PowerPhase FX⁺
User Guide

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PHASE ❶NE

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Software Installation Guide

Computer Configuration

In order to run the Phase One Software you must have a computer that meets or exceeds the listed minimum configuration.

The minimum configuration is recommended only for use as an image capturing station for taking pictures and then transferring them to a larger, more powerful computer for processing.

When processing captured images, particularly when using other applications simultaneously, for example Adobe Photoshop, efficiency and speed will be greatly improved if the recommended configuration is exceeded.

Minimum Configuration

Power Macintosh with MacOS 9.X and a built in 1394 (Firewire) Port or a 1394 PCI card installed

The PowerPhase FX requires a total of 11 watts of power from the 1394 bus. Some computers (notably the Apple iMac) and 1394 cards do not provide the required power. To use the PowerPhase FX on these computers a Phase One IEEE1394 Power Conditioner with external power (battery or AC adapter) must be used.

Installing the Software

1. Place the included CD-ROM into your CD drive.
2. Double-click the item marked "Phase One System Install"
3. Read the software license, and if you agree, click the "Agree" button to continue with the installation. If you disagree, click "Cancel" to quit the installation
4. Follow the on-screen prompts. When the installation is completed, restart your computer.

PowerPhase FX Hardware Setup

Connecting the PowerPhase FX to the computer

Because the PowerPhase FX connects to the computer through IEEE 1394 there are no ID numbers or termination to worry about.

When you are ready to begin capturing files simply plug the PowerPhase FX into the built-in FireWire port or a 1394 PCI card in your Macintosh and double click on the "Phase One Image Capture" program to start the software and connect to the PowerPhase FX.

Optical Filters

The CCD sensor used in PowerPhase FX back are extra sensitive to infrared light. Unless infrared light is filtered out before reaching the CCD sensor, there will be an unnatural color rendering in your pictures. Therefore, you must use a filter that removes infrared light when you take digital pictures.

Phase One offers the following filters:

• AR1— Infra-red Filter for all lights

The AR1 filter provides adequate infra-red cutoff for all the lights recommended for use with Phase One camera backs, including fluorescent, HMI, tungsten etc.

• TG1 Tungsten Filter

Phase One has developed the TG1 filter to be used with their digital camera backs and Tungsten lights. The camera back is "daylight balanced", so the TG1 filter makes optical color correction before the digital image is prepared. This results in pictures with very bright, crystal clear colors and perfect color rendition when using Tungsten lights.

Furthermore, the TG1 filter has been developed with very low attenuation of light in the visible range and is very efficient in reducing infrared light. A separate infrared filter is therefore not necessary when using a TG1 filter.

Both filters are included with the system.

Color Management

The PowerPhase FX is designed to work as part of an ICC color management workflow.

The camera, monitor and printer profiles can be specified in the Phase One application, and the processed image will be customized for that specific input and output configuration. If the final images are to be printed, then the results, as they would appear in the final print, can be previewed on screen.
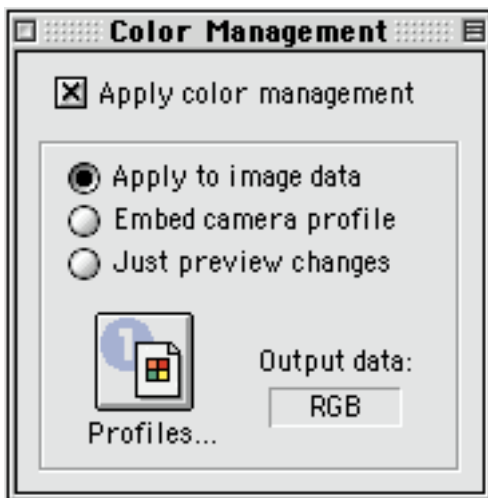
In this way images can be adjusted to give optimal results, and costly errors can be avoided

To use this feature first set the Profiles in the Preferences window.

For more information on Color Management please refer to the Phase One Color Management User Guide.

Open the Color Management window by pressing the colorsync button Three options are available:

Apply to image data

The Phase One software converts the colors of the image, using the specified settings.

Apply to image data also embeds the camera profile, enabling Photoshop to recognize the color characteristics when opening.

Embed camera profile

This option can be used to only embed the ICC camera profile into the scanned TIFF image. Use this option when the images are going to be edited on a computer that does not have the Phase One software installed.

Embed camera profile also is a time saver, when capturing with this option the capture time is improved significantly as opposed to Apply to Image data.

When a profile is embedded in an image, and the image is opened by Photoshop (or other ICC aware programs) the program will recognize the color characteristics of the camera back and ensure accurate color reproduction.

Just preview changes

When this option is selected, the on-screen image will change to simulate the printer or monitor set in the preferences, but the actual image data will not be adjusted when the image is developed.

This option is used to preview how an image will look in CMYK, without converting the image color data.

Because the Phase One application is fully ICC compliant, it is an "open" system. Any ICC profile for any printer or monitor can be used. Place the desired profile in the "Color Sync Profiles" folder in the "System Folder". Restart the Phase One application and the new profile will appear in the Preferences pop-up menu. Using third-party software, customized printer or monitor profiles can be made and installed. This gives greater color management control of the workflow environment.
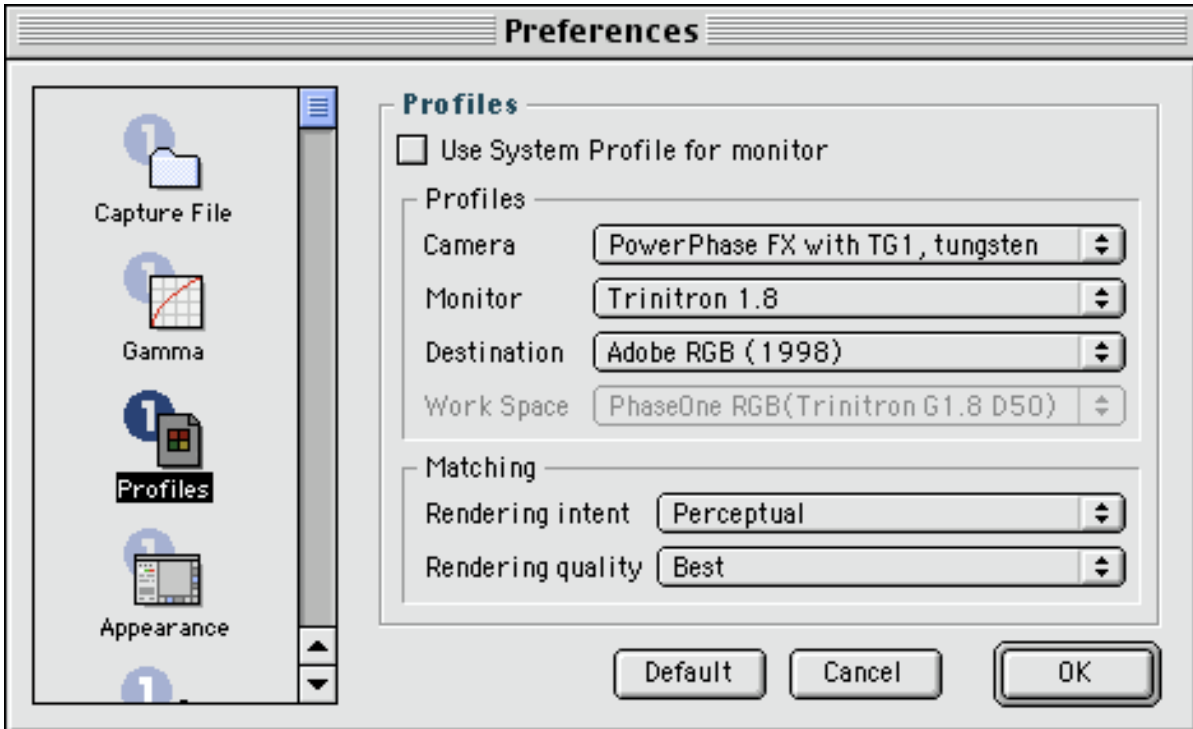
In the above example the "PowerPhase FX with TG1, tungsten" camera profile and the "Adobe RGB (1998)" destination profile are selected. Firstly, the image is captured using a profile suited for tungsten light. Secondly, after capturing the image will be specifically adjusted for the Adobe RGB workspace.

The Color Management window will also display "RGB" in the "Output data" window to show that you are creating a RGB file and the on-screen preview image will change to simulate the final Image.

Capturing Images

Film Curves

Film curves can be applied to ad more dynamic to the images, think of it as if you had the choice between different brands of film, each with a different dynamic range.

Several curves are available in the Camera Control
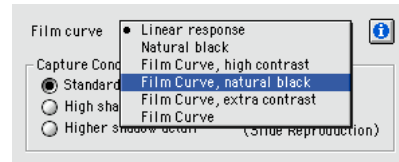
Linear response does not apply any film curve to the image.

Click the Information button to get information about each Film Curve.
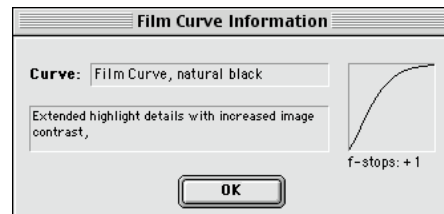
These different Film Curves and ISO options are available from the PowerPhase FX Camera Control tool in the Phase One tool bar.

ISO/File Size Options

The PowerPhase FX is extremely versatile in its ability to be set at different ISO ratings and achieve the same image quality; the only trade off is in file size. The following file sizes are the maximum that can be captured at each ISO (in 8bit/channel RGB at the PowerPhase FX's "normal" capture setting):

400 ISO - 380MB

800 ISO - 95MB

1600 ISO - 24MB

Changing the sensitivity to a higher ISO value limits the available resolutions.
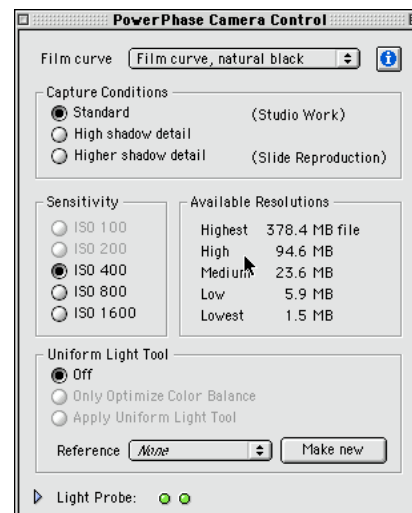
A higher ISO value ads more noise to the image and the camera is therefore limited in resolution.

Active Power Stabilization

When line voltage to the photographic lights changes during the capture time the density on the exposed file will change. Therefore Phase One has provided the PowerPhase FX with an Active Power Stabilization feature.

The image on the left shows the effects of inconsistent powering of the lights. The right one was taken with the PowerPhase FX Light Probe in use.

To compensate for unstable line voltage a small probe is placed either in the scene or on the front of the camera. The probe reads the light intensity during the capturing. If the sensor probe detects a change in light intensity (due to a voltage drop) the sensor will automatically compensate for the change in the image.

Calibrating the Probe

Before the PowerPhase FX probe can compensate for voltage problems it must be calibrated.

Click the "Calibrate" icon in the PowerPhase Camera Control window.

As stated in the occurring dialog, cover the Light Probe to prevent light from interfering with the calibration process. Put on the lens caps supplied, as the probe is very sensitive. Additional covering may be required if working in very bright surroundings.

Click the "Continue" button in the dialog.

After a few seconds an indicator line will appear in the color bars indicating that the Probe is calibrated correctly.
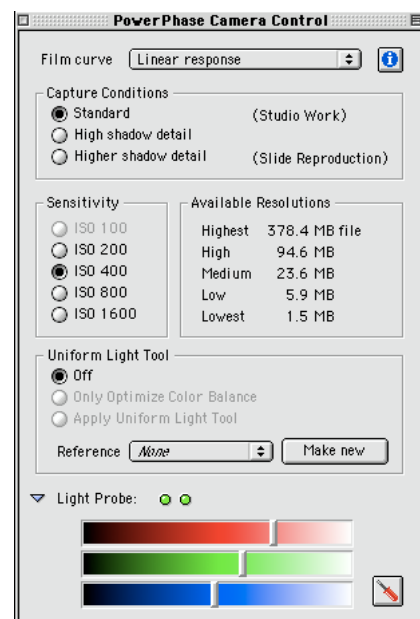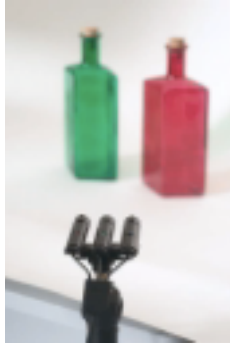
Light Probe in the scene

Occasionally there will not be enough light of a certain color for the software to calibrate properly.

If this occurs you will see one of the meter Lights will go out, and the indicator line in the window will not respond to lighting changes and will be at the bottom of the color scale.

(Notice the blue indicator on the image to the right).

If this occurs you can manually adjust the aperture ring on the color probe until the indicator line begins to respond and both the two lights on the probe is lid like on the previous page.
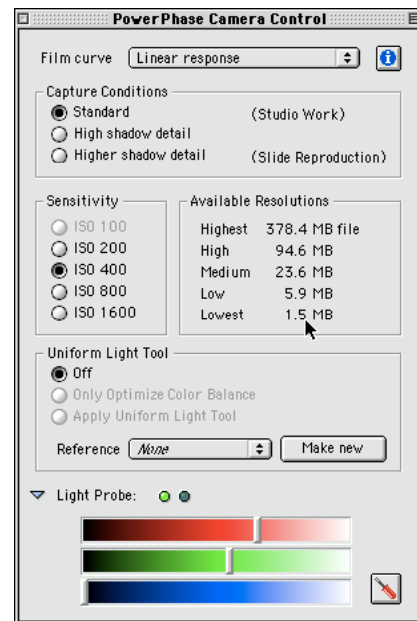
Preview Images

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

What is a Preview Image?

A preview is a low resolution capture which you make to get an idea of what the final capture will look like. Think of it as digital Polaroid. You should always make a preview before making your final capture.

Use the preview to check your photo composition, and to adjust camera and camera back settings.

Preview shots only take a few seconds to generate (the actual time depending on the exposure time setting), Which means that you can test any setting you want prior to a final capture.

Make a Preview

1. Prepare for Capture

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.

2. Mount an Infra-red filter

You must always use an infrared filter with Phase One digital camera backs. Refer to "PowerPhase FX Hardware Set-up" for more information about infrared filters.

3. Use a Grayscale Card

Put a Grayscale Calibration Chart by your main subject (see Gray Scale Calibration section for further information).

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. Select the "Settings" in the Camera menu, and select an appropriate equivalent film speed for the type of work you are doing. Use your photographic experience or a light meter to set the exposure according to the equivalent film rating and lighting levels you have selected.

6. Preview the image

Press the "Preview" button.
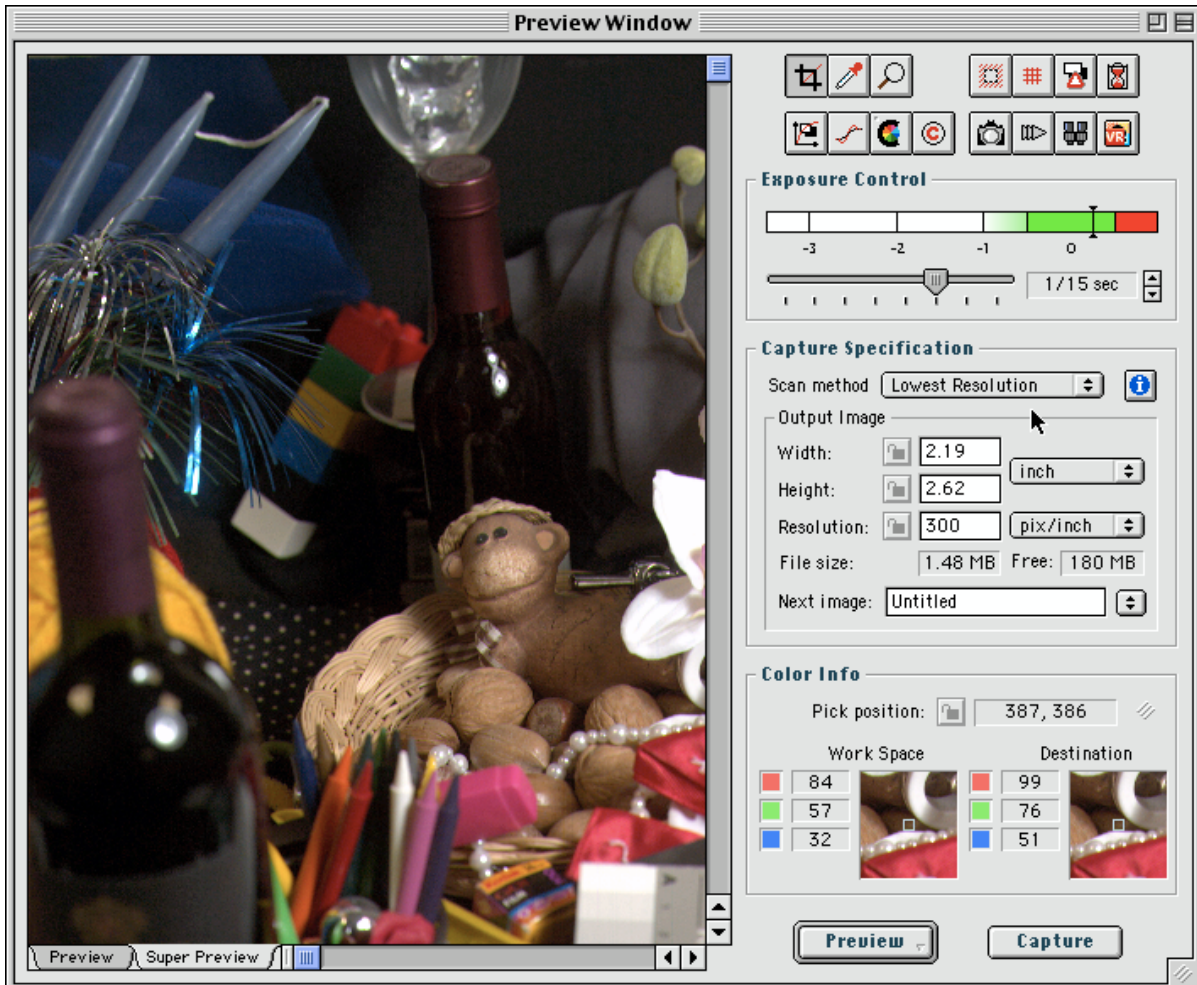
A few seconds will pass while the image is captured. The image is transferred to the Preview Window and is now ready for evaluation.

Clicking the Super Preview tab enables a larger and more detailed view, Super Preview takes a little bit more time to capture, but its detail can be very useful.

In fact Super Preview has the same resolution as the Lowest option in the Capture specification pop up menu.

Initial Evaluation

The first thing to do after making a preview is to check the image quality. This section guides you through this process.

Purpose of Initial Evaluation

When the preview is visible on the screen you should check the focus, composition and exposure. The better your original capture is, the less retouching you will have to do later.

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Focus and Zoom

Optimize your camera focus right from the start. If your image is out of focus, then focus and do another preview. Remember that a preview is only a low resolution image, and that the camera sharpness is much more visible in the final take. To take a closer look at a particular area of the preview you will need to zoom in.

Activate the zoom cursor tool by clicking on the zoom button the cursor changes to a magnifying glass with a plus inside.

By clicking with the mouse button, you zoom in for example from 1:5 to 1:6.

To zoom out, hold down the **Alt** key while clicking on the image. You will see the cursor change to a magnifying glass with a minus inside

Changing Composition

Composition in this user guide refers to the partial area of the preview image you select to be the target 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 captured. This offers the advantages of a quicker capture 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.

TIP! Holding down the button while clicking the Preview button brings up a pop up menu where you can select to preview only the cropped area this can save you valuable time in the Previewing process.

Crop Tool

Click on the icon to activate the Crop tool. The cursor changes to a cropping tool.

Crop Box

The crop box is a rectangle that includes only those pixels that are present in the final image capture.

Note: A *Crop Box* always exists in a *Preview* image, where its default size corresponds to the entire image.

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 cropped area more visible, by using the *Mask* function. To activate this, click on the Mask icon.

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 to define the area.

Moving a Crop Box

Move the mouse cursor inside the crop area. The mouse cursor changes to a cross with four arrow heads. Click and hold the mouse button and drag the entire area. 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 outside of the crop area and click 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.

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 (and image size in pixels).

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 *Color Info* panel.
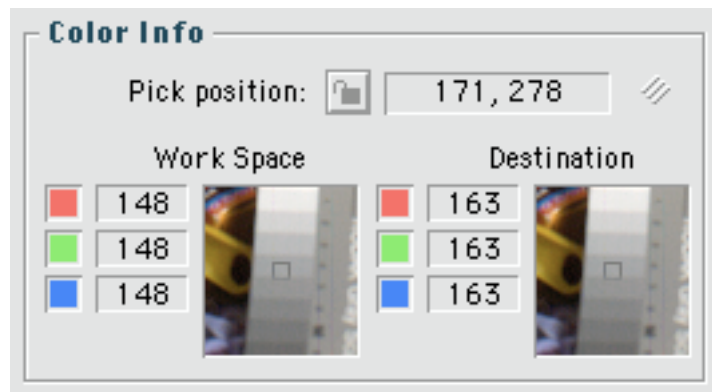
Color Picker

 Activate the color picker by selecting it from the toolbar. When the color picker is active, the mouse cursor changes to a color picker.

Color Info Panel

When clicking a pixel with the Color Picker, the color information of that specific pixel is displayed in the Color Info panel.

The Pick Position shows the X and Y pixel-coordinates of the Color Picker. The coordinates are measured from the upper left hand corner of the preview image.

The two cursor viewers show the area around the Color Picker. The Destination view shows image data after gray balance calibration and color management destination profile has been applied. The Work Space display shows image data in current workspace after gamma correction, tonal range, and gradation changes.

You can also use the Zoom tool inside the two cursor view windows.

Use the Lock function (Command – Click) to fix the pick position (and hence the cursor view windows)

Pixel Values

Each color pixel consists 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 almost equal values in RGB.

Finding Saturated Pixels

Use the color picker to identify points in your image that are overexposed. 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.

Preventing Saturation

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

Evaluating Exposure

Use the Exposure Control to evaluate and correct your exposure. Longer exposure times give slower shutter speeds. This controls the amount of light needed to saturate a pixel. Make adjustments with the Exposure Time slider until the exposure control indicator is in the green area. If necessary, change your camera aperture or the positioning of your lights.

You can also check your exposure with the Color Picker and Color Info window. An optimal exposure is obtained when the shadow areas range from 0–20 and the highlight area ranges from 235–255.
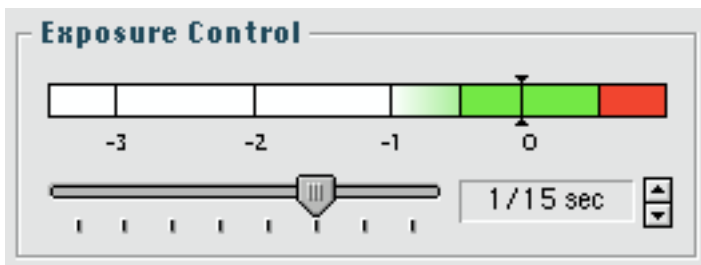
The Exposure Control Display

The *Exposure Control* display contains three colored regions: red, green, and white. -3 to 0 corresponds 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.

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.

If the Exposure Control was in the red 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.

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 infrared filter is in place.

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

3. Adjust Exposure and Equivalent Film Speed

Select "Settings" from the "Camera" menu and select an appropriate equivalent film speed for the type of work you are doing.

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

4. Preview the Image

Click on "Preview

A few seconds will pass while the image is captured. When capturing 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 color picker 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.
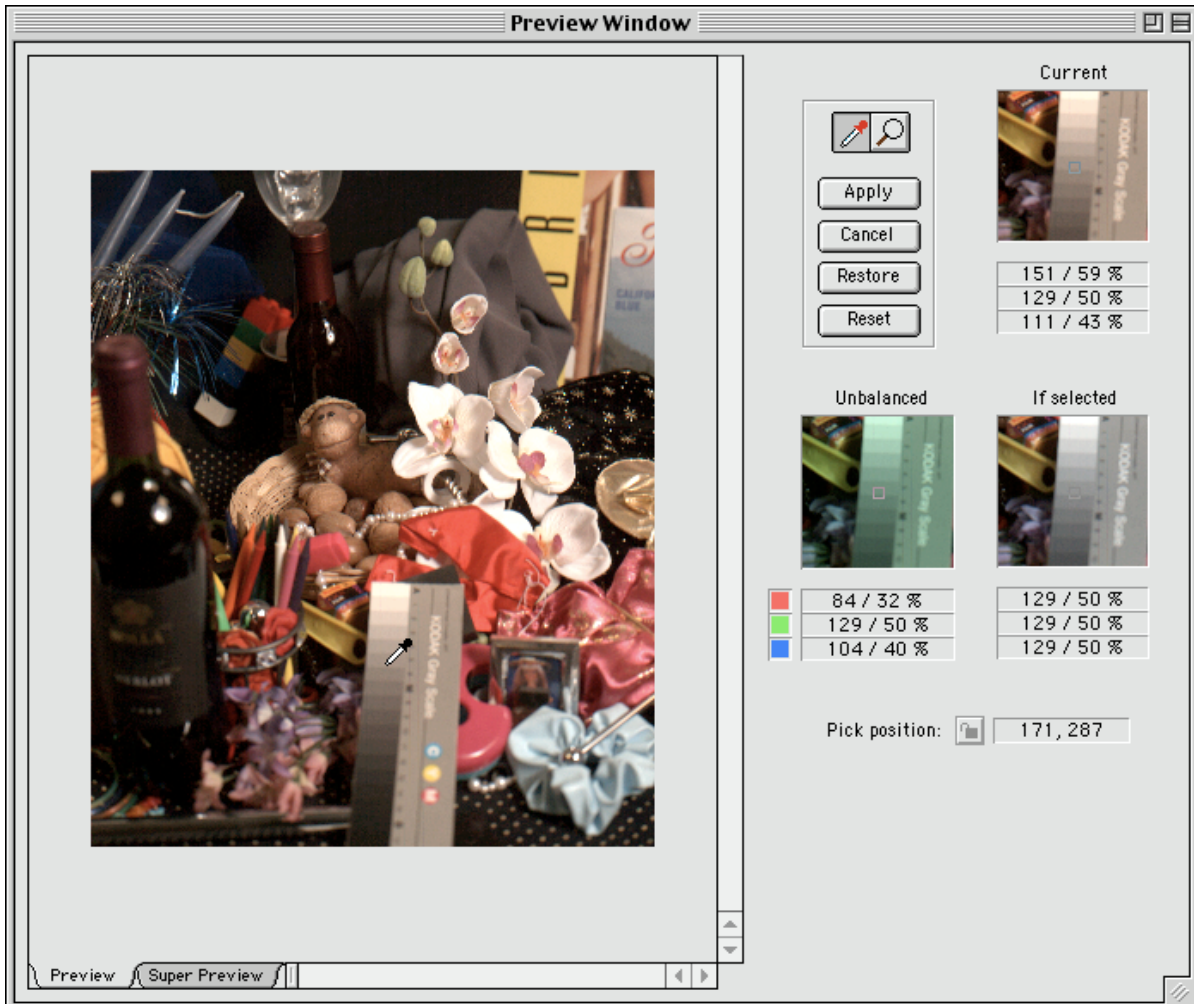
Optimizing Quality

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

This section shows you the main methods using simple controls.

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.

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.
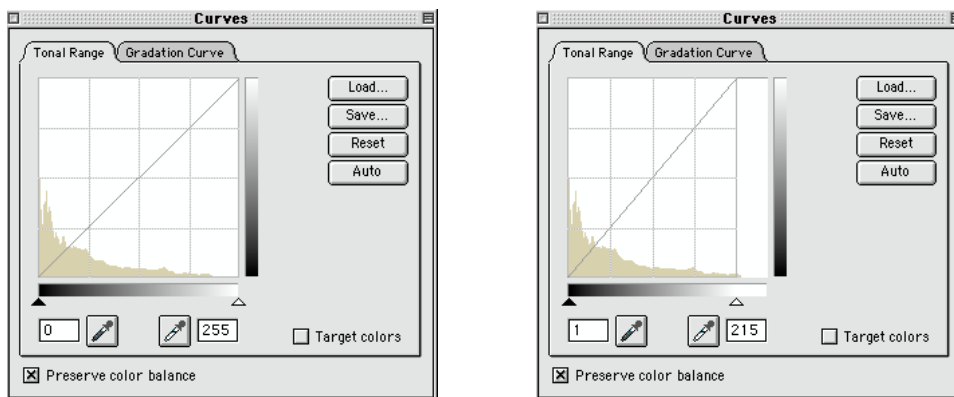
In the example to the right the shadow and highlight points are set to 0 and 255 respectively. The example to the left shows the same window after tonal range has been adjusted with the auto function. Now the shadow and highlight points are 1 and 215 respectively.

The histogram before tonal range correction shows an area that are "spikeless" between 215 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.

Adjusting the Tonal Range

1. Open Tonal Range Window

Click on the Tonal Range/Gradation button.

2. Preserve Color Balance

Make sure the "Preserve Color Balance" box is checked

3. Examine your image highlights

Select the highlight color picker and place it somewhere in the white area of the grayscale calibration chart. 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.

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 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.

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

Activate the Color Warning function by clicking on the Color Warning button Any pixels in your preview image that have a value of 0 are indicated on the screen in green (default color).

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

Remember, this function only gives a warning. You may decide that the numbers 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.

Brightness and Contrast

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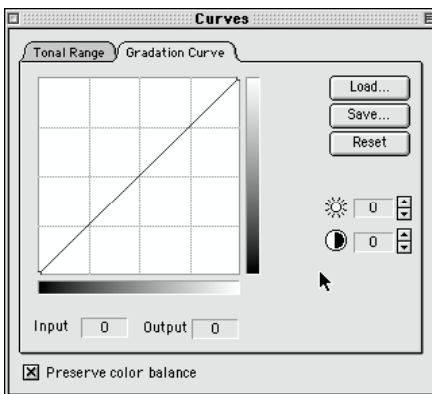
A neutral gradation setting is represented as a straight diagonal line from the bottom left to the upper right of the gradation graph. With this setting, all gray levels are evenly distributed within the tonal range. By making changes to the gradation graph, you can hide or bring out details in selected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

Changing Brightness and Contrast

1. Open the Gradation Window

Click on the Tonal Range/Gradation button and select the gradations tab in the top.

2. Adjust the Brightness

Click on the up- or down-arrow 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.

3. Adjust the Contrast

Click on the up- or down-arrow 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.

Unsharp Mask

Click the Unsharp Mask button to apply unsharp mask after the image is captured

Unsharp Mask can be applied on the fly.

This can be an advantage if you know that the images will not be resized after they have been captured.

Unsharp mask should only be applied to the final image and can also be applied afterwards in Photoshop.

Unsharp Masking

☒ Apply unsharp masking

Amount
100

Radius
◉ 0.7 ○ 1.0 ○ 2.0

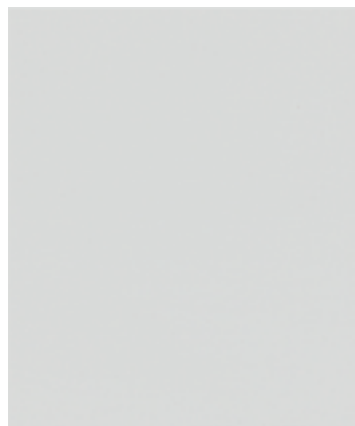Threshold
3

Working With Flat Art Reproduction

Uniform Light Tool

The Uniform Light Tool compensates for uneven lighting caused by your light set-up or the light distribution in the lens system. The Uniform Light Tool is very useful when working with flat art reproduction. In a mixed light setup Uniform Light Tool is also able to compensate for chromatic differences in the scene.

The uniform light process can be illustrated by comparing the distribution of light on a gray even background captured before and after Uniform Light Tool is applied.

Uniform Light Tool – Off   Uniform Light Tool – On

Setting up Uniform Light Tool

Set up the Uniform Light Tool panel in the Camera Control window.

Before you use Uniform Light Tool, a reference file that describes the light of the current scene must be defined.

Creating a reference image file:

1. Set up the scene, camera and lighting.

2. Place a reference target in the scene area.

The reference target should be neutral white/gray and must fill out the entire uncropped capture area. If the reference target has a textured surface, then make sure that the focus blur out this detail focus by moving the reference target out of focus or make a slight defocus moving the rear standard


3. Make a super preview.
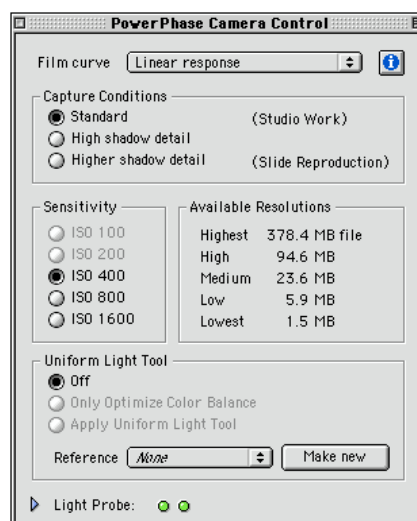
Use the Gamut Warning Tool to ensure that the image has no under or overexposed areas.

Adjust the exposure settings if necessary and make a new preview. Make sure Uniform Light Tool is set to off.

To check that the exposure settings are optimized, use the Tonal Range Tool to view the histogram.

Note: If the exposure is not correct adjust it by changing the Exposure Time or ISO settings. Never use tonal range values to compensate for underexposure.
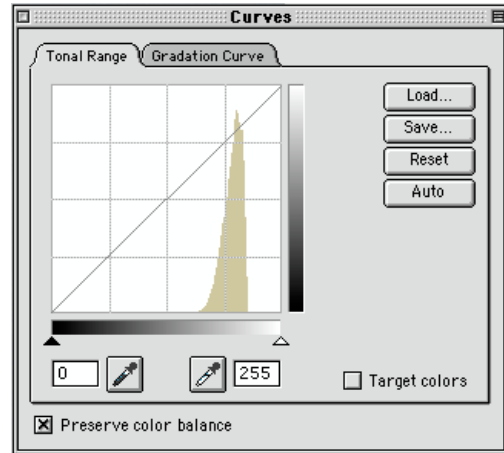
4. Make a reference file

When you are satisfied with the settings click "Make New" and name the reference image.
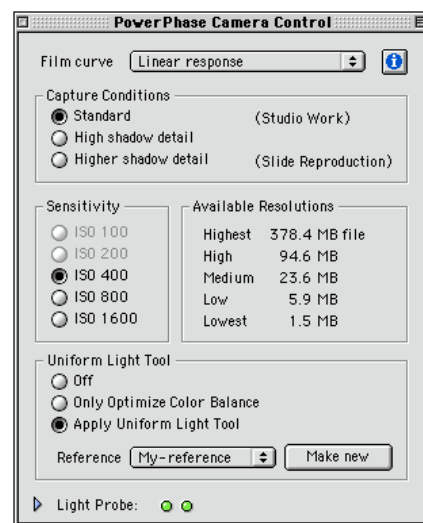
Using Uniform Light Tool

In the "Uniform Light" Tool panel select the reference file relevant for the current scene and check Apply Uniform Light Tool.

On the Fly Correction

Inside the main window click the "Preview" button, and while scanning the Uniform Light Correction will be applied on the fly.

Making a final Scan by pressing the "Capture" button, and the Uniform Light Correction will also be applied to the final image while you are scanning.

If you **do not change the scene conditions** (lightning, lens, aperture and focus distance) you will be able to capture an image **using the same reference** and any combination of exposure time, ISO-setting, image resolution, quality setting and film curve.

The "Only Optimize Color Balance" option also found in the **Uniform Light Tool panel will only compensate for color unevenness and small chromatic differences in the scene**.

It is important to notice that the "Only Optimize Color Balance" option will maintain the light distribution of the original scene.

Both the "Uniform Light Tool" option and the "Only Optimize Color Balance" are using the same reference file.

Any previous reference file can be selected from the list in the Uniform Light Tool panel. If you use a copy stand where scene conditions (light, lens and magnification) can easily be restored, this feature facilitates the re-use of previously saved reference files.

TIP!

It is very important that the light, lens, aperture and magnification settings stay the same during the capture session as those used to create the reference image file. If not, create a new reference image file.

You can make any crop, adjust Tonal Range, make a Gradation Curve, apply Color Management and use 8 or 16 bit pixel depth using the same reference.

Depending on capture settings and the CPU speed of your computer you may notice an increase in capture time when using Uniform Light Tool.
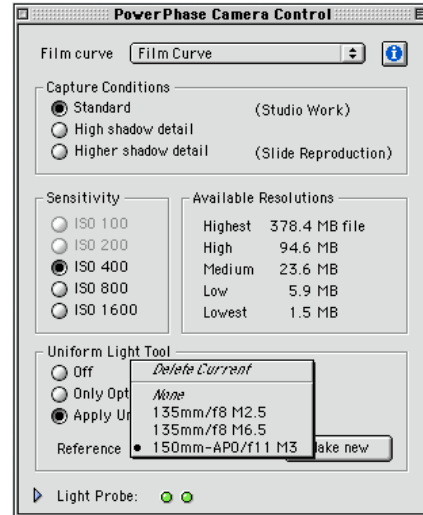
Focus Tool

 To Activate: Click on the icon

Description and Use

The focus tool allows you to examine the brightness information of one line in the CCD sensor in graphical form. This allows you to see transitions from light/dark. If your subject is correctly focused on the CCD sensor, transitions will be steep. Out of focus subjects will cause a flattening of the slope.
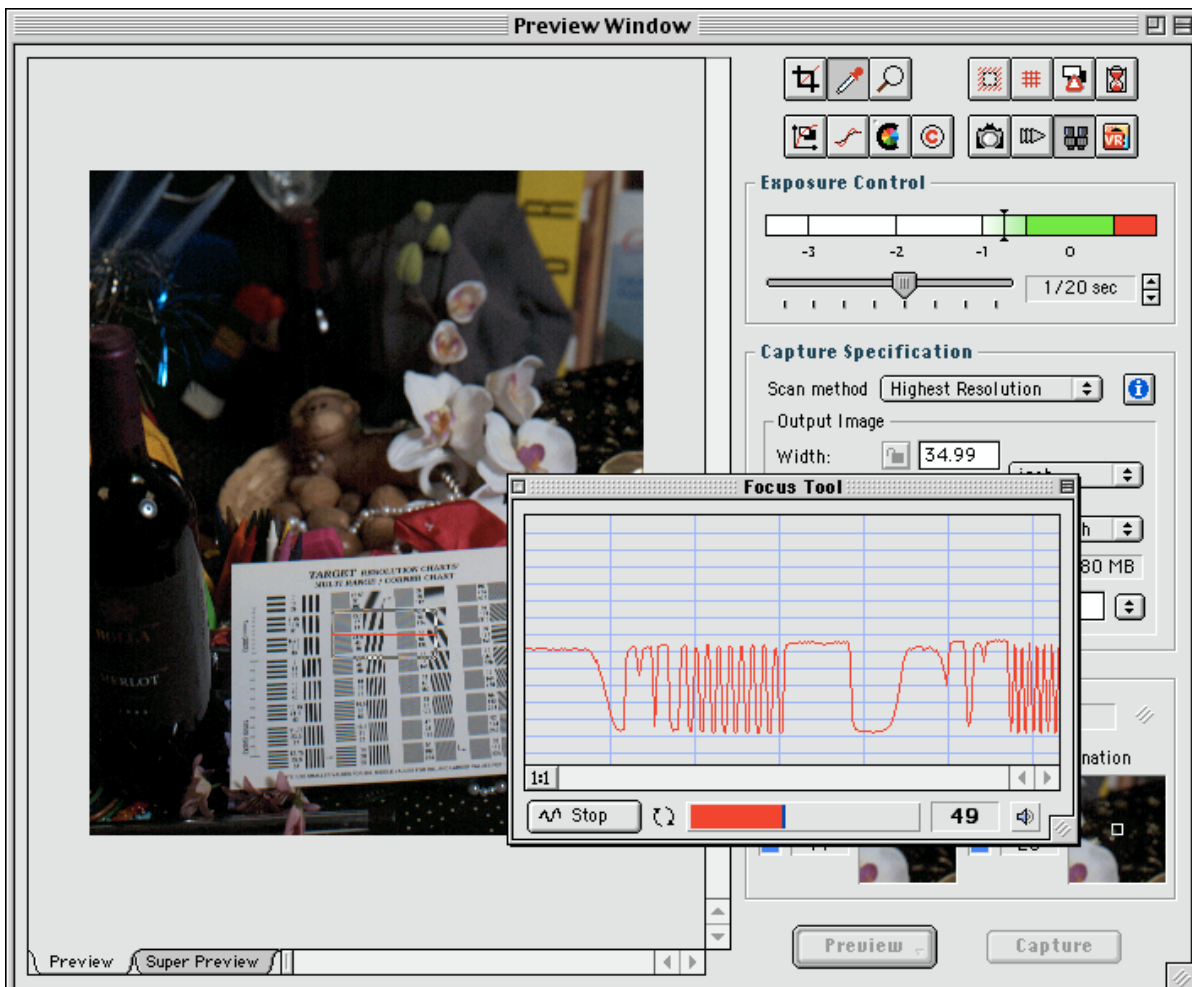
The example above shows a black and white resolution chart. The focus tool readouts show the result when the subject matter is in focus. The marquees shown is the area which the Phase One software uses to sample the picture.

The marquee can be moved around by dragging and size of the scan line is variable.

Focus Tool Guide

The curve represents a scan-line captured at the red centerline of the focus crop box. When objects within this line are in focus, the scan-line should appear as jagged as possible and edges should appear as steep as possible.

The Focus Crop Box

The meter displays a relative sharpness value based on the appearance of the curve. It also includes a maximum indicator (the blue stripe). This peak-and-hold indicator displays the maximum sharpness value that has been registered since the last time you moved the focus crop, or since the last time you reset the max *indicator (you reset the indicator by clicking on the meter).*
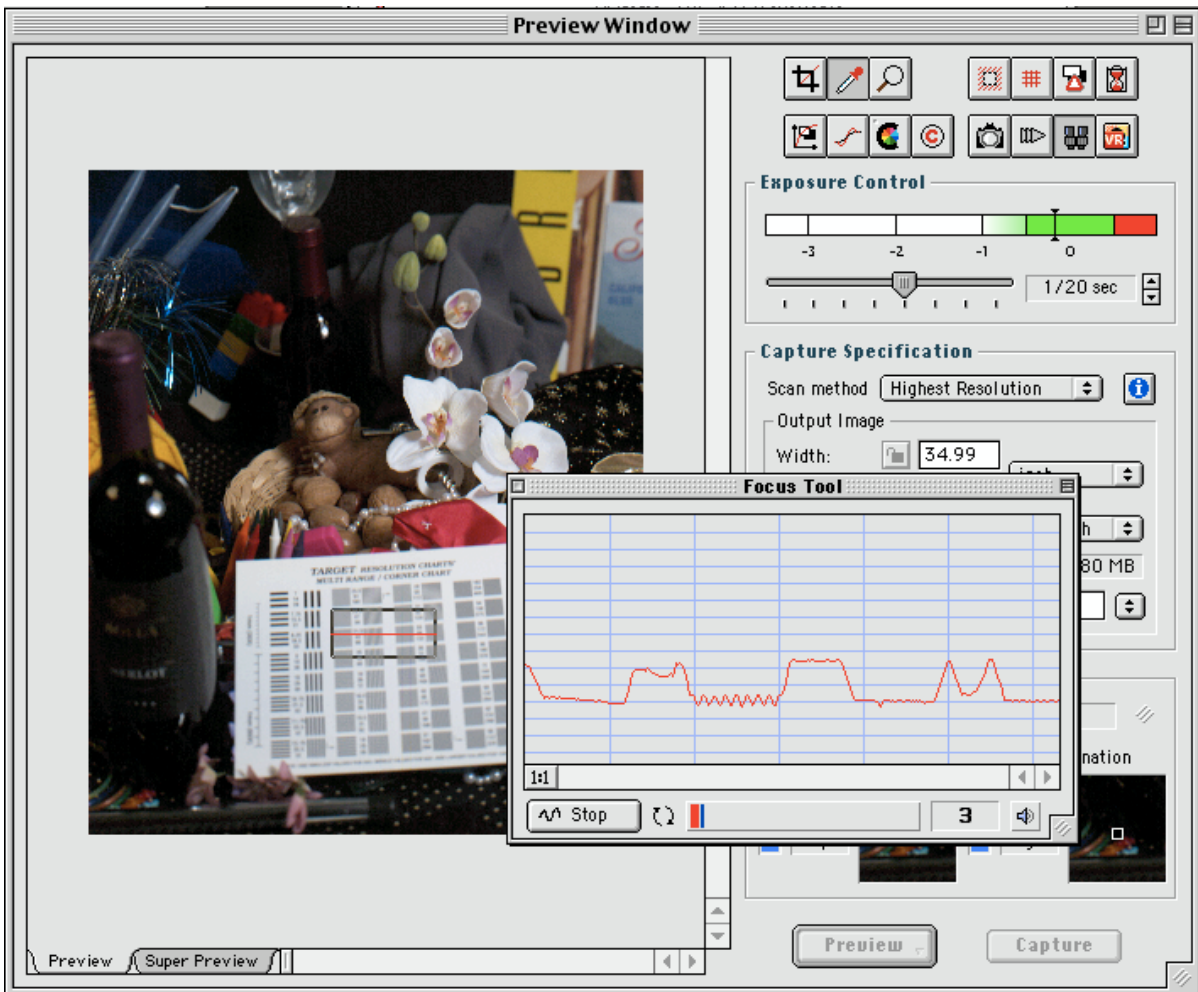
Same subject, but out of focus in the marquee area.

General Procedure

Place the focus crop on top of the object that needs to be in focus. The best objects to focus at are objects with a lot of small details (possibly so small that they can only be distinguished when they are in focus), and objects with abrupt edges. In general, do not include objects in the scan-line that should not be in focus.

There are a few other focusing guidelines you should consider:

Focus scans works much like normal scans, i.e. they depend on the current capture settings, exposure times, etc. Set the Scan Method to high resolution (as

high as possible). Set the exposure time so that you don't overexpose the signal. Also, setting your camera aperture to a low number will ease the process a lot-once focused you can always set some more sensible parameters.

When you have placed your crop and start to focus, the objects you target should be out of focus. Extremely slowly (in very small steps), the camera shooting distance should then be adjusted so that you reach, and pass, the point of focus. At this point, the maximum indicator will display a fairly good estimate of the maximum reachable focus value. Now you can reverse the camera shooting distance until you reach the maximum sharpness again.

Note that focus scanning is a very sensitive process. When you touch the camera the focus curve will probably "shake" a bit. Hence, do the adjustments in small steps and let the system stabilize before you proceed.

Batch Tool

The first part of this section will describe the basics of the Batch Tool, i.e. the few operations you need to know in order to do batch scanning.

The second part of this section is a much more in-depth description of the Batch Tool and the functionality it induces. You need not read this part of the document in order to do batch scanning, and in fact, you are more likely to be confused than to be enlightened if you read the section before you have had any hands-on experience with the tool. In short, the last section is for experts.

Basic Batch Scanning

The process of doing a batch scan is in essence that of collecting a set of jobs and then execute these jobs in an automated fashion while you go out for a cup of coffee. A "job" is a specification of an image you need to capture, that is, a certain crop, exposure time, scan resolution, etc.
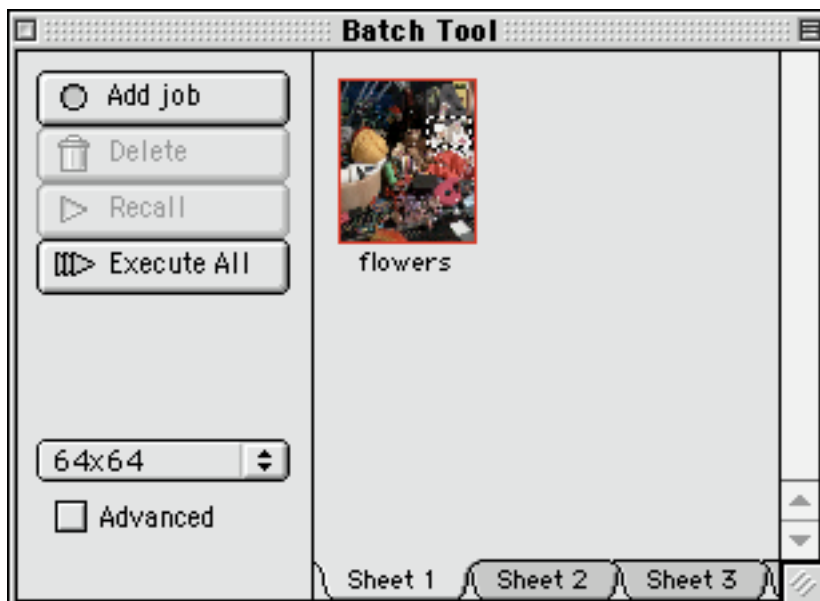
Batch Tool Dialog

A job looks much like a file icon of the Macintosh Finder. It consists of a title and an icon-like thumbnail of the Preview Image as it appeared at the time you added the job. Like with the Finder, you can select the individual items or subset of items. A selected item, or set of items, is typically subject to the operations you perform subsequently, e.g. executing a batch scan.

A Step-By-Step Batch Scan

Place the Batch plug-in at the root of the "Plugins" folder and launch the Phase One Image Capture application. Prepare for a capture in the usual way, i.e. take a preview, set a decent grey-balance, place a crop, and adjust all capture and camera specific parameters as appropriate. Instead of hitting the "Capture" button click the "New job" button of the Batch Tool dialog; a new item will be inserted in the right side view of the dialog representing the current capture configuration.

Repeat the process for each subject of the preview that you want to capture. Now, select the jobs and hit the "Execute" button of the Batch Tool dialog. One by one (and in the order they were selected) these jobs are recalled (the saved configuration is reverted) and a capture command is issued. You can terminate the batch process prematurely by re-clicking the "Execute" button.

When you are done, you can use the "Delete" button to dispose all selected jobs.

A word of caution

Keep your hands off the Previews folder. Each preview of the Previews folder may contain one or more resources that define a job, thus, if you remove the preview files, you also remove the jobs of the Batch Tool window.

Advanced Batch Scanning

In reality, the batch tool builds on a much more general concept and implementation than that of performing batch scans. The main concept is the concept of snapshots:

Snapshot Concept

The main idea behind the snapshot concept is to be able to dump the entire state of the application (i.e. a "snapshot"), and then later on revert either the entire state or the part of it that suites our purposes. An implementation of this concept would give us things like:

Unlimited Undo

Being able to dump the entire state of the application and revert it again later on allow you to maintain your own undo-buffer. For instance, when you fiddle with the gradation curve to obtain the best image quality, you could take a set of snapshots of various gradation settings. You can now easily toggle between these gradation curves by reverting the snapshots and concentrate on the visual

feedback from the Preview Window. This is much simpler than saving and loading gradation curves, not to mention dragging the curves to their right shape. Furthermore, this technique applies to all other part of the application, such as tonal range, gray balance, gamma, crop, etc.

Personal Settings

One main point of the snapshot concept was that the user should be able to specify which part of the state should be reverted upon reverting a snapshot. Hence, snapshots could be used to create personal settings. For instance, two users may have different preferences regarding the appearance of the application, default window positions and other default settings. A snapshot could be customized to revert only these attributes, thus when one user take over from another one he/she would only have to revert his/her personal settings snapshot to get the optimal set-up. Alternatively, one user could have a set of snapshots that represent settings optimal for different situations, cameras, light conditions, etc.

Specific Set-ups

The idea just described could be taken even further. A user could maintain a collection of snapshots that represent certain camera set-ups. So, one snapshot that was known to give good images in a certain set-up, would revert the entire combination of gray balance, camera settings, exposure time, gradation curve, tonal range, USM, color management, … - or any subset of these.

Batch Scanning

Another obvious feature enabled by the snapshot concept, is batch scanning. Say you have ten pairs of shoes in the preview and want to capture each pair in its own image. For each pair you then place the crop, adjust the image processing parameters as appropriate, and take a snapshot. In the end you select all ten snapshots, invoke the batch-process and go out for a cup of coffee while the scanning takes place. You may then choose to adjust the lights and redo the exact same capture process, or you may choose to take the same series of images - this time with color management. The latter can be accomplished if you make sure that the snapshots do not revert the recorded state of the color management data-processing panel. Then activate this panel and restart the batch-process. The same technique can be applied if you want to try another USM value, with and without copyright embedded, etc.

By now, the latter described usage of snapshots should sound familiar to you. In fact, the batch capability has been so central that e.g. "snapshots" has been renamed to "jobs" in the very implementation of the concept.
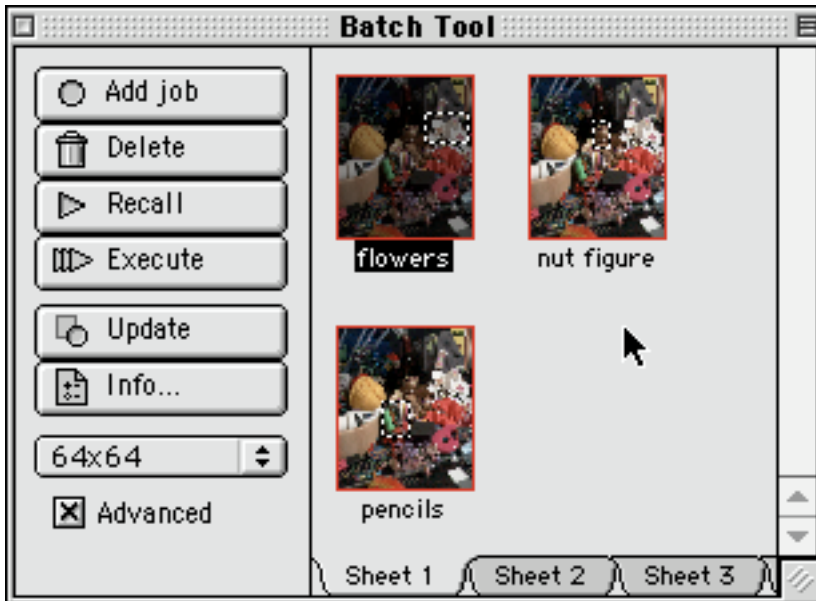
Advanced Batch Tool

The right part of the window holds the very snapshots (jobs). The container resembles a standard Macintosh folder, and the snapshots act much like standard Macintosh file icons. They display a thumbnail of the preview at the time you took the snapshot; actually, you can zoom and drag the images of these icons and you can choose an icon size ranging from 32x32 to 256x256. Just like file icons these snapshot icons can be selected, making them subject for various operations to be described in the following section.

Along the bottom border, the container also has a row of sheet tabs. All snapshots belong to a sheet, and only those snapshots belonging to the currently active sheet are visible. You can move a snapshot from the active sheet to any other sheet by dragging the snapshot to the corresponding tab.

You can take advantage of the sheet system in a number of ways. For instance, you can reserve one sheet to each user of the computer. Alternatively, you can use the sheets in relation to a copy booth, such that the sheets of the Batch Window map to the sheets of the copy booth.

The panel in the left side of the window contains six buttons and a pop-up menu:

Add job

Pressing this button will result in a new snapshot (job) that contains the current state of the application. A new snapshot icon will be inserted in the end of the snapshot list of the current sheet and it will be assigned a default name.

Delete

If you have selected a set of snapshot icons you can delete them from the Snapshot Window by means of this operation.

Recall

If you select one snapshot icon this button will be enabled. When you revert a snapshot, certain parts of the state recorded in the snapshot will be reverted; you specify which part of the recorded data to revert in the Information Window described below. You can obtain the same effect by double-clicking the snapshot icon.

Execute

If you have selected a set of snapshot icons you can start a batch process. One by one, the snapshots are reverted and an image is captured. If the "Advanced" option is set when enacting the Execute operation, a dialog appears that allows you to specify a delay between the captures and how many times to repeat the batch.


Batch Delay Dialog

Update

Only available if the "Advanced" option is set and one snapshot icon is selected. When you update a snapshot you merely replace the recorded state of the snapshot with the current state of the application. This is valuable if you e.g. want to update the scan method of a snapshot from low resolution to high resolution.

Info

Only available if the "Advanced" option is set and one snapshot icon is selected. Each snapshot has an Information Window (see below) associated which can be used to manipulate certain internal data. First of all you can change the snapshot name and a description field. Secondly, you specify which data to be reverted upon request. The data are grouped logically in a "General" group and groups for preview panels, data processing panels, preference panels and image tool panels. A main group checkbox can be used to quickly include/exclude each item contained in that particular group. In the "General" group you get the chance to include/exclude the recorded grey balance, color mode, camera orientation and window positions in the revert operation. The items of the other groups let you include/exclude the recorded data for entire panels, e.g. the state of the "Exposure Control" preview panel.
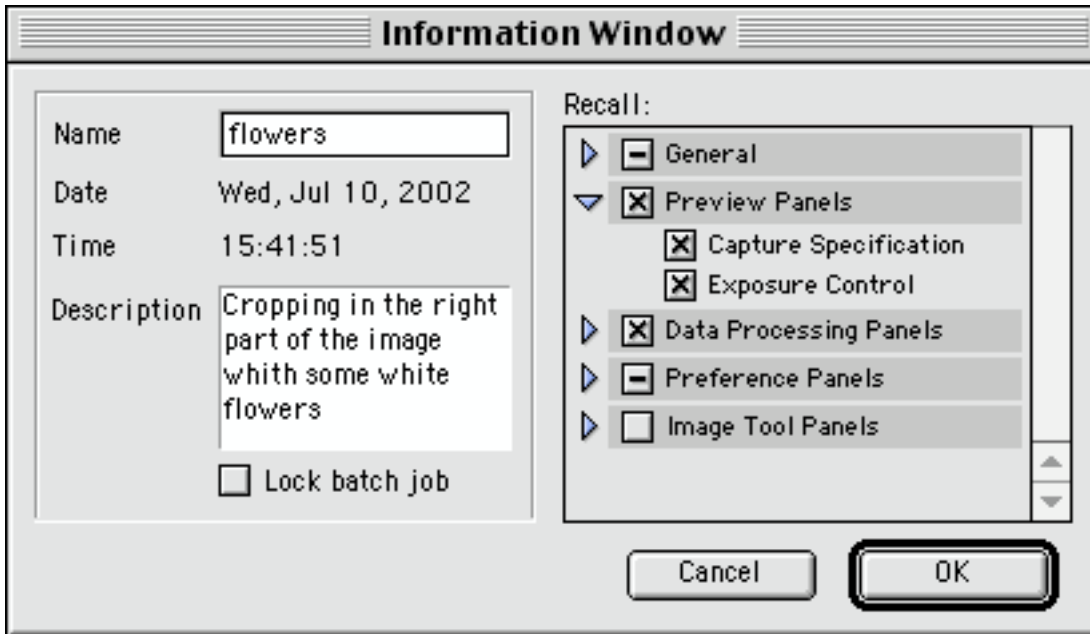
Information Window

Pop-up Menu

The menu lists the possible snapshot icon sizes, ranging from 32x32 to 256x256.

The Scripts Menu

In addition to the Batch Tool the Phase One Image Capture application is fully AppleTalk scriptable.

Furthermore scripts stored in the Scripts folder inside the Phase One Image Capture folder can be executed from the Script menu inside the application.
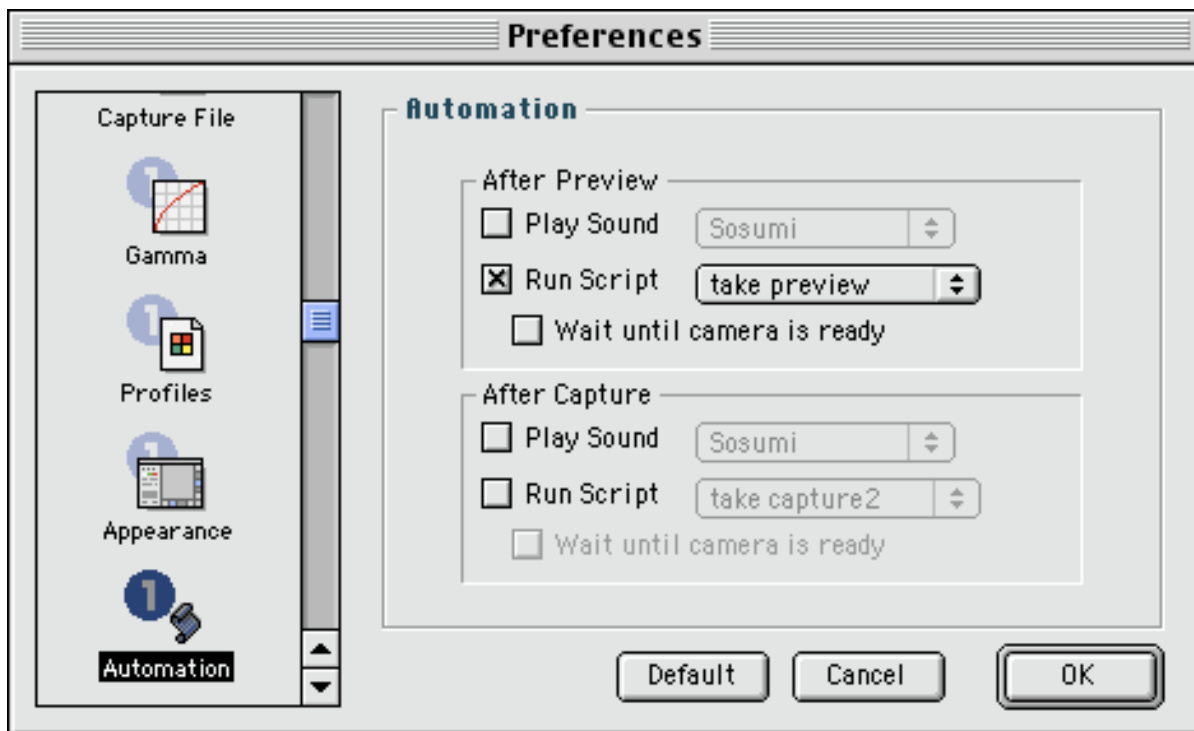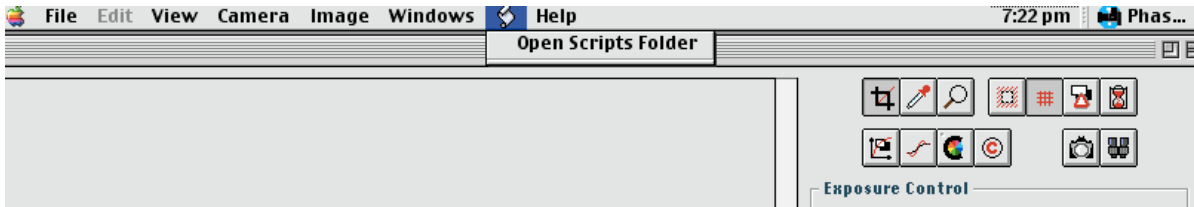
The same scripts can be executed after a Preview or a Capture, this can be setup in the Automation Preferences found in the File menu.

Embed Copyright

With Embed Copyright you can place your copyright information inside your image.

Use the Font button to select the desired typeface, and write the text inside the text box.

In the Position area you can select whether it should be placed inside the image or outside, and in which corner.

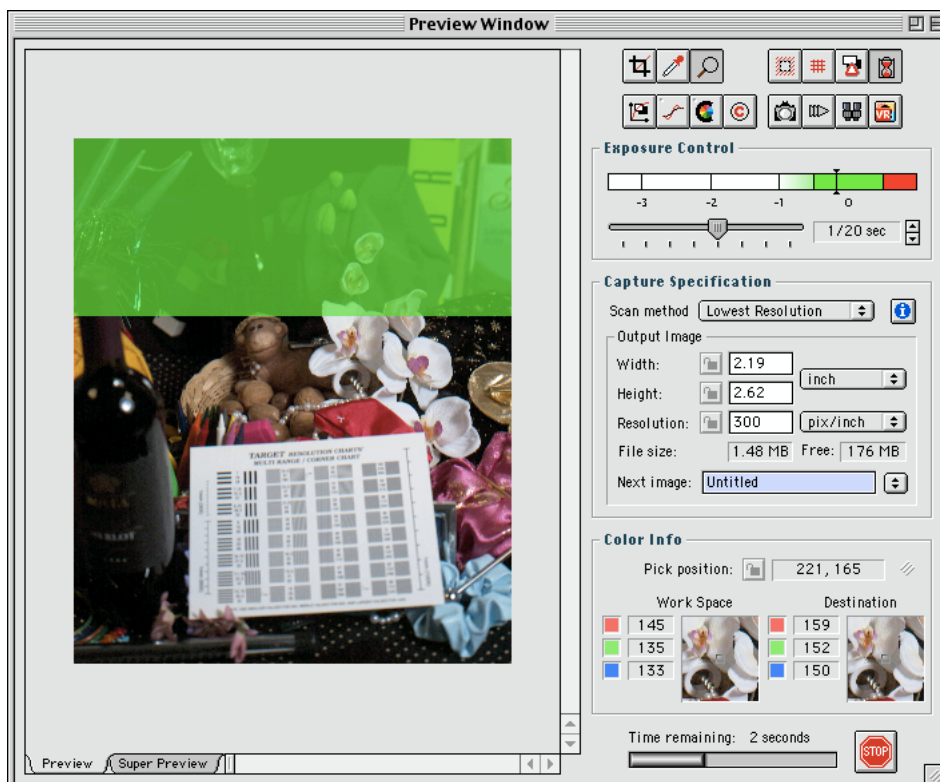Clicking the buttons inside Colors let you specify both text and background color.

The Opacity slider sets the transparency of the text, useful if it is set inside the image.
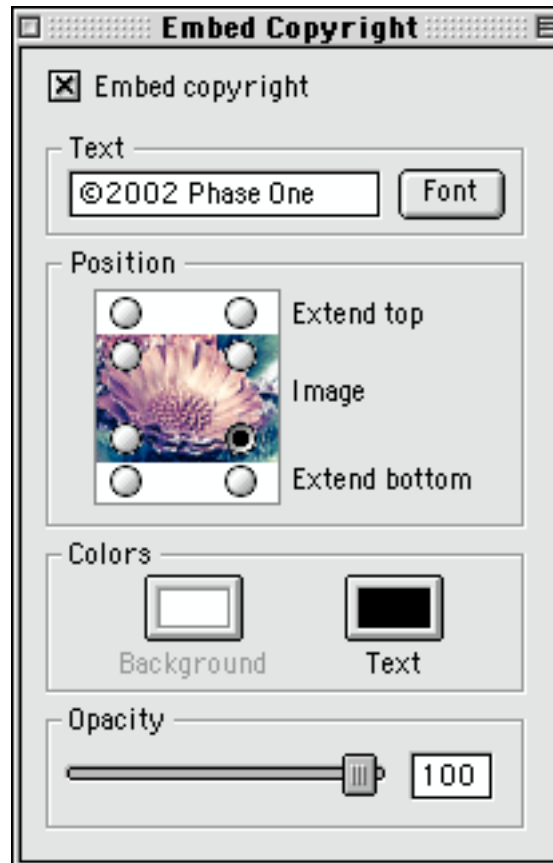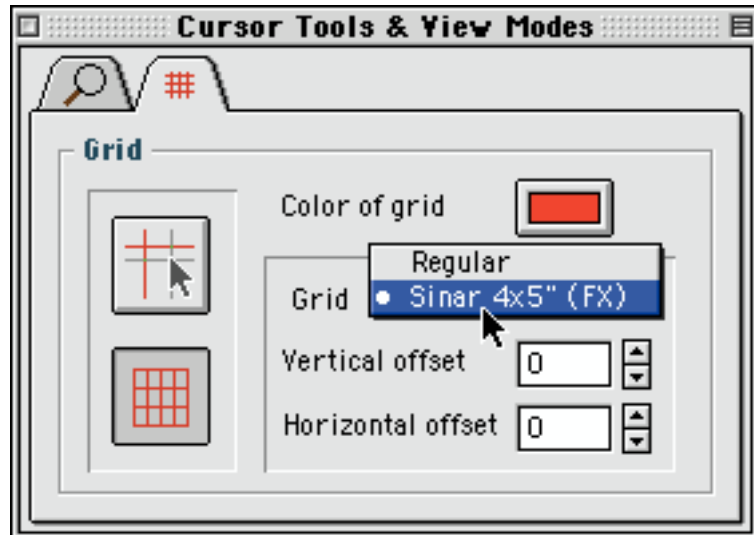
Scan Progress

Clicking the Scan Progress icon lets you monitor how far the camera is in the process. The image is colored green in the area already captured.

Custom Grids

 By double-clicking this button you can select a custom grid from the Grids view mode panel:

The Sinar 4x5" (FX) custom grid is selected

Custom Grids are stored inside the folder "Grids" in the "Phase One Image Capture" root folder. All Custom Grid files should be placed in this folder.

Sinar Grid

The Sinar 4x5" (FX) custom grid is supplied and assembles the viewfinder grid of the Sinar 4 x 5" camera with a PowerPhase FX.

To use other custom grids, you need to place them in the "Grids" folder.

The grid description file is a simple text file, but the files should have their file type and creator code altered to 'Grid' and 'P1IC' respectively.

The Grid Format

----

version

X

line1

line2

…

lineX

- where:

version = 1,

X = the numer of lines,

the format of a line is: "AB C D E"

'A' should be either H (horizontal line) or V (vertical line).

'B' is either 1 (normal line), 2 (thick line), 3 (transparent line) or 4 (gray line)

If 'A' is H then C, D and E are the vertical offset, the horizontal start and the horizontal end points. All coordinates are in promilles (1/1000's of the image dimensions).

If 'A' is V then C, D and E are the horizontal offset, the vertical start and the vertical end points. All coordinates are in promilles (1/1000's of the image dimensions).

Example


1

16

V1 495 418 486

V1 495 507 576

H1 497 381 481

H1 497 509 609

V1 90 90 219

H1 90 90 150

H1 165 90 150

V1 900 90 219

H1 90 840 900

H1 165 840 900

V1 90 774 903

H1 828 90 150

H1 903 90 150

V1 900 774 903

H1 828 840 900

H1 903 840 900


Preferences

Tool Preferences

Double clicking each tool in the Toolbar wil bring up the Cursor Tools & View Modes.Special settings for the different tools can be set here, just select the tab for that specific tool.
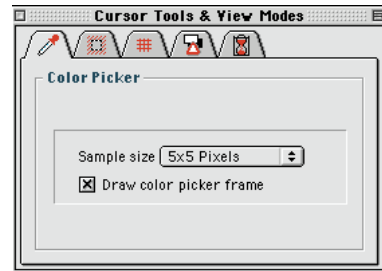
Other Preferences from the Preferences menu

Capture File

Inside the Capture File Preferences you cant setup the Image to automatically open in another application (e.g. Photoshop), or if you want the file to be stored in another location than the default, furthermore the naming, suffix and extension can be set here.
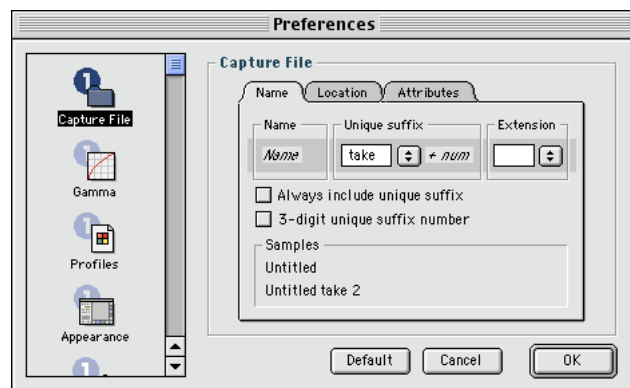
Gamma

In a Macintosh workflow Gamma should be set to 1.8.

Refer with the Color Management Guide for more information about gamma.
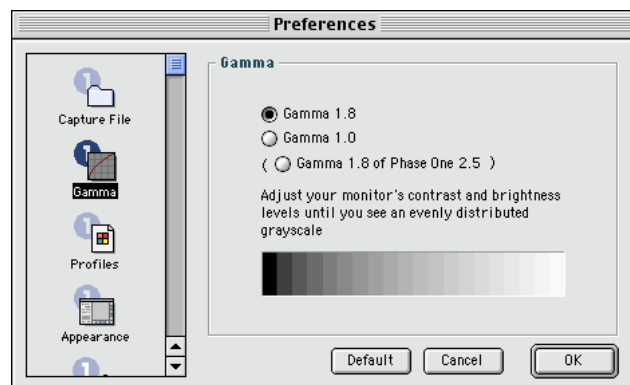
Appearance

Appearance controls the way the application looks, whether or not the palette should be floating, what tool buttons should be displayed, and if the toolbar should be to the right or to the left.

Settings are stored when closing the application, and reused when the application is started next time.

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Back Panel Description

The PowerPhase FX Camera back is here shown in Cleaning Position:

IEEE 1394 Port: This port connects to the IEEE 1394 (Firewire) port on your Macintosh Computer.

Light Probe Connector: Connects to the PowerPhase FX Light Probe.

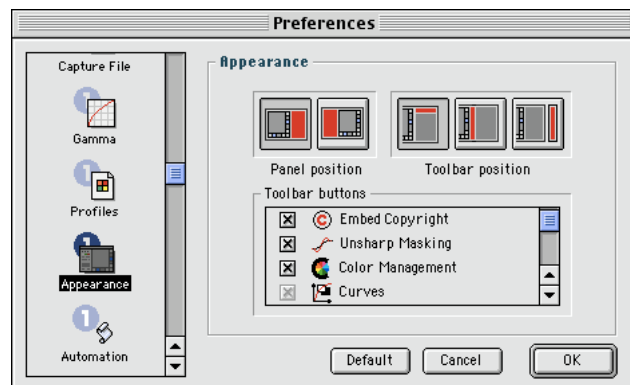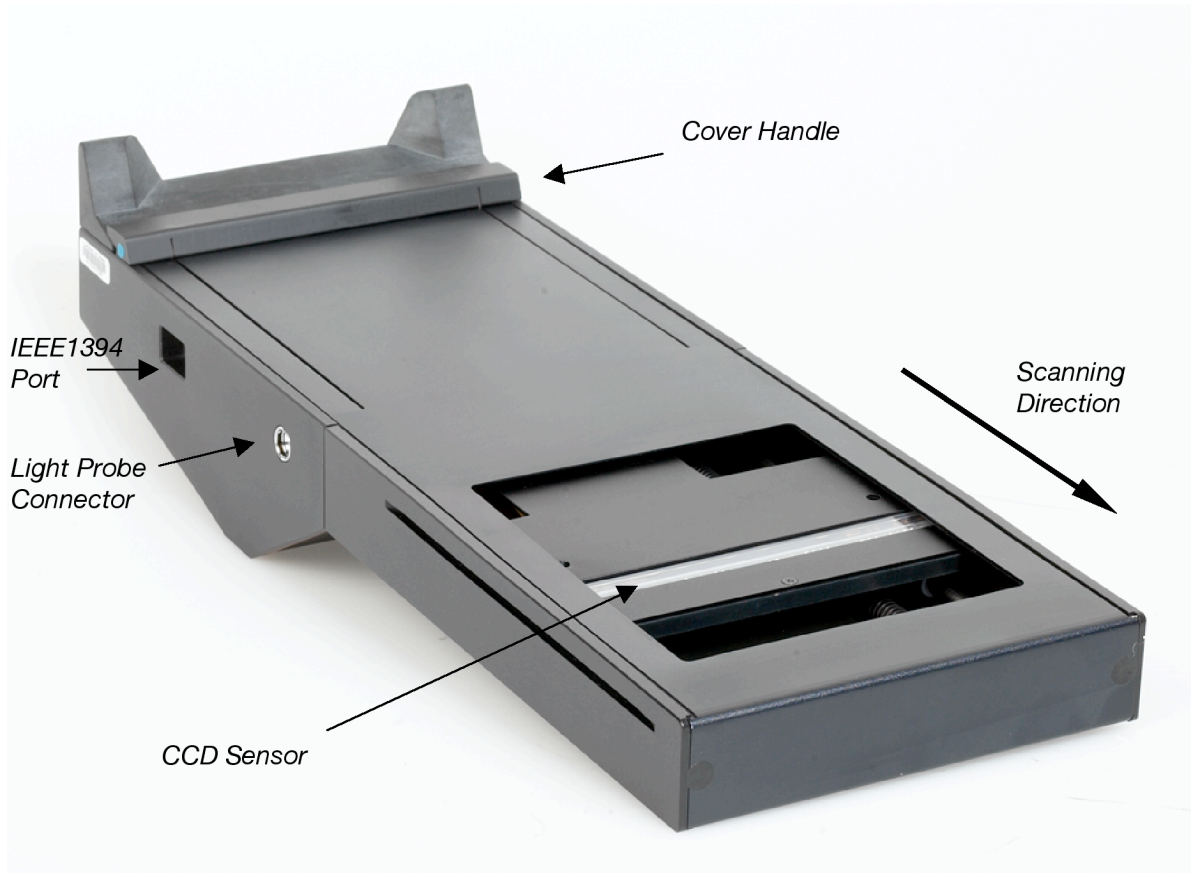CCD Sensor: This is a linear light sensitive surface. It scans across the entire exposure area to capture the full image.

Capture Area: The rectangular cut out area on the back panel is the capture area. The CCD sensor moves across this area during capturing.

Scanning Direction: The arrow shows the direction of the CCD sensor's movement during camera back operation. This information is useful when troubleshooting your system.

Cover Handle: The PowerPhase FX has a build in sliding cover. This should be used whenever the camera back is not mounted on the camera.

Mounting the Camera Back

The camera back fits to your camera just like a normal film back. Be sure to install a Phase One infrared filter on your camera before using the camera back (see the Optical Filters Section for information on Infra-red filters).

In normal operation, PowerPhase FX remains attached to your camera. When you do remove it from the camera, remember that the PowerPhase FX is a high-quality instrument and must be treated with care. When not attached to a camera, always slide down the build in sliding cover to protect the CCD sensor.

Care and Cleaning

Your PowerPhase FX camera back is a sensitive and high precision instrument. To keep it working properly, treat it carefully as you would any of your other high quality photography equipment, and take special note of the advice given here.

Storage and Handling

Keep the camera back away from sources of moisture. Do not let liquid get in or on the unit.

Do not touch the CCD sensor or any of the other internal elements.

Always store your camera back in such a way that the CCD sensor and other internal components are protected from dirt and damage.

Avoid extreme temperatures.

Protect the camera back from falls and collisions.

Cleaning the Camera Back Housing

1. Disconnect the unit from power.

2. Lightly wipe the case with a clean, soft cloth dampened with water.

Do not allow moisture to get in any of the openings on the back panel or in the connectors.

Cleaning the CCD Sensor

You must never touch the CCD sensor with your fingers, nor allow the surface to become dirty, scratched, or damaged in any way.

However, if you notice that your images contain cyan, magenta, or yellow lines in the direction parallel with the scan movement, then your CCD sensor may be in need of cleaning. In this case, use the following procedure:

1. With your system fully assembled and with the software running, select **Maintenance** from the **Camera** menu. Select the **Cleaning Position** option.

View	Camera	Image	Windows	⚡	Help

Preview	⌘J
Preview Crop	⌘I
Capture	⌘K
Stop Scan	⌘.
Pause Scan	⌘–
Gray Balance	⌘G
Settings	
Maintenance ▶	Cleaning Position
Orientation...	Shipping Position
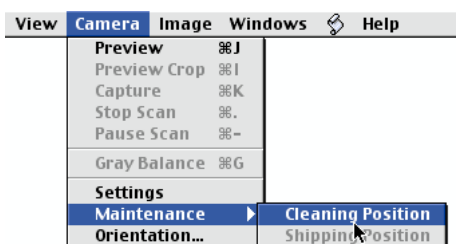
This will move the CCD to where it can be cleaned easily.

2. Spray the CCD sensor surface with a low-pressure compressed air spray to remove any abrasive dust.

3. Lightly moisten a clean piece of standard lens cleaning paper with some isopropyl alcohol.

4. Rub the CCD sensor surface with the moistened lens cleaning paper. Be careful not to get any alcohol anywhere else inside the camera back. After the alcohol evaporates, inspect the CCD for dust. Repeat if necessary.

5. Use one pump of anti-static spray (included with your camera back) to lightly moisten a new, clean piece of lens paper. Never spray the fluid directly into your camera back. Gently rub the CCD sensor surface with the moistened lens cleaning paper. The purpose of this step is to apply a very light coating to prevent static electricity from building up on the CCD surface. Do not apply too much of the anti-static solution.

Always store your camera back in such a way that the CCD sensor and other internal components are protected from dirt and damage.

Troubleshooting Guide

Getting System Information If you contact your Phase One representative during troubleshooting you may be asked to supply information about the software version and camera connected to your system. This information is available on the **About** window.

Click on the **Apple** symbol and select **About Phase One...**

The **About** window is an information only window that shows you the Phase One application software version and details of the type of camera connected to your system. If you click on the Phase One icon in this window, the **Camera Information** window appears. This gives detailed information about the particular camera attached to your computer.

Force terminating a program causing a freeze

It may be that a particular program in your computer is causing the computer to freeze. To "thaw" the computer, the offending program must be terminated.

Hold down the **Command+alt+esc** keys simultaneously.

If terminating the offending program un-freezes the computer, save all of your unsaved documents and restart your computer.

Force restart a Macintosh

If the system is completely frozen, the only possible solution is to reset the computer.

Removing the power from your computer and restarting it again has the same effect as resetting it, but the preferred method is to use the computer's "reset" button, since this does not remove power from the electronics. Repeated removal and application of power in short periods of time can reduce the life of certain microchips.

Note: When resetting your machine, all changes to unsaved documents and preferences will be lost.

Color Problems

If your image contains faded or unrealistic colors then check the following:

Infrared Filter You must always use an infrared filter mounted on your camera when you make previews and captures. This is because infrared light will interfere with the CCD sensor. Phase One digital camera backs are shipped with an infrared filter (AR1) which is recommended for use under most lighting conditions. If you are using Tungsten light Phase One recommends that you use the TG1 Tungsten Filter to obtain the best image quality.

See the Optical Filters section for more information about filters.

Tonal Range Settings

It is possible to use the Tonal Range window to remove or add a colorcast to your image. If you see an undesirable colorcast, then open the tonal range window (click on the tonal range button) and click on the Reset button. This will assure that the tonal range settings are not causing the colorcast.

You can use the Tonal Range window to change the colors in your image by working with the Preserve Color Balance box unchecked. Refer to the Tonal Range section for instructions about using the Tonal Range window to add or remove colorcasts in your image.

Gray Balance Setting

If your images contain a color cast even though you are using the correct infrared filter and have reset the tonal range, then you may need to make a new gray balance calibration. You should always make a gray balance calibration when you first start working with your system, and each time you change the type of lights you use. See the *Gray Balance section* for more instructions.

Striping

There are two types of striping that may appear in your image: striping in the scan direction, and striping perpendicular to the scan direction.

Check your camera back manual to find out the direction in which your camera back scans, and note the position of your camera back on your camera to determine which type of striping you have.

Stripes in the scan direction

If your CCD is dusty, then a cyan, yellow, or magenta line will appear down your image. This is the result of one or more pixels of a single color being blocked by dust and scanned the length of your image. To fix this problem, refer to the care and cleaning section.

Stripes perpendicular to the scan direction

Studio lights drawing a large amount of power can cause fluctuations on the power circuit to which they are connected. This may interfere with the normal operation of your computer and your digital camera back, resulting in striping on your images. If you are having this problem, then check that your computer and camera back are on the same power circuit, but one regulated by a different fuse or circuit breaker than the one used by your studio lights.

Also make sure to use the Light Probe as described in the Active Power Stabilization section.

Stepping and Discontinuities

If your images contain broken, stepped or jittery edges, then your camera or subject may have moved during the scan. You may also see some discoloration

in the lines of your image where the camera or subject has moved. Avoid bumping or adjusting your camera or subjects while scanning.

Place your setup away from large vibrating machinery, and keep light subjects out of strong drafts. Nearby roadwork or traffic should **not** affect your images. If you consistently see these effects in your images even when your camera has not moved, then your camera back may require service.

If Your Image is Scrambled

If you see nothing but colored static after you scan, then there is a communication problem. This may be caused by a bad cable connection from your computer to your camera back.

Turn off your computer. Check that all cable connectors are properly connected. Restart your computer and try again to take a capture.

If Your Image is Partially or Totally Black

If your image is black, then it has not been exposed. This is most likely the result of an incorrect setting on your camera.

Check that the shutter on your camera is open. Your camera shutter must be set to remain open during the entire scan, while still applying the f-stop setting. This is usually done by setting the exposure time to "B" and pressing the shutter release; however, this may vary from camera to camera. Check your camera manual if you are not sure how to do this.

Check that you have fully opened the camera back's dust cover.

The PowerPhase FX has a sliding steel cover that can be closed when not mounted on a camera body. You must raise this slider all the way up, otherwise your image will be partially or totally black.

Check that you are supplying adequate power. If your camera back is not receiving enough power, then the CCD may not move at all, resulting in a black image. You should hear the motor running in the camera back during a scan when it is receiving adequate power.

Camera Back Specifications

Exposed Frame

8.4 x 10 cm (3.3" x 4")

10500 x 12600 pixels per color

Maximum Print Size at 60 lpc/150 lpi (no scaling)

175 x 210 cm/70" x 84"

Accuracy

14 bits per color

Power Consumption

11 Watts

Max File Size (RGB)

380 MB

Equivalent ASA Rating

200, 400, 800 and 1600 (including the required infra-red filter)

Data Transfer Rate

During captures the transfer rate between camera and computer is

Up to 240 MB per minute

Data Interface

Connects to computer via standard IEEE1394 cable.

Output

24 bits RGB TIFF 6.0 - 380MB

48 bits RGB TIFF 6.0 - 760MB

24 bits CMYK TIFF 6.0 - 1GB

Part #: 80019000