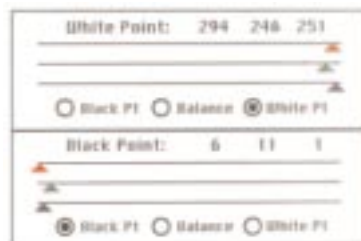# CALIBRATING MONITORS

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CALIBRATING MONITORS

Switch-on the monitor and let it warm up to operating temperature.

Monitor control panel.
*Set brightness and contrast for normal room light conditions.*

Apply colour calibration to the monitor. Call up the reference patches on the screen.

CALIBRATING MONITORS

- *After measurement, the values of the patches are read into the CMS software*

- *The CMS software relates the RGB values sent to the monitor with the measurement values.*

- *CMS software generates colour profile.*

Input profile
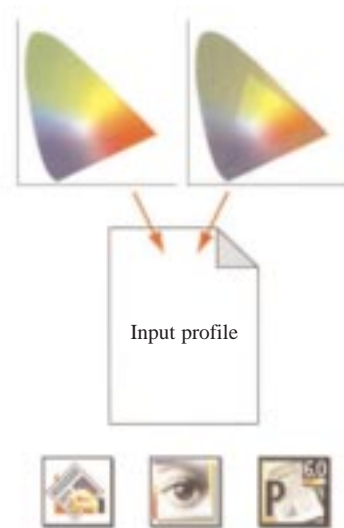
After setting the colour profile in the system software, perform a few tests to check if the profile yields a desirable result with DTP software.

CREATING AN ICC MONITOR PROFILE

The monitor will display colour reliably if a colour management and accurate ICC profiles are used. The Adobe Gamma utility which is bundled with Photoshop, is automatically stored in the control panel folder on both a Mac and PC. It calibrates and characterises the monitor to a standard and then saves the setting as an ICC compliant profile. This can be used with any program that uses a colour management system.

There are 4 calibration elements which must be set on a monitor:

- Brightness
- Contrast
- Gamma Levels
- White Point Temperature

The calibration helps eliminate any colour cast in the monitor, makes greys as neutral as possible and standardises image display across different monitors.

Although Adobe Gamma is an effective calibration and profiling utility, hardware based utilises are more precise. Hardware based calibration that can generate an ICC compliant profile should be used instead of Adobe Gamma. Also use only *one* calibration hardware to create a profile; using multiple utilities can result in incorrect colour.

The calibration process involves the use of a light meter or colorimeter. The colour measurement device generally comes with a rubber suction cup which fixes directly onto the front of the monitor. The CMS takes control of the monitor and activates different colours to be displayed on the screen. The device measures the colours actually emitted by the monitor and sends this data back to the CMS. The CMS then creates a profile of the monitor's performance by relating the actual colour values measured, to the ideal colour values that should have been emitted.

Knowing Your Gamma
The gamma level of the monitor defines the relationship between the input colour values stored on the computer disk and the output colour values, i.e. the colours actually shown on the screen. The gamma level (as well as the white point level) may vary according to the computer's age and temperature.

A good white point is 6500 K, 5000 K is the common standard for USA prepress providers. The white point of the monitor is the colour that results when red, green and blue channels are operating at full intensity. In some monitors the white will tend towards blue, in others towards orange or another hue. Setting the white point to match the light under which prints and proofs will be viewed, helps standardise colour at different stages of production.

When the CMS commands the monitor to display a 'pure red', the monitor may not display pure red, but rather a red with 1% of blue. The information read by the device (colorimeter) is fed to the CMS. The CMS deduces that this specific monitor tends slightly towards blue. In future the CMS will know that it needs to subtract 1% of blue from every colour it processes in order to compensate for this monitor's discrepancies.

As the monitor's ages the consistency of colour will change as the phosphors tend to degrade, causing the white point to develop a colour cast. It is important to regularly calibrate the monitor to take into consideration this aging process and adjust accordingly.

For best results set the monitor display to thousands (16 bit) colours or more. Knoll Gamma which is supplied with older versions of Adobe Photoshop is obsolete. Adobe Gamma does not work with flat panel (LCD) monitors.

PC: Adding a Colour Profile To A Monitor
Start Menu/Settings/Control Panel

Select: Display icon
          Settings tab
          Advanced
          Colour Management

Select 'Add' and locate profile required:

Windows/System/Color

The default profile for Windows 98 is:

      sRGB Colour Space

Mac: Adding A Colour Profile To A Monitor
System Folder/Control Panel/Monitors

Select: Colour icon

Import new colour profile

Profiles can also be created using:
Adobe Gamma file: Found in the Control Panel

QUESTIONS ON CALIBRATING MONITORS

(1)   Name the four calibration elements which first must be
       set on a monitor?

(2)   Describe the next stages of calibrating the monitor?

(3)   Although the Adobe Gamma is an effective calibration and
       profiling utility, what should be used instead which is more
       precise?

(4)   Why is the White Point Temperature important?

(5)   Why does the monitor need to be calibrated regularly?