

Micromap 123

SOFTWARE MANUAL

Software Version: 4.8

March 2002

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Year 2000 Compliance Statement

Micromap software is Year 2000 compliant. All date and time information displayed and stored with Micromap data files is provided directly by the operating system. Micromap software does not create, manage, or use system time. The definitive statement of Year 2000 compliance of the operating system must be made by the operating system vendor.

Minimum Computer Specification for Instrument Measurements

Operating system:	Windows NT 4.0 SP3
Monitor:	1024x768 24 bit (true color)
Graphics:	AGP with DirectX 6.0 or higher
Processor:	500 Mhz Pentium III or higher
Memory:	256 MB RAM or higher

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Micromap 123 Software

Software Version: 4.8, 2002-03-11

Toolbar



Customizing the toolbar

Left-click on the toolbar (between the buttons) to drag the toolbar to a new location. You can drop it along any side of the 123 main window, or drop it into its own window.



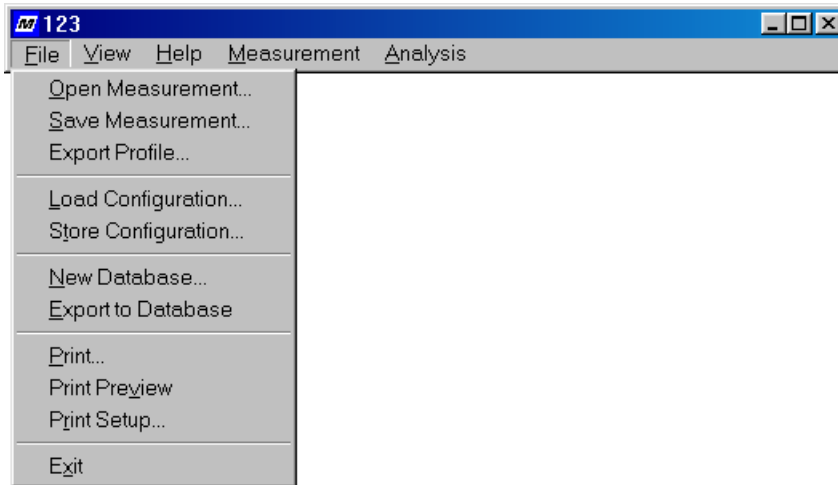
Click here to customize the tool bar

Right-click on the toolbar (between the buttons) to customize the layout of the buttons: you can move, add, or delete buttons from the toolbar.

These changes are saved in the Windows registry, not the Micromap config file. Loading a config file will not change the layout of the toolbar.

Menus

File menu



Open Measurement...

This command loads a measurement file.

Save Measurement...

This command saves a measurement. Three measurement file formats are supported:

- MMD (Micromap Data file format)
- SDF (Surface Data File format 1.1 - binary)
- SDFA (Surface Data File format 1.1 - ASCII)

Automatic file naming allows you to save a series of related measurements with a single click.

More information:

Dialog Boxes

Export Profile...

This command allows you to save the current profile as a data set. The profile exported is exactly the one displayed on the profile display. Profile data sets cannot be loaded by the Micromap 123 software..

Load Configuration...

This command loads a software configuration file.

Store Configuration...

This command saves the current configuration of the software. Configuration files store the View Menu, Sample Setup, Optics Setup, Measurement Setup, Analysis Setup, Area and Profile cursors, and display customizations. If you want to define several different custom displays (for instance, a Contour display that shows cursor statistics, and another Contour display that shows statistics for the whole data set), you can store these display customizations in Configuration files.

Whenever you exit the software, the current configuration is written to the file "Micromap Configuration File.MCF." Whenever you start the software, that file is loaded. If that file does not exist, then the software starts with the factory default settings.

When you load a configuration file, the name of the file is displayed as the window title for the Micromap application.

More information:

Tutorial - Customizing displays

New Database...

This command allows you to specify a database file. You may create a new database file or load an existing one.

Database files are stored as CSV (comma-separated values) files, which can easily be imported into other applications. The first line of a database file contains the names of the statistics being exported. Each time you export data, you append a record to the database file.

More information:

Dialog Boxes

Tutorial - Exporting statistics

Export to Database

This command exports statistics to the database file.

Print...

Print Preview

Print Setup

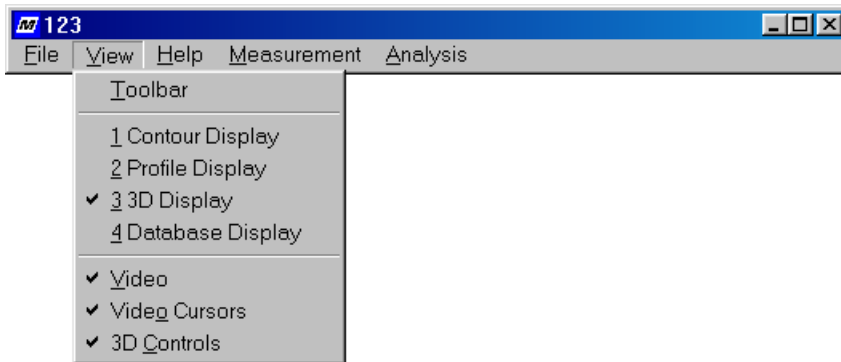
The print commands perform standard printing operations.

Note that you cannot print live video. You can acquire an Image measurement, and then print the measurement, which is good approximation of live video.

Exit

This command closes the software.

View menu



Toolbar

This command toggles display of the toolbar on and off.

1 Contour Display

This command shows the Contour Display.

2 Profile Display

This command shows the Profile Display.

3 3D Display

This command shows the 3D Display.

4 Database Display

This command shows the Database Display.

Video

This command shows the live video in a dialog box.

More information:

Dialog Boxes

Video Cursors

This command toggles display of the area cursors in the live video dialog box. It also displays a cross-hair in the center of the video image.

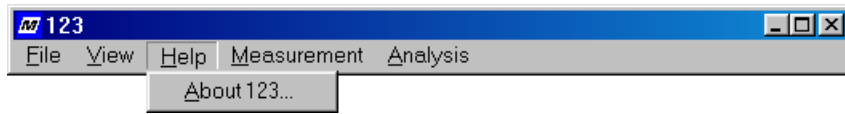
3D Controls

This command opens the 3D Controls dialog box, and is only available at the 3D display.

More information:

Dialog Boxes

Help menu



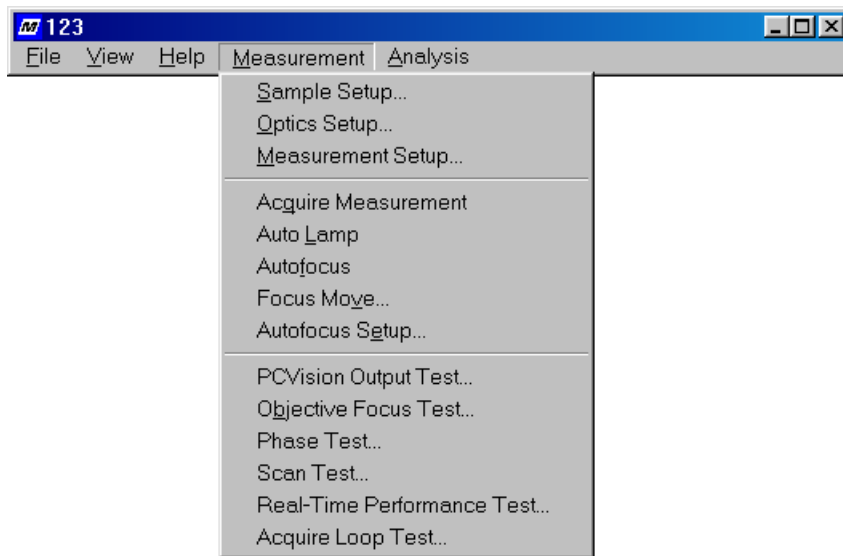
About 123...

This dialog box displays the current software version. It may also indicate if there is a problem with your computer.

More information:

Dialog Boxes

Measurement menu



Sample Setup...

This dialog box allows you to set information about the sample context. All measurements you acquire will have this information attached to them. You can change this information after acquiring a measurement through the "Edit Sample Information" command (found in the "Analysis" menu).

More information:

Dialog Boxes

Optics Setup...

This dialog box allows you to select what optics are being used for your measurements.

More information:

Dialog Boxes

Measurement Setup...

This dialog box lets you specify the data format, lamp and contrast, and current measurement mode.

More information:

Dialog Boxes

Acquire

This command acquires a measurement using the current measurement mode.

Auto Lamp

This command automatically adjusts the lamp and contrast.

Note: if your hardware does not include a computer-controlled lamp, this item will not appear.

Autofocus

This command automatically finds focus on the sample.

Note: if your hardware does not include autofocus, this item will not appear.

Focus Move...

This dialog box allows you to move the focus motor.

More information:

Dialog Boxes

Autofocus Setup...

This dialog box allows you to control how the autofocus algorithm works.

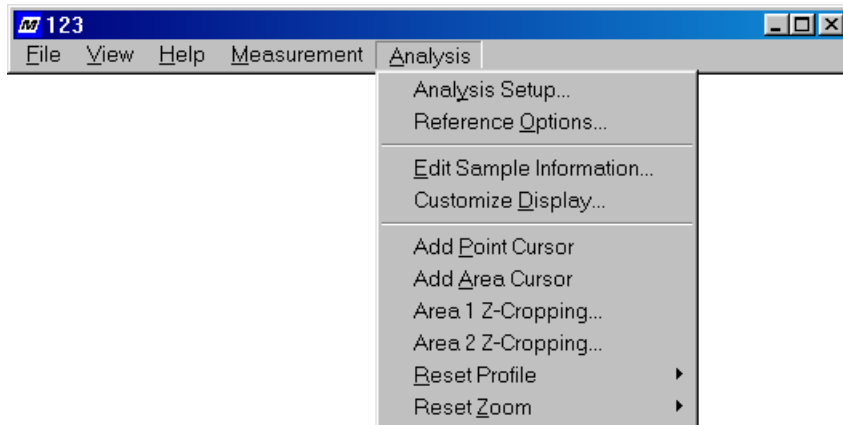
More information:

Dialog Boxes

PCVision Output Test...**Objective Focus Test...****Phase Test...****Scan Test...****Cycle Test...****Real-Time Performance Test...****Acquire Loop Test...**

These tests are for hardware diagnostics. They require a password to access. You should only use these tests under the supervision of a Micromap representative.

Analysis menu



Analysis Setup...

This dialog box allows you to control how the measurement is analyzed and displayed.

More information:

Dialog Boxes

Reference Options...

This dialog box provides a way of measuring super-polished optics whose roughness is smoother than the microscope's reference optics

More information:

Dialog Boxes

Tutorial - Reference Options

Edit Sample Information...

This dialog box allows you to change the Sample and Optics set-up associated with the current measurement.

More information:

Dialog Boxes

Customize Display...

This dialog box allows you to specify which statistics are displayed on the current display.

More information:

Dialog Boxes

Tutorial - Customizing displays

Add Area Cursor

Add Point Cursor

These commands add a cursor to the current plot. You may never have more than 2 cursors on any plot. Area cursors are only for Contour plots; Point cursors are only for Profile plots. You can configure the displays to show various statistics relating to the cursors.

To get rid of a cursor, simply drag it off the plot and release it.

More information:

Tutorial - Using volume cursors to create automatically aligning masks

Area 1 Z-Cropping...

Area 2 Z-Cropping...

These dialog boxes allow you to place vertical limits on the data analyzed by the area cursors.

More information:

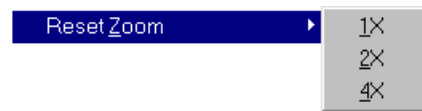
Dialog Boxes

Tutorial - Using area z-cropping to create automatically aligning masks



Reset Profile...

- X** Reset the profile to an X profile centered in the measurement area.
- Y** Reset the profile to a Y profile centered in the measurement area.
- Skew** Reset the profile to a skew profile.



Reset Zoom...

- 1X** Reset the contour zoom cursor to show the entire measurement.
- 2X** Reset the contour zoom cursor to zoom to 2X.
- 4X** Reset the contour zoom cursor to zoom to 4X.

Dialog boxes

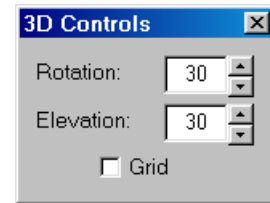
3D Controls...

This dialog box allows you to control the 3D plot. It is only available when you are at the 3D plot.

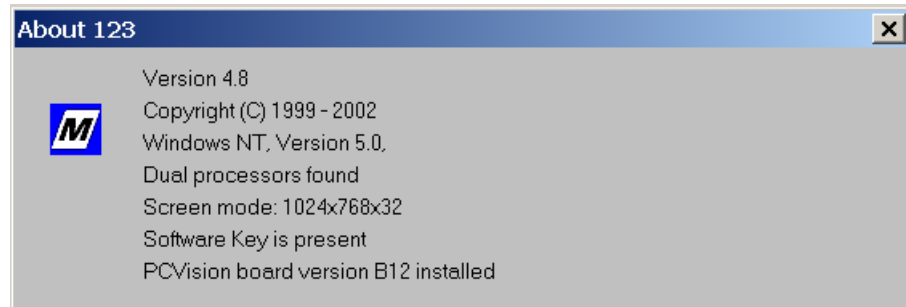
Rotation allows you to control the angle of rotation from the plot (0° - 360°).

Elevation allows you to control the angle of elevation above the plot (-180° to 180°). Positive elevation views the top of the surface; negative elevation views the bottom of the surface.

Grid displays a gray pattern on the bottom of the surface.



About 123...



This dialog box displays the current software version. It also displays the state of certain hardware and software components required for the software to run. If you are having problems running the software, check here first.

Analysis Setup...

This dialog box allows you to control how the measurement is analyzed and displayed.

Analysis options are on the left hand side; you may turn any option on or off by clicking on the box next to the option name.

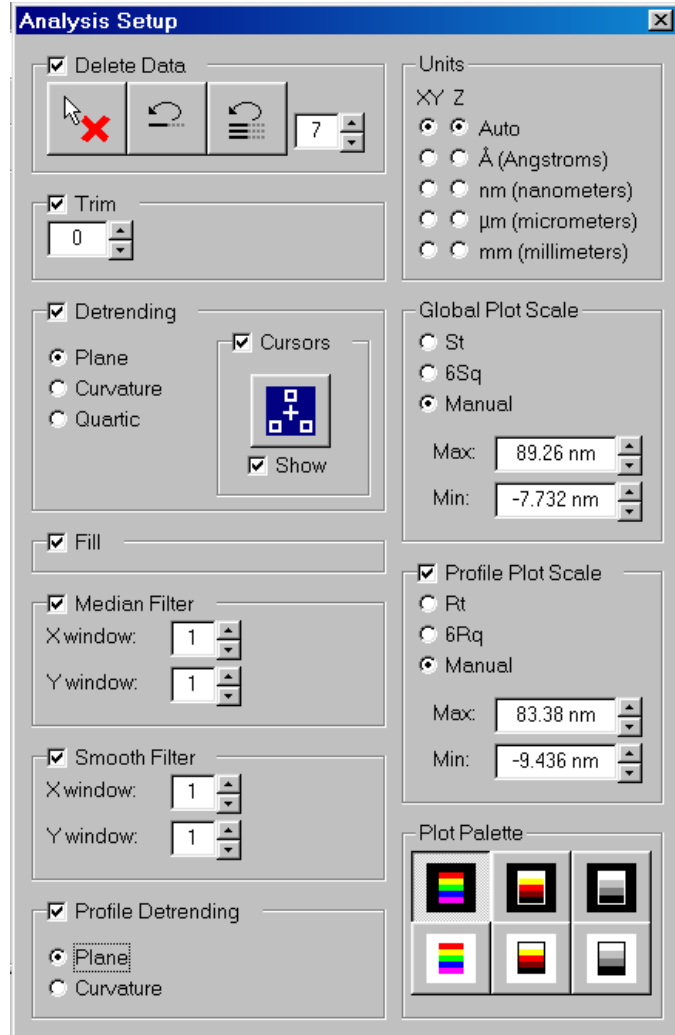
Display options are on the right hand side; you must select at least one setting for each option.

Delete Data allows you to manually paint out certain pixels. These pixels will be removed from the data before analysis. You may only delete pixels from the Contour display.

The buttons allow you toggle painting mode **On/Off**, **Undo** the last painting operation, or **Undo All** painting operations (restore all the data).

The number field allows you to control the size of the "brush" that deletes the pixels.

Trim allows you to expand the area around invalid pixels. For every level of trim you specify, that many pixels in each direction will be removed when adjacent to an invalid pixel. A trim level of 0 will have no effect; a trim level of 20 will magnify each bad pixel to a 40x40 patch of invalid data.



Detrending specifies the overall surface shape that is removed in the analysis. Removing the surface shape reveals the microsurface structure, and allows the calculation of surface roughness statistics. The detrending term fit is calculated from a least squares fit to a sampling of every 4th pixel from 4th line (about 6% of the data). When the 4x4 sampling of the data results in fitting less than 5000 data points, the fit is recalculated using all valid data points. If there are less than 16 valid data points, the term fit will fail and display an error message.

Plane should be removed from almost all measurements because sample tilt alignment is measured as a plane shape.

Curvature removes the shape from a torus. It is a general quadratic surface: elliptic paraboloid or hyperbolic paraboloid. It is also appropriate for spherical surfaces.

Quartic is a general fourth order term fit, and may be required for some supersmooth measurements.

If detrending is turned off then no terms are removed from the data. The Term statistic will report "None" for term removed. (This is exactly identical to specifying the "None" term in previous versions of the software.) The Term statistic will also report "None" if the term fit failed and no terms were removed.

Normally, the term is calculated from the entire data set. However, you may turn **Cursors** on and then use the Contour display to specify up to four areas to fit the term to. The calculated term is then removed

from the entire data set. This is particularly useful for leveling steps. You may opt to **Show** your fit cursors on the Contour plot.

Fill creates data to fill in invalid data points. For each invalid pixel the 8 adjacent pixels are examined. If at least 4 of those pixels are valid then the missing pixel is replaced by the average of all the adjacent pixels. This procedure is repeated 9 times allowing the valid data to "grow" over clumps of missing data.

The Fill operation never adjusts or modifies existing valid pixels.

Median Filter specifies the X and Y width of a median window. This window can be visualized as passing over the raw data pixel by pixel adjusting the height of the data point in the center of the window to be equal to the median height of all the data points falling within the window.

For example, if the X width is 3 and the Y width is 3 the nine pixels covered by the window will be sorted according to height and the center pixel will be replaced with the middle height (i.e. the 5th height in the 9 pixel sorted list). If the sorted list contains an even number of pixels (for example a 2x2 window or a 3x3 window with one bad pixel) then the center pixel is replaced with the average of the two heights in the middle of the list (for a 2x2 window the 2nd and 3rd heights would be averaged to create the height for the center pixel).

Pixels with insufficient convolution windows (for example pixels on the edge of the data set) will be eliminated from analyzed data. The maximum amount of missing data allowed is one less than the width or height of the window, whichever is smaller.

If X and Y are both set to 1 then no median windowing is applied to the data. (This is equivalent to turning Median off.)

Smooth Filter specifies the X and Y width of a convolution window. This window can be visualized as passing over the raw data, pixel by pixel, adjusting the height of the data point in the center of the window to be equal to the average height of all the data points falling within the window.

For example, if the X width is 3 and the Y width is 3, the height of each data point will be equal to the average of 9 data points; itself and each adjacent data point.

Pixels with insufficient convolution windows (for example, pixels on the edge of the data set) will be eliminated from analyzed data.

If X and Y are both set to 1, then no smoothing is applied to the data.

Profile Detrending applies a term fit to the profile displayed on the Profile Display. The profile is drawn from the analyzed data, which has been detrended, filtered, etc. Profile Detrending allows you to apply another layer of detrending to just the profile.

Units allows you to select which units to display height statistics in. Image surface heights have no units. "Auto" attempts to pick a useful unit system for each value displayed.

Global Plot Scale selects between peak to valley, the mean ± 3 times the Rq, or a manual peak and valley you enter. Points above the peak or below the valley will be clipped to the peak or valley color (for display only; this has no effect on any statistics). All contour and 3D plots will be drawn in this scale.

Profile Plot Scale is the same as Global Plot Scale, but it only applies to the profile on the Profile Display.

Plot Palette lets you select a color scheme to display the data in.

Area Z-Cropping...

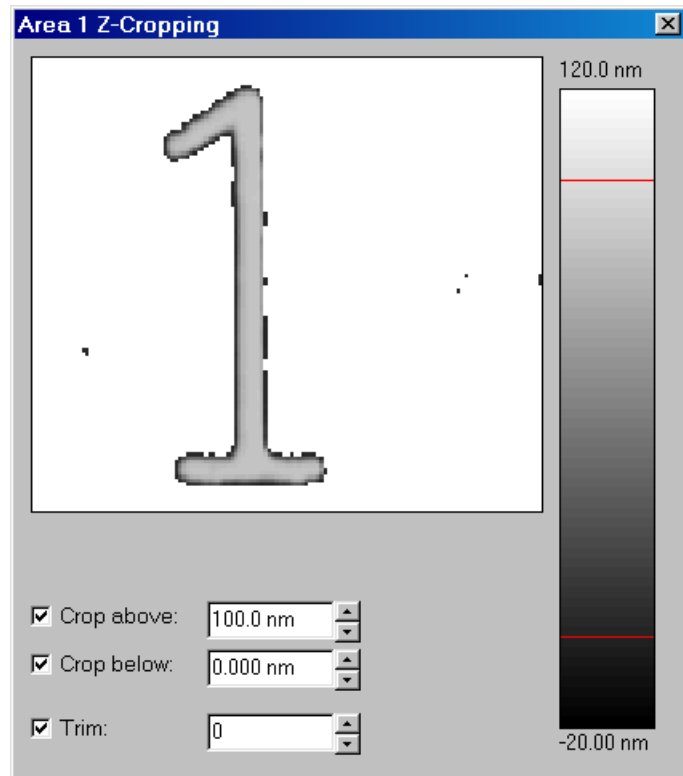
This dialog box allows you to apply vertical limits to the area cursors.

Crop Above controls whether a ceiling is applied. Once it is checked on, you can enter a height, or use the cursor on the color key to select a height.

Crop Below controls whether a floor is applied.

Trim causes pixels adjacent to the ones cropped out to also be cropped out.

The plot shows you the data that is in the area cursor. It will delete pixels above and below the floor and ceiling, so you may visually determine that you are removing the correct pixels.



The plot is not interpolated: each pixel is shown as a solid square. This makes it easier to recognize which data pixels are being deleted.

There is a separate dialog box for each area cursor.

More information:

Tutorial - Using area z-cropping to create automatically aligning masks

Autofocus Setup...

This dialog box allows you to control how the autofocus algorithm works. You can select among various autofocus modes you have installed.

Move Before Focus specifies a distance to move before the focus attempt is made.

Initial Search Range specifies the total range to search for focus in the first attempt. (Example: 20.0 um searches from 10 um above to 10 um below the current position).

Maximum Search Range species the total range to search for focus in the final attempt.

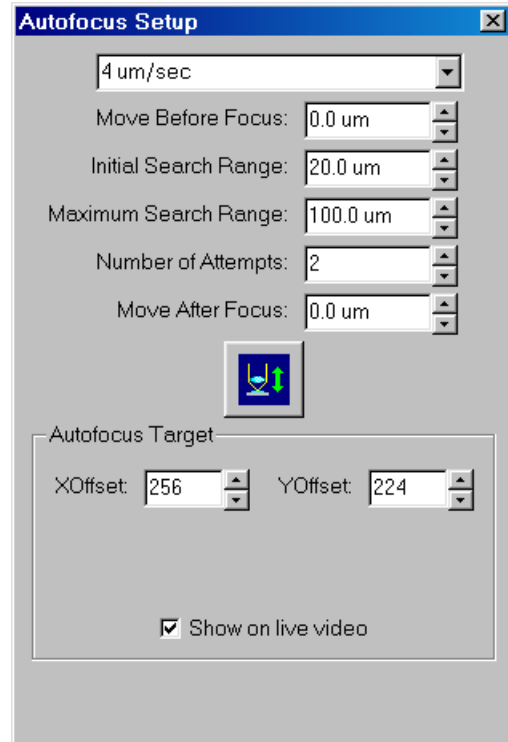
Number of Attempts specifies how many times to try to find focus, each time increasing the search range from the initial towards the maximum. If only 1 attempt is specified, then only the initial range will be searched.

Move After Focus specifies how far to move from focus. If no focus was found, then move after focus will not be executed.

Focus starts the focus procedure.

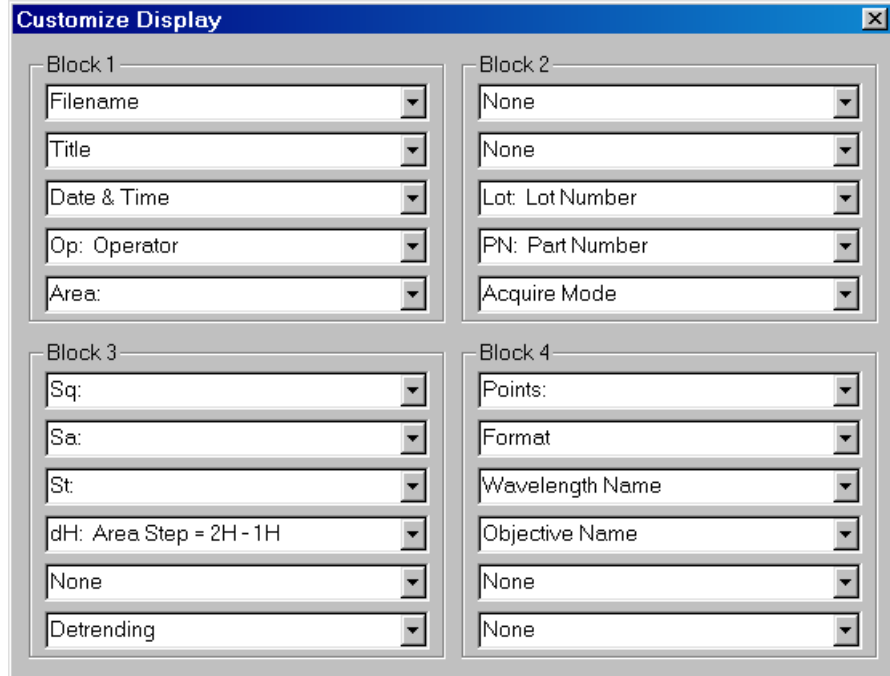
Autofocus Target specifies the X and Y offset of the autofocus cursor. Normally you want that to be in the center of the measurement area.

Show on live video controls whether or not the autofocus cursor is drawn on the live video displays.



Customize Display...

This dialog box allows you to select the statistics displayed.



The 'Customize Display' dialog box is organized into four quadrants, each labeled 'Block 1' through 'Block 4'. Each block contains a series of dropdown menus for selecting specific data points to display. Block 1 includes 'Filename', 'Title', 'Date & Time', 'Op: Operator', and 'Area:'. Block 2 includes 'None', 'None', 'Lot: Lot Number', 'PN: Part Number', and 'Acquire Mode'. Block 3 includes 'Sq:', 'Sa:', 'St:', 'dH: Area Step = 2H - 1H', 'None', and 'Detrending'. Block 4 includes 'Points:', 'Format', 'Wavelength Name', 'Objective Name', 'None', and 'None'.

Customize Display allows you to customize the displays to show the information you need. These customizations are stored in the default configuration file, so if you change it, the next time you run the software it will remember. If you want multiple layouts, you can store each one in a configuration file.

To customize the Database display you must use the command "New Database..."

More information:

Tutorial - Customizing displays

Edit Sample Information...

This command allows you to change the Sample and Optics settings associated with the current data file. It allows you to fix some mistakes; for instance, if you took a data set with the wrong magnification, you could change the magnification here and see the correct area for the data.

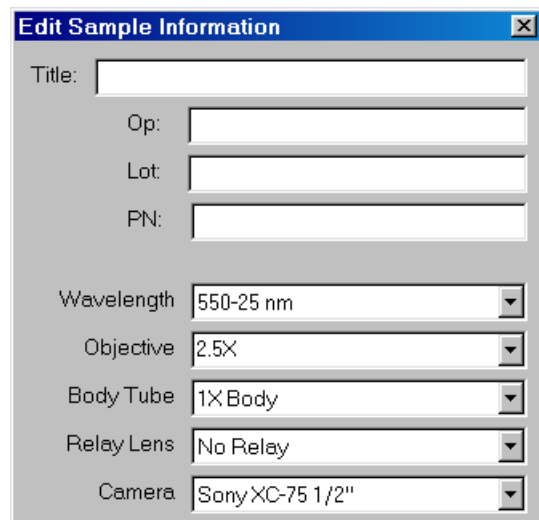
This dialog box cannot change the height of the data; hence, changing the wavelength does not actually change the height of the data points.

Title is a comment or description of the measurement that the user can enter (70 characters).

Op: is the operator name (20 characters).

Lot: is the Lot name or number (20 characters).

PN: is the part name or id (20 characters).



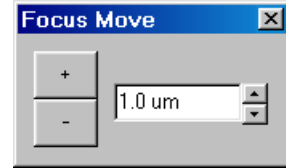
The 'Edit Sample Information' dialog box features a 'Title:' text field at the top. Below it are three input fields for 'Op:', 'Lot:', and 'PN:'. The lower section contains several dropdown menus: 'Wavelength' (set to '550-25 nm'), 'Objective' (set to '2.5X'), 'Body Tube' (set to '1X Body'), 'Relay Lens' (set to 'No Relay'), and 'Camera' (set to 'Sony XC-75 1/2").

Focus Move...

This dialog box allows you to move the focus motor. For instance, you might want to move the objective up 5 mm so you can put a new sample under the microscope, and then move it back.

+ moves the motor up.

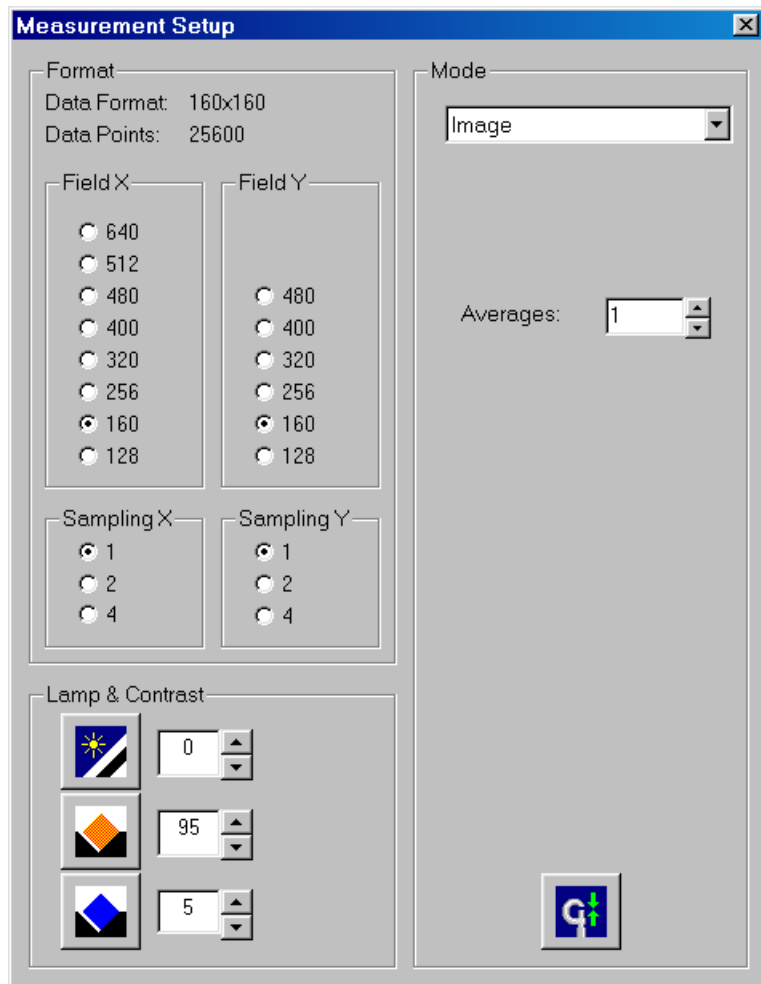
- moves the motor down.



Measurement Setup...

This dialog box lets you specify the data format, lamp and contrast, and current measurement mode.

Lamp and contrast controls allow you to manually adjust these settings. Normally, the Auto Lamp function will find the best settings.



Field X/Field Y allow you to specify the camera area (the number of columns and rows of data) to acquire. The current field area is displayed as the box cursor on the live video displays.

Sampling X/Sampling Y allow you to select a sampling of the field area. This means that only every N th column or row in the field area will be measured. Specifying a sampling higher than 1 lowers the lateral resolution of the measurement, but allows you to measure the same amount of physical area with less memory and greater speed.

Lamp allows you to set the lamp level.

Mode allows you to select the mode used when you acquire a new data set. Each mode has various parameters that you can specify. Scan ranges are affected by the number of data points in the field area.

Averages specifies the number of measurements to average. For example, if you choose Averages: 3, the application will acquire 3 complete measurements and present the average of those measurements as the current data.

Note: if you do not have a computer controlled

Contrast Top (the orange box) sets the upper limit for camera image range.

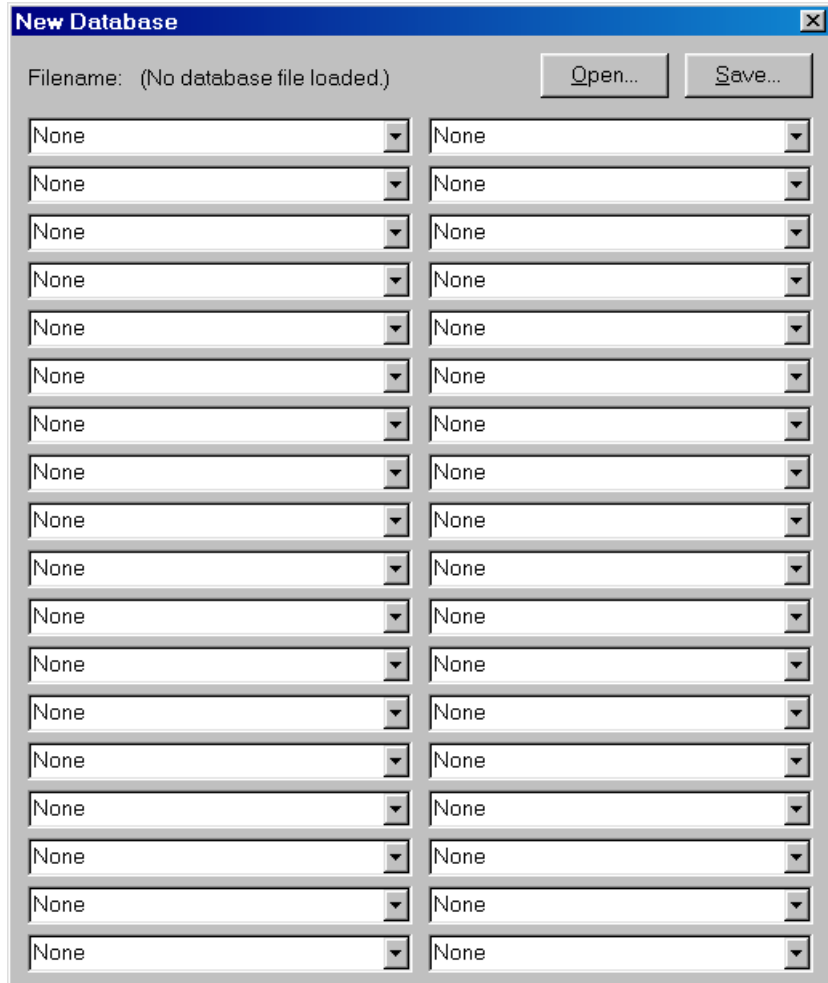
Contrast Bottom (the blue box) sets the lower limit for camera image range.

Auto sets the lamp and contrast to the optimum for the current live video measurement area.

lamp installed, then the Auto Lamp and top contrast controls will not be available. However, you will still be able to set the bottom contrast level.

New Database...

This dialog box allows you to specify which statistics are displayed on the Database display (and thus exported to the database with the Export command).



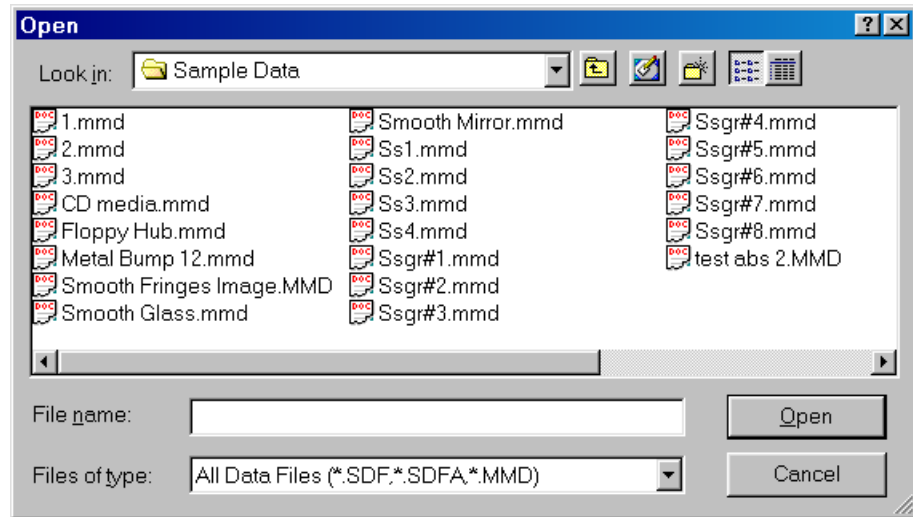
Open allows you to load an existing database file. The database will then be automatically use the same fields as the database file you loaded.

Save allows you to save the current fields to a database. If you save to an existing file name, the file will be overwritten (all of the data in the file will be lost).

More information:

Tutorial - Exporting statistics

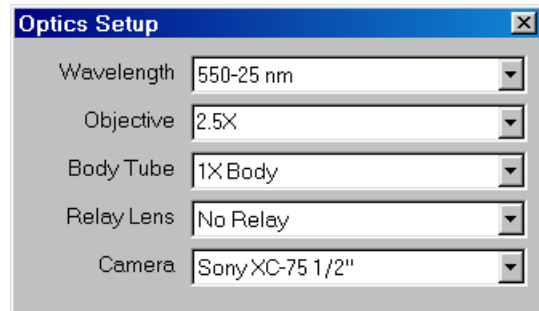
Open Measurement...



Open allows you to load an existing measurement file.

Optics Setup...

This dialog box allows you to select what optics are being used for your measurements. You may only have one set of hardware, in which case each of these menus will only have one choice. If you have multiple magnification objectives, this is where you tell the software which one you are using.



Reference Options...

This dialog box provides a way of measuring super-polished optics whose roughness is smoother than the microscope's reference optics.

Unlike other dialog boxes, the Group Reference box has 'tabs.' By clicking on the tab headings (Off, Subtract, Absolute RMS, or Group) you can change how the dialog box functions. This is because each of the states is mutually incompatible: for example, you cannot do Absolute RMS measurements while subtracting a Group reference.

The box contains numbered buttons, which display a file name next to them when they contain a data set. These boxes are often referred to as "slots;" they allow you to manage multiple measurements. To use a slot, simply click on it and then acquire or load as normal. To empty a slot, press the Clear button (although this will empty all of the slots).

Note that even when the dialog box is closed, it continues to function. If you open Reference Options, go to Absolute RMS, and press the Test button, you will see an Absolute RMS measurement. If you then simply close the box and press Acquire, the new measurement will go into slot 2 (the currently selected slot in the currently selected tab), and the Absolute RMS of that measurement and the measurement in slot 1 will be displayed.

To prevent any reference options from being applied, simply open the dialog box and select the "Off" tab. Also note that restarting the software clears all the slots and resets the tab to "Off."

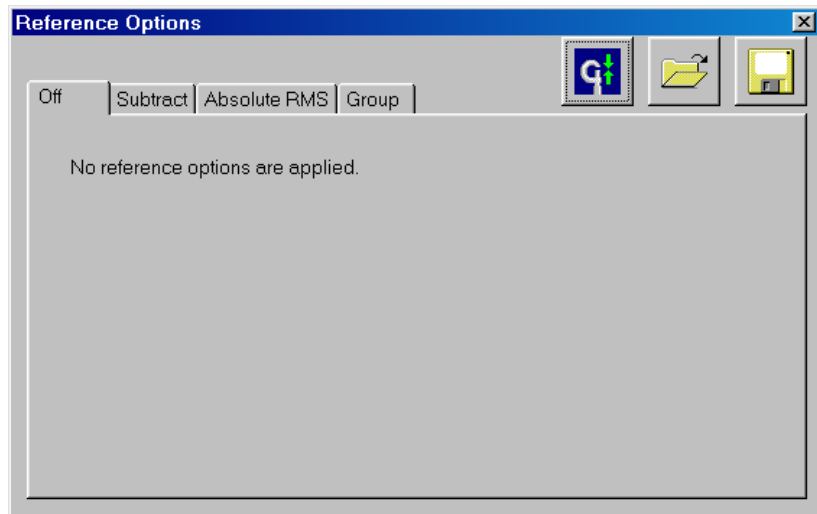
The Load, Save, and Acquire buttons in the dialog box behave exactly the same as the ones in the toolbar. They are provided for convenience only.

More information:

Tutorial - Reference options

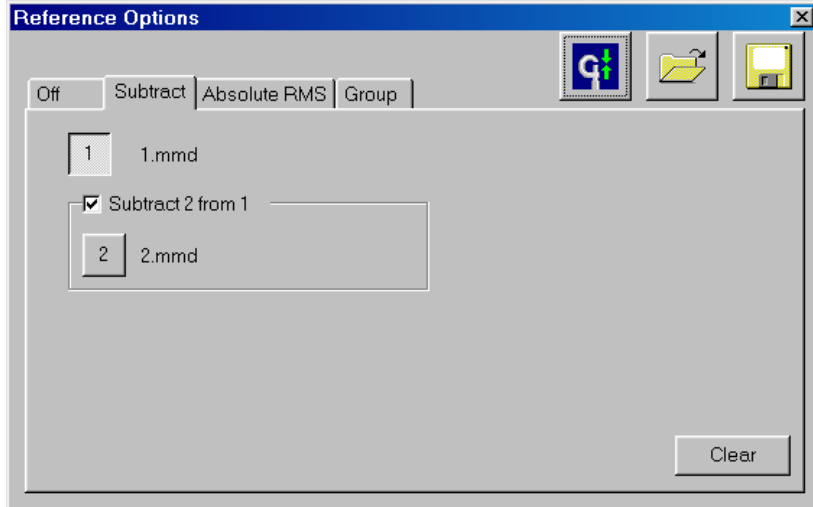
Off

When you select this tab, no reference options are applied.



Subtract

This tab allows you to specify a file that will be subtracted from the data.



1 is the current data file.

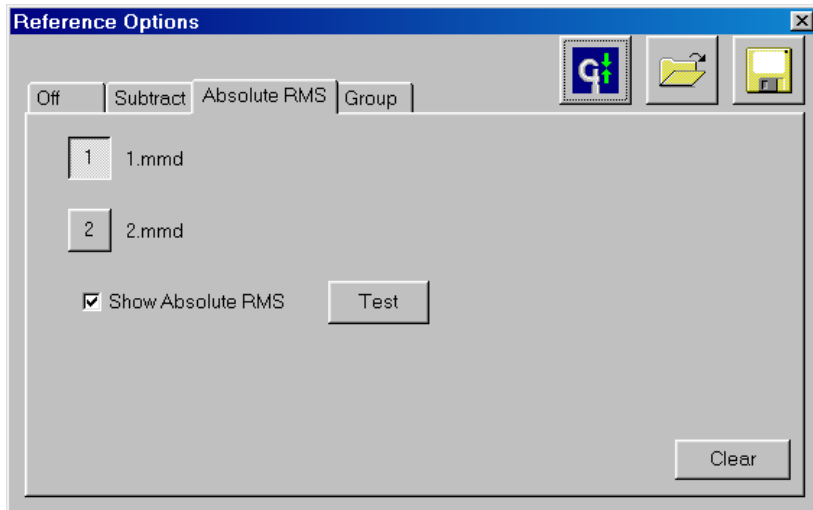
2 is the file that will be subtracted.

Subtract 2 from 1 controls whether or not the file in 2 is subtracted.

Clear empties both slots.

Absolute RMS

This tab allows you to take two measurements and create a single, self-referenced, qualitative measurement..



1/2 selects the (first or second) measurement to be part of the Absolute RMS.

Absolute RMS displays the absolute RMS. If this box is checked, then you will always see the absolute RMS as the current data. If it is not checked, then you will see the data from the selected slot.

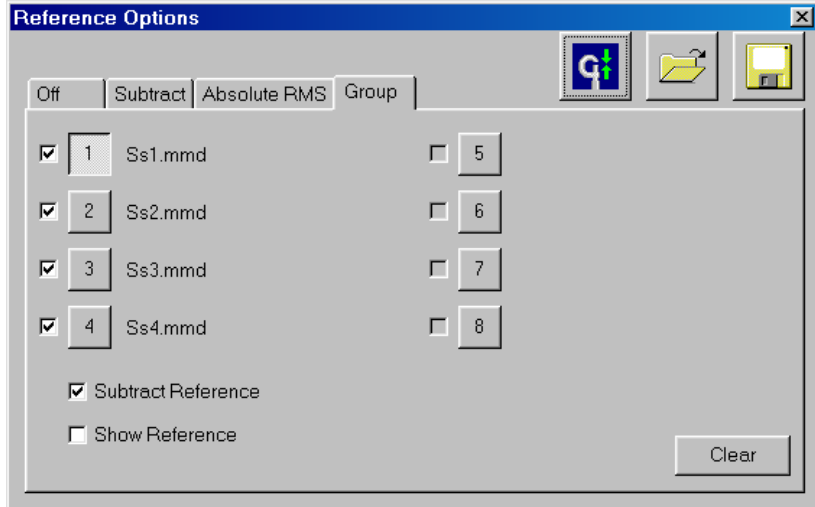
Clear removes both measurements.

Test automatically acquires measurement 1 and 2, and displays the absolute RMS.

Note: To quantify an absolute surface roughness from the difference of two uncorrelated measurements, the Absolute RMS difference is divided by $\sqrt{2}$. Prominent features observed in the surface data are also divided by $\sqrt{2}$, and since measurement 1 is subtracted, its surface features are inverted.

Group

This tab allows you to take up to eight measurements and use them to reference each other.



1-8 selects the (first through eighth) measurement slot.

The **check box** next to each measurement indicates whether that measurement is included in the reference. There must be at least 2 measurements included before a reference is created.

Subtract Reference controls whether the measurements displayed have the group reference subtracted. If this is not checked, then the measurements are displayed normally. If it is checked, then each measurement displayed has the group reference subtracted.

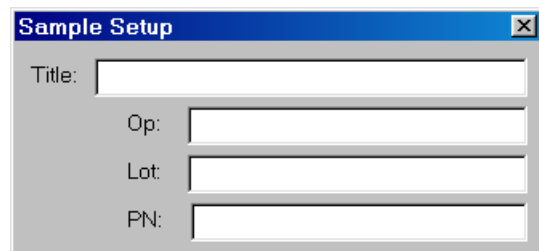
Show Reference displays the current group reference (the average of all measurements checked). It overrides the current data; as long as this box is checked, all you see is the group reference. Changing the slot will not change the data displayed; however, acquiring a new data file into a slot that is included in the reference will display the new reference

Clear removes all measurements.

Note: Measurements included in the group reference undergo special treatment to prevent underestimation of the surface. These measurements, and the group reference, are first multiplied by $N/(N-1)$ before the group reference is subtracted (N is the number of measurements in the group reference).

Sample Setup...

This dialog box allows you to set information about the sample context. All measurements you acquire will have this information attached to them. You can change this information after acquiring a measurement through the "Edit Sample Information" command (found in the "Analysis" menu).



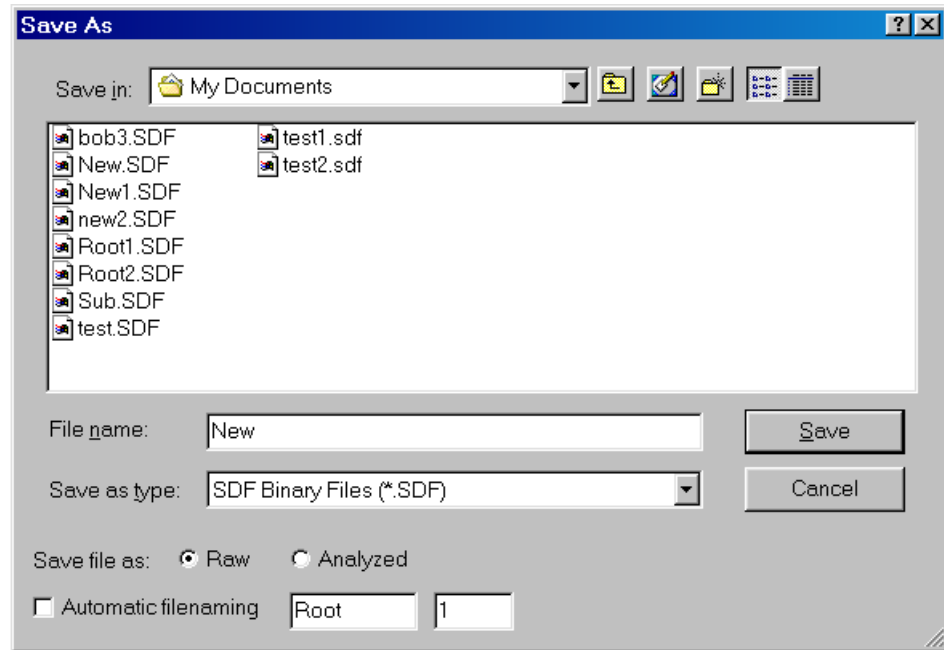
Title is a comment or description of the measurement that the user can enter.

Op: is the operator name.

Lot: is the Lot name or number.

PN: is the part name or id.

Save Measurement...



Save As allows you to save the current measurement file.

You may save the **Raw** data or the **Analyzed** data. Analyzed data has all of the effects of analysis applied to it. For example, if you delete pixels and save the raw data, the next time you load the measurement file you will have to delete the pixels again. If you save the analyzed data, the next time you load the measurement file those pixels will remain deleted.

Automatic filenaming allows you to specify a **Root** and a **Sequence number**. If it is turned on, then every time you come to this dialog box, the default file name for saving the measurement will be "Root" + "Sequence number" (in the above example, the file would be saved as "Root1.SDF").

Graphical plot tools

Color highlighting

Clicking on a color bar in the color key will turn that particular color into the cursor color. To restore the color, just click again on the same color bar.

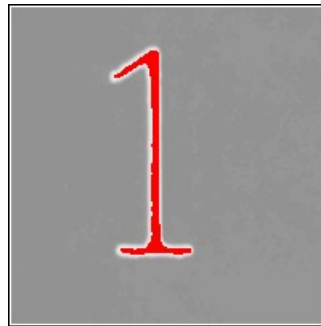
Click here...



and the color changes...



even on the plot.



These color changes are not saved in the config file. Every time you start the software, all of the colors will be at their default values.

Plot scale

If you click on the peak or valley displayed to the right of the plot, you can drag the cursor up and down to set a new value.

Click here...



and drag the cursor while the number changes.



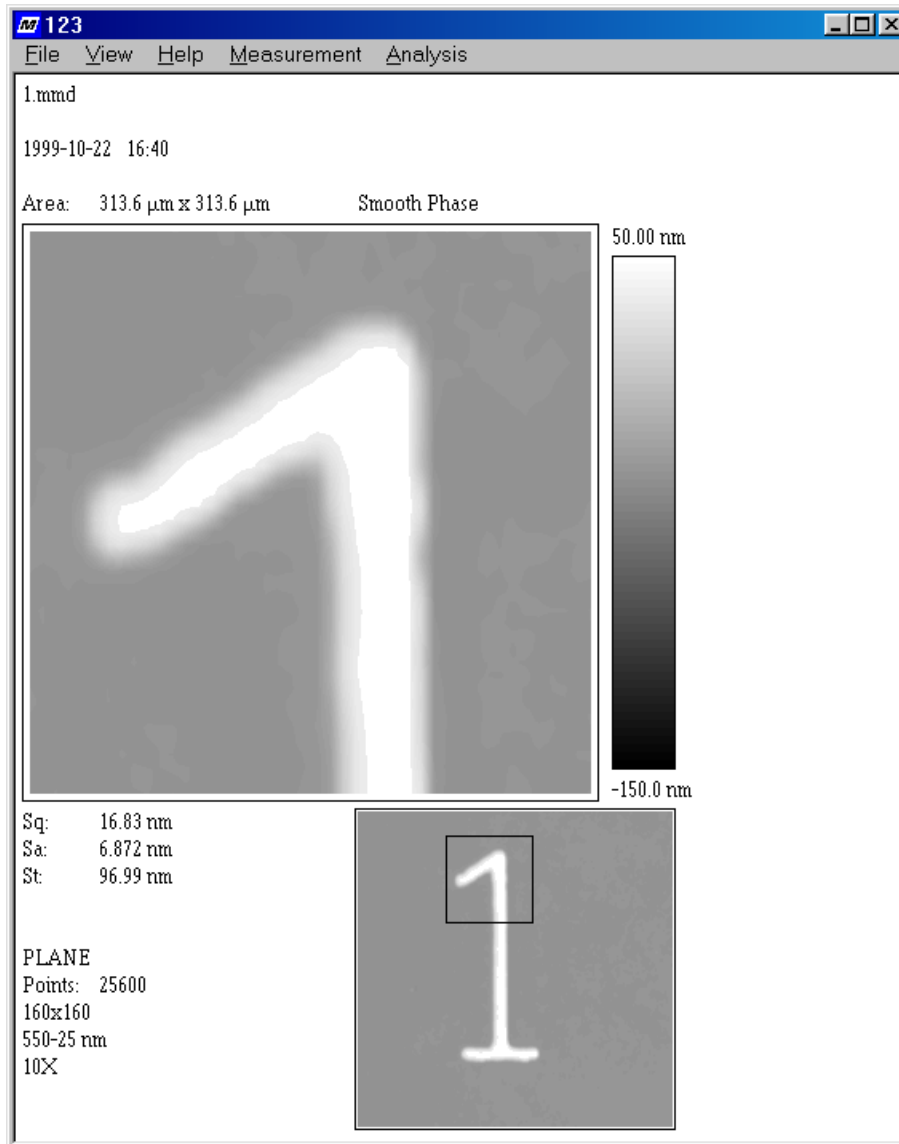
This applies to the peak and valley displayed on the contour plot, the profile plot, and the 3D plot. However, you cannot click and drag the peak/valley shown in the Area Z-Cropping dialog boxes.

Zoom

The zoom cursor appears on the Contour display. It allows you to restrict the plot to a smaller area, for closer visual inspection. The zoomed area will always have the same aspect ratio as the original plot.

Keep in mind that statistics are never affected by the zoom. Only the visual plot display changes.

You cannot remove the zoom cursor by dragging it off the plot. To reset the zoom to cover the entire plot, use the Analysis/Reset Zoom/1X menu item.



Cursors

There are a number of cursors that appear on the plots. The contour plot can have up to 2 area and 4 detrending cursors; the Profile plot can have 2 point cursors.

Area Cursors

These cursors are created by clicking the toolbar button or using the menu item Analysis/Add Area Cursor while at the Contour display. Various statistics can be displayed about the data under the cursor by customizing the display (see "Tutorial - Customizing displays").

You can also assign a volume limit (see "Tutorial - Using area z-cropping...") to the top or bottom of the area cursor. If there is a top assigned, you will see a short line above the number of the cursor; if there is a bottom limit, you will see a short line below the number.

To move an area cursor, click on the middle of the cursor and drag it. If you click on one of the edges, you will resize the cursor.

If you release the cursor so that some of it hangs off the plot, the cursor will clip to the plot. If you release the cursor so that all of it is off the plot, the cursor will be removed from the plot and no longer have any statistics.

You can display the area cursors on the live video display through the menu item View/Video Cursors.

Detrending cursors

These cursors are created by clicking on the button on the Analysis Setup dialog box.

Detrending cursors control what data is used to calculate the detrending term. You may have up to four of them on the data; each one is indicated by a "D" in the center. The calculated term is applied to the entire data set. See the "Tutorial - Using area z-cropping..." for an example of a detrending cursor.

Detrending cursors are moved, resized, and deleted the same way as area cursors.

Zoom Cursor

The zoom cursor is also resized and moved as an area cursor. However, the zoom cursor's aspect ratio is fixed at the same as the original plot, and you cannot drag the zoom cursor off the plot to remove it. Instead, to reset the zoom to 1X (fully covering the data), use the menu item Analysis/Reset Zoom/1X.

Point cursors

These cursors are created by clicking the toolbar button or using the menu item Analysis/Add Pointor while at the Profile display. Various statistics can be displayed about the data under the cursor by customizing the display (see "Tutorial - Customizing displays").

Point cursors cannot be resized, since they only refer to a single point. If you drag them just off the left or right side of the plot, they will snap to the first or last pixel in the profile. To remove them, drag them to the far right of the plot and release them.

Profile Select Cursor

The profile select cursor appears on the small plot on the profile screen. It allows you to select the profile you want displayed. If you grab the middle of the cursor, you can move the entire cursor; if you grab one of the endpoints, you can move just that endpoint.

There must always be a profile defined, so you cannot remove the profile select cursor. You can reset it to a pure X or Y cursor using the Analysis/Reset Profile menu. You can also set it to a skew cursor, or just drag the endpoints to whatever orientation you want.