



AxyScanner User Guide

Revision: 2006-04-21

Introduction

AxyScanner is an automated proprietary high-resolution, high-speed protein crystal imaging, recognition and scoring system. This compact system provides high quality contrast images and analysis of sitting, hanging, or microbatch experiments. The AxyScanner is equipped with a high magnification lens and a 4-megapixel high-resolution camera providing sharp, high-contrast images. The images are processed by the Crystal Recognition Software (CRS), a sophisticated algorithm able to detect faint crystals and the difference between crystal and precipitate.

Part One: Assembly

Contents

- AxyScanner protein crystal imager
- Computer, Monitor, USB Cable (1), Power Cable (2), Firewire Cable (1), Keyboard, Mouse

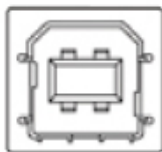
Please save all packaging for future shipping.

Installing Computer

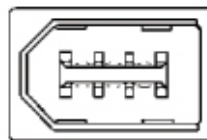
1. Follow the instructions provided in the Dell Computer Box.

Connecting AxyScanner to the Computer

1. Use the provided power cable to connect the AxyScanner to a surge-protected power source.
2. Connect the firewire and USB cables from the scanner to the supplied computer. The firewire is the top port on the scanner, while the USB is the bottom port on the scanner.



USB Type B



Firewire (IEEE-1394)

Part Two: Operation Instructions

Starting Crystalline

1. Turn on the AxyScanner by clicking on the power button on the back of the scanner.
2. Start the Crystalline application.
3. Click "Connect" from the Scanner menu.

Scanner status is displayed in the title bar of the Crystalline Window. Possible states are:
Connected, Disconnected, and Connecting.

4. Click on Eject / Load from the Scanner Menu.
5. Place an SBS standard crystallography plate in the plate holder when it fully ejects.

- Click on Eject / Load to load the plate into the scanner.

Scan Plate

Although there are some pre-defined plates and layers that ship with the program, these may not be ideal for the drop volume that you use. The drop volume affects the height of the drop, and changes the Bottom Focus and Top Focus of the layer. To ensure that you have the right layer height, go to Plate Configuration.

- Choose a plate type from the drop down menu.
- Select the layer(s) you want to scan from the list. To select multiple layers (sub-wells), hold down CTRL while selecting the layers.
- Choose the base directory where you will be storing images.
- Enter the Barcode. The barcode will be used to create a new folder in the base directory in which to store scanned images.
- Click Scan

When attempting to scan the plate, you may get an error stating the distance between the top and bottom foci is 0. This error relates to the focus merging capability of Crystalline. Multiple images of each well are taken between the top and the bottom foci. This method requires that the two foci have different values.

Manual View

The Manual View tab allows you to manually control the scanner; you can use the joystick controls to navigate to and view any area on a plate.

- Click on the Start View button to begin manual viewing of the plate. A secondary window displaying the camera's view of the plate will open up.
- Control the camera's position, focus, zoom, and exposure using the controls in Scanner Controls. Control the speed at which the position and focus move by selecting one of the three speeds at the top of the Scanner Controls.

You can hold down the buttons controlling position and focus to continue affecting those values. However, the Exposure and Zoom controls apply incrementally, and cannot be adjusted by holding down Exposure or Zoom buttons.

- When done, close the camera view window.

If you do not close the camera view window, many features will remain disabled.

Plate Configuration

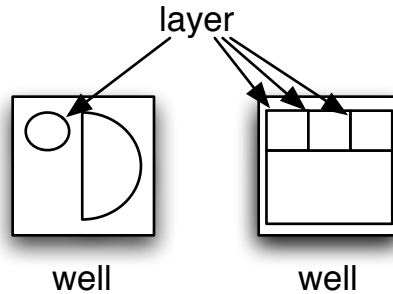
AxyScanner is only designed for SBS standard plates. Axygen does not recommend or support anything other than SBS standard plates.

Plate Maintenance

- Click on [Add Plate](#) to add a new plate. Enter plate's name, rows, and columns in the dialog box that comes up.
- To edit an existing plate, double-click on the name of the plate you want to edit.
- Click on [Remove Plate](#) to delete the plate.

Layer Maintenance

Each plate has multiple layers (think of these as sub-wells). You can define each layer that will be scanned.

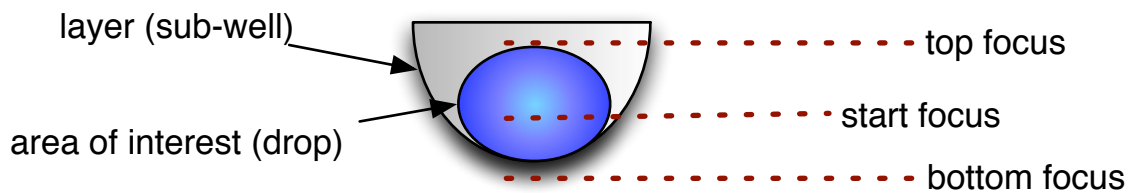


- Click on [Add Layer](#) to add a new layer. Enter layer's name in the dialog box that comes up.
- To edit an existing layer, double-click on the name of the layer you want to edit.
- Click on [Remove Layer](#) to delete the layer.

Layer Teaching

To configure each layer your plate must be loaded into the AxyScanner.

1. With a layer in the list selected, click [Teach Layer](#) to begin. A camera view window will pop up.
2. Select the corner you would like to teach by choosing it from the drop down box. Once the corner is selected, wait for the scanner to move to that corner.
3. Use [Scanner Controls](#) to center and zoom into the area you would like to scan.
4. Click [Save Corner](#) when you are satisfied that the desired area fills the camera view window.
5. Use the [Focus](#) controls to adjust the focus until some part of the area's contents is in the focus.
6. Press the lower focus button until all of the area's contents are just out of focus.
7. Click on [Save Bottom Focus](#).
8. Press the top focus button until all the area's contents are just out of focus. During this time you should see all of the area's contents go in and out of focus.
9. Click on [Save Top Focus](#).
10. Select another corner to teach by selecting it from the drop down box.



The exposure, zoom, top focus, and bottom focus do not vary between the corners of each layer. So after you have taught these values to one corner, you only need to adjust the position for the subsequent corners.

11. When you have finished teaching, close the camera viewer window.

Part Three: Troubleshooting

Problem	Solution
<i>The images appears mis-aligned or askew</i>	<i>The camera is out of alignment. Open the front panel, and loosen the locknut connecting the camera to the 1.0x objective lens. Then straighten the camera while looking at the image. When the camera is straightened, tighten the locknut, and replace the front cover.</i>
<i>Image is too dark or too light</i>	<i>Increase or decrease the exposure. Another option is to manually adjust the iris. To adjust the iris, open the front panel. Then move the lever on the iris to dilate or contract it.</i>
<i>No image</i>	<i>Make sure the camera is not centered on something that is opaque.</i>
<i>A fuse is blown</i>	<i>Reset the fuse located on the back of the scanner</i>

Part Four: Warranty

- The scanner’s parts are under one year warranty only if used at room temperature.
- Warranty does not apply to abused parts.

Part Six: Technical Support

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