

USER MANUAL

LASER MICROMACHINING SYSTEM MicroView

Version 1.2

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BACKGROUND

The MicroView software has been designed for fast and convenient viewing of live video input from a standard camera, which is usually installed into an LMT Laser Micromachining System manufactured by Potomac Photonics, Inc. However, the camera can be positioned to view anything and there are no limitations on the lens or field of view.

The MicroView program requires that a frame grabber board be installed into the computer. The frame grabber is a half size PCI bus plug in card manufactures by Imaging Technology. Several different frame grabber cards may be used with the MicroView software, however a configuration file names itimgmgr.cnf must be set up to initialize the frame grabber according to what camera (or cameras) is attached to the hardware card. The configuration file may be created by using a program installed in the frame grabber's directory call iticfg32.exe. After the appropriate configuration parameters have been set up according to the desired camera, the configuration file may be saved to the name itimgmgr.cnf (itimgmgr.txt). See that help file for the program iticnf32.exe (Camera Configurator) for more information in creating configuration files.

NOTE: It is very important that only experienced and knowledgeable personnel change the configuration file used by Potomac software. Incorrectly changing configuration parameters or deleting the default configuration file will render MicroView and all other Potomac software unusable.

MicroView may be run at the same time as other unrelated applications. There may be unexpected behavior if MicroView is run with other programs that also initialize and use the hardware frame grabber card. The unexpected behavior results from more than one application configuring and using the hardware frame grabber card in different ways.

NOTE: If the software begins to behave oddly, reboot the computer and run the application again.

IMPORTANT: The MicroView application MUST be run in 256 color mode. To change the color mode of the computer, go to the Display Properties applet in the Control Panel and select the Settings tab. Go to the colors drop-down list box and select 65535 colors (sometimes referred to as High Color (16 bit). It is best to reboot after making changes to the number of colors on the display so as to remove any screen artifacts and allow the display driver to correctly update the desktop icons. The MicroView program will run correctly however, if the computer is not rebooted.

Main Application Window

The MicroView software is an application that [provides continuous live video from a camera and displays the video on the monitor of a personal computer.

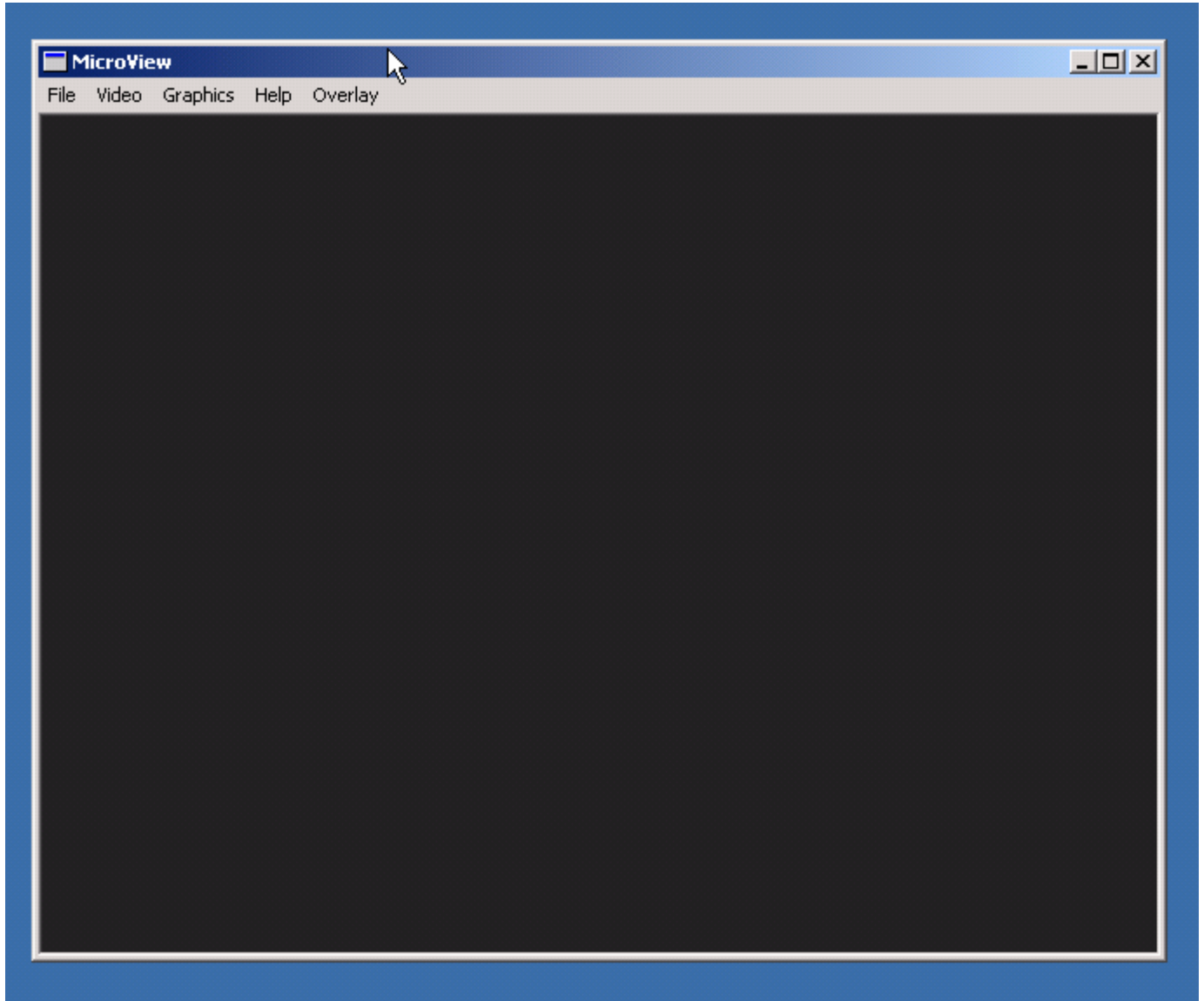


Figure 1 Main Application Window

File Menu

Performance Menu Item

The performance characteristics may be used to determine whether or not another application is degrading the transfer of video from the hardware frame grabber to the monitor's display area. Any other hardware card plugged into the personal computer's PCI bus will degrade the performance of the MicroView application (and any other application that accesses the hardware frame grabber).

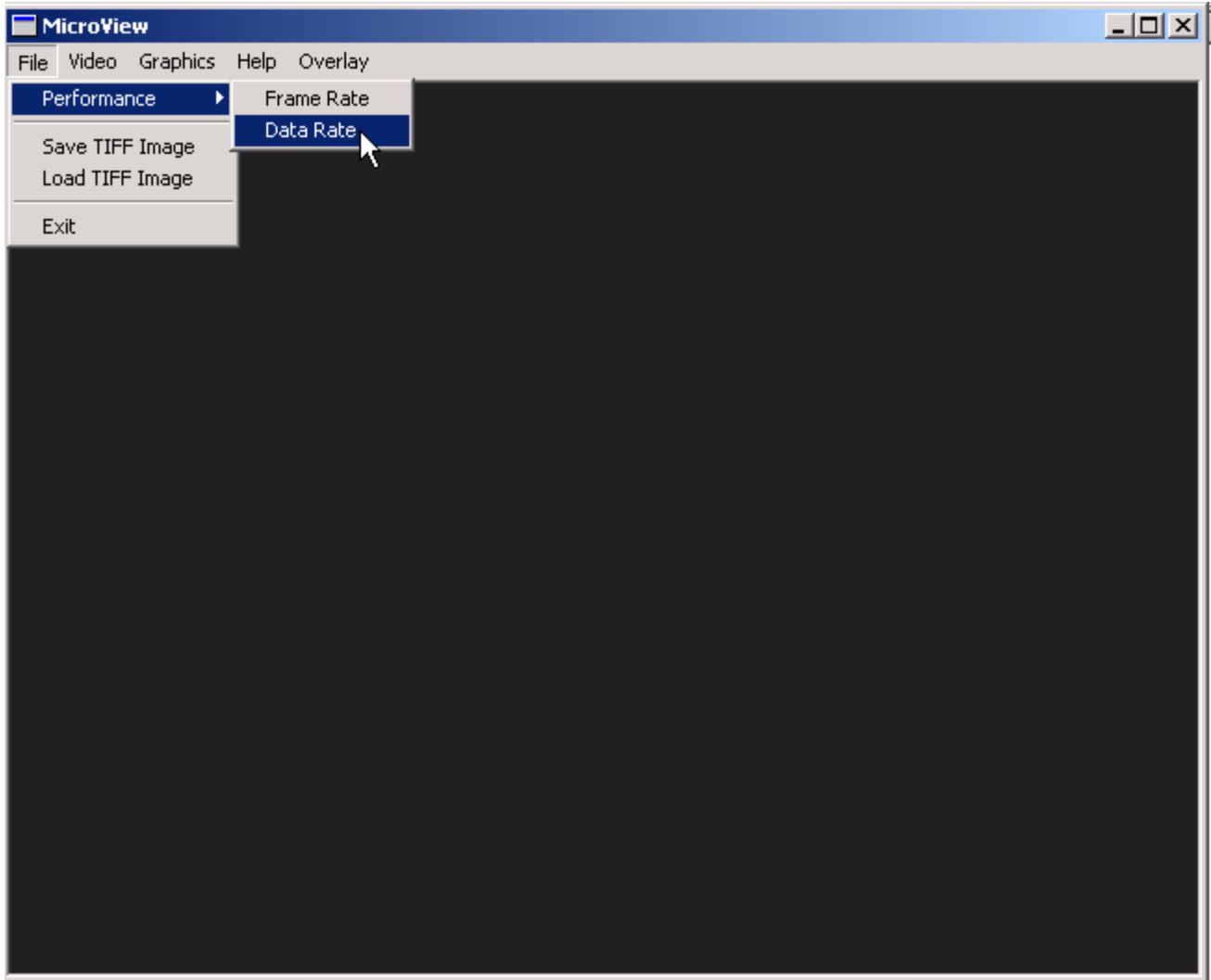


Figure 2 Performance Menu

Frame Rate - This menu selection displays the current number of frames of video data that are being transferred from the hardware frame grabber to the video display. This menu selection is useful for determining the performance of the system. If many applications are running at the same time as the MicroView application then the performance of the live video may not be real-time. Real-time performance is characterized as approximately 30 frames of video data per second.

Data Rate - This menu selection displays the current number of bytes of data being transferred over the PCI bus. Any other hardware cards that have been installed on the PCI bus will affect the data rate. This is to include network interface cards. If there is network traffic then the performance of the hardware frame grabber will be degraded.



Figure 3 Performance Data Dialog

Save and Load TIFF Image Menu Item

Save TIFF Image – TIFF format images may be saved when this menu item is selected. A dialog box will appear requesting the name of the file to which the TIFF image will be written. Only TIFF format images may be saved at this time. To save bitmap images, use the MicroTools: MicroInspector application.

Load TIFF Image - This menu selection will allow the display of a previously saved TIFF image. This image must have been saved via the Save TIFF menu selection. As TIFF image formats vary greatly, not all TIFF images created with other applications may be displayed using this menu selection. To save and restore bitmap type images, use the MicroTools: MicroInspector application.



Figure 4 Load/Save TIFF Image Dialog

Exit Menu Item

This menu selection closes and exits the program.

Video Menu

The video menu selections provide for control over the image display. Live video acquisition is controlled through this set of menu selections. It is suggested to use the Snap menu item to help determine whether or not a frame of image data is acceptable to save as a TIFF image (see below).

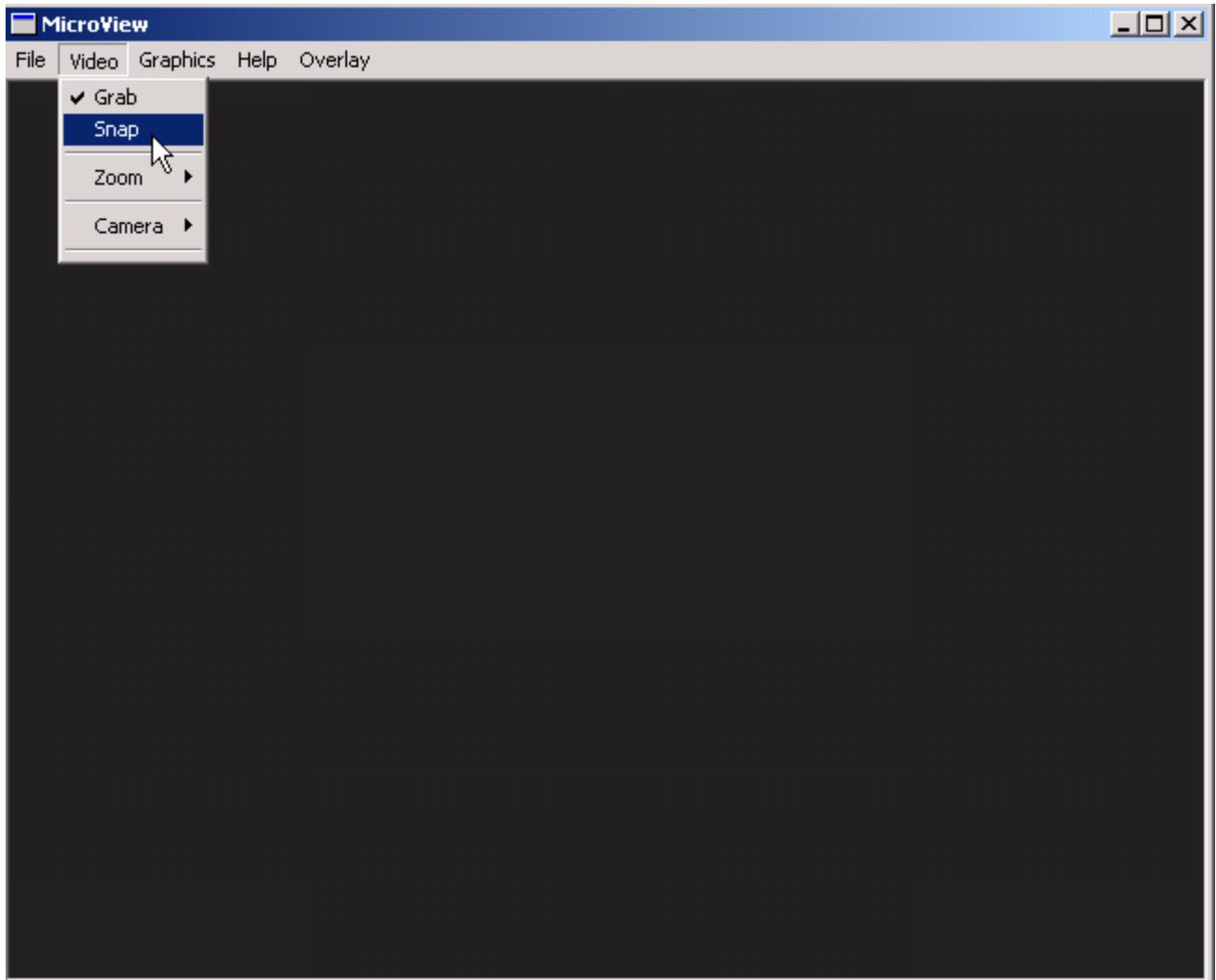


Figure 5 Grab/Snap Menu Item

Grab Menu Item

The Grab menu selection allows the display of live, real-time video data. After a TIFF image has been displayed in the application, the Grab menu item must be selected to enable the display of live video again.

Snap Menu Item

The Snap menu selection allows the display of a single frame of video data. Before saving an image into the TIFF format, it is a good idea to snap an image to be sure that the image is the one to save. Click on the Grab menu item (see above) in order to enable the live video acquisition again.

Zoom Menu Item

The Zoom menu item allows the size and resolution of the displayed video to adjusted according to application needs.

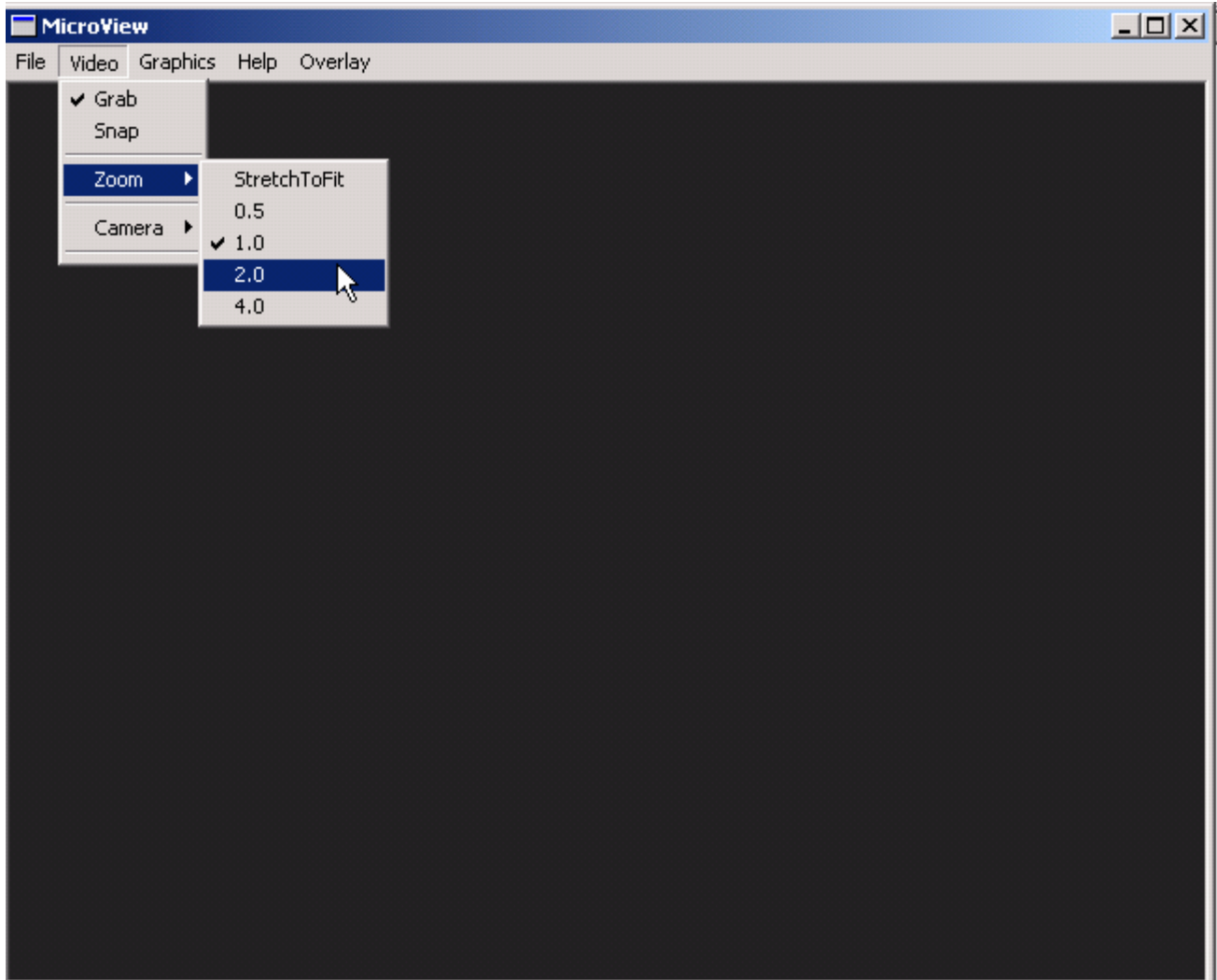


Figure 6 Zoom Menu Item

Stretch To Fit – The stretch to fit menu item allows the live video display to be stretched and shrunken via dragging by the mouse on the application window borders. The stretch to fit zoom mode will have a performance that is much lower than the zoom modes above 1.0 because of the way that the live video image transfer must be made at the hardware level.

0.5 - The 0.5 menu item allows the live video display resolution to be reduced by 50%. The 0.5 mode will have a performance that is much lower than the zoom modes above 1.0 because of the way that the live video image transfer must be made at the hardware level. The 0.5 zoom mode does not allow the display window to change in size via dragging on the application window borders.

1.0 - The 1.0 menu item displays the live video in the actual resolution of the camera (640x480).

2.0 - The 2.0 menu item allows the live video display resolution to be increased by a factor of 2. The 2.0 zoom mode allows the display window to change in size via dragging on the application window borders. If the application window size that is displayed is less than the maximum (640*2 x 480*2) then scroll bars will appear on the application window. The scroll bars may be used to change the area of interest that is currently being viewed. **NOTE: This zoom not available when using a color camera.**

4.0 - The 4.0 menu item allows the live video display resolution to be increased by a factor of 4. The 4.0 zoom mode allows the display window to change in size via dragging on the application window borders. If the application window size that is displayed is less than the maximum (640*4 x 480*4) then scroll bars will appear on the application window. The scroll bars may be used to change the area of interest that is currently being viewed. **NOTE: This zoom not available when using a color camera.**

Camera Menu Item

The camera menu item provides for the changing of the up to four available cameras.

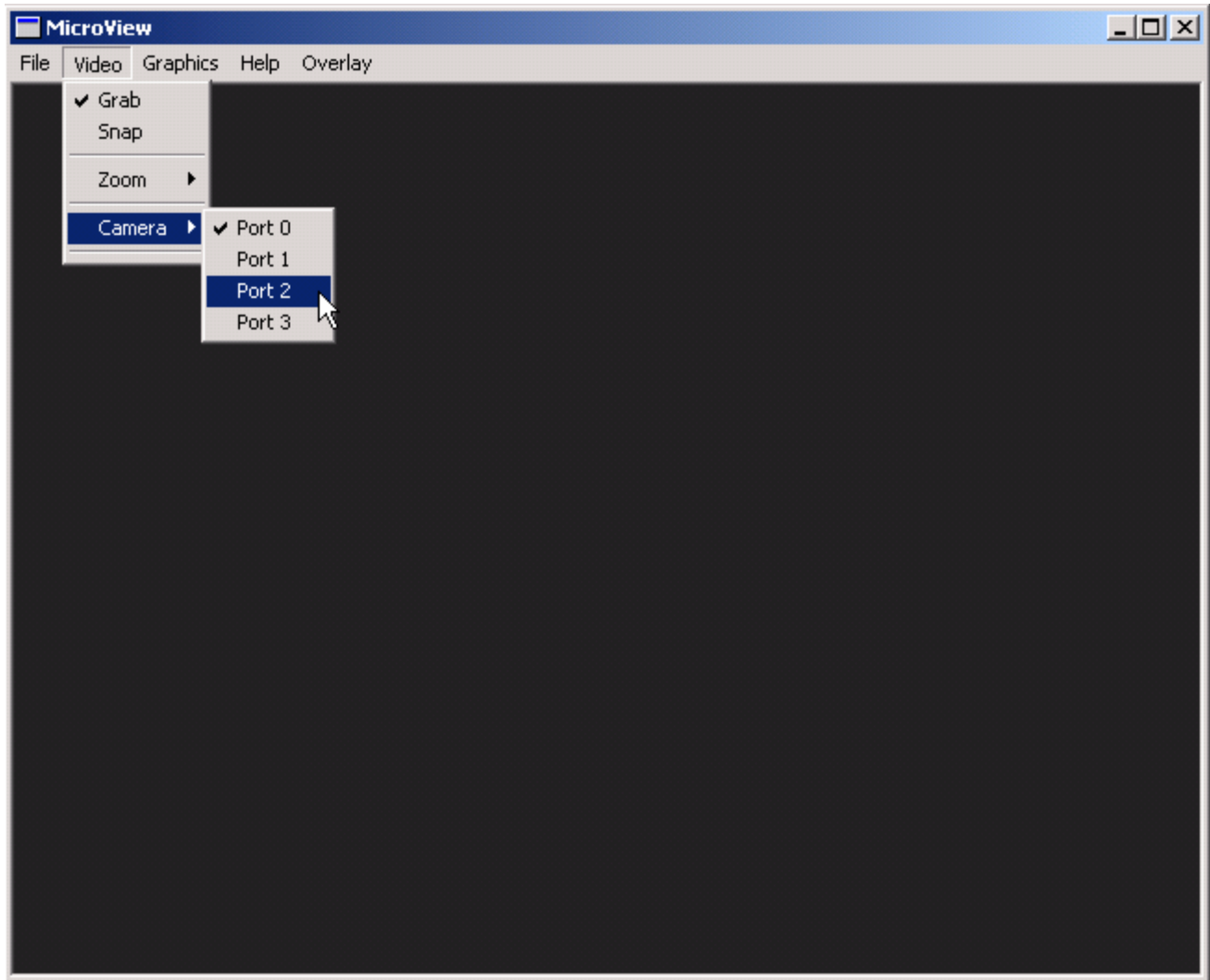


Figure 7 Camera Port Menu Item

The cameras are listed by port number as the hardware frame grabber muxes between the four camera input ports. If the system that was purchased was delivered with four camera capability, then the cable which connects the frame grabber hardware to the camera will have four camera BNC type connectors. They should be labeled camera 0 through camera 3 which corresponds to port 0 through port 3. If the system that was ordered did not come with a four port cable, then one may be ordered via Potomac Photonics.

Graphics Menu

The graphics menu selections allow for the manipulation of the overlay graphics, which may be drawn and displayed, nondestructively over the live video image.

Overlay Graphics Type Menu Items

Overlay graphics are used to outline a particular feature. They may also be used to perform relative measurements. The most generic of overlay graphic methods is the Free Hand drawing which may be used to display any graphic that can be drawn with the human hand.

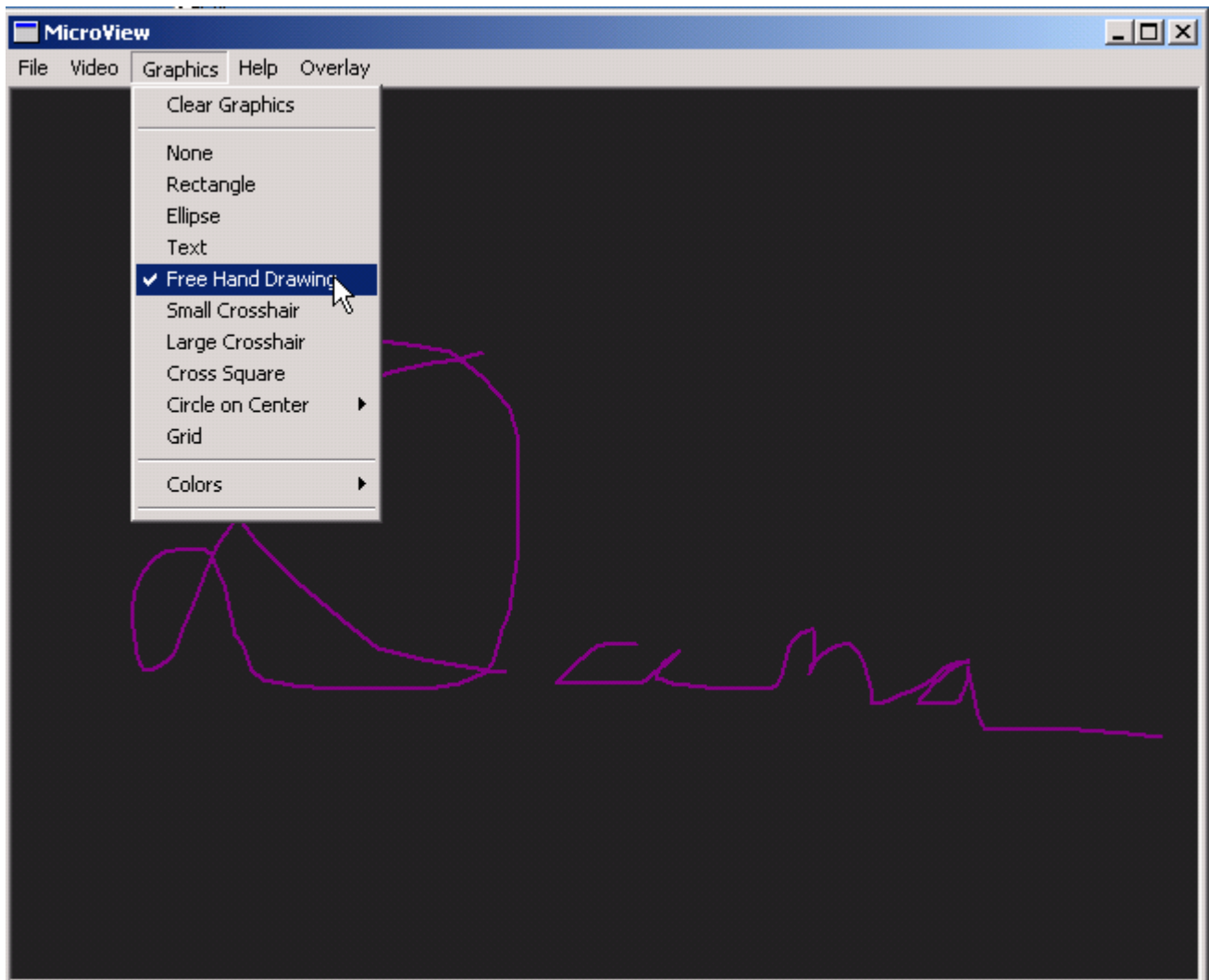


Figure 8 Overlay Graphics Type Menu Item

Clear Graphics – The Clear graphics menu item clears the overlay graphics from the live video image. All of the graphics will be cleared from the display. There is no ability at this time to pick and choose individual graphics to delete.

The rest of the overlay graphics menu items allow for the drawing of the graphics. The Rectangle, Ellipse,

Text, and Free Hand Drawing allow for dynamic drawing of the corresponding graphics anywhere on the live video image. Dragging the mouse with the left mouse button pressed will change the Rectangle and Ellipse size.

The Text item will prompt for the text string and will apply the text on the live video display at the point where the left mouse button is clicked first. Dragging the mouse cursor while pressing the left mouse button will drag the text around the display. The text may only be moved the very first time it is applied to the live image.

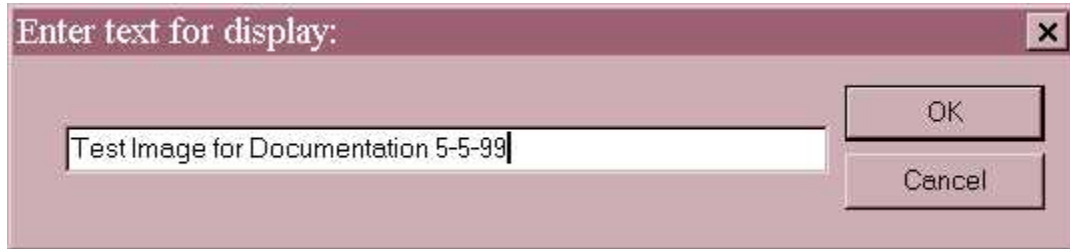


Figure 9 Text Graphic Dialog Box

The text that is entered into the dialog box will be displayed in the live video display area after the left mouse button is clicked on the spot where the text should be put. If the incorrect spot was chosen and the left mouse button is still depressed, the position where the text will be put may be dragged about the display along with the mouse cursor.

The rest of the overlay graphics are static graphics that provide a reference to some aspect of the video image. The Crosshairs (Large and Small) will cross in the exact center of the field of view. The circles will also encircle the center of the field of view. The grid may be used to segment the image into various sectors. None of the static graphics may be moved after they have been drawn to the display. If it is desired to change the location of any graphic, all of the graphics must be cleared from the display and the desired graphics must be redrawn.

NOTE: When the overlay graphics are drawn to the live video image and the scroll bars are used on a zoomed display window, the graphics may not be drawn properly. It is best to clear all overlay graphics when scrolling and zooming the application window. If the graphics seem to be dragged across the image perform the following steps:

1) Clear the overlay graphics from the live display, 2) select the Zoom Menu item, 3) then, select the desired zoom menu item and scroll to the desired position. The graphics may then be drawn on the live video after the desired area of interest in the live video window is showing.

Colors Menu Item

The colors menu item is used to change the color of the next graphic to be drawn. Multiple colors may be displayed at the same time. After each graphic is drawn in the current color, a new color is chosen and all graphics drawn from then on will be drawn in the newly chosen color.

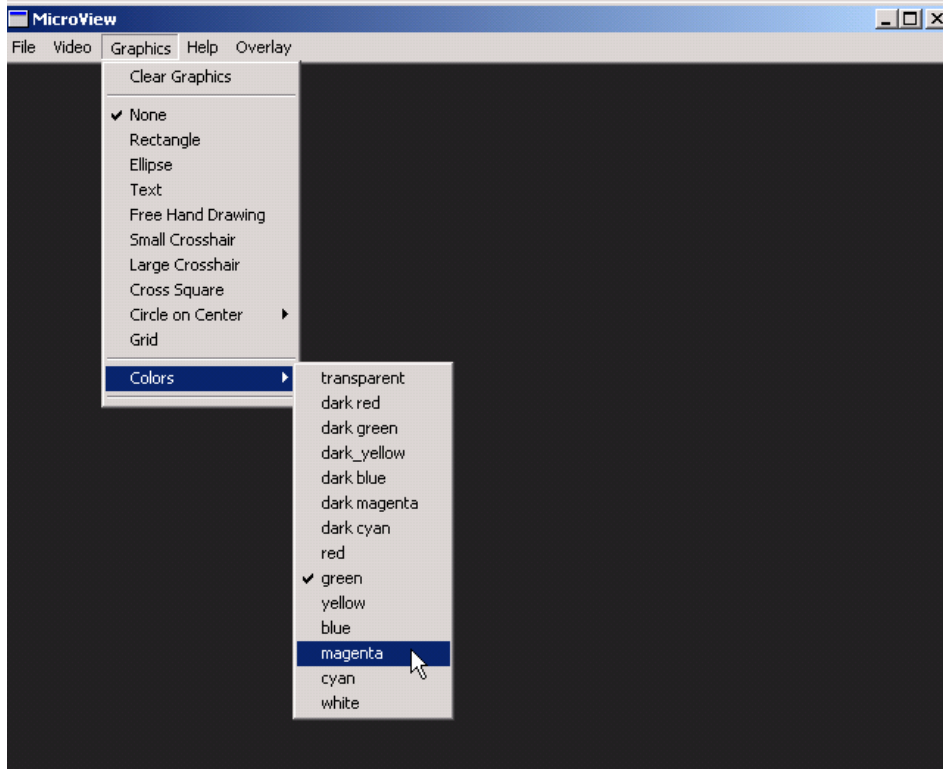


Figure 10 Overlay Graphic Colors Menu Item

Help Menu

The help menu item displays the information about the application software.



Figure 11 About Dialog Box

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