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PHASE ONE

IMAGE CAPTURE SOFTWARE

Tutorial Guide

Edition 3.0

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Before You Start

Before starting with this guide, you must have your System up and running as described in your other Phase One manuals. This section contains a short list of the things you must do before your start.

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Before starting the Tutorial you must:

1. Be familiar with your computer

If you have not used a computer before, then we recommend that you spend a little time with the on-line tutorials that come with the computer. See your computer's documentation for more details.

You should be familiar with how to use files, folders, floppy disks, the mouse, menus, and other basics of the operating system.

You should also be familiar with basic user-interface terminology, such as mouse cursor, click, double click, drag, pop-up menu, window, etc. The *Phase One Software Reference Manual* contains a glossary that will help you with many of these terms and other terms used in digital imaging.

2. Take note of all cautions and warnings listed in all of your computer and Phase One manuals.

3. Assemble your system

Follow the procedure given in your *System Assembly Guide*.

4. Organize your studio.

Arrange your studio so that your subjects, camera, computer, and Phase One equipment are easily accessible, and so that all wires will be lying out of the way.

Plug your computer and Phase One equipment into a different power circuit than that used by your studio lights. Otherwise, electrical noise produced by your lights on the power line may interfere with the operation of your computer and image captures.

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5. Mount your camera back to your camera.

Mount your camera back just as you would a normal film cassette. Refer to your camera back manual if you have any problems. Note that if you are using a view camera, then you must always compose your image using the focusing screen before mounting the camera back.

6. Install an infra-red filter onto your camera, just as you would any other filter.

Infrared light interferes with your image captures. Therefore, you must always use an infra-red filter when you take pictures with your Phase One system. A suitable filter is included with your system. Other types if infra-red filters are available from Phase One — see your *System Assembly Guide* for details.

7. Install and Run the Software

Install the software onto your computer's hard drive as described in your *Software Installation Guide.*

Click on the application icon to start the application running. For more information about starting up the application refer to your *Software Installation Guide.*

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Calibration

In this section you will learn how to adjust your computer monitor screen and gray balance your image to eliminate color cast.

These functions are vital for preserving the high quality your system offers.

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About Calibration

The key to maintaining excellent quality when using digital techniques is to ensure that the interface equipment is calibrated - whether these be the camera back, the computer monitor or the final print process.

Calibration is the process by which you set each piece of equipment to a known condition, and one that is repeatable time after time.

Unless you are sure that the devices you use in your digital camera system produce the same colour and tonal range each time they are used, you will not be able to make qualitative judgements or produce the same shot twice in different sessions.

Because so much depends upon good calibration, you must be quite clear of the order of calibration and what the critical adjustments are.

The topics in this section of the Tutorial guide are written in the order in which calibration should be done.

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Viewing Environment

The Importance of the Viewing Environment

The first part of calibration is to make sure that your viewing environment is the same from day to day. It is impossible to make on-screen judgements of color balance and tonal quality if on one day the monitor screen is in bright sunlight, the next in a darkened room and the third illuminated with fluorescent lighting.

Room Conditions

- In general, you should choose to view your computer monitor screen in subdued lighting, preferably diffuse.
- Avoid placing the monitor where sources of glare - overhead lights, windows, etc. - cause specular reflection from the glass screen.
- Remember that it is the relative differences from day to day that upset your viewing conditions. Whatever environment you start with, you should attempt to keep them constant.

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Calibrating the Computer Monitor

When your viewing environment is set, you can calibrate your computer monitor.

The computer monitor is a central component when taking digital shots and you have to be sure it is set-up correctly since most other judgements rely upon it.

Periodic Calibration

To ensure that colour registration within the picture tube is kept as precise as possible, it is a good idea to have your monitor lined-up on a regular basis. Refer to your monitor manual for further information.

Mis-alignment can be mechanical in nature – for example subjecting the monitor to vibration when moving it – or it can be magnetic – due perhaps to stray magnetic fields within your studio caused by lighting ballasts. Mechanical and magnetic disturbances should be avoided if you want to keep your monitor in the best condition.

Daily Calibration – Macintosh Users

If you have Gamma control from Knoll Software installed on your Macintosh (usually supplied with Adobe Photoshop), use this to line-up your monitor. Otherwise proceed as for the PC daily calibration (see next page).

1. **Start the Knoll Software Gamma program**

2. **Adjust the Gamma slider**

   Set the Target Gamma to 1.8 (unless you know you need a different value).

   Activate the White pt. radio button.

   Adjust the gamma slider for least striping in the gamma panel.

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3. Adjust the Monitor

Adjust the brightness (☼)and contrast (◑) controls on your monitor until the grayscale shown on the screen appears to have even changes in intensity from one step to another.

A straightforward way of getting close to the ideal is:

a. Turn both controls to minimum

b. Adjust the brightness control until the white section of the grayscale bar just appears

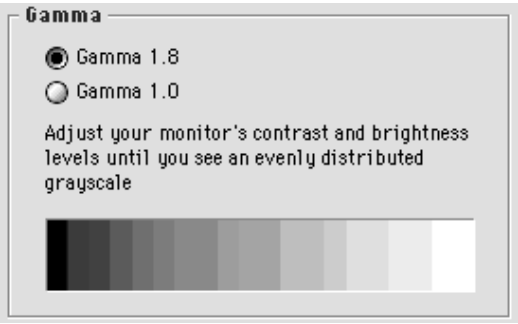
c. Increase the contrast until all the steps of the grayscale can be seen and appear to have even intensity shifts.

Daily Calibration – Windows Users

1. Display the Monitor Calibration dialog box..

Select Preferences... from the File menu.

Click on Monitor calibration. A grayscale pattern is displayed.



2. Set the Gamma

Set the Gamma to 1.8 unless you are using a specific color management system.

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3. Adjust the Monitor

Adjust the brightness (☼)and contrast (◑) controls on your monitor until the grayscale shown on the screen appears to have even changes in intensity from one step to another.

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c. Increase the contrast until all the steps of the grayscale can be seen and appear to have even intensity shifts.

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Camera Gray Balancing

Gray Balancing

Gray tones are “colors” that are defined as having equal intensities of red, green and blue pigment. When the three lines of CCD sensors in the digital camera back see a gray patch in an image, they should produce the same electrical output.

Depending upon the lighting conditions (different lights have different proportions of red, green and blue wavelengths), the output from each of the RGB sensors may not be equal. Gray balance calibration ensures that for a particular set-up the outputs are equal. Gray balancing applies a scaling factor to the RGB levels of the captured image.

If the gray balance in your digital camera back is not correct, your images will have a color cast. These can be corrected digitally later on, but in keeping with Phase One’s philosophy of providing the highest possible quality at every step of the digital photography process, a correctly balanced camera gives better quality images.

Frequency of Gray Balancing

- Do a gray balance calibration each time you change your lighting arrangement, or at any time you notice your system is not capturing colors correctly.
- Phase One also recommends that you do a gray balance each time you start the software. This ensures that your color captures are as perfect as possible before the image is manipulated in the computer.

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Making a Gray Balance Calibration

1. Set up a Gray Balance Shot

Compose your shot and include a grayscale calibration chart in it.

You should get into the habit of always having a grayscale calibration chart somewhere in the area of your main subject when taking all but the final image.

Some calibration charts are quite large and may overwhelm your subject, distracting from the composition. If you wish, make a small chart by cutting squares of black, white and a light gray tone from a calibration chart and mounting them on a small piece of card.

Use the lighting you plan to use in your final shot.

Make sure the grayscale is evenly and adequately lit.

2. Check your Camera

Securely mount your camera back onto your camera.

Ensure that an infra-red filter is in place

Set your camera's shutter to remain open for the entire scan time.

3. Adjust Exposure and Equivalent Film Speed

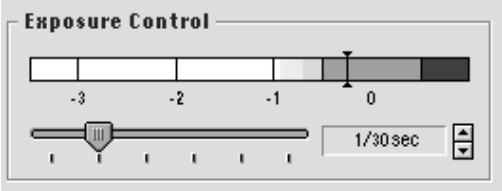
Start the Phase One Image Capture Software.

Click on 

Select an appropriate equivalent film speed for the type of work you are doing.

Use your photographic experience or a lightmeter to set the exposure according to the equivalent film rating and lighting levels you have selected.

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4. Scan the Image

Click on 

A few seconds will pass whilst the image is scanned. When scanning is complete, the image is transferred to the Preview Window.

5. Set the Color Picker Sample Size

Double-click on the  icon and select a sample size of 5x5 pixels.

6. Open the Gray Balance Window

Select Gray Balance from the Camera menu.

The Gray Balance window will appear on your screen.

7. Capture a Point on the Grayscale

Place the eyedropper ( ) over a light grey area of the grayscale (preferably an area where pixels have unbalanced values close to 50% – look in the color info panel).

Click the mouse button to capture the RGB values of that area.

The screen image is immediately updated to show the result of the gray balance calibration. If you are not satisfied with the effect on the image, click on another part of the gray area.

8. Keeping the Gray Balance

When you are satisfied with the image, click on Apply to keep the new gray balance values and return to the Preview Window.

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Software Calibration in Windows

Note 1: This section only applies to Windows users.

Note 2: This part of the calibration procedure requires a digital image in TIFF format. A Phase One final image is in TIFF format. If you have not made any final images yet, use a TIFF file of your choice (or example from the Phase One CD-ROM) - but one that you are familiar with.

Why Calibrate the Software?

When you have captured a final image you will want to look at it.

If you choose to look at the image using the Phase One *Capture Viewer*, color and tone rendition should be the same as your preview image since the capture viewer and the preview image use the same monitor set-up reference.

However, if you look at your image using another image processing program (for example Adobe Photoshop), the color and tones will probably appear to be different than the preview and final captured image.

This is because the other program probably has a different color monitor calibration to the Phase One application. To ensure that the final image is the same whether viewed with the Phase One application or another image viewing program, you will need to calibrate that program's monitor set-up reference.

An Example Calibration using Adobe Photoshop

1. Open the Image using the Phase One Capture Viewer

Using the File ➜ Open option to open a TIFF file that you are familiar with - for example a final capture you have just made.

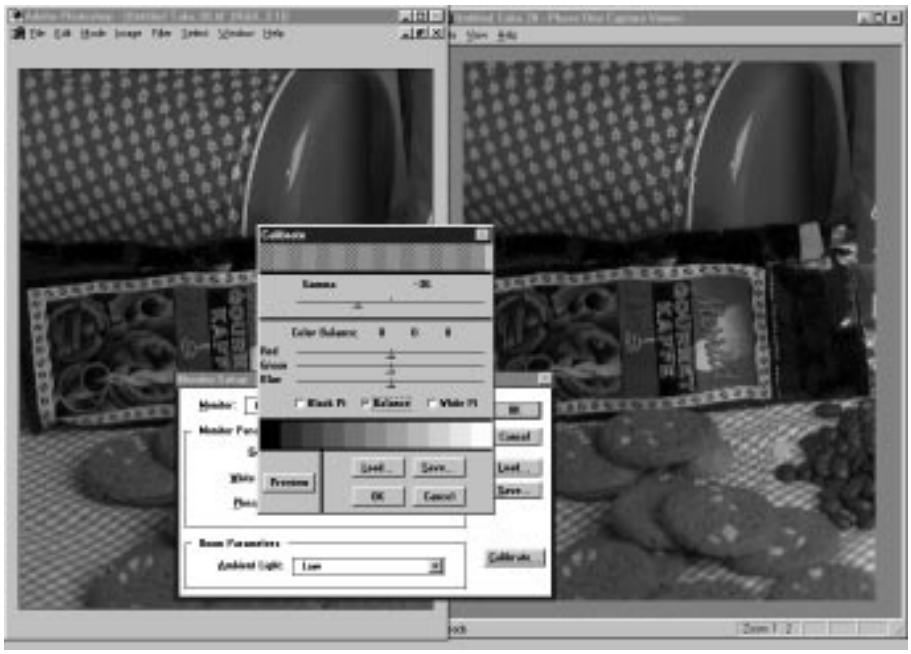
2. Open the Image in Photoshop

Start Photoshop and Open the same TIFF file.

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3. Arrange the Windows

Move and resize the Photoshop window and the Capture Viewer window on your computer screen so that they appear side by side (see picture).



4. Open Photoshop's Monitor Setup Dialog

Choose File ➜ Preferences ➜ Monitor Setup... in Photoshop.

Select the Monitor type to be Other and the Ambient Light to suit the lighting conditions in your studio.

The Gamma value should be set to 1.8

The White Point and Phosphors settings can be left as they are.

5. Calibrate the Monitor

Choose the Calibrate... option in the Monitor Setup dialog.

The Calibrate dialog appears. Click on Balance and ensure that the RGB sliders are at 0.

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Adjust the Gamma slider until the image displayed by Photoshop is visually identical to the image displayed by the Phase One Capture Viewer.

7. Save the Calibration

When you are satisfied with the comparison of the two images, click on the Save... option of the Calibrate dialog. A file selection dialog appears. Choose a suitable directory, for example the Photoshop home directory, and save your monitor calibration with a suitable filename, remembering to keep the default .AGP file extension.

This ensures that next time you start Photoshop, your monitor calibration values will be read in.

8. Save the Monitor Setup

Click on OK in the Calibrate dialog.

Choose the Save... option in the Monitor Setup dialog. A file selection dialog appears. Choose a suitable directory, for example the Photoshop home directory, and save your monitor setup with a suitable filename, remembering to keep the default .AMS file extension.

This ensures that next time you start Photoshop, your monitor setup values will be read in.

Click on OK to close the Monitor Setup dialog.

The Photoshop display and the Phase One display of images should now be identical, giving you better control of your colour reproduction.

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Comparison with a Reproduction

To see the overall effect of your monitor calibrations (both Phase One and other programs), it is a good idea to compare an on screen image with a final printed image from your service center.

This will give you a good idea of how colour and tone on the screen is reproduced as hard copy.

You can then make small adjustments to your monitor calibrations so that you are confident that the on-screen images will be “as reproduced”.

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Preview Images

This section provides a step by step overview of how to capture a preview image.

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What is a Preview Image?

A preview is a low resolution shot which you take to give you an idea of what the final shot will look like. You can think of it as a digital instant film

You should always take a preview before taking your final shot.

You use the preview to check your photo composition, and to adjust camera and camera back settings. Also, the preview gives you a reference from which to make all the other adjustments that are necessary before taking the final shot.

Preview shots only take a few seconds (the actual time depending on the exposure time setting), so you can freely experiment with different camera settings, computer settings, picture compositions, lighting arrangements, etc., until you are satisfied with the result.

Method

1. Set up the Shot

- Arrange your subject, set, camera, and lights just as you would if you were using normal film.
- Make lighting, focusing, composition, depth of field, and camera angle decisions using the camera's focusing screen.
- Use only studio lights that are recommended for use with your system. Refer to your *System Assembly Guide* for more information about lighting.

2. Mount an Infra-red Filter

You must always use an infra-red filter with Phase One digital camera backs. Refer to your *System Assembly Guide* for more information about infra-red filters.

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3. Put a Grayscale Calibration Chart by your Main Subject

4. Open the Camera Shutter

Set your camera shutter to remain open indefinitely (on most cameras this is done by setting the exposure time to "B") and open the shutter.

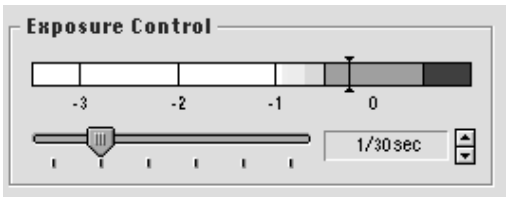
5. Adjust exposure and equivalent film speed

Start the Phase One Image Capture Software.

Click on 

Select an appropriate equivalent film speed for the type of work you are doing.

Use your photographic experience or a lightmeter o set the exposure according to the equivalent film rating and lighting levels you have selected.



6. Scan the image

Click on 

A few seconds will pass whilst the image is scanned. When scanning is complete, the image is transferred to the Preview Window.

The image is now ready for evaluation.

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Initial Evaluation

The first thing to do after you have made a preview shot is to check it for basic quality.

This section guides you through this process.

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Purpose of Initial Evaluation

When you have a preview image visible on the screen you should check it for basic quality. This means looking at the focus, composition and exposure. Many things can be fixed later with the tonal range and gradation tools, or during image processing with other software packages. However, the better your original shot, the more you will be able to do with it later.

It is assumed that a gray balance calibration has been done.

Focus and Zoom

You must optimize your camera focus right from the start. If your image is out of focus, you must refocus and retake the shot.

Remember that a preview is only a low resolution shot, and that much more sharp detail will be visible in the final take.

To take a closer look at a particular area of the preview when evaluating focus, you need to zoom in.

Activate the zoom cursor tool by clicking on 

The cursor changes to a 

By clicking with the mouse button when the cursor is over the preview image, you increase the zoom ratio by one, for example from 1:5 to 1:6.

To decrease the zoom ratio by one, hold down the Alt key while clicking on the image. You will see the cursor change to a 

For more details of *Zoom*, see the *Software Reference Manual*.

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Changing Composition

Composition in this tutorial refers to the partial area of the preview image that you select to be the scanned area for your final image.

With a Phase One digital camera back you need not only adjust your camera and lens to determine what is included in your image. You can also adjust the image size and aspect ratio using the *Crop Box* in combination with the crop tool.

The crop tool enables you to select a reduced area of the image to use in your final work. When you have selected a cropping area, only that area will be scanned during image capture. This offers the advantages of a quicker scan time, a smaller image file, and optimized image composition.

Cropping an image excludes some of the captured pixels. The excluded pixels are not used in calculations of exposure and color balance. Thus another important advantage of cropping is to avoid having over- or underexposed pixels disturbing the quality of the final image.

Crop Tool

Click on the  icon to activate the Crop tool.

The cursor changes to a  when placed over the preview image.

Crop Box

The crop box is a rectangle shown on the preview screen. Only those pixels within the crop box are captured in the final image scan.

Note: A *Crop Box* always exists in a *Preview* image, but the default size is the whole image so its boundaries cannot be seen.

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Defining a Crop Box

Use the mouse to point to one of the corners of the area you wish to crop. Press and hold the mouse button as you drag the mouse away from the original point; a black and white dashed rectangle will outline an area that will resize as you drag. Release the mouse button to define the area.

The size of the cropped area is displayed in the *Capture Specification* panel.

You can make the area enclosed by the crop box easier to see using the *Mask* function. To activate this, click on .

Resizing a Crop Box

To resize the crop area, move the mouse cursor to any corner or edge of the crop area. When at a corner or edge, the mouse cursor changes to a double arrow. Click and hold the mouse button. Drag the mouse to resize the area. Release the mouse button when you are finished.

Moving a Crop Box

Move the mouse cursor inside the crop area. The mouse cursor changes to a cross with four arrrowheads. Click and hold the mouse button and drag the entire area anywhere on the image. Release the mouse button when the *Crop Box* is placed where you want it.

Deleting a Crop Box

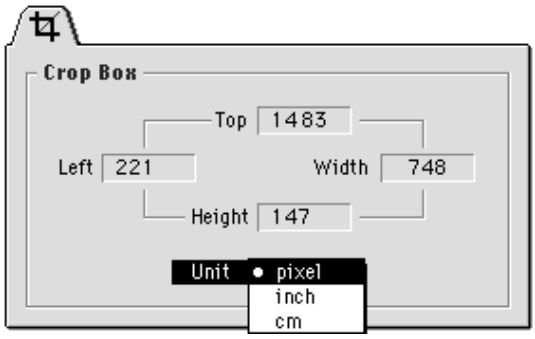
You can delete a crop area by placing the cropping tool cursor on the image but outside of the crop area and clicking once with the mouse button. This effectively re-defines the *Crop Box* to be full size.

Fine Tuning

The Height, Width and Resolution data fields in the *Capture Specification* panel directly reflect the size of the crop in the given units. When you change these values, the size of the *Crop Box* is changed accordingly.

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To see the *Crop Box* origin (top left corner), double-click on the icon. The placement of the *Crop Box* is shown in this window together with its height and width (which also give the image size in pixels).



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Checking Pixel Values

The absolute value of a pixel, or group of pixels, is information you might use to evaluate exposure and color balance. To find the value, use the *Color Picker* in combination with the the *Color Info* panel.

Color Picker

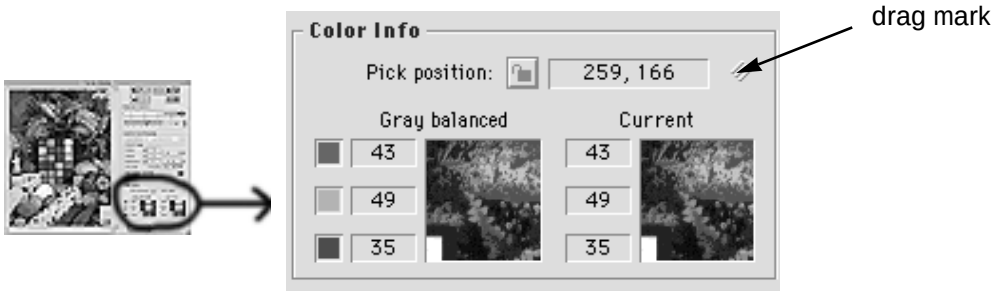
Activate the color picker by clicking on  in the toolbar.

When the color picker is active, the mouse cursor is a  when it is placed over your preview image.

See the *Color Picker* topic in the *Software Reference Manual* for more details.

Color Info Panel

When you click on a pixel with the Color Picker, the color information at that pixel (and its immediate neighbours if the sample size is not 1) is displayed in the Color Info panel.



The Pick Position shows the X and Y pixel-coordinates of tip of the *Color Picker*.

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The coordinates are measured from the upper left hand corner of the preview image.

The two cursor viewers show the area around the tip of the *Color Picker*. The gray balanced view shows preview image data after gray balance calibration data has been applied. The current display shows preview image data after gamma correction, tonal range, or gradation changes.

You can use the *Zoom* tools in the cursor view windows.

Use the *Lock* function to fix the pick position (and hence the cursor view windows)

Pixel Values

Each color pixel is made up of three primary color components: red, green, and blue (RGB). The numerical value of each component is displayed separately. Values range from zero (black, or no color) to 255 (white, or brightest color) for each color component. Neutral pixels (white, gray, or black) will show approximately equal values for each RGB component.

Finding Saturated Pixels

Use the color picker to identify points in your image that are over exposed. Do this by placing the eyedropper over the whitest areas in your image. Look at the pixel values. Some of them will be shown as 255 — the maximum value possible. Pixels who's R, G, or B values are equal to 255 are overexposed, or "saturated".

Pixels that are saturated in only one or two colors will have inaccurate colors. Very bright points in your image may cause “blooming”, which looks like a bright or colored smear in your image.

Preventing Saturation

To prevent saturation, reduce your exposure, use indirect lighting, change the angle of your subjects, or use cards to place shadows where needed.

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Evaluating Exposure

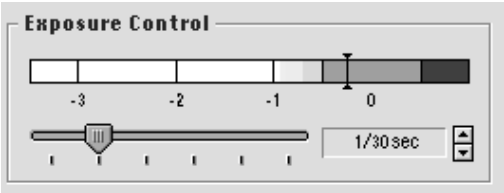
Use the Exposure Control to evaluate and correct your exposure. The exposure time is exactly analogous to shutter speed when using film stock. Longer exposure times give slower shutter speeds. This controls the amount of light needed to saturate a pixel.

Make adjustments with the Exposure Time buttons until the exposure control indicator is in the green area. If necessary, change your camera's aperture or the positioning of your lights.

You can also check your exposure with the Color Picker and Color Info window to read pixel values and to look for saturated pixels. An optimal exposure is obtained when the shadow parts of your image have pixel values in the range 0–20 and the highlight part 235–255.

The Exposure Control Display

The *Exposure Control* display contains three colored regions: red, green, and white. It is also divided into numbered regions labeled from -3 to 0. These numbers correspond to f-stops.



A dark vertical line shows an estimate of the exposure of your image.

Ideally, this line should appear in the green area labeled “0”.

If it appears in the solid white areas (-3 to -2), then your image is underexposed by the number of f-stops indicated.

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If it appears in the red area, then your image is overexposed.

A reading in the partly green area labeled “-1” is also acceptable, though slightly underexposed.

Adjusting Exposure Time.

Unless the Exposure Control display was in the green area after your first preview, you will need to adjust the Exposure Time.

Click on the slider in the *Exposure Control* display and adjust the displayed time by moving the slider left or right . The amount of change depends on how many f-stops your image was incorrectly exposed by.

For example, if the Exposure Control shows a value of -1, then you need to double the exposure time. A value of -2 means increasing the Exposure Time by four. Conversely, if the Exposure Control is in the red area, you will need to decrease the exposure time (that is, reduce the amount of light affecting the CCD sensor).

If you cannot obtain a correctly exposed shot using only the *Exposure Control*, you will need to adjust the camera’s aperture, just as you would when adjusting exposure time and f-stop number with film stock.

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Optimising Quality

The Phase One application includes many controls that enable you to optimise your digital image before it is sent onward.

This chapter shows you the main methods using simple controls.

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Introduction

If you have done a gray balance and adjusted the exposure control correctly, your image will probably be acceptable to be passed on. However, the chances are that you have not used all the available quality that a Phase One digital camera back offers.

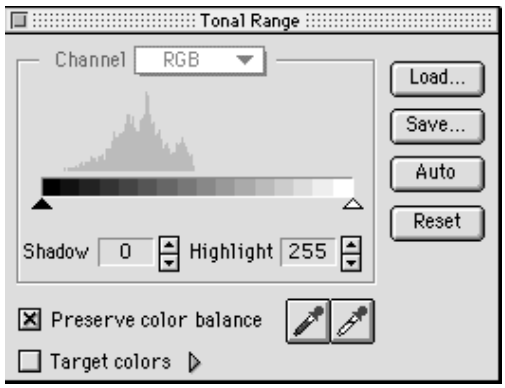
Phase One digital cameras have a larger dynamic range than that offered by 8-bit TIFF files. This means that more detail is available in the camera, but some of it has to be sacrificed in order to make the final image files comply with the TIFF standard. The tools described in this section allow you to choose which parts are sacrificed and which are emphasized.

At the end of this Tutorial is an Appendix describing in detail how some of these processes work.

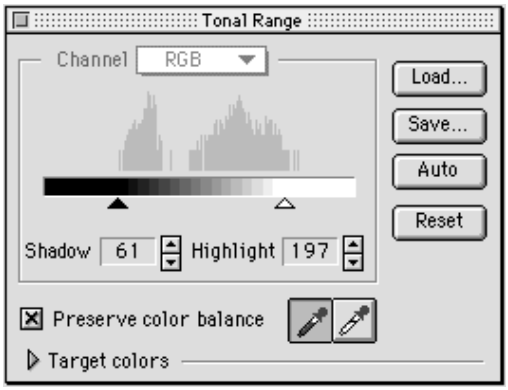
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Tonal Range

The basic *Tonal Range* window (see below) includes controls for defining the range of tones (levels of grey) contained in your image. By setting highlight and shadow points in the basic window, you redefine those shades in your image that will be reproduced as white and black respectively.



In the above example the shadow and highlight points are set to 0 and 255 respectively. The example below shows the same window after tonal range has been adjusted. Now the shadow and highlight points are 61 and 197 respectively.



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The histogram before tonal range correction shows two areas that are “spikeless”. These lie between 0 (the shadow pointer) and the first spike, and the last spike and 255 (the highlight pointer).

After tonal range correction, there is no redundant space between the spikes and the shadow/highlight pointers.

There are three different methods for setting the highlight and shadow values: automatic, graphical adjustment, and pixel selection. These methods can be used separately or combined. In this tutorial only the pixel selection method is discussed. See the *Software Reference Manual* for details of other methods.

Adjusting the Tonal Range

1. Open Tonal Range Window

Click on the  tool button.

2. Preserve Color Balance

Make sure the Preserve Color Balance box is checked

3. Examine your image highlights

Select  to activate the highlight color picker.

Place the color picker somewhere in the white area of the grayscale calibration chart. You can use the *Zoom* functions to enlarge the preview if necessary.

4. Set the highlight point

When you think you have found the brightest pixel (use the *Color Info* window to see the pixel values), click on that pixel to select it. The preview screen will change to reflect the new highlight.

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Inspect your image. If you are not satisfied with the effect, try making modifications using the Highlight and Shadow sliders. If you want to pick a different point with the highlight color picker, then you must click on the highlight color picker button again, and then click on the new highlight point.

5. Set the shadow point

Select  to activate the shadow color picker.

The procedure for examining and capturing the shadow value is exactly the same as with the highlight value described above, except that you should examine and select the black part of the grayscale calibration chart.

6. Set Target Colors

Activate Target colors by putting a check mark in the Target color box, and then click on the disclosure triangle to open an extension to the Tonal Range window. The target colors slider appears.

The default values for the shadow and highlight target colors are 0 and 255 respectively. This means that the pixel value that you choose as your shadow reference point is mapped onto a value of 0. If there are any pixels in your image with an original value lower than the shadow reference point, they will also be mapped onto 0, and consequently removing shadow detail.

Choose a target shadow value of 10 so that your shadow reference point is mapped to a pixel value of 10. Those pixels in the original image that are within a value of -10 from the shadow reference are now included in the image - whereas before they were “saturated”.

Now choose target highlight target value of 245.

By setting the shadow and highlight values to 10 and 245 you have given your image a 3% brightness margin. This helps avoid loss of detail in the shadow and highlight areas, and you may find that some printing processes require this margin because, for example, 100% white cannot be printed.

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Gamut Warning

Burnt-out pixels (those with values of 0 or 255) are an indication that you might be loosing detail in the highlight and shadow areas. You avoid burn-out by adjusting the lighting conditions, the exposure, the tonal range and the gradation.

The *Gamut Warning* function points out areas of your image that have burnt-out pixels.

Activate the gamut warning function by clicking on 

Any pixels in your preview image that have a value of 0 are indicated on the screen in bright yellow(default colour).

If pixel values are 255, these are shown bright red (default colour).

Remember, this function only gives a warning. You may decide that the number of pixels that are burnt out are so few in number that it is not worth changing the exposure or tonal range, since other parts of the image quality will be sacrificed.

A detailed description of this function is given in the *Software Reference Manual*.

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Brightness and Contrast

Gradation refers to the distribution of grey levels within the tonal range of your image. The Gradation window enables you to control this distribution to affect the image brightness and contrast. In this project, you will experiment with the gradation window and examine the results.

Introduction to Gradation

Different types or brands of film react differently to light. They are usually more sensitive to light of one brightness range (e.g. midrange) than others (e.g. shadows and highlights). Digital cameras also react differently to light than film does, but with the gradation window you are able to control your camera back's sensitivity to add or remove brightness and contrast

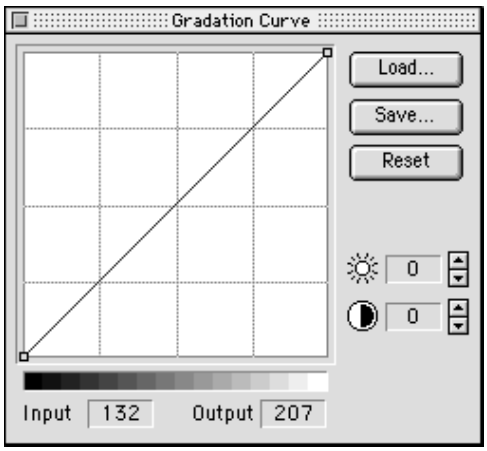
Gradation refers to the distribution of gray levels within the tonal range defined with the highlight and shadow settings. With the Gradation window, you are able to control the gradation used in your image.

The Gradation Window

The gradation window contains a graph with a curve showing how the brightness of the pixels coming from the camera back (shown on the horizontal axis) are mapped to the brightness of the pixels stored in the PC (shown on the vertical axis).

A neutral gradation setting is represented as a straight diagonal line from the bottom left to the upper right of the gradation graph. With this setting, all gray levels are evenly distributed within the tonal range. By making changes to the gradation graph, you can hide or bring out details in selected brightness areas of your final image.

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For more information about gradation and what it does to you image, read the *Understanding Gradation* section in the Tutorial Appendix. This gives background information that will help you understand what gradation can do to your image and how to use the gradation tool to your best advantage.

Changing Brightness and Contrast

1. Open the Gradation Window

Click on the  button.

2. Adjust the Brightness

Click on the up- or down-arrow beside the ☼ to increase or decrease the image brightness. Click several times to apply further adjustment.

The numerical field next to the Up and Down buttons shows the relative change you have applied. The graph shows the new gradation curve that results from your changes.

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3. Adjust the Contrast

Click on the up- or down-arrow beside the ◑ to increase or decrease the image contrast. Click several times to apply further adjustment.

The numerical field next to the Up and Down buttons shows the relative change you have applied. The graph shows the new gradation curve that results from your changes.

See the *Gradation Curve* topic in the *Software Reference Manual* for details on using the more advanced features of the Gradation window.

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Full Capture Procedure

This section gives a step by step overview of the complete image capture process. Most of the steps listed are covered by earlier parts of the Tutorial.

Only the section on Final captures is new.

Text in *italics* refers to topics in the Software Reference manual.

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1. Make a *Gray Balance*

2. Select the light sensitivity

Click on 

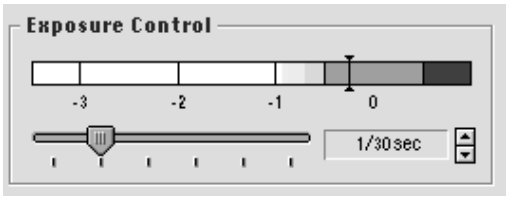
3. Take a *Preview*

Click on 

4. *Crop* your Image

Use 

5. Adjust the *Exposure*



6. Take a new *Preview*

Repeat steps 5 and 6 as necessary

7. Apply *Tonal Range* and *Gradation*, using *Gamut Warning* as a guide

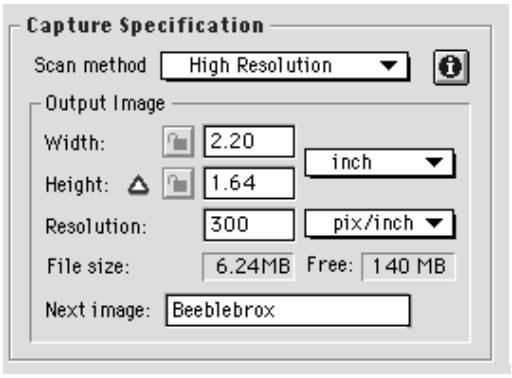
Use the   and  tools.

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8. Set the *Unsharp Masking* Filter

Use 

9. Set the Input and Output Resolution



Select a Scan Method to suit your final image requirements. The higher the scan resolution, the larger the file size for a given crop area.

Select an output image Resolution. Use 300 pix/cm (dpi) if you are not sure what output resolution you need.

The Width and Height are set by your *Crop Box*.

10. Choose a file name

Enter a name for your image in the Next image field.

11. Start the scan

Click on 

When the scan is finished, the resulting TIFF file is saved with the file name and folder you have chosen.

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Congratulations!

You have just completed the Phase One Software Tutorial. You should now be familiar with most of the basic features of your system, plus many basic techniques for creating good digital image captures.

Next you should try experimenting freely with your system. Try some of the standard techniques that you use when you work with film. See what new effects are possible when working digitally (e.g. with the contrast, color, and tonal range settings). Try experimenting with HMI or tungsten spots, colored gels or filters, and other equipment to add special effects to your images. Learn about other computer software that can help you to retouch your pictures, plus enable you to combine shots and add special effects never before possible with photography.

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