oXYgen Smart Tips

English

Scientific Research Tools

Internal 731-00669B-EN Rev A

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Overview

Kodak oXYgen Scan for Scientific Research is a specialized version of the latest *Kodak oXYgen* Scan software that is specifically designed for use in scientific research. Its scientifically-oriented features make it a powerful and important tool for research labs.

This new software enables efficiency and flexibility. With an interface that's straightforward and easy to use, it provides automatic and manual focus, and enables batch scans that span the height of multiple sections.

You can choose a variety of file types for your scanned files including 16-bit Raw-data files (as RGB or separate red, green, or blue channels) and toned 16-bit or 8-bit RGB files that give you the added value of our advanced image-processing algorithms and high-quality color tools.

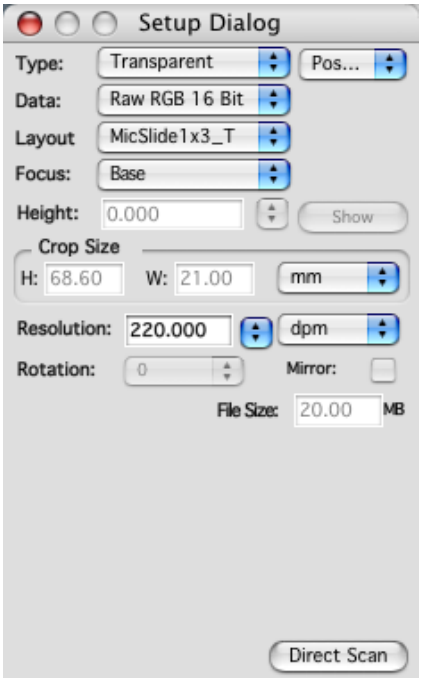
Mounting Samples

Important: Do not place any sharp objects or anything else on the base glass that may possibly damage the base-glass coating.

- Place the sample face-down
- If the sample is covered with a glass coverslip, place it with cover-side down
- If the sample is mounted on a microscope slide or a coverslip, it is recommended that you use a *Kodak* microscope-slide holder

Scanning Setup

You select scanning parameters in the Setup dialog box.



Type

The **Type** list includes the two illumination configurations available for the scanner: **Transparent** and **Reflective**.

- **Transparent**: Uses back-light illumination. Best for scanning transparent or semi-transparent samples. The use of a mask is recommended to reduce scattered light.
- **Reflective**: Uses epi-illumination. Best used for scanning opaque samples.

Tip: In the **Reflective** configuration, you can leave the upper cover of the scanner open while scanning. If you do so, dim or neutral roomlight is recommended.

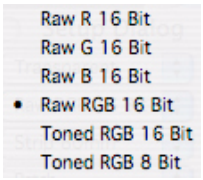
Negative/Positive

Note: With a raw data format, your selection of **Negative** or **Positive** does not affect the final scan data but is applied to the preview image display only.

- If you are scanning a negative slide, select **Negative**.
- If you are scanning an object, select **Positive**.

For more information about **Negative** and **Positive** original types, see the oXYgen Scanning Application User Guide and the oXYgen Scanning Application User Guide Addendum.

Data



The **Data** list includes available data types for the final scan.

- **Raw data:** This data type does not use image processing. Data is captured with 16-bit depth per channel. You can capture 3-channel data (RGB) or 1-channel data (in each of the Red, Green or Blue). After you preview an image, the software automatically analyzes the image data to create a tone curve which is used for the preview display. The tone curve created is attached to the final file as a separate tag. It does not affect the final image data but only the preview display.

Notes:

If you open a Raw data file as a TIF file, the tone curve is not used and you can view the Raw data.

In *Adobe Photoshop* software with the Creo DT plugin, a Raw data file opens as Raw 16-bit, RGB, 3-channel data.

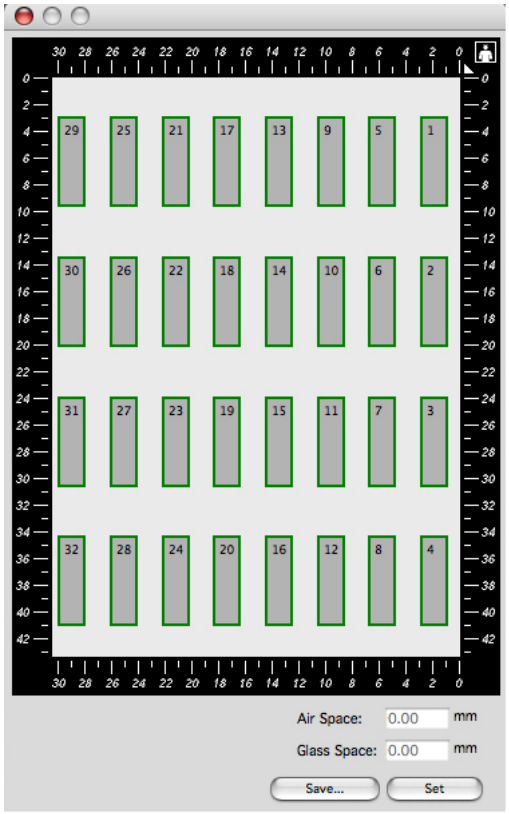
Important: Before you open a Raw file with *Adobe Photoshop*, perform the following procedure: On the hard drive, from **oXYgenScan-App>Plugins**, copy the **DTFormatPlugin** and **DTonedPlugin** files to the *Adobe Photoshop* software's **Plugins>FileFormat** folder.

- **Toned data**: This data type uses image processing. Files are created using sharpness, automatic histograms, gradation, and so on. Toned data can be captured in 16-bit or 8-bit depths. The tone curve that is created affects the final image data.

Layout

1. From the **Layout** list, select a layout such as **MicSlide 1x3_T** for the microscope slide holder.

The layout appears in the Layout Display window. The numbers on the crops indicate the scan order.



2. Press SHIFT and then click to select the crops you want to scan.
3. If you want to keep only the selected crops in the layout, click the **Set** button.
4. If you want to save the layout for later use, click **Save**.
5. Click **Preview** to preview the selected crops.
6. After preview, you can define a crop and then prescan if you require.

Notes:

If the defined crop is less than 20% of the preview area, it is recommended that you use the **Prescan** option.

If the width of the defined crop is greater than the width of a single-strip scan, a symbol appears indicating stitching for the scan may not produce optimal results. This is only an alert and does not prevent you from scanning.

Focus

Parameters

The following parameters are taken into account during focus calibrations:

- **Base glass plane:** The upper surface of the base glass is the base glass plane. The height of the base glass plane is 0 mm.
- **Air Space:** The height of the air space between the base glass and the scanning plane of interest of the object. You define an air space value when the focus plane of the sample's region of interest (ROI) is higher than the scanner base glass. For example, the body plane of a butterfly that is standing on its feet (see Figure 1). Defined in millimeters.
- **Glass Space**: The height of the glass on the base glass. Define this value when the sample is raised above the base glass on spacers or on a coverslip. For example, if a sample is covered with a coverslip that is 170microns thick, place the sample coverslip down on the base glass and define the glass space value as 0.170 mm. Defined in millimeters.

Note: If you use a *Kodak* microscope slide holder, the software automatically calculates and includes the holder's thickness.

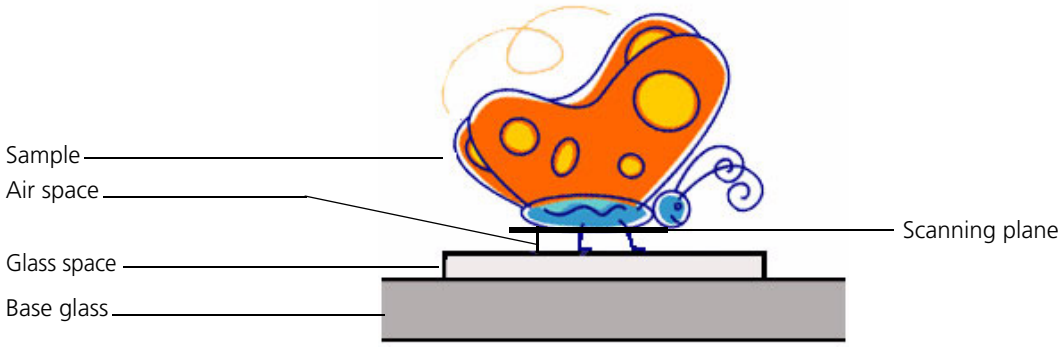
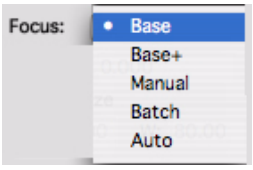


Figure 1: Focus parameters

Focus Mode

Important: Select the **Focus** mode before you perform Preview.



The **Focus** list includes the following modes: **Base**, **Base+**, **Manual**, **Batch**, and **Auto**.

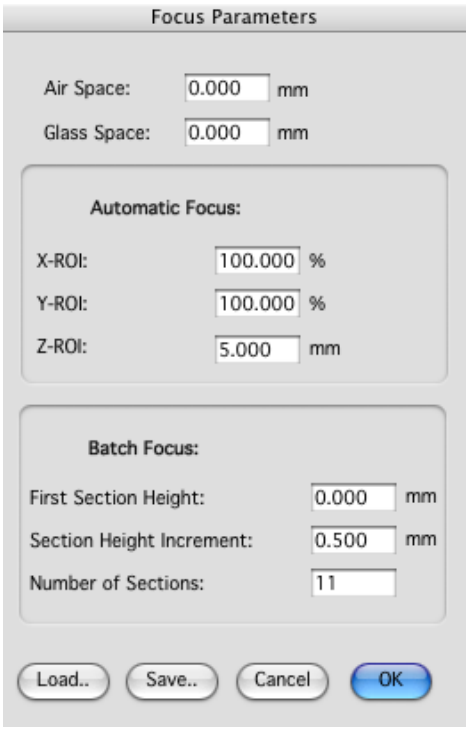
Using the Focus Parameters Dialog Box

If you use **Base+**, **Manual**, **Auto**, or **Batch** modes, enter values in the Focus Parameters dialog box.

Tip: Before preview, you can enter **Air Space** and **Glass Space** focus parameter values in the Layout Display window.

To open the Focus Parameters dialog box:

➢ From the oXYgen menu, select **Setup>Focus Setup**.



To save focus parameters:

➢ After entering the relevant parameters in the Focus Parameters dialog box, click **Save**.

The parameters are saved as a table in the **oXYgen table** folder and the table can be used for other scans.

To load focus parameters:

Important: Make sure to load focus parameters before you perform a preview.

➢ In the Focus Parameters dialog box, click **Load** and then select the table of focus parameters that you want to use for the next scan.

Base

This is the normal scanning mode. If you select this mode, the focus plane is automatically set at the base glass and you do not need to manually select focus parameters.

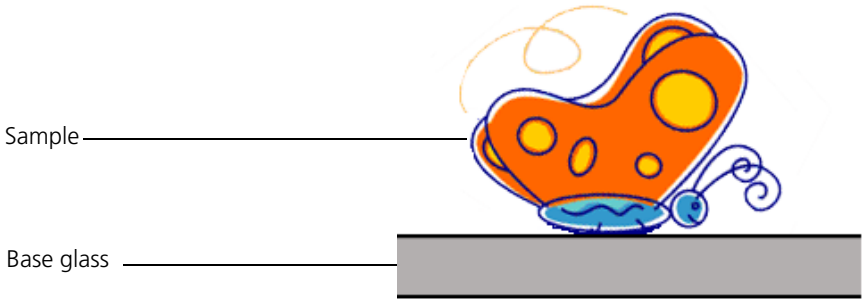


Figure 2: **Base** focus sample

Base+

In this mode, the scan is performed with the focus plane above the scanner's base glass. The height of this plane is determined by two constants: the glass space and air space values.

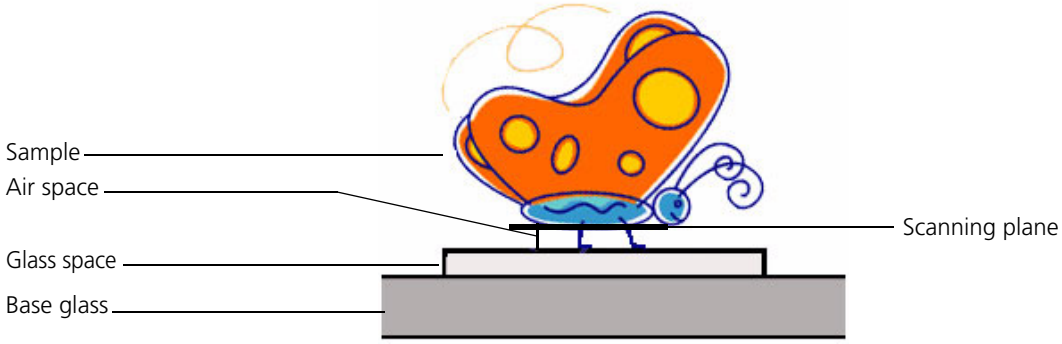
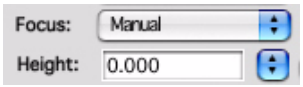


Figure 3: Example suitable for **Base+** focus

Manual

If you select this mode, the **Height** box appears in which you must select or enter the height of the scanner focus plane.



The maximum height of a section is determined according to the resolution at which you scan.

Table 1:
Maximum height specifications for reflective scans with *EverSmart* Supreme II and *EverSmart* Select II scanners

Resolution (dpm)		Maximum Height (mm)
Standard & Excellent Mode	Accelerate Mode	
<43 or = 43	< or = 96	30
>43 and < or = 168	< or = 168	5
>168 or < or = 210	< or = 360	10
>210	>360	17

Notes:

The **Height** value is the height above the scanner's base glass. The base-glass has a height of zero. The zero-height plane is determined by two constants: the glass space and air space values. If the air space or the glass space has a height value, the zero-height plane is set above it.

If you select **Transparent**, the combined thickness of the sample, air space, and glass space must not exceed 5mm, due to mechanical limitations.

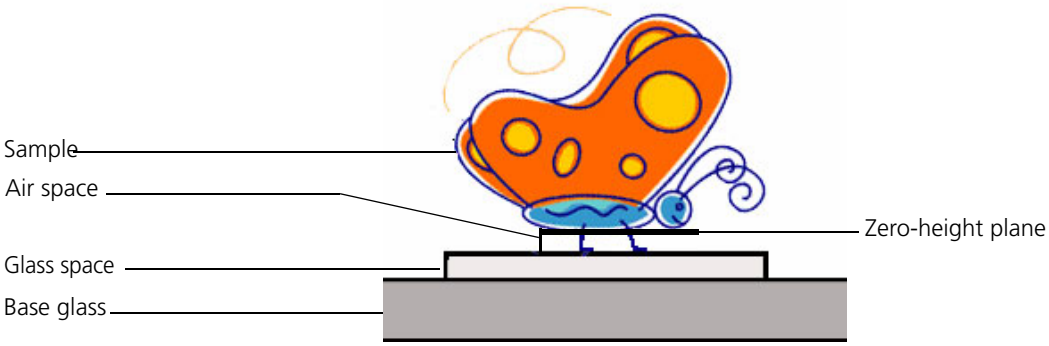
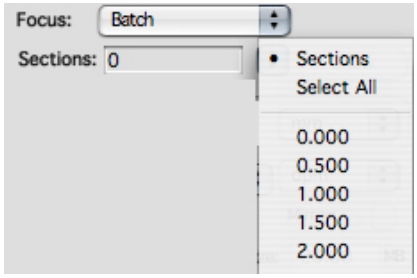


Figure 4: **Manual** focus sample

Batch

Use this mode for scanning a batch of several sections automatically. The **Sections** list includes the heights of the sections. The height value for each section is set in the Focus Parameters dialog box.



- To scan a batch of all defined sections, from the **Sections** list, select **Select All**.
- To scan a selection of sections, from the **Sections** list, select the sections you want to include in the batch scan.

Note: When you click the **Final Scan** button, all sections selected for the batch are scanned. The filename of each scan file in the batch includes the height of the section in microns.

Tip: You can use Max Detail for all selected sections in the batch. For more information about Max Detail, see the oXYgen Scanning Application User Guide and the oXYgen Scanning Application User Guide Addendum.

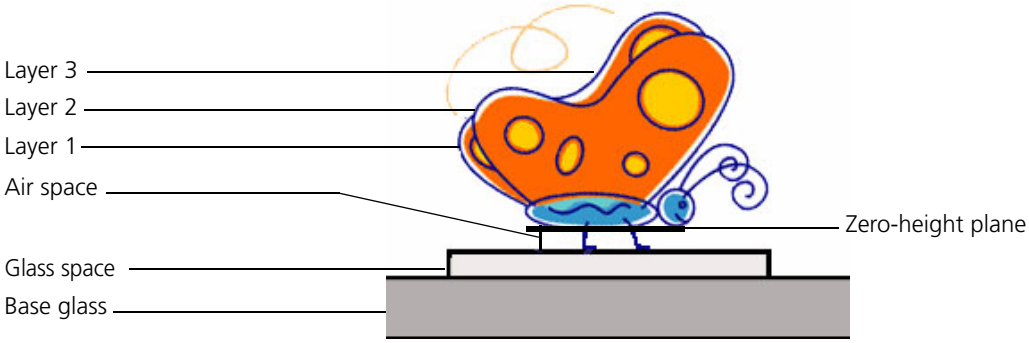


Figure 5: **Batch** focus sample

To define section heights:

- In the Focus Parameters dialog box, include values for each of the following parameters:
  - **First Section Height**: The height of the first section defined in millimeters.
  - **Section Height Increment**: The height of the increment between sections defined in millimeters.
  - **Number of Sections**: The number of sections you want to define.

  The values you enter appear in the Setup dialog box, in the **Batch** focus mode **Sections** list.

Auto

Auto is an automatic focusing mode. The focus search is performed within a region of interest (ROI) that you can define.

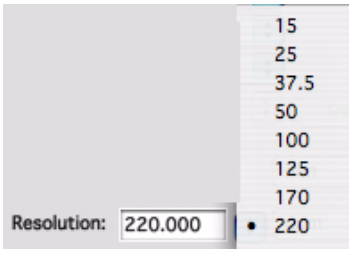
- **X-ROI:** The ROI width, defined as a percentage of the crop width.
- **Y-ROI**: The ROI length, defined as a percentage of the crop length.
- **Z-ROI**: The range of the focus search above the zero-height plane, in millimeters.

Resolution

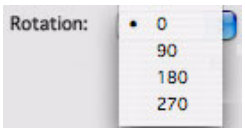
Resolution specifies the number of pixels per millimeter (dpm) or the number of pixels per inch (dpi).

To select a resolution for a scan:

1. From the units list, select a unit of measure (**dpm** or **dpi**).
2. The **Resolution** list represents the scanner's optical resolution. From the **Resolution** list, you can select a resolution or enter a value in the **Resolution** box. If you enter a value, interpolation is involved.



Rotation



➢ To rotate an image 'on the fly', from the **Rotation** list, select a degree of rotation.

Note: The default setting is zero.

Mirror

➢ To mirror the image 'on the fly', click the **Mirror** check box.

Selecting an Input Profile for a Toned Scan

The input profile, or scanner profile, represents the color space of the scanner which is converted from RGB to the independent LAB color space.

Make sure that you select the input profile that suits the type of original and the scanner type. The type and scanner type are indicated in the name of the input profile.

For more information about input profiles, see the oXYgen Scanning Application User Guide and the oXYgen Scanning Application User Guide Addendum.

Using a Naming Convention

Use the **Automatic Naming Setup** option in oXYgen software to assign a prefix, suffix, and indexed numbering to the image files in a collection.

1. From the oXYgen Scan menu, select **Setup>Automatic Naming Setup**.
2. To include a prefix:
   a. In the Automatic Naming Setup dialog box, click the top button.
   b. Click the **Prefix** check box.
   c. Enter a prefix.

Note: If you select **Default**, `SCAN` is automatically used as the prefix and `1` as the first number for indexing.

3. To include a suffix:
   a. Click the top button in the dialog box.
   b. Click the **Suffix** check box.
   c. Enter a suffix. The suffix appears after the indexing numbers in the filename (for example, in the filename `house_1_red`, `red` is the suffix).
4. To set the first index number for a series of images, select the **Automatic Image Indexing** check box and then enter a number. Other images in the series are automatically numbered sequentially according to this first number (for example, SCAN_1, SCAN_2, and so on).

Note: The **File Format Suffix** check box is automatically selected.