Introduction

SimplePCI **A**utomated **I**mage **C**apture-**A**dvanced **D**evices (**AIC-AD**) enhances ***SimplePCI*** to provide cost-effective control over all major motorized microscopes and select scanning confocal attachments. A Scan Wizard simplifies collection of image sequences for XYZ and wavelength over time (time-lapse). Image sequences are easily viewed in a data file for later analysis.

Expand the functionality of ***SimplePCI*** and **AIC-AD** by adding the following optional modules:

- **AIC-EP** for advanced control of scan patterns
- **DIA**, dynamically measure intensity over time
- **IPA**, develops icon-driven work files for automatic image analysis and processing
- **IPA-MTA**, track and analyze moving objects
- **QFA-FRET**, accurate FRET measurements and cross talk correction
- **VIS-MD**, provides rapid 3D visualization of multi-dimensional data sets
- **DNN**, Remove or Restore blur in images using fast algorithms
- **DNN-2D**, a Point Spread Function is derived and used in restoration

Getting Started

This **Quick Start Guide** contains examples of how to utilize **AIC-AD**. For further assistance, refer to the online help, manual, or visit support at http://www.cimaging.net, for access to the latest **How to's** and frequently asked questions. Additional support is available at e-mail: support@cimaging.net, or Tel: 412-741-7920.

Example guides:

Add Microscope to a New Profile

1. At File Menu, select **Manage Profiles** (**fig.1**).
2. Click **Add** (**fig.1**), enter a name for the new profile.
4. Click **Properties** to add device and file path (**fig.1**).
5. Assign Default File Paths by clicking on category and browsing to desired file path (**fig.2**).
7. Click on **Device Control** to add camera, microscope or confocal (**fig.2**).
8. Add a camera by clicking on **Image Capture Devices** > **Add** > Select Camera.
9. Add an XY stage, filter wheel or shutter by clicking on Stage/Filter/Shutter Devices.
10. Add a microscope by clicking on **Microscope Devices** > **Add** (**fig.3**).
11. Select Microscope > Click on COM-Port and select Com-Port > Click on Controller > Click Auto (**fig.4**) to read setup details previously configured in the microscope. The components list will be updated. Click OK to accept the current settings and close the window.
Note: Each microscope manufacturer has its own setup software, which need to be installed and configured accurately for **AIC-AD** to configure the microscope properly.
12. Click on the **Camera** icon to Activate Capture Menu.
13. Click on the relevant **Microscope** Tab in the Capture Window to show the components and functionality of the microscope (**fig.5**).
14. The microscope is controllable from the dialogue in the window (**fig.5**).
15. Select objective, cube, shutter or light source for convenient imaging; however, the microscope must be aligned for best image conditions.

    Microscope components listed are accessible through the **Filter Setup** on the **Sensor** Tab to synchronize activity during automated image capture.

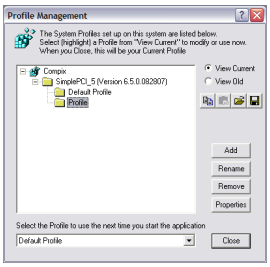

fig.1

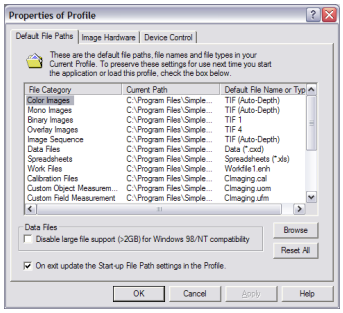

fig.2

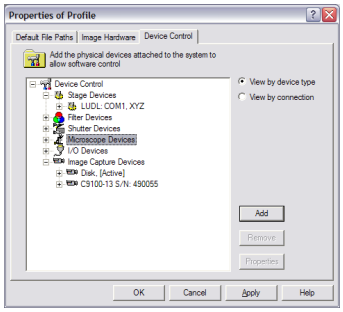

fig.3

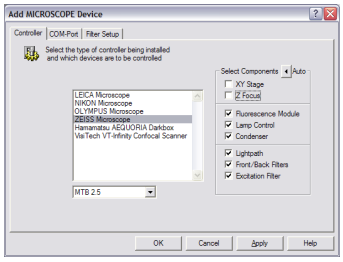

fig.4

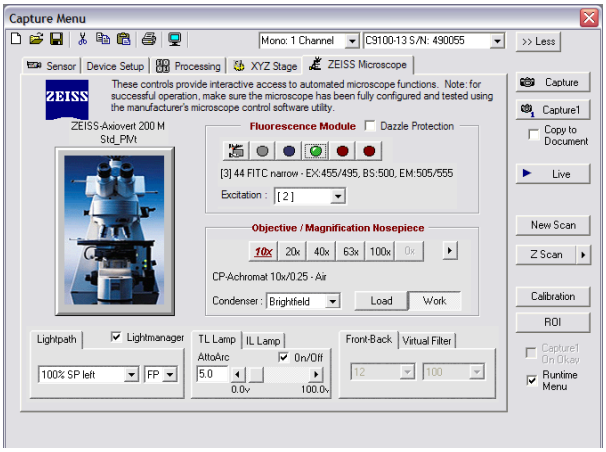

fig.5

Add Confocal to a New Profile

1. At File Menu, select **Manage Profiles...**.
2. Click **Add** (**fig.1**), enter a name for the new profile.
4. Click **Properties** to add device and assign file path.
5. Assign **Default File Paths** by clicking on category, and browsing to desired file path.
6. Click on **Device Control** tab to add camera, microscope or confocal.
7. Select **Microscope Devices** (**fig.2**) and click **Add** Select the **VisiTech VT-Infinity Confocal Scanner** (**fig.3**).
8. Click on **Auto** to automatically pull the available configurations. Check **AOTF** if an Acousto-Optic Tunable Filter (AOTF) is present (**fig.3**).
9. Click **Device List** to select a communication interface. **USB**, **Serial**, or **VT-Infinity 3**.
10. Click on **Filter Setup** and customize the **Dichroic Mirror** and **Barrier Filter** step settings (**fig.3**). Click **OK** to accept the current settings and close the window.
11. Click on the **Camera** Icon to activate **Capture Menu** window.
12. Click on the **VT-Infinity** tab in the **Capture Menu** to show the components and functionality of the confocal (**fig.4**).

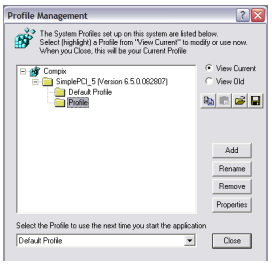

fig.1

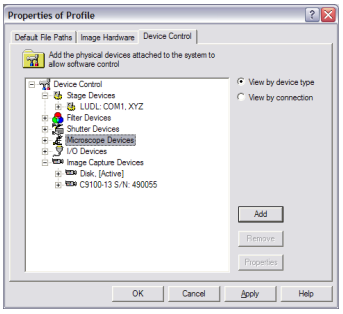

fig.2

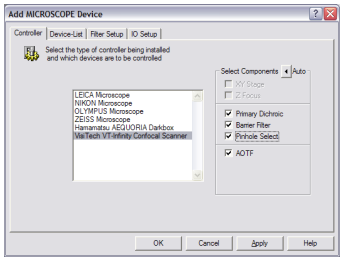

fig.3

The VT-Infinity 3 window is summarized below:

Confocal

- Select up to four Dichroic filter positions (**fig.4.A**)
- Select up to five Barrier filter positions (**fig.4.B**)
- Home Dichroic and Barrier (**fig.4.C**)
- Select Pinhole size (**fig.4.D**)
- Conveniently Start/Stop Galvo (**fig.4.E**)
- Adjust speed of Galvo Scan Rate (**fig.4.F**)
- Adjust sweep of Galvo Scan Width (**fig.4.G**)
- Adjust Galvo sweep position with Offset (**fig.4.H**)
- Sync. Scan Width and Offset with current ROI (**fig.4.I.**)

AOTF

- Adjust Laser intensity on selected lines (**fig.4.J**)
- Check On/Off up to eight Laser lines (**fig.4.K**)

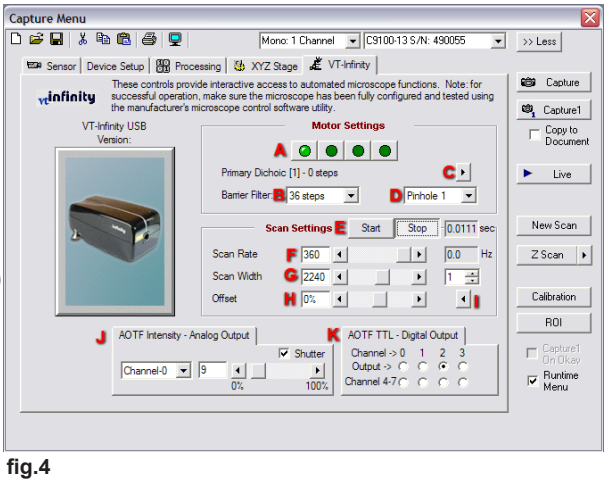

fig.4

Confocal and AOTF functions are accessible through Filter Setup on the **Sensor Tab** to synchronize activity during automated image capture.