.
Precision

This lets you specify either normal or high precision. "Normal" (the default) produces profiles that are about 70K in size. "High" bumps up the internal resolution of the profiles and produces about 300K of data. This may improve smoothness in some cases; it also makes larger profiles, and they take a bit longer to build.

Show Edits in Preview

If unchecked, the effect of the color editing sliders will be seen only in the prints that you make through the new profile. If checked, the effect of the color editing sliders will be displayed both in the prints that you make and when using the Preview command.

What does this really mean?

• If “Show Edits” is checked when you build a profile, then your preview will change as well as your print when you use the profile. If your monitor is well calibrated, and if your initial print through the reference profile matches what you see on the screen, then this is the best setting for building subsequent profile variations. If you add saturation to a profile, and then Preview through it, you’d like to see this increase in saturation in the screen preview as well as in any prints that you make through the profile.

• If “Show Edits” is unchecked when you build the profile, then only the prints you make will change as a result of slider adjustments. If your monitor isn’t well calibrated, or if your monitor is calibrated but your initial print still doesn’t match well to what you see on the screen, then this is the best setting for building subsequent profiles. If your prints are more saturated than your screen preview, you’ll probably want to decrease the saturation slider and build a new profile, which will then make prints that are less saturated. These should match your monitor more closely; but you don’t want the Preview through the profile to also get less saturated in the process. This gives you a way of adjusting the print to better match the screen, without affecting the way that the profile previews on the screen.
Saving the Profile

Once the profile building controls are adjusted the way you want, click **OK**. ProfilerPLUS RGB will ask you for a profile name; choose something meaningful, such as the name of the printer and paper (i.e., Epson 1270 Matte). Save the profile in the System Folder/ColorSync Profiles folder on the Macintosh, or C:\WINDOWS\SYSTEM\COLOR directory using Windows.

**Note:** ProfilerPLUS RGB should automatically take you to the right folder or directory on your system; you will not normally need to switch folders/directories, but double-check to make sure. If you don’t save your profiles in the proper place, they won’t be available to Photoshop, the printer drivers, or other applications for use when printing.

Figure 1: Building and Saving a ColorSync profile on the Macintosh
After calculating for somewhere between 5 and 10 seconds, ProfilerPLUS RGB will finish building the profile and will save it under the name that you had specified. That’s all there is to it! You’re now ready to print an image using the ColorSync profile you just made.

**Note:** If it takes longer than 10 or 15 seconds, at most, to build a profile, something is wrong. You may have a dirty scan, or ProfilerPLUS RGB may be unable to locate the chart squares. See the description in “Step 3 – Scan The Chart Print” for more details.

Once you’ve built a profile, we recommend quitting Photoshop and relaunching it before you attempt to use the profile. (You only need to quit Photoshop and restart it; you don’t need to shut down and restart your entire computer). This is because Photoshop 5 (and, in some situations, Photoshop 6) will not recognize newly created profiles unless they are present when Photoshop first starts up.
Printing RGB from Photoshop

There are several ways to print RGB images from Photoshop using a profile you’ve created. Different variations, based on whether you’re using Macintosh or Windows, and Photoshop 5 or 6, are described in the following sections. In general, the methods are as follows:

**Method 1:** Leave the controls in the main Print dialog as they were when you printed the calibration chart, and hook your custom profile in at the “lowest” level in the Epson driver.

On the Macintosh, this method works flawlessly and is the easiest to use. You select ColorSync in the Advanced section of the Epson driver, select the custom profile from the profile pop-up, choose a rendering intent, and you’re done. The Epson driver will remember the setting, and every print you subsequently make will automatically use your custom profile.

With Windows, you select ICM in the Color Management properties of the Epson driver inside Photoshop; and in Windows, you associate your custom profile with the printer, so that any use of ICM with the printer driver will subsequently use your custom profile. In theory, this should work flawlessly; in practice, it doesn’t always work, as a result of some unknown flaw in different combinations of Windows versions and Epson driver versions. You can try this to see if it works. If it doesn’t, we recommend using Method 2 instead.

**Note:** With Windows, Method 1 is the only way to use an RGB printer profile with programs other than Photoshop.

**Method 2:** Leave the Advanced settings of the Epson driver set for No Color Adjustment, as when you printed the Calibration Chart, and select your custom profile in the Space pop-up (Photoshop 5) or Print Space pop-up (Photoshop 6). This works flawlessly on both Mac and Windows. One disadvantage is that you are not allowed to choose a rendering intent; as a result, you will get the Perceptual rendering intent (Photoshop 5) or the intent you’ve specified in Color Settings as previously described (Photoshop 6). Another is that this method works only when printing from Photoshop.

**Method 3:** Leave *everything* set exactly as it was when you printed the Calibration Chart. To use your profile on an image window before you print, use the Profile to Profile command (Photoshop 5) or Convert to Profile command (Photoshop 6). This works flawlessly on both Mac and Windows. One disadvantage is that you must do this on each image that you open, right before you print it. Another is that this method works only when printing from Photoshop.
Method 1, Macintosh Photoshop 5: Set the Space pop-up to RGB and check the Printer Color Management box, as shown in the Epson 3000 example below:

Set the Mode to Advanced, click on More Settings, select ColorSync in the Color Management section, and then select your profile in Profile pop-up:
Method 1, Macintosh Photoshop 6: Set Source Space to Document and Print Space to Printer Color Management, as shown in this Epson 1270 example:

Set the Mode to Custom, click on Advanced, select ColorSync in the Color Management section, and then select your profile in Profile pop-up:
Method 1, Windows Photoshop 5: First, add the profile that you just made to the print driver (in this example, we'll use the Epson 3000). In Windows, open the Printers folder.

You will see:

Select the printer and click the Properties button.
Click on the **Color Management** tab. Select the **Manual** radio button and click the **Add** button.

![Color Management Tab](image)

This opens up the Add Profile Association window. Now select the profile from the Color folder and click the **Add** button.

![Add Profile Association](image)
First, click “Set As Default” to set the profile as the default. Next, click the Apply button. Finally, hit the OK button.

You can now print with the default ICM profile you just installed by selecting the ICM radio button in the More Settings window back in Photoshop.
Method 2, Macintosh Photoshop 5: Print by choosing the profile in the Space pop-up menu in the Epson print window. In Advanced settings, use no color adjustment, just the way you printed the ProfilerPLUS Calibration Chart.

Method 2, Macintosh Photoshop 6: Print by choosing the profile in the Print Space pop-up menu in the Epson print window. In Advanced settings, use no color adjustment, just the way you printed the ProfilerPLUS Calibration Chart.
**Method 3, Macintosh Photoshop 5:** Convert your image with the Image: Mode: Profile to Profile command, as illustrated below using the newly created ColorSync profile called Epson Stylus Pro 9000 PhotoQuality. **Note:** The image window will change to “strange” looking colors. Don’t be alarmed, this is normal. Print the converted image window with no color adjustment, just the way you printed the ProfilerPLUS Calibration Chart.

![Profile to Profile](image)

**Method 3, Macintosh Photoshop 6:** Convert your image with the Image: Mode: Convert to Profile command to a color-corrected image, as illustrated below. **Note:** This will change the image window colors only slightly, if at all. This is normal for Photoshop 6 (a very different visual behavior than Photoshop 5). Then print with no color adjustment, just the way you printed the ProfilerPLUS Calibration Chart.

![Convert to Profile](image)
Previewing RGB in Photoshop

The **Preview** command produces an RGB print simulation of the current image window in Photoshop. The idea is to show you, on screen, what the image will look like when you print through the profile that you select for preview.

- In Photoshop, open the RGB image you want to preview in a window.
- Run the **ProfilerPLUS RGB** plug-in, using the File—>Automate—>ProfilerPLUS RGB command.
- Select **Preview**. (If no RGB image window is open, **Preview** will be dimmed).
- Select a printer profile from the pop-up menu, select a rendering intent (typically the default setting, **Perceptual**, which is how most images are printed), and click **OK**.

After a few moments (if you are using Photoshop 5, you’ll see some temporary image windows open and close – this **doesn’t** happen in Photoshop 6), you’ll see a print-simulated preview of your image. Use **Command-Y** to toggle this “live” RGB preview mode on or off in either Photoshop 5 or 6.

**Note:** If you are using Photoshop 5: After you’ve made a profile with **Create RGB Profile** and saved it in the ColorSync folder, you must quit Photoshop and restart it before Photoshop can see your new profile. This means you must quit and restart Photoshop before **Preview** will work properly with a newly created profile. This does not apply to Photoshop 6 – after you build a profile, it is immediately available for general use and preview without quitting.

**Note:** Once you’ve “hooked in” Preview (in Photoshop 5 only), your CMYK Setup will be switched to “Tables” and connected to a set of custom CMYK preview table files. These will subsequently have undesirable effects if you attempt to do any CMYK-related work in Photoshop. After you are done previewing, make sure that you go into the CMYK setup dialog and manually reset the CMYK mode to either “Built-In” or “ICC,” depending on how you normally use it.

**Note:** In Photoshop 6, the Preview command in the ProfilerPLUS RGB plug-in works by internally hooking into Photoshop 6’s **View:Proof Setup** command. After turning on proofing this way, you can go into the Proof Setup:Custom dialog and further change the preview by switching rendering intents and/or turning the Paper White simulation on/off.
Using ProfilerPLUS RGB with Adobe Photoshop Elements

ProfilerPLUS RGB is compatible with the new Adobe Elements application. You will be able to load the Calibration Chart and build RGB profiles, but Preview is not functional, and will not show up if you are running inside Elements.

There are many references throughout this document to Photoshop in general; and on occasion, Photoshop 5 and/or Photoshop 6 specifically. In most of these cases, you can simply substitute Elements instead.

Note: The “method 3” descriptions for printing RGB images are not applicable in Elements, which does not have a Profile To Profile command (as in Photoshop 5), or a Convert To Profile command (as in Photoshop 6).

Adobe Elements does not allow control of the RGB color space used. Set to no color management profile tags are ignored, and saved files have no profile tagged to them. Using the Web color management setting, sRGB is the available color profile. For full color management, the color space already attached to an image is used.
Adjusting for Blues that Look Purple

In some situations, the most saturated “blues” that you print through a custom profile may have too much magenta in the final print, resulting in a color that looks more purple than blue.

One way of improving how the profile handles “blue” is to make a modified version of the ProfilerPLUS Calibration Chart. First, open it the usual way in Photoshop, using the “Load” command in ProfilerPLUS RGB. Then, use Photoshop Image:Adjust:Hue/Saturation command. Set the Edit pop-up to “Blues,” adjust the Hue slider to a value of +10, and click “OK.” Save the modified chart into a new file, using a non-lossy file format (such as PICT, with no JPG compression; or TIFF). Name it whatever you like, as long as you know where the file is located.

It is this modified Calibration Chart image that you would subsequently load (using Photoshop File:Open command) and print, instead of using the ProfilerPLUS RGB plug-in to load the “standard” calibration chart.

This technique adjusts the hue of the blue patches in the target without affecting the other colors, by shifting them toward purple. ProfilerPLUS compensates for this by making the blues more cyan in the profile, and the result will be a more visually pleasing “blue” in your prints. If you need to, you can apply a stronger hue shift to the target, but if you go past +20 you may start to see some banding in transitions between blue and cyan in your prints.

Note: For the best results, we recommend applying this adjustment to the target you are going to print for your profiling, rather than to the scan of the target print.