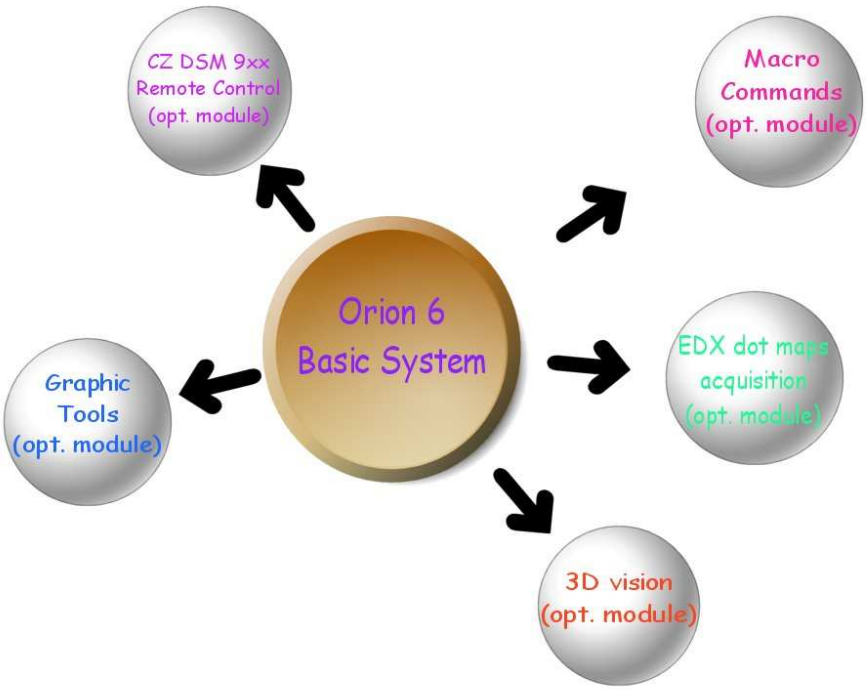
E.L.I. sprl

Orion version 6

High Resolution, 32 bits PCI Image Grabbing System For Windows™ 2000, XP and Seven

User's Manual Part 1: Description of the Basic Package



Release 6G, February 1st, 2010
E.L.I. sprl, Belgium

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Preliminary notes :

The Orion system is a real-time grabbing system.
This means that it has to track the scanning of your SEM and
catch the lines and pixels as they are generated by the SEM.

It's not recommended to run any other program while grabbing,
as these jobs use processing time and thus can prevent the Orion system to function correctly.

Please turn off your screen saver, as it can interfere with this software.

The "stand by" mode of the PC has also to be turned off.

1. Introduction

The PCI design uses Plug and Play features for allocating memory spaces and the IRQ channel used by the board.

The Orion software consists in two levels:

- The BASE version offers the following functions:
    - image grabbing in slow scan (visual modes) and photo modes
    - image details zooming
    - pixel interpolation for noise reduction
    - image save with access to all popular formats
- The "Modules": they allow the customer to add specific functions corresponding to his specific requirements. There are 5 different modules:
    - Graphic tools
    - Macro commands
    - EDX mappings
    - 3D Vision (Anaglyphs)
    - RS 232 remote control for DSM

To make a module available, just give us your board serial number when ordering it. This key file (size is only 1kbytes) unlocks the purchased options. Please refer to chapter 2 for more details.

Orion 6 has been created to be fully 32-bits compliant and compatible with Win 95, 98, Me, 2000 and XP. The board design is radically different from the ISA design in that it has a local coprocessor, uses hardware pixel integration and uses interrupts. The layout of the user interface has been optimized by reducing the number of mouse clicks, and the technical setup has been enhanced to provide the installer more comfort and possibilities in optimizing the grabbing characteristics.

During grabbing, you can now use the mouse instead of the function keys.

Any image size from 16 x 16 up to 8,192 x 8,192 pixels is available, depending on the scanning characteristics, which limit the size of the image you can get from your SEM. Up to 64 different image sizes can be defined in a SEM driver. Images are grabbed and stored with 256 gray levels per pixel. When integrating frames in visual mode, 16 bits (2 bytes) are allocated per pixel in order to maintain full pixel gray level resolution even when 256 frames have to be integrated; in this case the pixel depth is reset to 8 bits after grabbing.

When an image is calibrated (i.e. when a reference distance has been manually defined or selected from the internal list, your Orion system has the ability of constructing a new micron bar in the extracted image – this is very useful because usually the calibration information is lost when extracting an area.

Please refer also to our Internet site for downloading new updates of the Orion package:

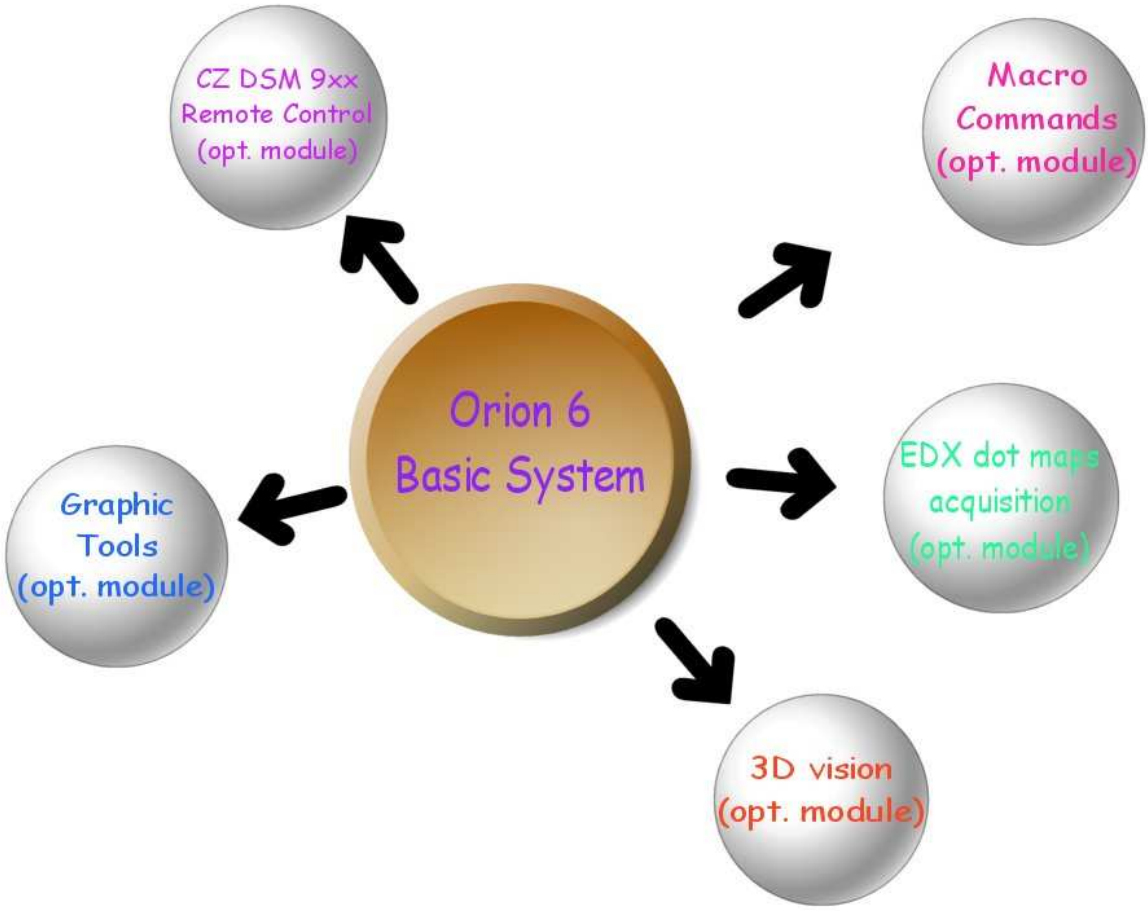
http://www.OrionMicroscopy.com

Minor changes can be made to the Orion package in order to enhance it.
This manual will be updated accordingly when required.

2. Optional software modules

In order to optimize the system to the user requirements, we have decided to distribute the system functions between the "Basic" system and optional modules. You can start with the "base" version and upgrade it with any option any time or ask for a limited time of evaluation of other options. It is required to have a special initialization file to unlock the options. This file is available from your system installer or E.L.I. Belgium (support@OrionMicroscopy.com).

Please refer to your Orion system installer or email us at support@OrionMicroscopy.com for any information you could require on these options.



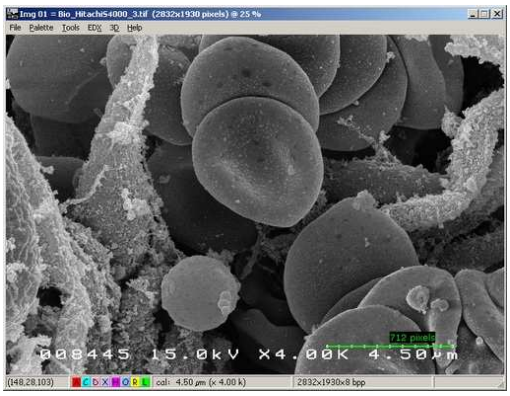
2.1. Graphic Tools

This option gives access to several very useful functions that will help you handling and evaluating your images after grabbing:

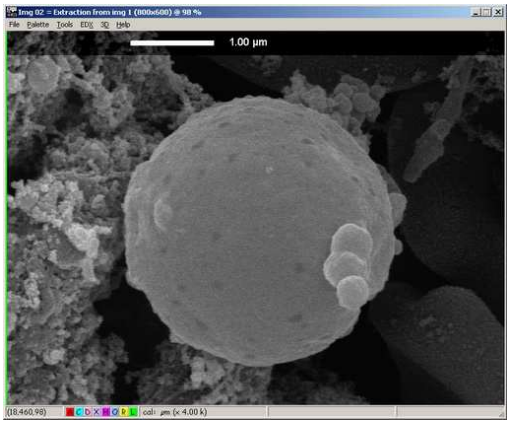
- Printing (with preview capability)
- Distance measurement (line segments overplayed or burned in pixel layer)
- Image annotation
- Area extraction
- Brightness / contrast adjustment after grabbing
- Image resize
- Palette processing and histogram analysis
- Automatic Micron bar creation in extracted images
- Email capability right after grabbing

This an example of the automatic scale bar generation in an extracted area :

- image from which the extraction was made :



- extracted area :



2.2. Macro commands

Orion includes a powerful, optional macro command editor and processor. This extension allows you create and /or change the function of 30 buttons (3 rows of 10) in the main toolbar, to automatically execute macro command files. Powerful commands also save and restore work variables to disk. It is possible to automate grabbing tasks, by using the **GrabSlowScan** or **GrabPhoto** commands and tell the system to automatically execute image filtering commands after grabbing.

This option is a new way of optimizing the Orion system configuration for each user: you can create new buttons that will execute your specific sequence of actions.
This is done by selecting a user at startup from a list. Each user in the list is linked to a macro command initialization file. This file is executed when the user is selected. The macro file can include functions like changing the main menu, initializing buttons with automatic grabbing and printing functions, or even selecting the default folder where all users' images will be saved.

The macro command option is required to use this feature, because the user selection menu can be called only if the macro function has been enabled.

The "Options" handbook fully describes these commands, with extensive examples, and the way to implement them.

In the following example, two screen dumps were made of the main tool bar:

- the default toolbar



- the same toolbar, in which the user added two new buttons with his code (in this case, one for grabbing in record mode and automatically resample the image right after grabbing, and the second one, for extracting an area of a constant size – here 800x600 pixels):



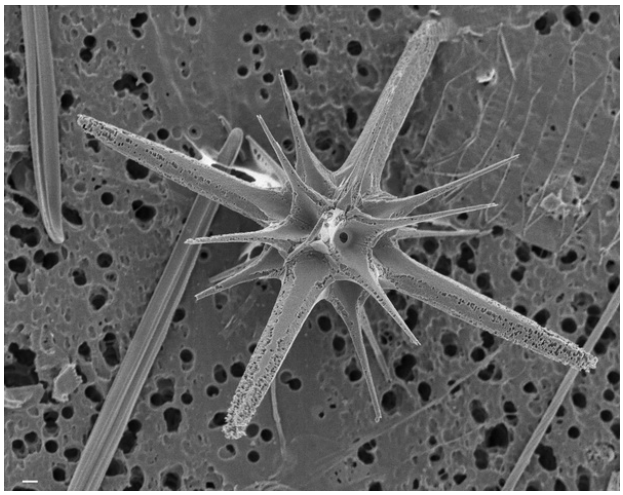
2.3. Anaglyphs

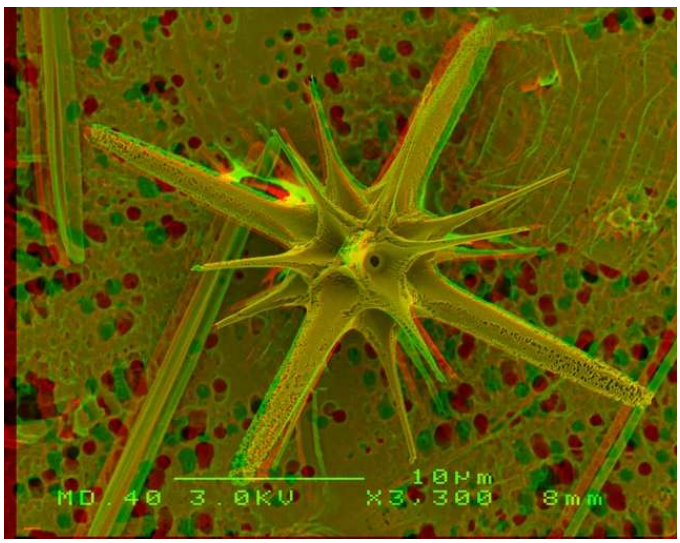
This option is required when the user needs to "see" the depth of his sample.

This 3D extension mixes stereo images (i.e. grabbed when sample is tilted by 5… 10 degrees). The two images are mixed and the result is red/green or red/blue coded. As with the EDX extension, the resulting image has 24 bits per pixel and can be printed in colors.

It also includes a tool for semi-automatic image alignment. With this utility, you can compensate small stage drift during tilt.

Here is an example of the difference between a normal view and a stereo view (special red/green or red/blue pair of glasses is required):





2.4. RS 232 for LEO DSM

This option allows you to digitize images from the DSM and reconstruct the correct micron bar information in the image, by interrogating the DSM through the RS232 interface. You can remote start the photo mode or any slow scan mode from the computer.
Because of the design of the DSM, the Orion system must interrogate the DSM right after grabbing in order to reconstruct the micron bar information. The final image has the same design as the original DSM image.

2.5. EDX mapping mixer

This utility allows you to grab an EDX dot map in photo mode or by recursively collecting frames in visual mode (this enhances the dot density in the resulting image). You can also mix an EDX dot map (white dots on black background) with any gray scale image of the same size. The resulting image displays the original gray scale image PLUS the dot map in the selected color.

The option includes another unique function for packing high size mappings and retrieve a higher dot density in only one scan, in photo mode.
The scanning must be provided by the SEM circuitry (no active drive from EDX)

The option includes the following tools:

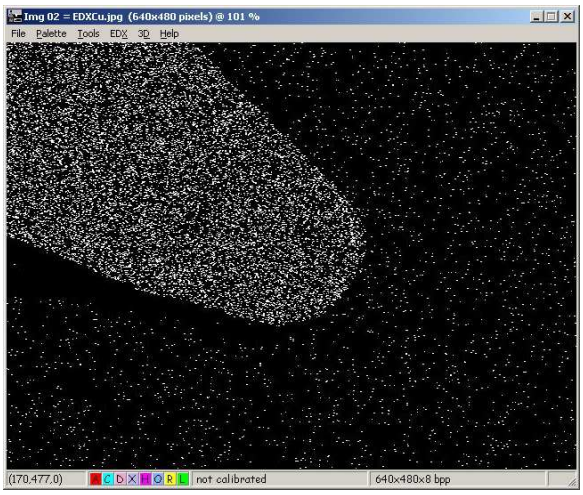
- Frame integration of EDX dot maps. You can collect dot maps by integrating several frames, in order to get a higher density dot map at the end. The resulting mapping has a black background with white dots.
- Mixing up to 16 mappings into an SE or BSE image. The result is a gray scale image with colored dots (one color per mapping).
- A dot map packing utility. This produces mappings with a higher dot density.
- A threshold function. This delivers white dots on a black background even if the contrast or brightness is not ideal during grabbing.

The following page shows the result of such a process:

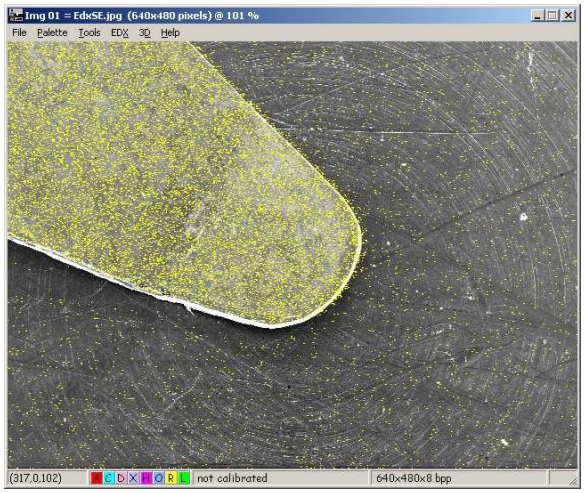
Step 1 : acquire an SE- or BSE image of your sample:



Step 2 : acquire a dot map of the same area :



Step 3 : mix the two images together :



3. System description

3.1. Software organization and system users

The main menu displays all the global system commands. Some of them are accessible both from the drop-down menu and from a dedicated button, like for example the grabbing commands. Many others, which are specific to the selected image, are also available from the drop-down menu in the image window or by right clicking in the image.

When an image is acquired from the SEM, it is automatically stored in computer memory and is immediately available for storage, pasting to clipboard, filtering...

All popular files formats are available: .TIF, .BMP, SUN raster, JPEG compressed and many others; the future image use will usually define which image format has to be used for storage. For example, when image processing is required after storage, an uncompressed format must be used because the compression / decompression algorithm modifies the pixel value.

3.2. Description of the grabbing process

The grabbing process transforms the analog video signal produced by the SEM into an array of gray levels that represents the image. Depending on the scanning mode (photo or visual), the system synchronizes differently, but the image is in both cases stored in the PC RAM memory and is immediately available after grabbing.

During the grabbing process, the system is synchronized with the SEM scanning and tracks every line produced by the SEM; the pixels of the current line are displayed, averaged if required and stored in memory in real time (i.e. at the time the line is scanned by the SEM).

The photo (or record) modes are generally defined by a slower scan speed (i.e. a higher number of ms per line, between 10 and 100 ms or more), a higher number of scanning lines (it can be several thousands, usually between 1000 and 4000), and there is only one scan; the resulting image contains less noise and has a higher resolution.

The slow scan (or visual) modes are defined by a faster scan speed (usually between 1 and 15 ms) and a lower number of lines (from 256 to 1000), but the scanning process is endless, which allows for example frame integration or averaging for noise reduction.

The ultra high resolution of Orion for Windows allows transparent pixel oversampling during grabbing; this means that the Orion card can take several measures of the same sample area during the grabbing process. This feature is made in real time and does not

cause any delay in the grabbing process. The big advantage is that the amplitude of the noise in the image is reduced by the square root of the oversampling factor.

It is a good practice to digitize the biggest possible image (i.e. with the highest possible number of pixels and lines), because image size reduction with interpolated pixels will give you noise-free and very high quality images. After reduction, you can close the original image to gain memory space. This is possible because of the ultra high resolution offered by Orion during grabbing.

3.3. SEM scanning characteristics and driver file

As every existing SEM has its own scanning characteristics (number of lines, screen form factor and line time), it is required to adapt the grabbing characteristics to each scan mode of every SEM. This is done by checking the SEM scanning characteristics during the installation process. A SEM driver file stores all these parameters.

In the Orion system, all driver files are located in a special folder (« …\drivers ») and have the « .SEM » extension. A driver file defines up to 72 different image sizes, with maximum 8 sizes per visual scanning speed (i.e. for each SEM scanning speed) and 8 different scanning speeds. The driver also stores information for up to eight image sizes in photo modes. But the number of really definable image sizes is in fact a function of the scanning capabilities of the SEM. Everything is explained in the technical manual, which is reserved to the installers trained by E.L.I. Belgium.

The whole system is designed to deliver images with square pixels.

The sensitivity of your Orion board (i.e. contrast and brightness) has been set up during the installation phase, by a trained engineer who is responsible for the installation. Usually the board sensitivity is adjusted in order to match the one of the photo device. So the adjustments for grabbing an image are the same as when taking a picture. The grabbing process does not interfere with your SEM photo device.

3.4. Additional system functions

The "Graphic Tools" optional module also includes a number of functions in direct relation with the work at the SEM:

- image filtering : low- and high pass, median, Sobel, contrast equalization ...
- image sizes reduction with interpolated pixels
- image extraction. Orion creates a new micron bar in the extracted image.
- image inclusion for mosaic creation
- Option to create a micron marker (for example when connected to a LEO DSM)
- draw colored texts, lines and rectangles in an image, as overlays or buried in pixels
- compress images on disk : CMP (optimized JPEG), JPEG, JTIF, JFIF formats are available
- printing
- during grabbing, the user can use the mouse for changing acquisition parameters. Additional menus are displayed while grabbing.

3.5. PC system requirements

Since grabbing is essentially a real-time process (SEM scanning data must be grabbed and stored as they are produced by the scanning, otherwise they are lost), it is required to fulfill the following minimum requirements:

- the processor must be at least a Pentium 500 MHz, with 128 Mbytes RAM (512 MB are recommended, specially with 2000 or XP)
- MS-Windows (R) version 95, 98, Me, 2000 or XP
- **A full-length PCI slot (the PCI board measures 260x100 mm, excluding the PCI connector)**
- supported Windows graphic modes are 1024 x 768, 1152x864, 1280x1024 and 1600 x 1200 pixels only (any number of colors; the best setting is 16,7 Mcolors in order to get 256 true gray levels on screen)
- a graphic board with min. 8 MB is required with PCI or (better) AGP bus interface
- a high capacity hard drive.

4. The Orion main toolbar

This chapter describes how to start Orion and the main menu. It explains the functions attached to the main menu icons and the data displayed in the main menu.

4.1. Running the Orion system

The following icon has been created during the installation process and has to be double-clicked in order to start Orion:

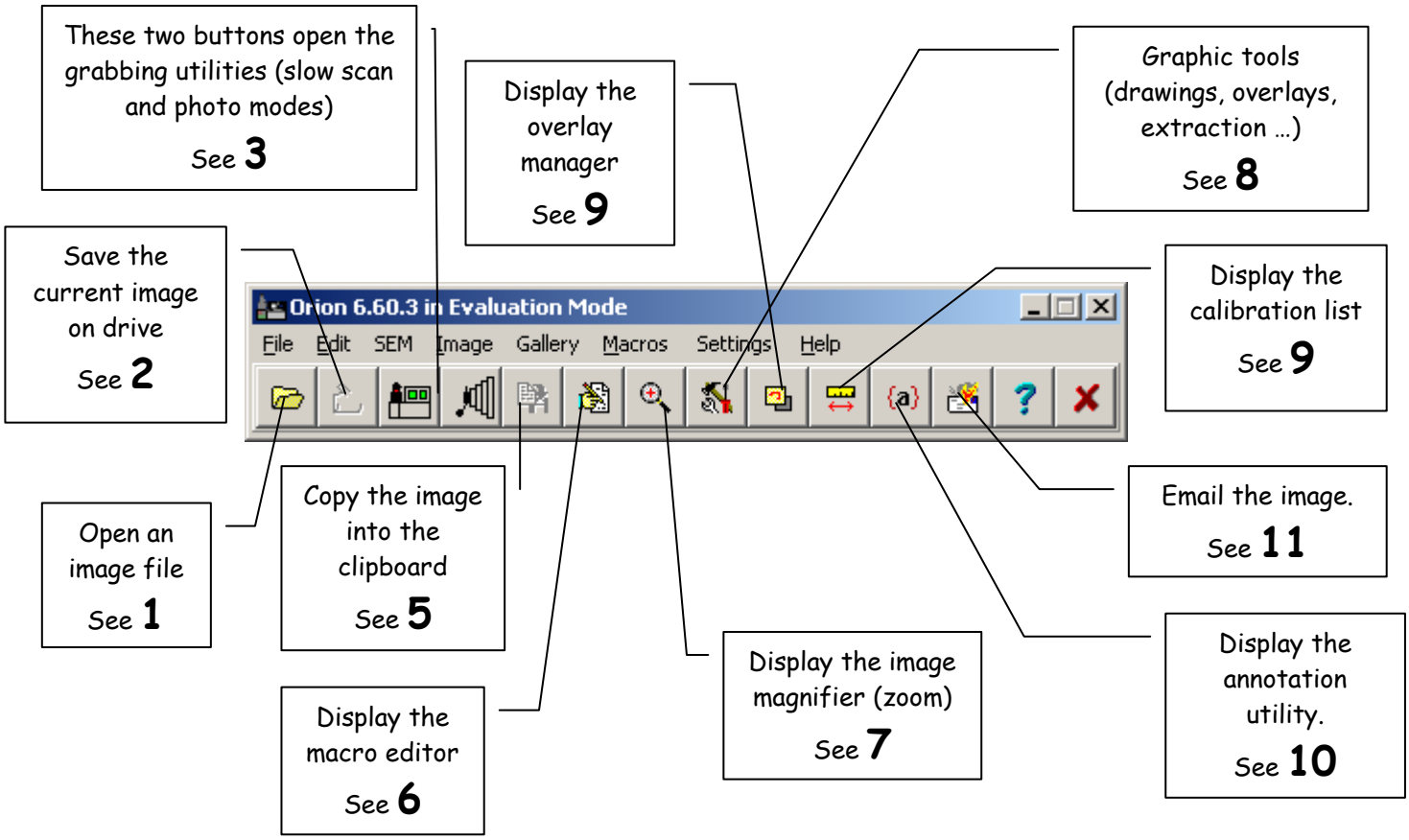


Once started, the main menu will be displayed at its latest position used before or at the top of the screen (depending on the startup option described later).

4.2. Description of the main menu

The main menu is divided into three parts:

- the drop-down main menu functions can be called by clicking the desired text and dropping the mouse down to display the corresponding list of sub-functions
- the icons (they are shortcuts of commands of the main menu) - they can be programmed at will with the macro « *InitButton* ».



4.2.1. Icons description

1 **Saves an image on disk** The image that will be saved is the selected image (its window caption is displayed in the bottom line of the main menu - it is the last one you have clicked in).

2 **Loads an image from disk**. The image to load will be displayed in a separate, independent window.

3 Displays the **slow scan grabbing window**.

4 Displays the **photo mode grabbing window**.

5 Copies the image to the clipboard.

6 This button displays the macro command editor (when the option is installed). If the option is not available, then this button is gray and inactive. The macro command editor is a text editor, optimized for editing .CMD files and executing macro commands step by step.

7 This button displays a zoom window that displays the area around the cursor position. Depending on the zoom settings, an area of 64x64, 128x128 or 256x256 pixels is magnified. The size of the zoomed area changes the magnification factor. You can also resize the zoom window by dragging its lower-right corner.

8 This one displays what we are calling the "Graphic Tools" utility. This is a set of functions (which are now easily accessible through small shortcut icons at the bottom of each image window). This button is active only if the corresponding optional module has been installed and is available in your system.

9 The "Overlay Manager" allows you to hide, show or delete image overlays. An overlay can be a rectangle, a line of a free drawing that you draw on the image. The overlay color can be selected either through the "Graphic Tools" utility, or by hitting the "O" icon in blue at the bottom of the image. Black or white colors will let you burn the line in the image pixels, while any other color will let you draw the next line as an overlay (i.e. as a part of your screen rather than a part of the image pixels).

10 The annotation utility allows you to write a one-line text in the image pixels, in black or white. You can choose different sizes and use a text background or not. If you push le left button of your mouse and drag it in the image, the system draws a line between the text and the subject in the image.

11 With this utility, you can email an image right after grabbing. This is a simple way of sending a document; you don't have to save the image and spend time retrieving it from your drive.

12 This button displays the main help window.

13 This button closes the Orion application.

4.2.2. Structure of the drop-down menu of the main toolbar

The base version includes only the command marked with an « * ».

- File
    - New (create a new, blank image)
    - Open (load an image from disk) *
    - Save (save an image on disk) *
    - Save As (saves an image under a name to specify)
    - Create folder (create a new directory) *
    - Dump desktop (copy screen to clipboard) *
    - Printer setup (modify printer characteristics) *
    - Print*
    - Exit (quit the application) *
- Edit
    - Copy to clipboard *
    - Paste from clipboard *
    - Duplicate (make a copy of selected image) *
    - Modify brightness/contrast
    - Resize image *
- SEM
    - Digitize in slow scan mode *
    - Digitize in photo mode *

- Image

    - Interpolate pixels (create a new image with interpolated pixels) *
    - Annotate (write text in image)
    - Calibrate (define a reference distance)
    - Extract area (create a new image from an extracted area)
    - Mark extraction area (write a rectangle around the extracted area)
    - Infos (display technical information)
    - Linear palette (modify the image's palette of grey levels)
    - Drawing color (set the color used for overlaying data)

        - Yellow
        - Red
        - Green
        - Blue
        - Navy
        - Acqua
        - Black
        - White

    - Overlays

        - Delete all
        - Hide
        - Show
        - Display list

- Gallery

    - Reorganize the screen*
    - Iconize all images (reduce them all at the bottom of the screen) *
    - Close all images *

- Macros

    - Display Fast Executor (execute only one line at a time)
    - Display macro editor (with full editing capabilities)
    - Display macro options
    - Startup macro file (file to execute at startup)
    - Users
        - Select a user at startup
        - Select another system user

- Options

- Language (-> English, French…) *
- Preferences
  - Printer setup
    - Setup *
    - Resolutions *
  - Change default image resolution (number of DPI) *
  - Main toolbar layout (button size…) *
  - Miscellaneous *
  - Display tips at startup *
- System setup
  - Orion technical configuration *
  - Create system backup *
  - Install system options *
  - Adjust your screen X/Y ratio *

- Help

  - on Orion system *
  - on grabbing *
  - on macros *
  - How to upgrade … *
  - About (version info and how to contact us) *

4.3. Main toolbar organization of the basic version

The active buttons and drop-down menu commands are : file open, file save, grabbing in visual mode, grabbing in photo mode and zoom display. To interpolate the image pixels, go to File / Interpolate in the image window.

When you need to upgrade to the full level, go to Options / System setup / Install system options, and open the option file you can get from your system installer or E.L.I. Belgium (our email address is Sales@OrionMicroscopy.com).

5. Acquiring an image

To acquire an image from the SEM, the Orion system synchronizes with the SEM scanning circuitry and reads the analog video signal produced by the SEM. A copy of the image is stored in memory while it is displayed during grabbing. The digitizing process requires that the SEM contrast and brightness first be adjusted on the SEM before grabbing (i.e. the Orion board contrast and brightness is set during the installation, to be the same as your photo record tube).

Paragraph 5.1.4 is important: it shows which commands are available during grabbing.

5.1. How to acquire an image in slow scan ("visual", "recurrent") mode?

The system can display three grabbing windows:

In slow scan modes:

- Type 1 : a window for grabbing image in slow scan ("visual", or "recurrent") mode only
- Type 2 : a window for grabbing in photo modes only (all SEMs except DSMs with RS232) – see par. 3.1.3
- Type 3 : a window specifically designed for the LEO DSMs series, with the RS232 connection – see par. 3.1.4

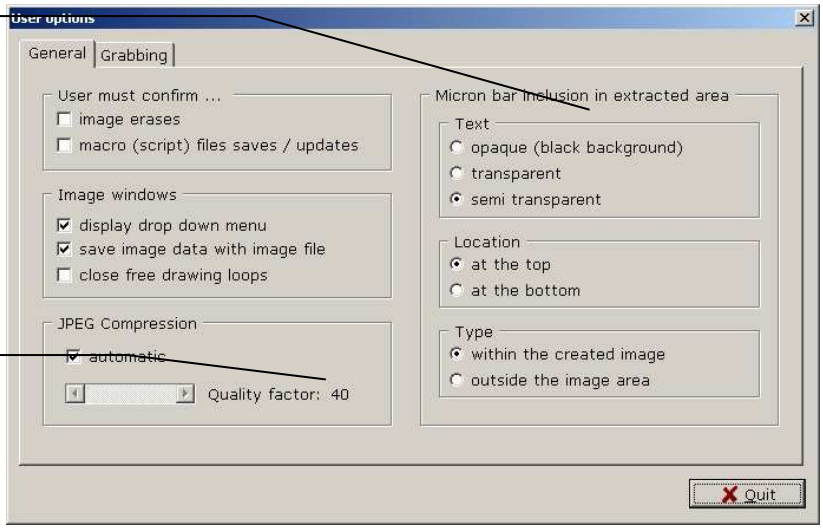
If you are connected to a LEO DSM with an RS232 connection, the best choice is to use type 3, because this allows the system to automatically interrogate the DSM after grabbing and get the micron bar information for the new image.

To select the window type: in the main toolbar, go to Options … Preferences. This displays the following utility:

Page 1, "General"

This allows you to set the scale bar parameters, when the system automatically generates a micron bar in an extracted image and when the "mother" image is calibrated.

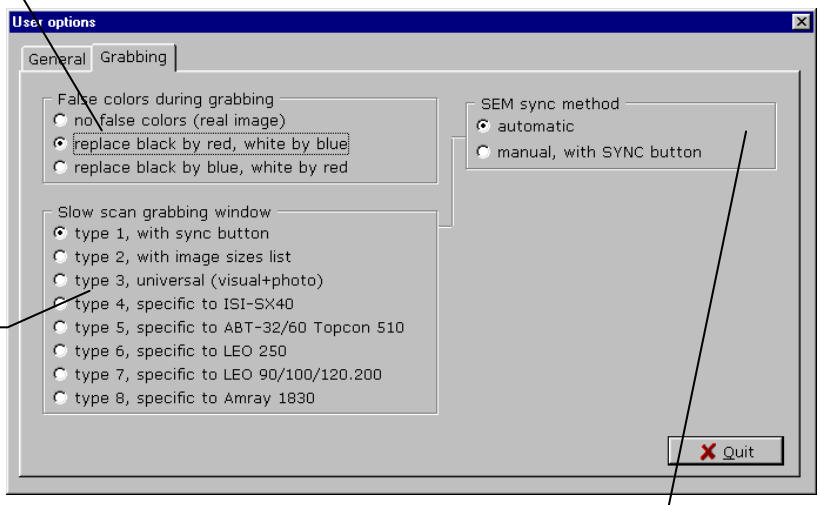
This value influences the file compression ratio; the effective compression ratio depends on the image (details, noise…)



Page 2, "Grabbing"

This setting is used during grabbing. It forces the system to replace the extreme gray levels with colors, for a better appreciation of the image contrast and brightness.

This changes the grabbing window displayed when you click the SEM button in the main toolbar (third from left). Some options are SEM-specific and linked to the technical configuration.

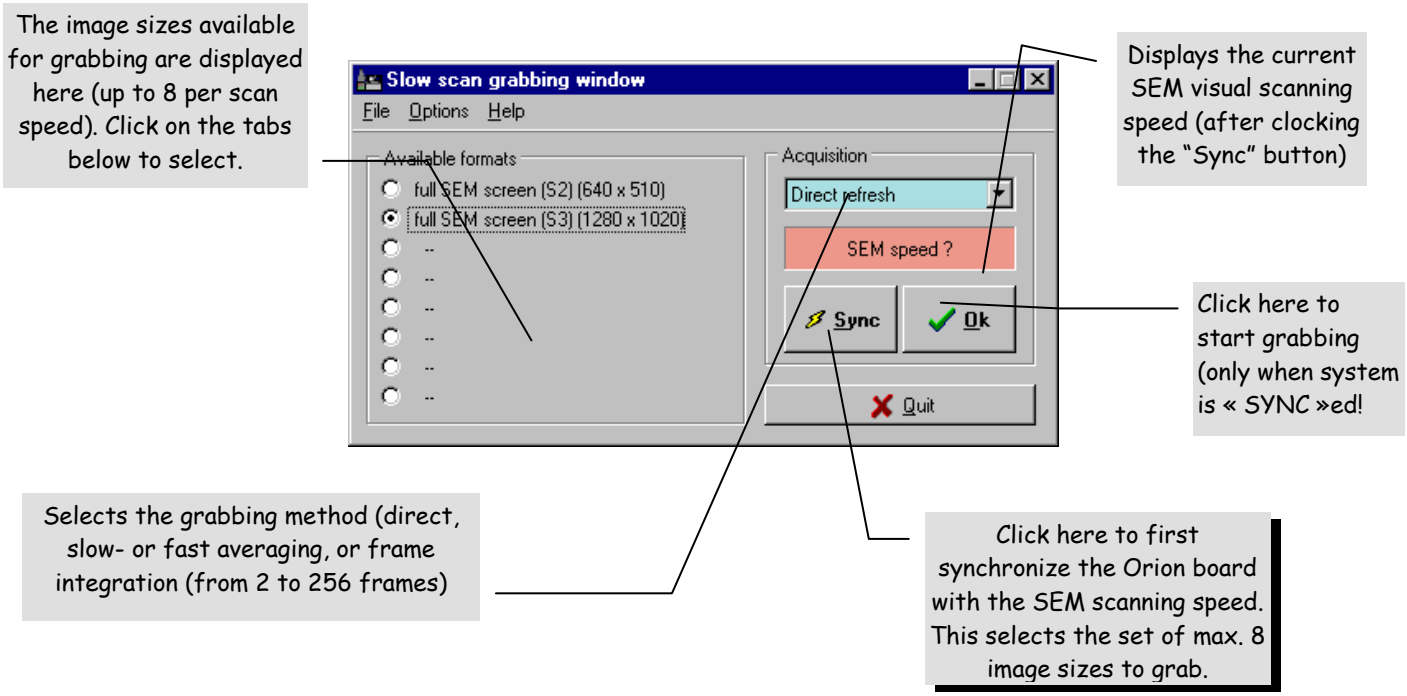


This new option is displayed only when grabbing window type 1 is selected. It allows you to let the system track the SEM scanning speed automatically, or to do it yourself by clicking the « Sync » button.

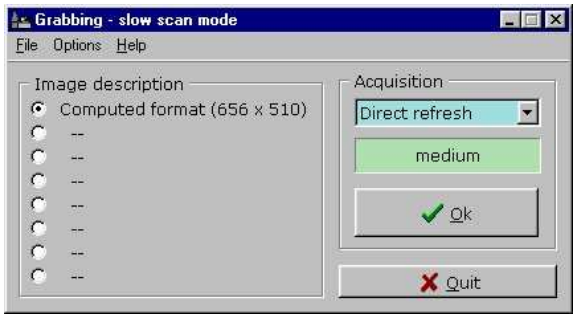


5.1.1 Grab in slow scan, must SYNC with SEM speed

Click the following icon in the main toolbar to display the slow scan grabbing window:



The same window is displayed below, when the "AutoSync" feature is enabled. In this case, the Orion system detects any visual speed change and updates the useable grabbing formats on the left. To activate/deactivate the "AutoSync" feature, go in the main toolbar to Options / Preferences /Miscellaneous. Select the second page called Grabbing. Select Slow scan grabbing window type 1 and select the automatic sync method (refer to the previous chapter for the corresponding screen dump).



This window displays the image formats that are currently available for the current scanning speed. In the first version, clicking the "SYNC" button checks the SEM speed. When this button is pressed, the SEM scanning speed is measured and compared with the contents of the driver file.

If the current speed was programmed in the SEM driver, then the available image sizes for this speed will be displayed on the left and the line time displayed in a green area. Selected the appropriate image size in the left list.

If the scanning speed was not set up, « **no sync!** » is displayed in a red area.

Other parameters have to be set before grabbing. They are:

- the video input used for grabbing this selection is useful only when the 2 inputs are wired to the SEM. The default is input number 1.
- the grabbing method used: direct refresh, slow- and fast averaging, or frame integration.

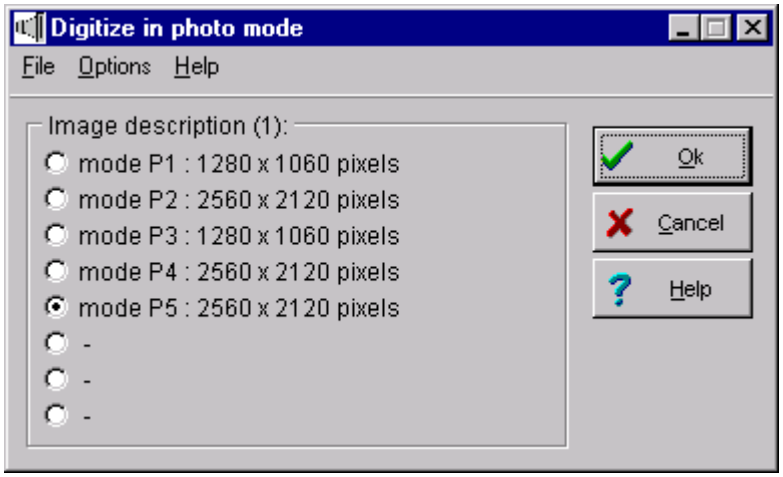
If the area is green, click « OK » to start grabbing.

The grabbing process first creates a blank window on screen, then synchronizes with the SEM scanning, and fills the displayed window with the live SEM image.

5.1.3. Grabbing in photo (record) modes

First make any necessary adjustment on the SEM in order to get a correct image (contrast, brightness, astigmatism ...). In particular, adjust brightness and contrast as for taking a photo (the Orion card sensitivity should have been adjusted to be the same as your photo device).

Click the fourth icon from the left in the main toolbar to display the photo mode grabbing window (please refer to par. 4.2 to locate it). The following window will then either be displayed or activated if iconized (the example below is valid for JEOLs 6300, 6400 and 6340 SEMs):



This window displays the image formats that are available for grabbing in the PHOTO modes. The SEM speed is not checked before grabbing, so it is your responsibility to select an image size that matches the photo mode you will start at the SEM. A set of up to 8 image sizes is available in the left list.

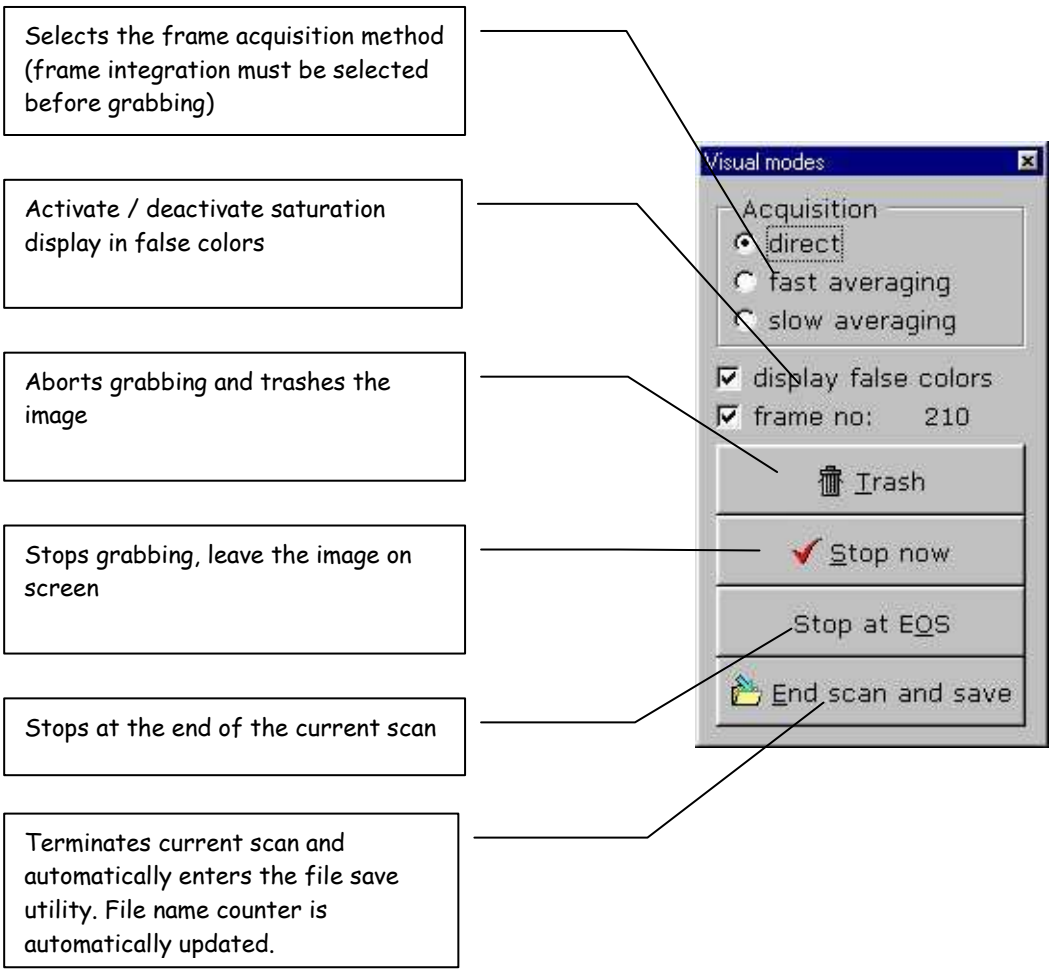
Select the appropriate image size and click « OK » to start grabbing.

The grabbing process first creates a blank window on screen, then synchronizes with the SEM scanning, and fills the displayed window with the live SEM image. Wait for initialization process to finish (you get a black rectangle in the grabbing window) then push the "photo" button on your SEM.

5.1.4 Commands available during grabbing

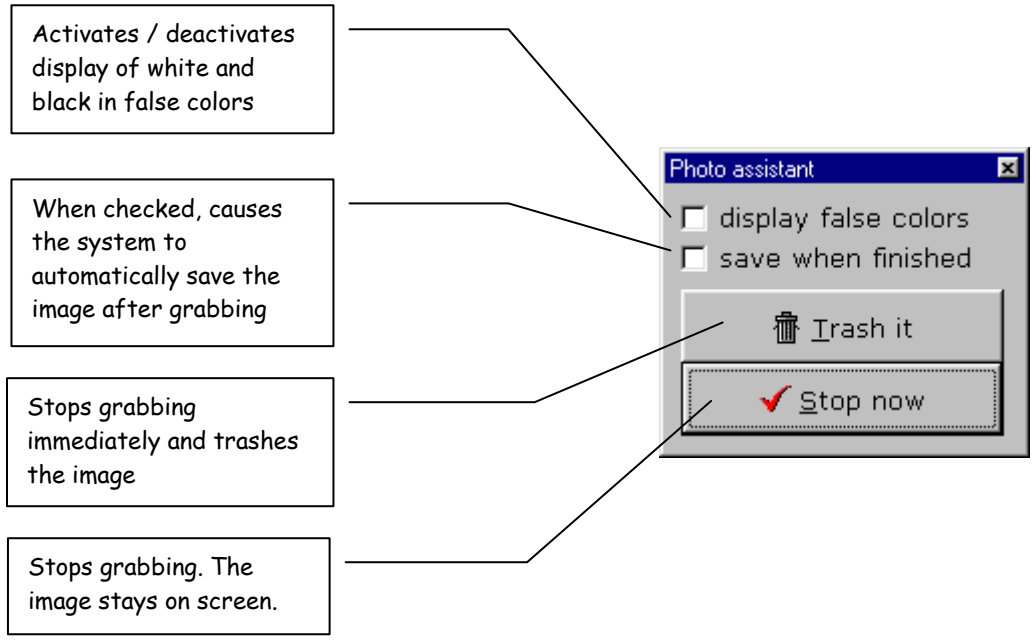
5.1.4.1. In visual modes only

The Orion uses full mouse control and displays specific menus for controlling the grabbing process. In visual mode, the system displays this window:



5.1.4.2. In record modes only

Like for the visual modes, the Orion system uses full mouse control and displays a specific menu for controlling the grabbing process. In record mode, the system displays this window:



6. After grabbing …

The images are stored in PC RAM memory. Only one image is active at a time, and the selected image is the active image that will be processed and its « name » is displayed in the main Orion menu.

When you have many images opened at the same time, it becomes interesting either to show them all on the screen or to reduce them all to icons, in order to clear the screen. These commands are available from the main menu (see paragraph 2.2.2. above).

Many of the image functions can be accessed different ways: from the main drop-down menu, from the icons of the main toolbar, from the popup menu available in the image window when you right-click with the mouse, or from the image drop—down menu.

6.1. How to get access to the available commands?

There are basically four ways to get access to the image commands:

- from the main menu (drop down text menu)
- from the icons in the main menu
- by right-clicking in the image window with the mouse.
- From the image drop-down menu.

The selected command will apply to the currently selected image, because clicking in the window makes that image the selected (current) one. When you select a command from the main menu, the target image is the one whose caption bar is highlighted.

6.2. Description of the image window drop-down menu (when available)

Commands		Description
- File		
	- Interpolate pixels	**creates an interpolated image**
	- Calibrate	**calibrates the pixel size**
	- Rotate / Flip	**rotates / flip current image**
	- Save	**saves the selected image on disk**
	- Info	**displays technical information**
	- Recalibrate display	forces a clean display of the image
	- Duplicate	Creates a copy of the image
	- Print	makes a hardcopy of the bitmap
	- Close	**closes current image window**
- Palette		
	- Edit contrast / brightness	**modifies palette or pixel values**
	- Show saturations	**displays red / blue palette limits**
	- Reset palette to linear	**displays linear palette**
	- Apply palette to pixels	**modifies pixel values from palette**
	- Open palette file	**loads a color palette from disk**
	- Savve palette	**saves current image palette to disk**
- Tools		
	- Overlay Manager	displays the Overlay Manager
	- Show Calibrations	displays the list of known pixel sizes
	- Show / Hide Overlays	
	- Delete all overlays	permanently removes all overlays
- EDX	- Mix EDX mapping w/ image	**mixes the with an EDX mapping**
	- pack mapping	**reduce size of mapping by 2**
	- Threshold dots levels	makes a thresholding
- 3D		
	- Mark reference location	sets a ref point for alignment
	- Align image from reference	makes the alignment
	- Combine views	creates the anaglyph from 2 views
- Help		**Displays help**

6.3. Let's save the image on disk !

The image save function can be called the four following ways:

- by clicking the corresponding ***icon in the main menu***
- by selecting the ***File / Save*** command in the main menu
- by ***right-clicking with the mouse*** in the image window and selecting the ***File / Save*** command (see paragraph 4.2. here above)
- by using the **SelectFolder / SaveImage** macro commands

There are a number of available formats for saving the image on disk. Select the right format in relation with your future image use: .TIFF / .BMP for general use, .JPG or .CMP for archiving with compression, SUN raster format when the image needs to be transferred to a SUN SPARC workstation ...

The supported formats are:

1. LEAD .**CMP** compress format. It delivers a much smaller file size and better image quality than other compression techniques, including JPEG.
2. **JFIF** (JPEG File Interchange Format with full color spacing (YUV 4:4:4)
3. **JFIF** (JPEG File Interchange Format with YUV 4:2:2 color spacing, to produce a smaller JFIF file
4. **JFIF** (JPEG File Interchange Format with YUV 4:1:1 color spacing, to produce the smallest **JFIF** file
5. **JTIF** (JPEG Tagged Interchange Format with full color spacing (YUV 4:4:4)
6. **JFIF** (JPEG Tagged Interchange Format with YUV 4:2:2 color spacing, to produce a smaller **JTIF** file
7. **JFIF** (JPEG Tagged Interchange Format with YUV 4:1:1 color spacing, to produce the smallest **JTIF** file
8. TrueVision **TGA** (Targa), uncompressed format created by TrueVision Inc.
9. **TIFF**. This is a tag-based field format designed to promote universal interchange of digital image data.
10. Windows Bitmaps (**BMP**). This is a file format created for Microsoft Windows. Some BMP images are compressed with an RLE type compression.
11. **SUN** Raster. Created and used by SUN on the workstations.

6.4. Transfer it to another application through the clipboard ...

It is often very useful to transfer an image between applications. There are four ways to copy the image to the clipboard:

1. by right-clicking in the image window and selecting File | Copy to clipboard
2. by selecting Edit | Copy to clipboard in the main menu
3. by clicking the Copy button in the main toolbar
4. by using the ToClipboard macro command

After execution of the command, the file becomes available in the Windows clipboard to any other application that accepts images.

Note

In some situations, it is necessary to consider the image size .For example a 2048 x 2048 pixels image takes 4 Mbytes and it can require some time to copy to the clipboard and load it in Microsoft Word 6 or any other word processing package. Such a density of pixels is not necessary in this case. It can slow the system down.

6.5. Changing the default image size on screen after acquisition

By default the Orion software uses a fixed ratio between the bitmap size and your desktop resolution, in order to avoid aliaising effects and visual artefacts.

You can change this by going to Settings / Preferences / Miscellaneous. Select the "After Acquisition" page.

For example, choosing … 50% will cause the largest border of the window (either horizontal or vertical) to be 50% of the (width or height of) the desktop.

7. How to contact us ?

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