Choosing Camera Colour Space

Colour spaces are an interesting and important part of digital photography. They help your images fit into a much broader range of imaging devices. Software, printers, monitors, and other devices recognize which Colour space is attached to your image and use it, along with other colour profiles, to help balance the image to the correct output colours for the device in use.

The two Colour spaces available, on most digital single lens reflex cameras, these have different gamuts, or ranges of colour. They are called sRGB and Adobe RGB. You'll find the colour space choices on the Shooting Menu, as shown below. This setting is only important if you shoot JPEG images which are to be printed, shooting in Raw file format does not have any colour profile attached until it is passed through Camera raw or when exported from Lightroom. Adobe RGB uses colours from a broader selection of the total colour range, so it has a wider gamut.


Calibrate Computer Monitor

To calibrate your screen, you need a device that sits on the monitor screen, and measures the colour being displayed. This is called a spectrophotometer. It's just a name for what it does: photo = light, spectro = from spectrum, meaning a range of colours, and meter = to measure. So it measures the light colour. These devices come as kits, with the required software bundled with it. The software produces an ICC profile which it stores at this location in the Windows OS: C:\Windows\System32\spool\drivers\color. In the "color" folder will be lots of profiles depending on the printer and or picture editing programmes installed. If the monitor has been calibrated the ICC profile will have been created and be located there. Typically it might have a name chosen when the profile is created e.g. BenQFP241W.ICM (M for monitor).

On a Mac the colour profiles are located here: Library/Colorsync/Profiles/Recommended

A colour space is a set of colours, also called gamut. The gamut of a monitor represents all the colours it is able to display. The gamut of a printer represents all the colours it is able to print. There are two types of colour spaces: the ones relative to a device (and we're talking about ICC profiles) and the ones created by engineers so that they don't depend on a device and among which are sRGB, Adobe RGB 1998 and ProPhoto RGB. In the diagram below the largest area represents the set of colours that a human being can see, it is called L*a*b* space. All the others are smaller because technical limits keep devices from reproducing so many colours.
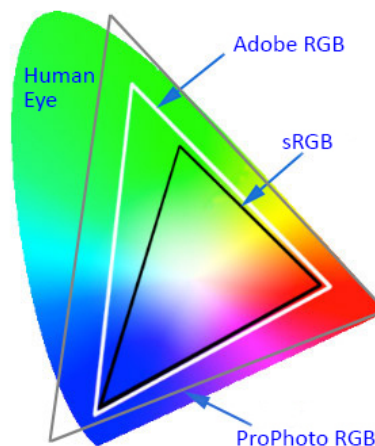
Colour Gamut Diagram

Colour Settings In Photoshop

The recommendation is that within Photoshop work with the largest number of colours, which is ProPhoto RGB, in Photoshop go to Edit → Colour Settings and set up the dialogue box as below, note the settings in the Color Management Policies section and the ticks in the warning boxes for profile mismatches. Click OK.
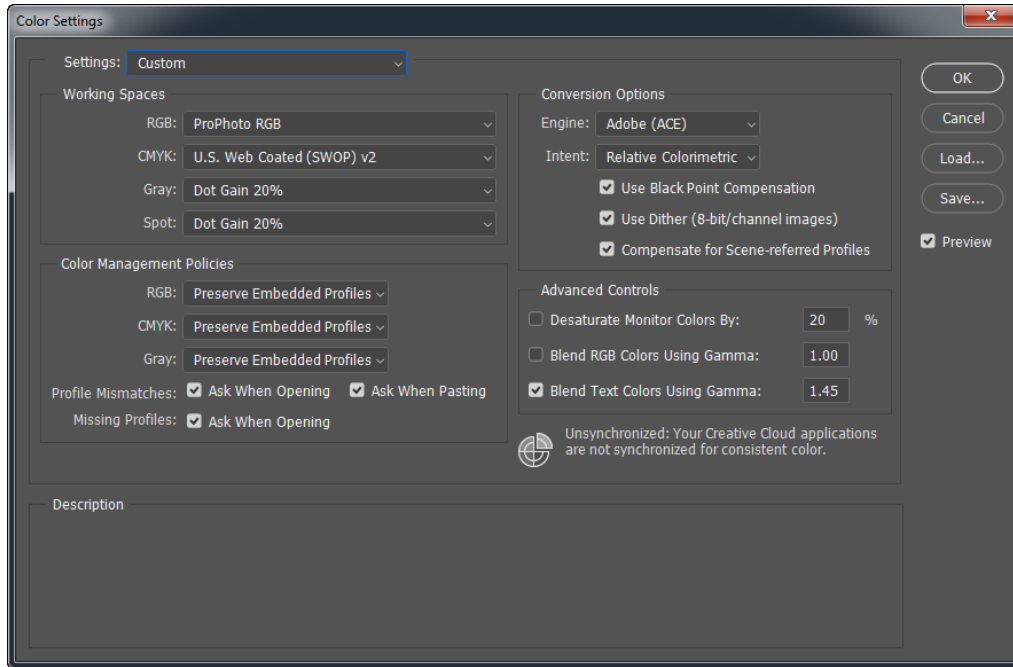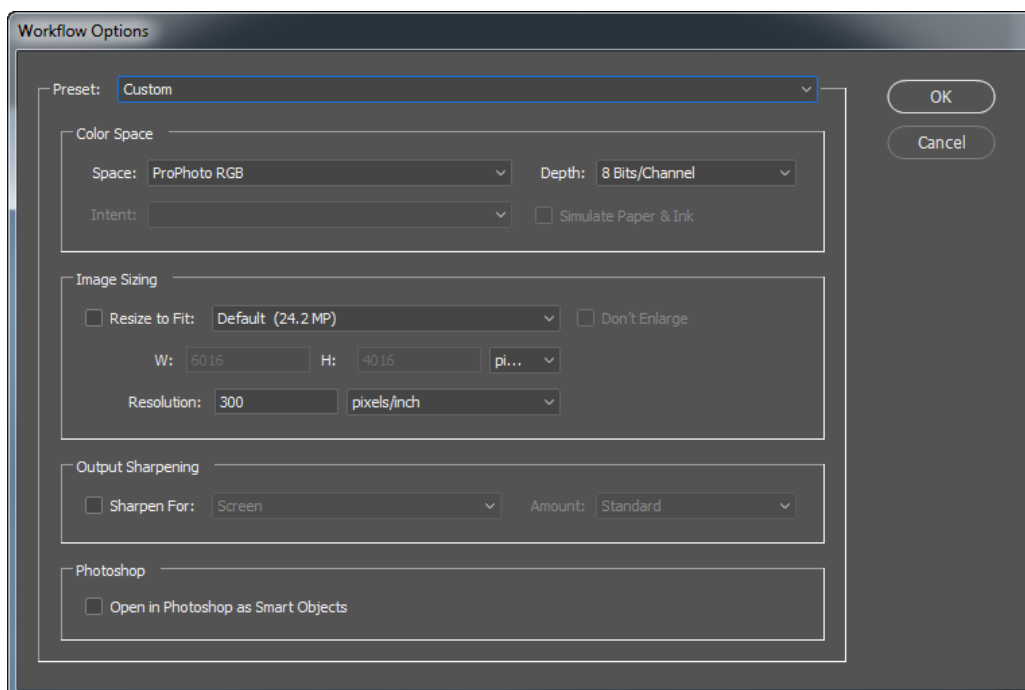
Settings In Camera Raw

In the camera raw dialogue click on the text box in the middle at the foot as shown below:
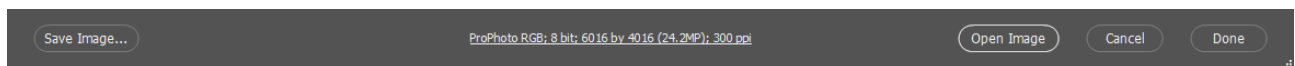
This opens this dialogue box where various settings can be made, Colour Space, Bit Depth and Resolution are the important settings.
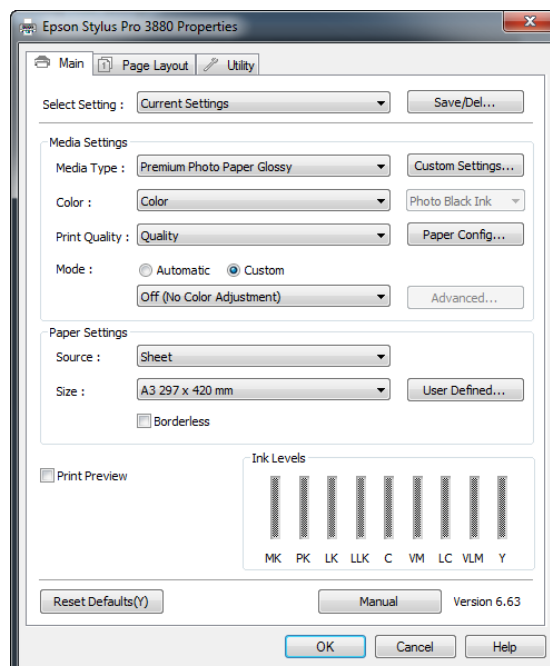
Preparing The Picture For Printing

1. Decide on the size that the picture will be printed, in this example say 36cm x 24cm
2. Here is a technical bit that is used for printing the picture, the picture is to overlap the cut aperture in the 50cm x 40cm mount by 4mm in both the length and width of the picture, so in the example aperture chosen i.e. 36cm x 24cm the picture would be sized to print the picture 36.4cm x 24.4cm on A3 printing paper. Go to Image → Adjust Image Size… (PC: Alt+Ctrl+I; Mac: Option+Command+I) change the dimensions there to 36.4cm x 24.4cm, ensure the resolution is set to 300 pixels/inch click OK.

Printing The Picture

3. Now go to File → Print (PC: Ctrl+P; Mac: Command+P) the dialogue below appears.
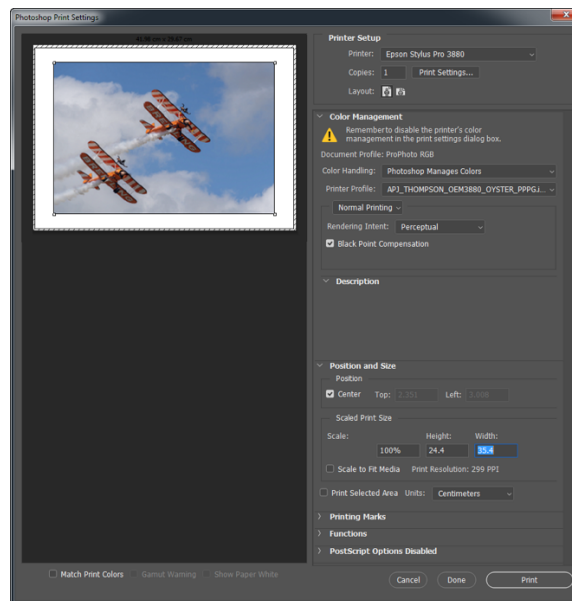
4. Choose the printer, in this example Epson Stylus Pro 3880
5. Choose copies, set to 1
6. Click on Print Settings, this dialogue box appears

7. The settings in this box, Media type: Premium Photo Paper Glossy, this is the paper type chosen when a custom profile was created by Permajet as part of their service, Set Color to Color, Set Print Quality to Quality, set Mode to Custom and then choose Off (No color Management) this is by the printer, set the paper size and orientation, click OK.
8. Back in the Print dialogue box set Handling to Photoshop Manages Colours, then from the Printer Profile dropdown choose the custom profile for the paper being used, in this case the profile name is: APJ_THOMPSON_OEM3880_OYSTER_PPPG.icm
9. If you have a bespoke profile made, it will be labelled like this:

Manufacturer	Customer	Ink Set	Printer	Paper	Paper Media	Profile Version
APJ	A N Other	KC	2400	Gloss	PGPP	V1

10. Example: APJ_ANOTHER_KC2400PK_GLOSS_
11. APJ refers to PermaJet, when locating profiles in Photoshop; they are listed alphabetically, as such all your PermaJet profiles will be together and towards the top of the list.
12. **A N Other:** This is usually users profile name.
13. **Ink Set:** Is an abbreviation of the Ink Set, e.g. KC refers to PermaJet K-Chrome Ink. Where the profile is made for original ink cartridges, the abbreviation will be OEM rather than the specific manufacturer Ink Set name.
14. **Printer:** This will usually be a slight abbreviation, e.g. "Epson Stylus Photo R2400" will be referred to as "2400".
15. **Ink Variation:** Where there is a choice of different inks within an Ink Set to load into your Printer, this will specify which one the profile has been made for, e.g. "PK" refers to Photo Black and "MK" refers to Matt Black. Please note, there won't always be a choice for Ink Variation and this information will not always be listed.
16. **Paper:** This will refer to the PermaJet paper you are using. These abbreviations will not always be the same as profile names are limited in characters, however they should be obvious.
17. **Media Setting:** This is the media setting the profile has been made for; you MUST select the same media setting in your printer properties. These will be an abbreviation of the media setting and should always be easily apparent, e.g. PPPG refers to "Premium Photo Paper Glossy".
18. The other settings are there by default.
19. When the printer is ready and online, click Print and the bottom of the Print dialogue box.
20. After the appropriate time the print will emerge from the printer.
21. When printing black and white prints, which this printer does very well, these would be the settings to use:
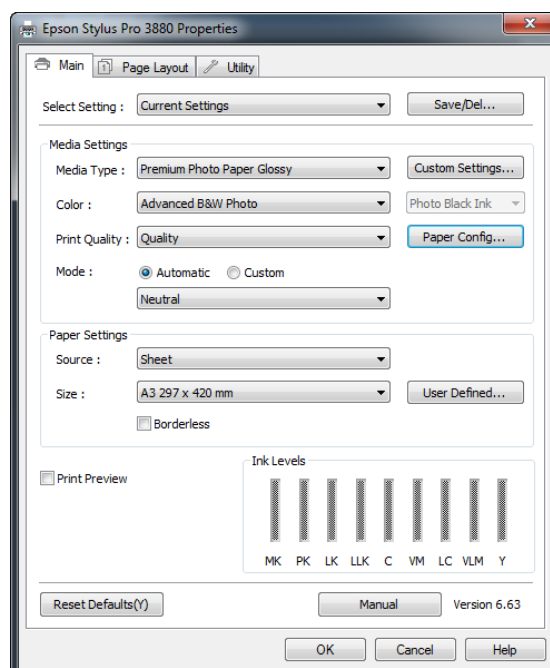
The key specs (from Epson) for the Epson Stylus Pro 3880 are:

- 17" Print width (A2+) Cut Sheet
- 8 colours (9 inks on printer) with new Vivid Magenta for a wider colour gamut
- Three Level Black ink technology
- Auto Switcher between Matte and Photo Black
- 80ml ink cartridge capacity
- 2880 x 1440dpi maximum print resolution
- 3 paper feeding paths
- Accepts up to 1.5mm thick media
- Advanced LUT technology for smoother gradations, reduced grain, colour fidelity
- Up to 85 years lightfastness in colour and up to 406 years lightfastness in black & white