

## Upgrading Discovery-1 Application from Version 5.0 to 6.x

### Abstract

This document describes how to upgrade the Discovery-1 application from version 5.0 to version 6.x. After the upgrade, most of your settings will carry over from version 5.0. However, you must configure some hardware components manually in order for your state files and journals to run in version 6.x.

### Instructions

The following procedures are explained in this document and must be completed in the order shown below:

1. Checking Calibration Settings in Version 5.0
2. Installing the Discovery-1 6.1 Software and 6.x Patch
3. Configuring Hardware in the Meta Imaging Series Administrator
4. Configuring Magnification in Discovery-1
5. Configuring Calibration in Discovery-1
6. Configuring the Stage in Discovery-1

**Note:** This document assumes that you have a Discovery-1 6.1 installation CD, a floppy disk containing your registration code, and a CD containing the 6.x patch. These three items are provided by your Universal Imaging representative. If you do not have the CD containing the patch, you can download it from the [Meta Series Updates website](http://updates.universal-imaging.com/index.cfm) – <http://updates.universal-imaging.com/index.cfm>. You will need to enter your System ID to access the updates page.

**Note:** You must have Windows Administrator privileges on your Discovery-1 computer to perform the upgrade. Consult your system administrator for more information

### Checking Calibration Settings in Version 5.0

Before installing version 6.1, you need to check that the correct calibration settings are loaded in your current 5.0 version. Doing so ensures that these settings are copied over to the 6.1 installation. Use the following procedure to check your calibration settings in version 5.0:

1. Start Discovery-1.
2. Select Calibrate Distances from the Measure menu. The Calibrate Distances dialog box opens.
3. Click the *Apply* tab.
4. Click *Load from file*. The Load Spatial Calibrations dialog box opens.
5. Navigate to the DATA folder, located at C:\MM5\app\mmproc\DATA.
6. Select zeroGenIIHQ.cal and click *Open*. This loads the Discovery-1 calibration settings.
7. Click *Close*.
8. Exit Discovery-1.

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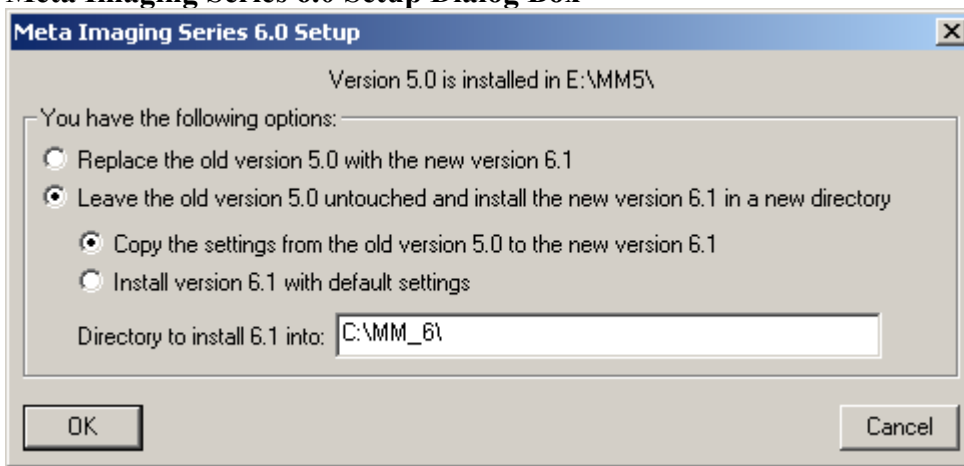
**Issue Type:** geninfo admn

## Installing the Discovery-1 6.1 Software and 6.x Patch

Complete the following procedure to install the Discovery-1 6.1 software and 6.x patch:

1. Load the Meta Imaging Series Version 6.1 CD into your DVD/CD-ROM drive. The Installer screen opens.
2. Click *Install Meta Imaging Series 6.1*.
3. Proceed with the installation, providing your Name and registration number when prompted.
4. When prompted that version 5.0 is already installed, select *Leave the old version 5.0 untouched and install the new version 6.1 in a new directory*. Also select *Copy the settings from the old version 5.0 to the new version 6.1* and type in a new directory for 6.1 in the Directory to install 6.1 into text box, as shown in Figure 1:

**Figure 1**  
**Meta Imaging Series 6.0 Setup Dialog Box**



**Note:** If you do not change the directory path to install 6.1 into, it will be installed into the 5.0 directory by default and will overwrite your 5.0 installation.

5. Click OK and continue with the installation.
6. When the installation is complete, click *Close*. The Meta Imaging Series Administrator opens. Close this for now.
7. Remove the Meta Imaging Series Version 6.1 CD from your computer and load the CD containing the 6.x Update.
8. From the Windows Start menu, go to Programs>Meta Imaging Series 6.1> Meta Imaging Series Updater. The Meta Imaging Series Updater program opens.
9. Click *Select Software Update File*. The Select Software Update File dialog box opens.
10. Navigate to the CD or DVD drive containing the update, select mm6xx.zip and click *Open*.
11. Click *Next*, then click *Update*. The Updater will install the patch.
12. After the update is complete, click *Close* to exit the Updater.

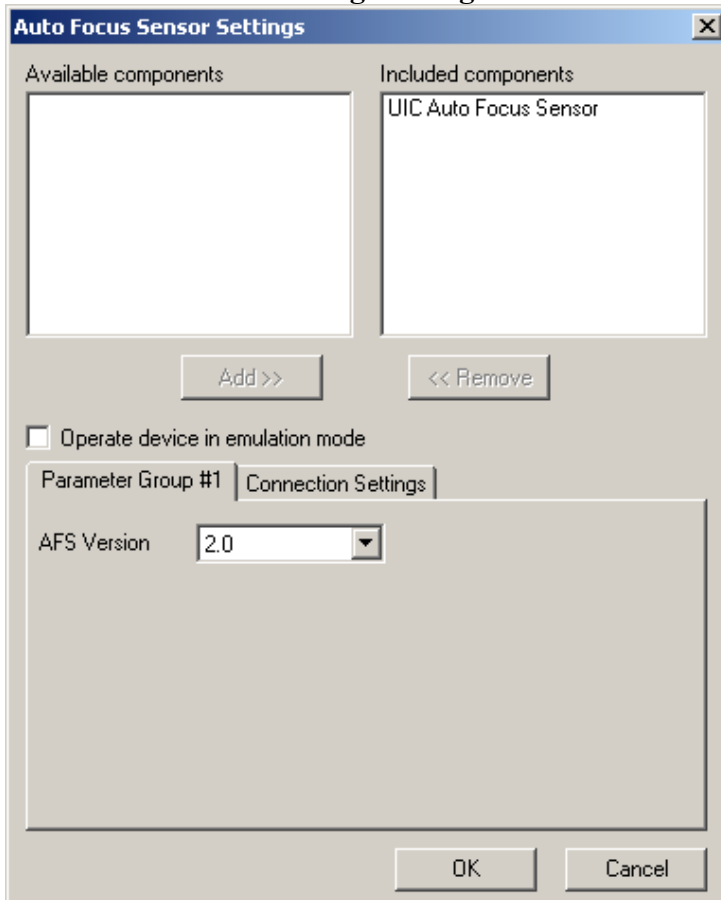
## Configuring Hardware in the Meta Imaging Series Administrator

Complete the following procedure to configure hardware components in the Meta Imaging Series Administrator application:

**Note:** For additional information about any of the dialog boxes in the Meta Imaging Series Administrator, press the F1 key to access the online help for the active dialog box.

1. From the Windows Start menu, go to Programs>Meta Imaging Series 6.x> Meta Imaging Series Administrator. The Meta Imaging Series Administrator program opens.
2. Select Discovery-1 from the *List of Groups* field.
3. Click *Configure Hardware*. The *Configure Hardware* dialog box opens.
4. Click *Install System Devices*. The *Install Systems Devices* dialog box opens.
5. Press *Cancel* if an error message opens that reads: Auto Focus not Detected.
6. Select *Auto Focus Sensor* from the *Installed Devices* list and click *Settings*. The *Auto Focus Sensor Settings* dialog box opens, as shown in Figure 2:

**Figure 2**  
**Auto Focus Sensor Settings Dialog Box**

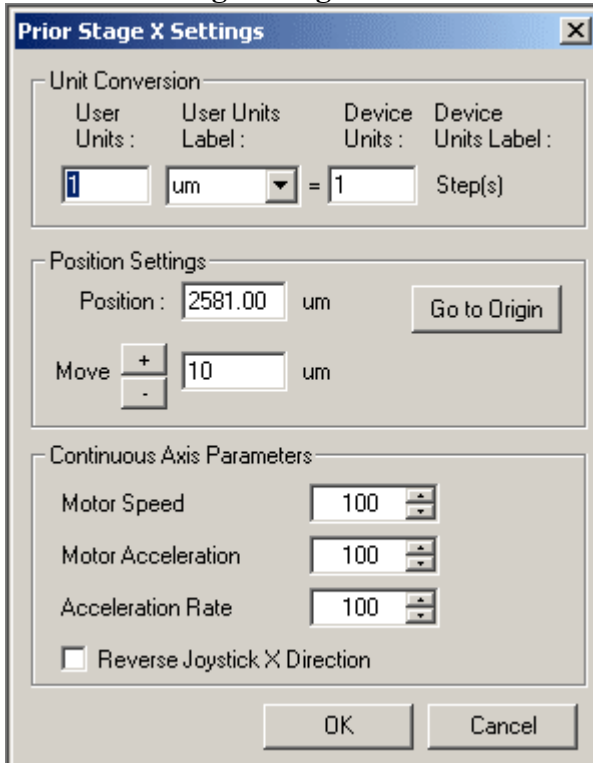


7. Ensure that the *Operate device in emulation mode* box is not checked (uncheck this setting if found in any Discovery-1 hardware settings dialog boxes).
8. Ensure that the *AFS Version* is set to the version of Auto Focus Sensor attached to your system (version 2.0 for Discovery-1 versions 6.15 and above).
9. Click the *Connection Settings* tab.
10. Ensure that the *Baud Rate* is set to 57600.
11. Click *OK*.
12. Select *Prior Controller* from the *Installed Devices* list and click *Settings*. The *Prior Controller Settings* dialog box opens.
13. Ensure that *Prior Servo Mode* is listed in the *Included Components* field.
14. Click *OK* to close the *Prior Controller Settings* dialog box.
15. Click *OK* to close the *Install System Devices* dialog box.

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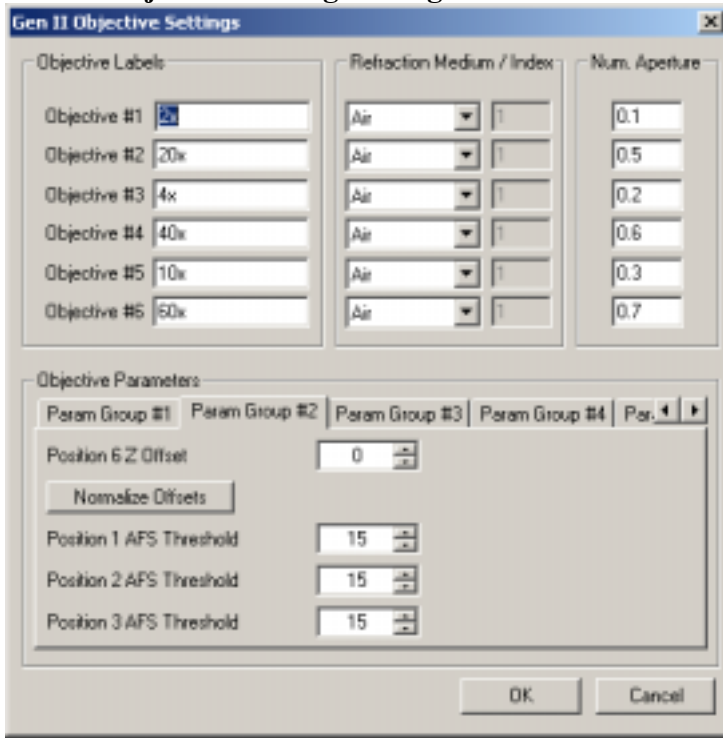
16. Select *Default* in the Configure Hardware *Hardware Settings* field and click *Configure Devices*.
17. Select *Prior Stage X* from the Claimed Devices list.
18. Click *Settings*. The Prior Stage X Settings dialog box opens, as shown in Figure 3:

**Figure 3**  
**X Motor Settings dialog box**



19. Click the  icon and confirm that the stage responds to the control.
20. Use the joystick to confirm that the stage is moving in the same direction as the joystick (left or right). If the stage orientation is correct, skip to Step 22.
21. If the stage is not moving in the same direction that you are moving the joystick, select the *Reverse Joystick X Direction* checkbox and retest using the joystick.
22. Click *OK*.
23. Repeat Steps 19-20 for the Y Motor settings.
24. Select *Gen II Z Motor* from the *Claimed Devices* list.
25. Click *Settings*. The Gen II Z Motor Settings dialog box opens.
26. Verify that the value in the *Device Units* field is *2*.
27. Click the  icon and confirm that the Z Motor responds to the control.
28. Click *OK*.
29. Select *Gen II Objective* from the *Claimed Devices* list and click *Settings*. The Gen II Objective Settings dialog box opens, as shown in Figure 4:

**Figure 4**  
**Gen II Objective Settings dialog box**



30. Confirm that the values in the *Num Aperture* fields match those in Table 1 below:

**Table 1**  
**Num Aperture Values in Gen II Objective Settings Dialog Box**

Objective Label	Num Aperture Value
Objective #1	0.1
Objective #2	0.5
Objective #3	0.2
Objective #4	0.6
Objective #5	0.3
Objective #6	0.7

31. Click the *Param Group #1* tab in the in the *Objective Parameters* section on the bottom half of the dialog box. This tab contains the Z offset positions for the first five objectives. The *Param Group #2* tab contains the field for the sixth objective.

**Note:** To obtain the values to put in the *Position 1-6 Z Offset* fields, you must have valid focus values for each objective. To determine the focus values for each objective, Open the Discovery-1 application, load a plate containing a familiar sample, and complete the following procedure:

- a. Select Screen Acquisition from the Apps menu. The Screen Acquisition dialog box opens with the *Main* tab selected.
- b. Ensure that *2x Plan Apo* is selected in the *Magnification* field. This is Objective #1.
- c. Click *Live*. A live image window opens.
- d. Use the joystick and focus knob to manually focus your known sample.

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- e. When the sample is in focus, write down the Focus number on the front panel of the Discovery-1 Controller.
- f. Change the value in the Magnification field to *4x Plan Apo* to move to Objective #3.
- g. Repeat steps d-f for each objective, noting the focus values for each. You will use these values to determine the Z-offsets for each objective.

32. Enter the focus value that you wrote down for Objective #1 in the *Position #1 Z Offset* field, adding a zero (0) to the end of the number (for example, if the focus value was 3799, enter 37990).
33. Repeat Step 32 for *Position #2-5 Z Offset* fields, adding a zero (0) to the end of each number.

**Note:** The *Position 1-6 Z Offsets* refer to Objective numbers 1-6 and are not in order of magnification. Refer to the *Objective Labels* fields to match the objective number with its magnification.

34. Click the Param Group #2 tab and fill in the value for Position #6, adding a zero (0) to the end of the number.

**Note:** If you do not have a 60x objective, enter the same value you entered for the 40x objective. Do not leave this value as 0.

35. Click Normalize Offsets to calculate the offsets for each Z position.
36. If you have Auto Focus Sensor version 1, proceed to Step 37. If you have Auto Focus Sensor version 2, skip to Step 38.
37. Ensure that the values in the remaining fields and tabs — Auto Focus Sensor (AFS) thresholding, accuracy, and maximum step size values—are the same as the values listed in Table 2:

**Note:** Skip this step if you are using Auto Focus Sensor version 2 or above.

**Table 2**  
**Replacement AFS Values**

Tab	Position	Value
<b>Param Group #2</b>	Position 1 AFS Threshold	15
	Position 2 AFS Threshold	15
	Position 3 AFS Threshold	15
<b>Param Group #3</b>	Position 4 AFS Threshold	10
	Position 5 AFS Threshold	15
	Position 6 AFS Threshold	10
	Position 1 AFS Accuracy	30
	Position 2 AFS Accuracy	4
<b>Param Group #4</b>	Position 3 AFS Accuracy	30
	Position 4 AFS Accuracy	1
	Position 5 AFS Accuracy	30
	Position 6 AFS Accuracy	1
	Position 1 AFS Max Step Size (microns)	200
<b>Param Group #5</b>	Position 2 AFS Max Step Size (microns)	30
	Position 3 AFS Max Step	200

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Tab	Position	Value
	Size (microns)	
	Position 4 AFS Max Step Size (microns)	10
	Position 5 AFS Max Step Size (microns)	200
	Position 6 AFS Max Step Size (microns)	10

38. Click *OK* to close the Gen II Objective Settings dialog box.
39. Click *OK* on each open dialog box to exit the Meta Imaging Series Administrator.

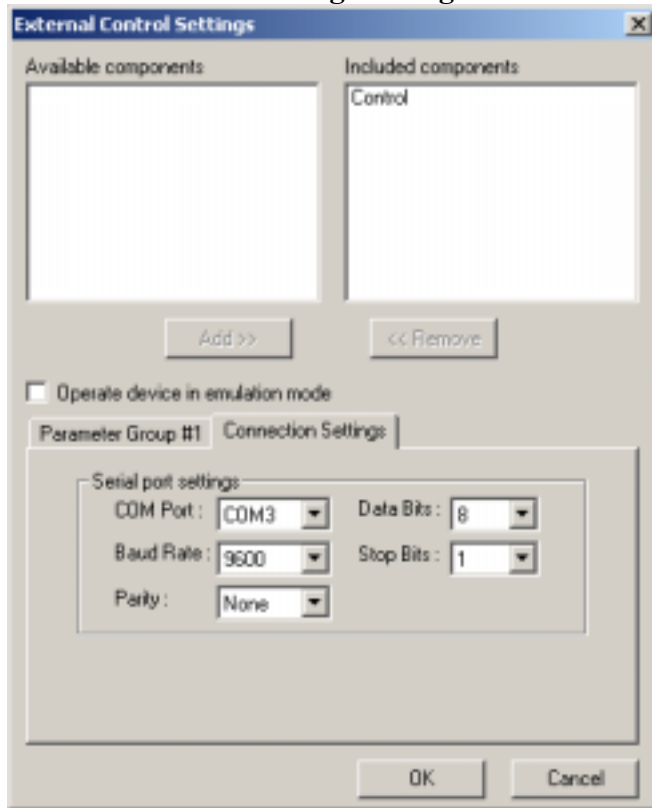
### Verifying External Control Settings

If you have a robot attached to the Discovery-1 system, you need to confirm that the External Control settings in the Meta Imaging Series Administrator are enabled and the correct COM port is selected.

Use the following procedure to confirm that the External Control settings in the Meta Imaging Series Administrator are enabled:

1. From the Windows Start menu, go to Programs>Meta Imaging Series 6.x> Meta Imaging Series Administrator. The Meta Imaging Series Administrator program opens.
2. Select Discovery-1 from the *List of Groups* field.
3. Click *Configure Hardware*. The *Configure Hardware* dialog box opens.
4. Click *Install System Devices*. The *Install Systems Devices* dialog box opens.
5. Ensure that External Control is listed in the *Installed Devices* list. If it is not, Select it from the *Available Hardware* list and click *Install*>>.
6. Select *External Control* from the *Installed Devices* list and click *Settings*. The External Control Settings dialog box opens.
7. Click the *Connections Settings* tab to display the Connection Settings, as show in Figure 5:

**Figure 5**  
**External Control Settings Dialog Box**



8. Ensure that the correct *COM Port* setting is selected. If the COM port setting is not correct, select the correct COM Port and click *OK* to close the External Control Settings dialog box. If you do not know what the COM port setting should be, end this procedure and contact your UIC representative.
9. Click *Apply*, then *OK* to close the Install System Devices dialog box.
10. Click *Configure Devices* in the Configure Hardware dialog box. The *User Settings for 'Default' hardware configuration* dialog box opens.
11. Ensure that *External Control* is listed in the Claimed Devices list. If it is not, select it from the *Available Devices* list and click *Add>>*.
12. Click *Apply*, then *OK* to close the *User Settings for 'Default' hardware configuration* dialog box.
13. Click *OK* to close the Configure Hardware dialog box, then click *OK* to exit the Meta Imaging Series Administrator program.

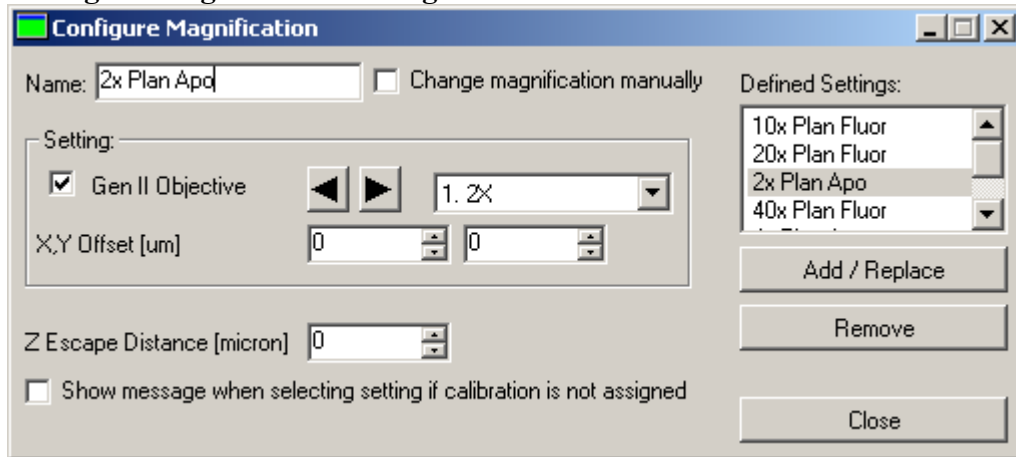
### Configuring Magnification in Discovery-1

You will need to confirm magnification settings for the Gen II objective before using your upgraded system. Complete the following procedure to check the magnification settings in the Discovery-1 application:

**Note:** For additional information about any of the dialog boxes in Discovery-1, press the F1 key to access the online help for the active dialog box.

1. Start the Discovery-1 application.
2. Select *Configure Magnification* from the Devices menu. The *Configure Magnification* dialog box opens as shown in Figure 6:

**Figure 6**  
**Configure Magnification dialog box**



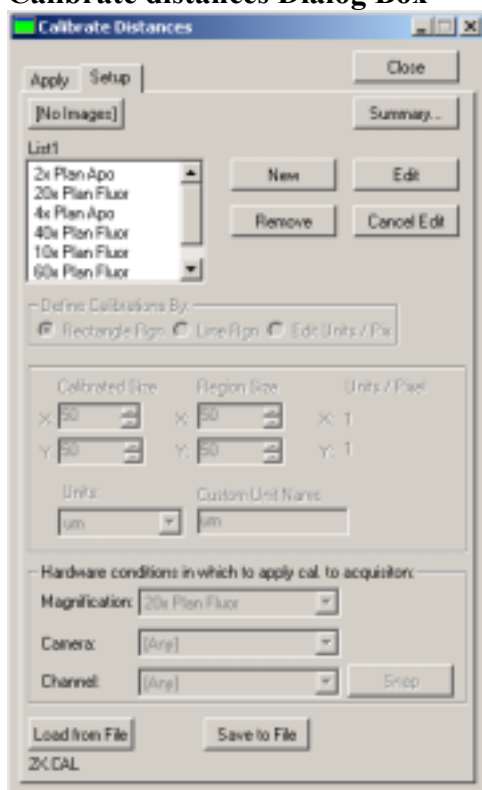
3. Ensure that the *Gen II Objective* checkbox is selected in the *Settings* field and select 2x from the *Gen II Objective* drop-down list
4. Type 2x Plan Apo in the *Name* field and click *Add/Replace*.
5. Select 20x from the *Gen II Objective* drop-down list.
6. Type 20x Plan Fluor in the *Name* field and click *Add/Replace*.
7. Repeat steps 5-6 until you have the following six objectives in the *Defined Settings* field:
  - 2x Plan Apo
  - 20x Plan Fluor
  - 4x Plan Apo
  - 40x Plan Fluor
  - 10x Plan Fluor
  - 60x Plan Fluor
8. Click *Close* to exit the Configure Magnification dialog box.

### Configuring Calibration in Discovery-1

Use the following procedure to configure the stage:

1. Select Calibrate Distances from the Measure menu. The Calibrate Distances dialog box opens.
2. Click the *Setup* tab. The calibrations you loaded in the *Checking calibration settings in version 5.0* section of this document will populate the *List1* field.
3. Select *2x Plan Apo* from the *List1* field and click *Edit*. The fields on the bottom half of the dialog become enabled.
4. Select the corresponding setting *2x Plan Apo* from the *Magnification* drop-down list and click *Done*.
5. Repeat steps 3-4 for each of the calibration/magnification combinations. There will be a total of six, as shown in Figure 7:

**Figure 7**  
**Calibrate distances Dialog Box**



6. Ensure that there are Calibration settings for each of the six objectives in the *List1* field.
7. Click Save to File. The Save Spatial Calibrations dialog box opens.
8. Type a new file name for the calibrations file and click *Save*. Do not save with the original name. The Save Spatial Calibrations dialog box closes.
9. Click *Close* to exit the Calibrate Distances dialog box.

### Configuring the Stage in Discovery-1

To configure the stage, you will work with 2 dialog boxes — Screen Acquisition and Move Stage to Absolute Position — to manually set the A1 center position of the stage. You will need to load a plate on the stage so that you can find the center of well A1. Use the following procedure to configure the stage:

1. Select Screen Acquisition from the Apps menu. The Screen Acquisition dialog box opens.
2. Click the *Plate* tab.
3. Click Live. The live image window opens.
4. Use the joystick to locate the center of A1.
5. Select Move Stage to Absolute Position from the Devices>Stage menu. The Move Stage to Absolute Position dialog box opens.
6. Click *More>>>* if this button is displayed to view the entire dialog box.
7. Click *Set Origin*.
8. Click *Close*. The Move Stage to Absolute Position dialog box closes.
9. Click *Set A1 center* in the Plate tab of the Screen Acquisition dialog box. The Set A1 center dialog box opens.
10. Click *Set A1 to Current*.
11. Click OK.
12. Click Close to close the Screen Acquisition dialog box.