

PALM[®] RoboSoftware

Quick Software Guide



MicroBeam
Version 3.0-0604 (EN)

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The following technologies have been patented by P.A.L.M. Microlaser Technologies:

- Laser catapult technology (Laser Pressure Catapulting LPC)
Patents: US 5,998,129, EP 879408 B1 and others.
- Three-dimensional laser beam positioning system
Patents: US 5,689,109, EP 679325 B1 and others.
- Additional patents pending.

P.A.L.M. Microlaser Technologies AG
Am Neuland 9+12
82347 Bernried / Germany

Phone: +49-(0)8158-9971-0
Fax: +49-(0)8158-9971-249
E-mail: info@palm-microlaser.com
www.palm-microlaser.com

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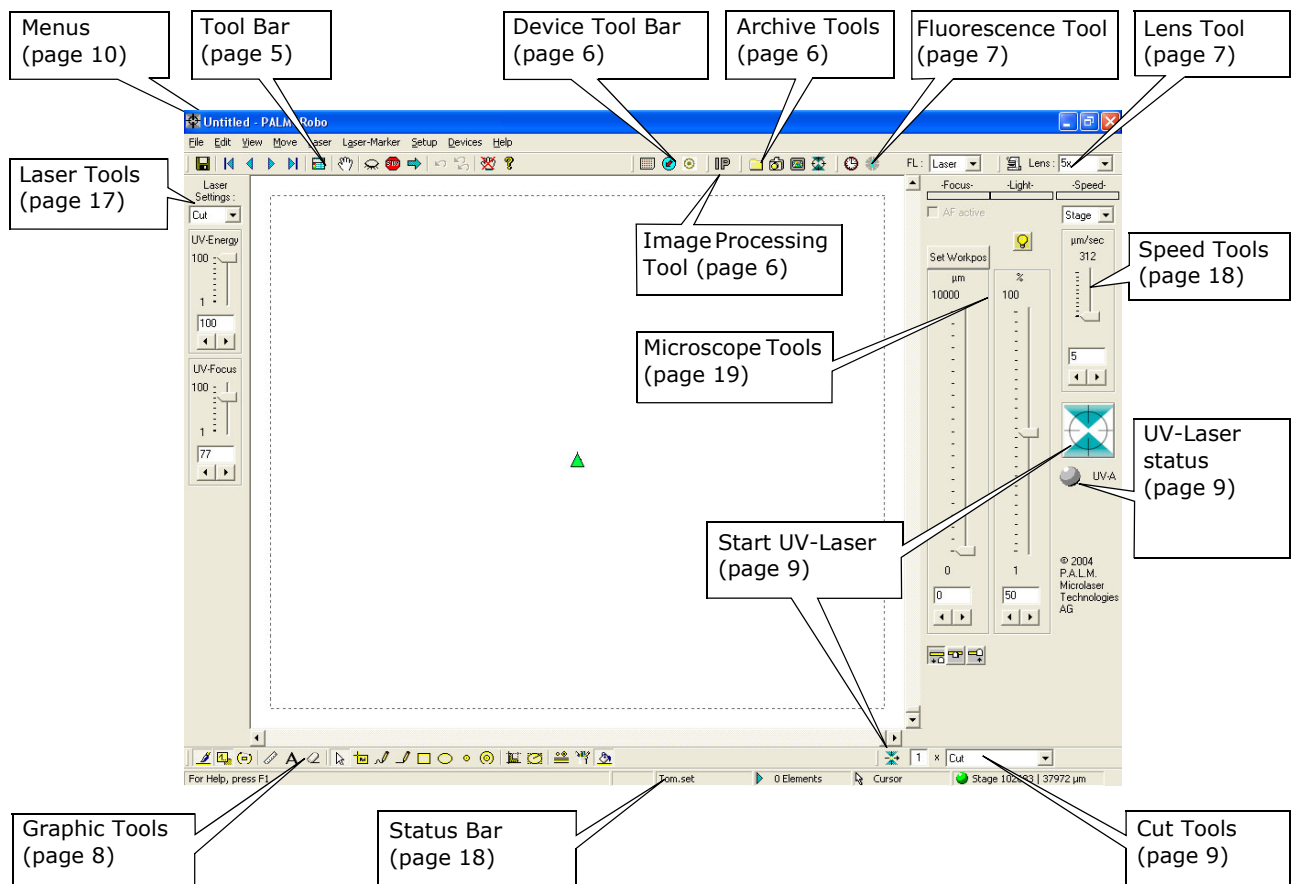
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In this quick guide the functions of the PALM[®] RoboSoftware are described in a short way.

1 Program layout


The site of each toolbar on the screen can be changed: with the cursor on the white thick stroke and while pressing the left mouse button you can move it.

Via menu item "View > Menus >..." each toolbar and each tool can be hidden or shown.







2 Tool Bar

The Tool Bar contains the following tools:


 Save Elements

To save the drawn elements in a file. The file can be called up any time with PALM® RoboSoftware.


The elements are saved in the default directory (see "Setup > PALM® Robo ..." page 15).

 First Element	 Last Element
 Previous Element	 Next Element



The stage is moved so that the desired element is centered on the screen.

 Element List

To show the "Element List". See also page 20.



 Stage

To switch to the stage mode. In the stage mode you move the stage with mouse. To exit the stage mode click left mouse button once.

 Check-Point	 Point of origin
---	---



To position the stage to the Check-Point.

To move the stage from Check-Point back to the point of origin.

 Stop	 Continue
--	--


To stop all laser functions and movements immediately (in case of emergency).

To continue with the last not completed function after a "stop".


 Delete last	 Delete all
---	--

To delete the last drawn element.

To delete all elements, also when hidden.

 Freeze


To switch to the Freeze Mode (the stage cannot be moved anymore and the video image is frozen).

 About



To get informations about the program (version number and manufacturer).


3 Device Tool Bar

The Device Tool Bar contains the following Tools:

 RoboMover¹⁾

Opens the PALM[®] RoboMover Window. With PALM[®] RoboMover you can position target caps and choose settings for the automatic positioning of target caps.

 Loadposition ²⁾	 Point of origin
To move the stage to Loadposition.	To move the stage back from Loadposition to point of origin.


 Navigator

Opens the PALM[®] Navigator Window. With PALM[®] Navigator you can scan your slide or certain parts of it and easily move the stage to points defined by a mouse click.

- 1) Only available in systems equipped with PALM[®] RoboMover. Contact P.A.L.M. for further information.
- 2) Only available in systems equipped with PALM[®] RoboStage II. Contact P.A.L.M. for further information.

4 Image Processing Tool³⁾

The Image Processing Tool contains the following tool:


 Image Processing software

To start the Image Processing software.


- 3) Only available in systems equipped with Image Processing software. Contact P.A.L.M. for further information.

5 Archive Tools


The Archive Tools contain the following tools:

 New Image folder


To select or create a folder for saving images.

 Save Image

To save the actual image under the default name with an image number added in the default directory (see "Setup > PALM[®] Robo ..." page 15). The image numbers will be increased automatically. You can save the image with or without the drawn elements.

 Imaging


To start an image handling software to display stored pictures and to edit them.



 PALMPicture

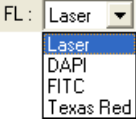
To start PALMPicture to display and organize stored pictures and organize folders.

6 Fluorescence Tool

The Fluorescence Tool contains the following tools:


 **Timer**
Allows to set a timer to close the shutter automatically.

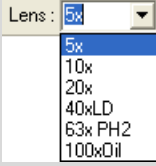
 **Fluorescence Shutter (closed)**  **Fluorescence Shutter (open)**
If your system is equipped with a filter wheel: Opens or closes the fluorescence shutter to activate or deactivate the fluorescence beam.

FL: 
To select a set of fluorescence settings defined via menu item "Setup > Fluorescence ..." (see page 15).

7 Lens Tool

The Lens Tools contain the following tools:

 **Microscope window**
To open the Microscope Window (only active when your system is equipped with a motorized microscope). All functions of the microscope are controlled by this window.

Lens: 
To select the required magnification on the microscope.

For a correct display of your drawn figure elements and for correct laser functions it is important, that the setting of this menu matches with the set lens on the microscope.

8 Graphic Tools

Display functions



Graphic on/off

To show or hide all elements.



Number on/off

To show or hide the numbers of the elements.



Element areas

To display the size of an element area in μm^2 .

Ruler, flag, comment



Ruler

To measure.
You measure with mouse moving while pressing the left mouse button.



Flag

To set a flag into the image. You can add a comment to the flag.

You can change the comment with "Change" in the dialog "View > Element List" (see "Element List", page 20).

To add a comment to an element, see "Element List", page 20.

Create and edit elements



Reference Point

To set a reference Point.



Freehand

To draw freehand lines.
To draw a line press left mouse button and move the mouse.

To correct an element of type "line", press "Ctrl" and move the mouse to the part to be corrected. The nearest anchor point of the element will be shown. Click and draw the correction line.

To connect two elements, press "Ctrl" and draw a line from the end of one element to the end of the other element.



Line

To draw straight lines.
You start drawing with the first mouse click, after another mouse click you can change the direction, with a double-click you finish the element.



If the quadratic attribute is selected, you draw horizontal and vertical lines.



Rectangle

To draw rectangles.



If the quadratic attribute is selected, you draw quadratic elements.



If the centric attribute is selected, you draw the elements from their center.



Circle

To draw ellipses.



If the quadratic attribute is selected, you can only draw circles.



If the centric attribute is selected, you draw the elements from their center.



Dot

To mark single cells for catapulting.
These dots are used for the Laser Pressure Catapulting function (LPC).



AutoCircle

To mark areas for cutting and subsequent catapulting.
These elements are used for the AutoCircle function.

**Eraser**

To delete parts of an element.
If you divide elements into parts, each part will become a separate element with its own number.

If you press simultaneously the "Ctrl" key, parts of an element will not be erased but straightened.

Select elements**Pointer**

To select elements, which then can be changed (e.g. right mouse button > "Change"), moved or deleted.

To select one element: Click on the number of an element to select it.

To select more than one element:
Click and draw a rectangle which contains the elements or parts of them, or
Click on first element, then press "Shift" and click on the other elements to be selected.

If several elements are positioned one above the other, press "Ctrl" and click several times until the desired element is selected.

Change element attributes**Lines**

To determine the thickness of lines, dots and the ruler or eraser size.

The thickness of selected elements will be changed.

**Colors**

To determine a display-color for each element.
The color of the drawn elements will not be changed.

**Color Palette On/Off**

To show or hide the color palette.
With the color palette you can select the color for the next drawn elements. The selected color is saved as a default for all elements of the actually set element type.

9 Cut Tools/Start laser

1 x LPC

To select the UV-Laser function for the next command "Start Laser function". The number states the total number of laser functions to be performed for each element.

For an overview of the Laser functions see page 23.



or



Start laser function (UV).



UVA

When the UV-Laser is on, the grey ball changes its color to blue.

10 Menus

Menu "File"

New Elements

To prepare the software for drawing new elements. Existing elements can be saved previously.

Open Elements ...

To open elements from a file:
Insert the slide into the stage with exactly the same position as it had at last using. Open the elements with "Open Elements...".

Save Elements ...

To save the drawn elements in a file. The file can be called up any time with PALM® RoboSoftware. The elements are saved in the default directory (see "Setup > PALM® Robo ..." page 15).

Open Image Processing ...

To open the Image Processing Software.

Only available in systems equipped with this software. Contact P.A.L.M. for further informations.

New Image Folder ...

To select or create a document folder for saving pictures.

Save Image ...

To save an image as a file (with or without the drawn elements). The images are saved in the default directory (see "Setup > PALM® Robo ..." page 15).

The folder for saving can be changed.

Open Imaging ... F2

To start an image handling software to display stored pictures and to edit them.

Open PALMPicture ... F3

To start PALMPicture to display and organize stored pictures and organize folders.

Import Elements ...

To import the element properties shown in the element list (Color, Nr., Type etc.) and the coordinates of the anchor points of the elements from a text file.

Export Elements ...

To export the element properties shown in the element list (Color, Nr., Type etc.) and the coordinates of the anchor points of the drawn elements into a text file.

The text file can be opened with PALM® RoboSoftware and any software that can handle *.txt files.

Print Elements ...

To print the element properties into an Excel Import file or into a text file. You can choose which elements and which properties of the elements will be printed.









1 Example D
2 Example C
3 Example B
4 Example A

To open one of the last four files with saved elements.

Exit PALM®Robo Alt+F4

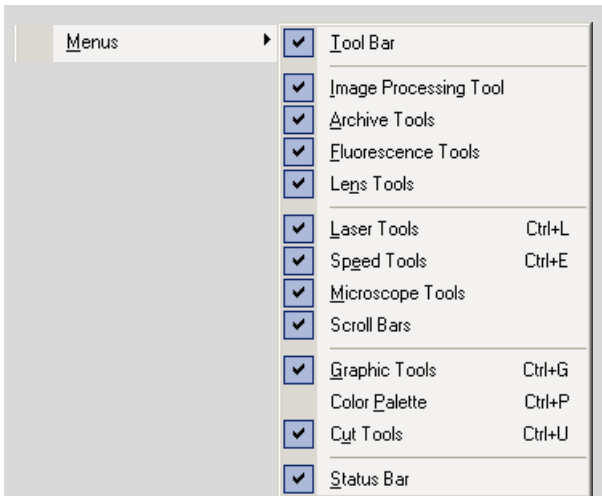
To quit PALM® RoboSoftware.

Menu "Edit"

 U ndelete	Alt+BackSp
To undo the last command "Delete ...".	
 S elect All	Ctrl+A
To select all elements on the screen.	
 D eSelect All	Ctrl+A
To deselect all elements on the screen.	
 C hange	Alt+Enter
To show and change the properties of the selected element. If more than one element is selected, the properties of the element with the lowest number are shown.	
R estore	
To restore a selected element that has been edited previously. If more than one element is selected, all selected elements are restored.	
 R enumber all	
To renumber the remaining elements after deletion of elements.	
C opy	Ctrl+C
To copy the selected elements to clipboard.	
P aste	Ctrl+V
To paste the elements from clipboard.	
 D elete selected	Del
To delete the selected elements.	
 D elete last	BackSp
To delete the last drawn element.	
 D elete all	Ctrl+Y
To delete all elements, including hidden elements.	

C reate G roup	
To create a group of elements from the actually selected elements.	
A dd to Group	
To add one or more selected elements to an existing group.	
R emove from Group	
To remove one or more selected elements from a group.	
D efine Group-Reference- F igure	
To define up to three elements as Group Reference Figures.	
U nDefine Group-Reference- F igure	
To undefine an element as Group Reference Figure.	
M atch Serial Section G roup	
To transfer elements from one slide to another for serial sections automatically.	
M atch Reference Point m anual	
To transfer elements from one slide to another for serial sections manually.	
U ppdate selected or all E lements	
To refresh the presentation of elements on the screen.	

Menu "View"



To show or hide Tool Bar (incl. Device Tool Bar), Status Bar and Scroll Bars (see "Program layout", page 4).

To show or hide the various tools (see "Program layout", page 4).

To show or hide the Color Palette.

The Tools "Image Processing", "Fluorescence" and "Microscope" are only available in systems equipped with Image Processing Software resp. Fluorescence resp. motorized microscope. Contact P.A.L.M. for further information.


Show Elements
To show or hide all drawn elements. Newly drawn elements are not shown if the display of elements is switched off.

Show Numbers
To show or hide the numbers of the elements.

Show Points
To show or hide the anchor points of drawn elements

Scroll Rectangle
To show or hide the scroll rectangle (dashed frame).


Screen Center
To show or hide the screen center mark (red reticule).

 Navigator Window F4

To open the PALM® Navigator Window.



 Element List F5

To show or hide Element List (see "Element List", page 20).

 Microscope Window F6


To open the Microscope Window (only available when your system is equipped with a motorized microscope).

Menu "Move"

	Stop	ESC
	Continue	

To stop the UV-Laser function and the movement of the stage immediately in case of emergency.


To proceed with operation choose "Continue".

	Stage mode	F7
---	------------	----

To switch to stage mode (the stage can be moved with mouse motion).

<input type="checkbox"/>	Invert stage motion
--------------------------	---------------------

With "Invert stage motion" activated, the stage moves opposite to mouse motion.

	Freeze mode	Alt+F
---	-------------	-------





To switch to freeze mode (the stage cannot be moved anymore and the video image is frozen).

<input type="button" value="Setup Speed ..."/>	F8
--	----


To determine speed settings for Stage, Arrow (Keys), Cut, LPC, Positioning and Scroll.

Speed slower	Ctrl+S
Speed faster	Ctrl+F


To modify the actual speed of the movement ("Speed slower" and "Speed faster").

	Goto First Element
	Goto Prev Element
	Goto Next Element
	Goto Last Element

To center a certain element on the screen.

	Goto Check-Point	Ctrl+K
---	------------------	--------

To move the stage to the Check-Point (to examine the sample in the cap).

	Goto Loadposition
---	-------------------

To move the stage to the Loadposition.

<input type="button" value="Goto Reference"/>	<input type="button" value="Group"/>	<input type="button" value="Ref-1"/>
		<input type="button" value="Ref-2"/>
		<input type="button" value="Ref-3"/>

To move the stage to the elements previously defined as Reference 1 resp. 2 resp. 3 for a group of elements.

<input type="button" value="Reference the Stage"/>
--

To move the stage to the end position in x and y direction. This position is set as zero point for element coordinates. Then the stage moves back to its initial position.

The stage is automatically referenced at every start of the program. Therefore "Reference the Stage" must only be used in case of error of referencing elements.


Menu "Laser"

LPC-Parameter ...

To determine LPC-parameters for each selectable microscope lens.

Energy & Focus (UV-Laser) ... F9

To determine energy and focus settings of the UV-Laser for each selectable microscope lens.

 Start Laser function F11

To start UV-Laser function after all settings are done.

- Cut
 - JointCut
 - Close&Cut
 - LPC
 - AutoLPC
 - Close&Cut + AutoLPC
 - RoboLPC
 - AutoCircle

To select the laser function for the next command "Start Laser function".

Energy/Power more	Page Up
Energy/Power less	Page Down
Focus up	Home
Focus down	End

To change the values for laser energy/power and laser focus. The set values are valid for the actually in the Laser Tools selected laser function only (Cut or LPC; see page 17).
 During laser action this values can be changed via keyboard (see page 22) or Laser Tools (see page 17).

Menu "Laser-Marker"

Position Laser-Marker ▶ UV-Laser

To align the position of Laser-Marker with the actual position of laser focus.

Layout Laser-Marker ▶ UV-Laser

With "Layout Laser-Marker" the color, size, type and style of Laser-Marker can be defined.

View Laser-Marker ▶ UV-Laser

With "View Laser-Marker" the Laser-Marker can be shown or hidden.

Menu "Setup"

PALM®Robo...

General settings for configuration, saving settings, saving elements, saving images, for laser function and Autofocus of a motorized microscope.

F_ilter ...

To define significant names for the fluorescence filters instead of filter numbers 1...8 (e.g. Rhodamin, DAPI, FITC etc.).

To select a fluorescence filter.

To get informations about the installed filter wheel.

S_hutter ...

To open and close the shutter.

To get informations about the shutter type.

If your system is equipped with a filter wheel: Opens or closes the fluorescence shutter to activate or deactivate the fluorescence beam.

R_eflector ...

To get informations about the reflector type.

To calibrate the Reflector.

To define significant names for the Reflector colors.

To select a reflector.

F_luorescence ...

To create a new or change an existing set of fluorescence settings.

Defined fluorescence settings are activated via Fluorescence Tools (see page 7).

S_ave Settings ...

L_oad Settings ...

To save and load preset speed settings for: stage, arrow keys, cutting, LPC, positioning and scrolling, and to save and load laser settings for: energy/ power, focus, lens value, LPC distances, and Auto-change.

L_oad Factory Defaults

To reset all settings to default settings.

C_alibration

N_ew C_alibration ▶ **S_tage**

To calibrate the software with respect to the microscope setup. This is necessary for exact cuttings and measurements. The calibration is stored with respect to lens magnification.

F_actory C_alibration

To call up the default setting for the calibration.

N_ew L_ens-Offset

To compensate the offset of the microscope objective (chromatic aberration).

F_actory L_ens-Offset

To call up the default setting for the Lens-Offset.

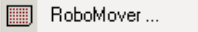
N_ew R_eflector-Offset

To compensate the offset of the reflector.

F_actory R_eflector-Offset

To call up the default setting for the Reflector-Offset.

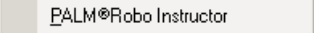
Menu "Devices"¹⁾



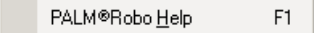
Opens the PALM[®] RoboMover Window. With PALM[®] RoboMover you can position target caps and choose settings for the automatic positioning of target caps.

1) Only available in systems equipped with PALM[®] RoboMover. Contact P.A.L.M. for further information.

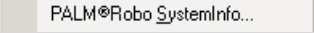
Menu "Help"



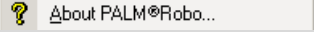
The "PALM[®]Robo Instructor" gives help for various subjects.



To list help topics.

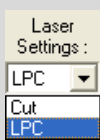
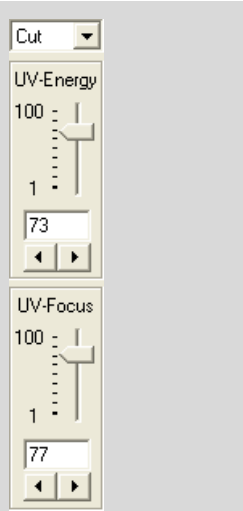
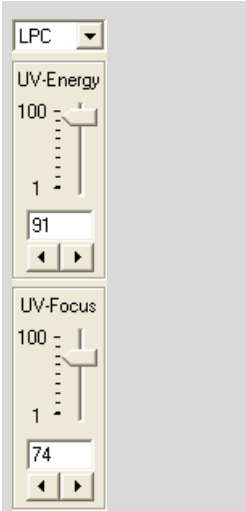


To show system informations.



To get informations about the program (version number and manufacturer).

11 Laser Tools

	<p>To select the laser function for which you want to set values for energy and focus.</p> <p>With selecting a function the relevant controls and the actually set values are shown (see below).</p>	<p>The preset values for energy and focus can be changed before each laser operation.</p> <p>In this way you optimize the parameters for each operation to obtain a precise cut and an effective catapulting.</p> <p>For fine adjustment the values can be changed even during cutting.</p>
 <p>Energy setting and Focus setting for laser function "Cut".</p>	 <p>Energy setting and Focus setting for laser function "LPC".</p>	







12 Speed Tools

-Speed-

Stage

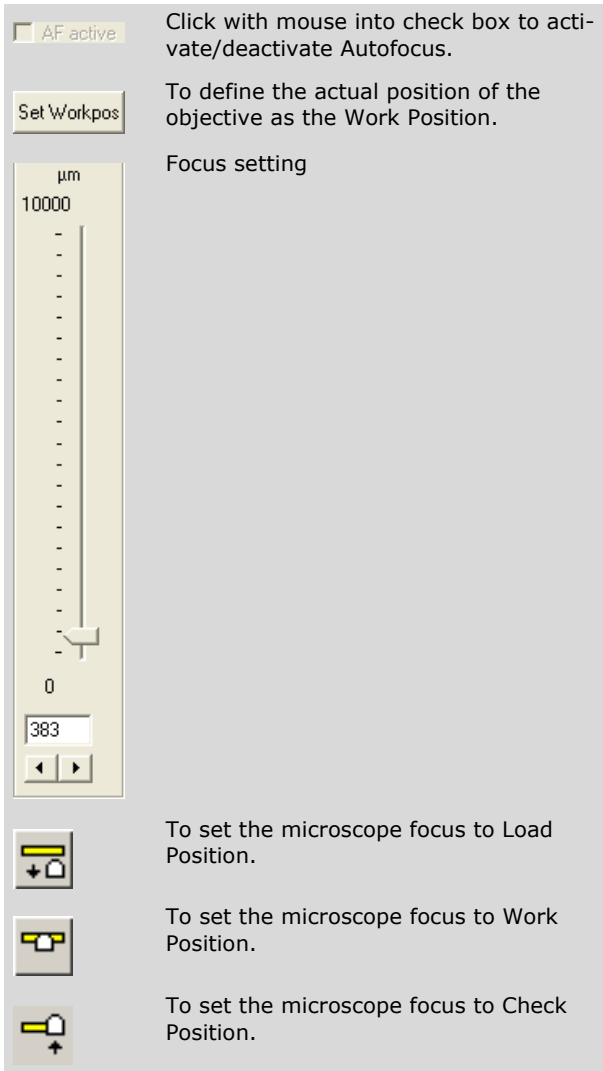
- Stage
- Arrow
- Scroll
- Position
- Cut
- LPC

To display and to change the preset speed for the following parameters. The unit can be set via menu item "Setup > PALM® Robo.." to $\mu\text{m}/\text{sec}$. or to Steps/sec.

<div style="border: 1px solid gray; padding: 5px; margin-bottom: 5px;">Stage</div> <div style="text-align: center;">$\mu\text{m}/\text{sec}$ 78</div>  <div style="text-align: center;"><input checked="" type="checkbox"/> slow</div> <div style="border: 1px solid gray; text-align: center; width: 40px; margin: 5px auto;">78</div> <div style="text-align: center;">◀ ▶</div>	<div style="border: 1px solid gray; padding: 5px; margin-bottom: 5px;">Arrow</div> <div style="text-align: center;">$\mu\text{m}/\text{sec}$ 37500</div>  <div style="border: 1px solid gray; text-align: center; width: 40px; margin: 5px auto;">28036</div> <div style="text-align: center;">◀ ▶</div>	<div style="border: 1px solid gray; padding: 5px; margin-bottom: 5px;">Scroll</div> <div style="text-align: center;">$\mu\text{m}/\text{sec}$ 390</div>  <div style="border: 1px solid gray; text-align: center; width: 40px; margin: 5px auto;">387</div> <div style="text-align: center;">◀ ▶</div>	<div style="border: 1px solid gray; padding: 5px; margin-bottom: 5px;">Position</div> <div style="text-align: center;">$\mu\text{m}/\text{sec}$ 25000</div>  <div style="border: 1px solid gray; text-align: center; width: 40px; margin: 5px auto;">24750</div> <div style="text-align: center;">◀ ▶</div>	<div style="border: 1px solid gray; padding: 5px; margin-bottom: 5px;">Cut</div> <div style="text-align: center;">$\mu\text{m}/\text{sec}$ 273</div>  <div style="border: 1px solid gray; text-align: center; width: 40px; margin: 5px auto;">78</div> <div style="text-align: center;">◀ ▶</div>	<div style="border: 1px solid gray; padding: 5px; margin-bottom: 5px;">LPC</div> <div style="text-align: center;">$\mu\text{m}/\text{sec}$ 585</div>  <div style="border: 1px solid gray; text-align: center; width: 40px; margin: 5px auto;">585</div> <div style="text-align: center;">◀ ▶</div>
<p>"Stage":</p> <p>Setting of the relation between mouse movement and movement of stage (Stage I and Stage II).</p> <p>Click with mouse into the check-box for slow mode (only available for Stage I).</p>	<p>"Arrow":</p> <p>Speed setting for the movement of stage with arrow keys.</p>	<p>"Scroll":</p> <p>Speed setting for scrolling in cursor mode.</p>	<p>"Position":</p> <p>Speed setting for stage movement from element to element, to check-point or to reference position.</p>	<p>"Cut":</p> <p>Speed setting for stage movement during Cut function.</p>	<p>"LPC":</p> <p>Speed setting for stage movement during LPC function.</p>

13 Microscope Tools¹⁾

Focus Tools






AF active Click with mouse into check box to activate/deactivate Autofocus.

Set Workpos To define the actual position of the objective as the Work Position.

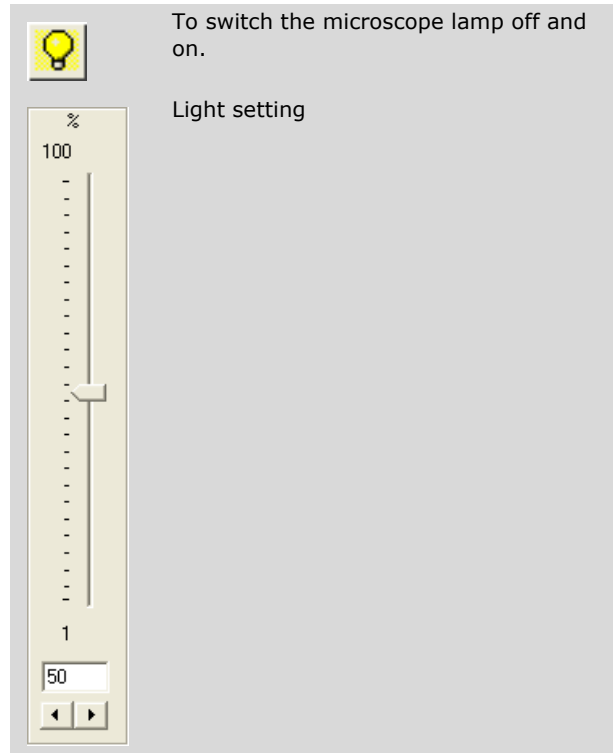
Focus setting

µm
10000
0

383

-  To set the microscope focus to Load Position.
-  To set the microscope focus to Work Position.
-  To set the microscope focus to Check Position.

Light Tools



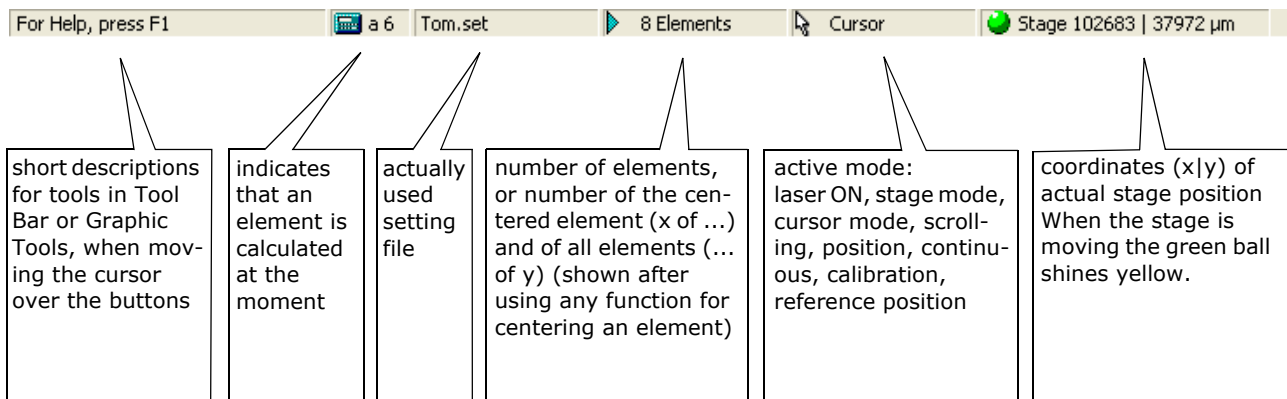
To switch the microscope lamp off and on.

Light setting

100
1
50

1) Only available in systems equipped with motorized microscope

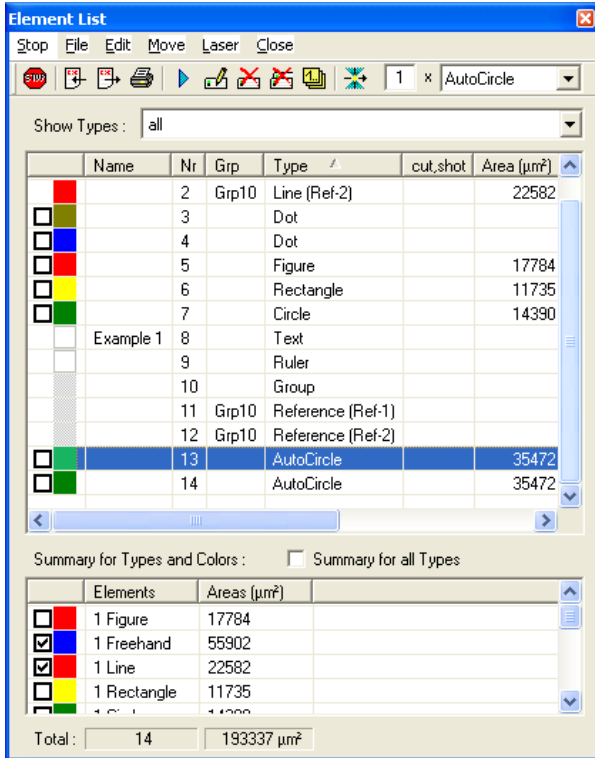
14 Status Bar



Callout	Description
1	short descriptions for tools in Tool Bar or Graphic Tools, when moving the cursor over the buttons
2	indicates that an element is calculated at the moment
3	actually used setting file
4	number of elements, or number of the centered element (x of ...) and of all elements (... of y) (shown after using any function for centering an element)
5	active mode: laser ON, stage mode, cursor mode, scrolling, position, continuous, calibration, reference position
6	coordinates (x y) of actual stage position. When the stage is moving the green ball shines yellow.

15 Element List

The element list displays informations about all drawn elements and allows operations on them.

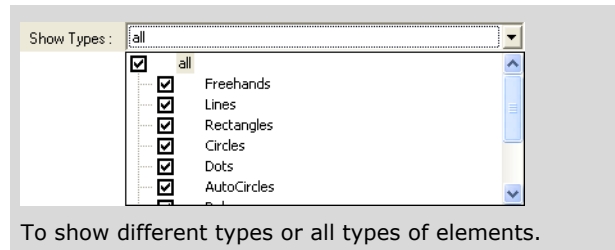


The columns in the upper table display the following informations about each element:

- first column: color
- Name: name
- Nr: number
- Grp: group number of grouped elements
- Type: type
- cut_shot: number of performed laser cuttings or catapultings
- Area: area for elements of type "Line" and "AutoCircle" (in µm²)
- H x W: height and width
- Comment: a possibly added text
- Position: the position (X,Y) relative to the reference position

Table "Summary for Types and Colors" displays:

- first column: reports the used colors for all types of elements
- Elements: total number of elements for each color and type
- Areas: total area of all elements of type "Line" and "AutoCircle" for each color (in µm²)



To show different types or all types of elements.

Menus of Element list

Menu "Stop"

Click on menu item "Stop" to stop the UV-Laser function and the movement of the stage immediately in case of emergency.

Menu "File" (see also page 10, Menu "File")

- New Elements
To prepare the software for drawing new elements.
- Open Elements ...
To open and save elements.
- Save Elements ...
- Import Elements ...
To import resp. export the element properties (Color, Nr, Type etc.) and the coordinates of the anchor points of the elements from resp. to a text file (*.txt).
- Export Elements ...
- Print Elements ...
To print the element properties into an Excel import file (*.csv).

Menu "Edit" (see also page 11, Menu "Edit")

- Select All
To select resp. deselect all elements.
- Deselect All
- Change
To change the properties of the selected element.
- Renumber all
To renumber the remaining elements after deletion of elements.

Copy	
Paste	
To copy the selected elements to clipboard.	
To paste the elements from clipboard.	
Delete selected	Del
Delete all	Ctrl+Y
To delete the selected resp. all elements.	
Create Group	
Add to Group	
Remove from Group	
To create a group of elements from the actually selected elements.	
To add elements to a group.	
To remove elements from a group.	
Define Group-Reference-Figure	
UnDefine Group-Reference-Figure	
To define resp. undefine up to three elements as Group Reference Figures.	
Match Serial Section Group	
Match Serial Section Point manual	
To transfer elements from one slide to another for serial sections automatically resp. manually.	

Menu "Move"

Goto	To center the selected element on screen.
------	---

Menu "Laser"

Start Laser function	F11	To start UV-Laser function after all settings are done.
<input checked="" type="checkbox"/> Cut		To select the laser function for the next command "Start Laser function".
JointCut		
Close&Cut		
LPC		
AutoLPC		
Close&Cut + AutoLPC		
RoboLPC		
AutoCircle		

Menu "Close"

Click on menu item "Close" to save and close the Element List.







Tool Bar of Element List

	Stop To stop the UV-Laser function and the movement of the stage immediately in case of emergency.
	Import Elements To import the properties of the elements.
	Export Elements To export the properties of the elements.
	Print Elements To print the element properties into an Excel import file (*.csv).
	Goto To center the selected element on screen.
	Change To change the properties of the selected element.
	Delete selected To delete the selected elements.
	Delete all To delete all elements.
	Renumber All To renumber the remaining elements after deletion of elements.






Cut Tools of Element List/Start Laser

	To select the laser function for the next command "Start Laser function". For an overview of the Laser functions see page 23.
	Start Laser function.

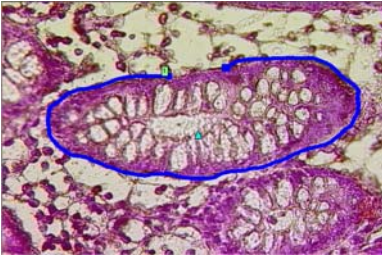
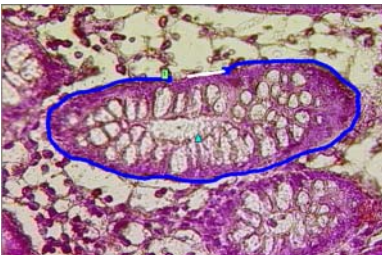
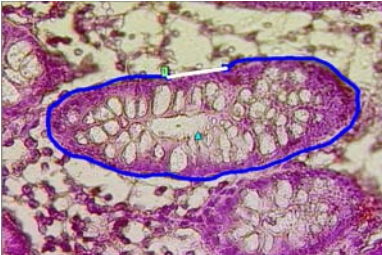
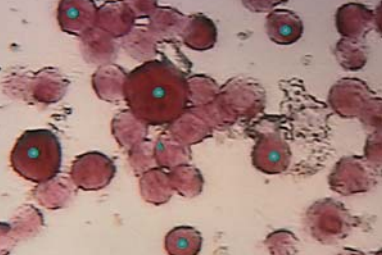
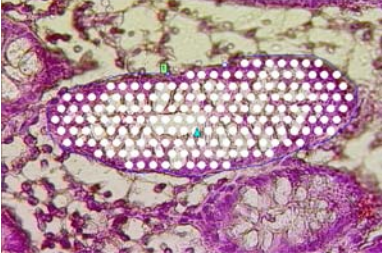
16 Shortcuts

Shortcut	Picto/Menu
Help	
F1	Help > PALM®Robo Help
File	
F2	 Imaging File > Open Imaging ...
F3	 PALMPicture File > Open PALMPicture ...
Alt+F4	File > Exit PALM®Robo
Edit	
Ctrl+A	Edit > Select all / Edit > Deselect all (toggle)
Ctrl+C	Edit > Copy
Ctrl+V	Edit > Paste
Backspace	 Delete last Edit > Delete last
Alt+Backspace	Edit > Undelete
Ctrl+Y	 Delete all Edit > Delete all
Del	Edit > Delete selected
Alt+Enter	Edit > Change
Move	
Alt+F	 Freeze mode Move > Freeze mode
Ctrl+F	Move > Speed faster
Ctrl+S	Move > Speed slower
Ctrl+K	Move > Goto Check-Point
F7	Stage mode / Cursor mode  Stage Move > Stage mode
F8	Move > Setup Speed ...

Esc	 Stop Move > Stop
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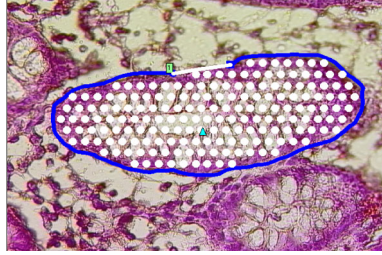
Shortcut	Picto/Menu
View	
Ctrl+L	View > Menus > Laser Tools
Ctrl+P	 Color Palette On Off View > Menus > Color Palette
F4	 Navigator Window View > Navigator Window
F5	 Element List View > Element List
F6	 Microscope Window View > Microscope Window
Ctrl+U	View > Menus > Cut Tools
Ctrl+E	View > Menus > Speed Tools
Ctrl+G	View > Menus > Graphic Tools
Laser	
Page up	Laser > Energy/Power more
Page Down	Laser > Energy/Power less
Home	Laser > Focus up
End	Laser > Focus down
F9	Laser > Energy & Focus (UV-Laser) ...
F11	 Start Laser Laser > Start Laser function
other	
Alt+P	Switch between Standard Pointer and Group Reference Pointer (toggle)

17 Laser functions - an overview

<p>Cut Cutting along the pre-defined line</p>		<p>The laser cuts precisely along the predefined line yielding a clear-cut gap between the selected and non-selected material. Thus pure sample preparation is possible without danger of contamination.</p>
<p>JointCut Close the line but leaving a small connecting piece to cut membrane-mounted preparations, living cells and moist tissue samples.</p>		<p>A cutting function where the marked line leaves a small connecting piece. The entire area can be catapulted later with one single shot. This function is dedicated for cutting automatic geometric figures to avoid unintentional movement.</p>
<p>Close & Cut Close and cut the line. For glassmounted preparations; living cells on membranes and moist tissue samples.</p>		<p>The enhanced cut function will close the incompletely drawn figure by connecting the end point with the start point with a straight line.</p>
<p>LPC Laser Pressure Catapulting</p>		<p>Only LPC dot-marked specimens are catapulted. The catapult point can be set manually, to individually catapult samples out of tissues after laser cutting. This function is of special benefit for cytocentrifuged specimen and for isolated cells within a histological preparation.</p>
<p>AutoLPC Automatic catapulting of larger areas from glass-mounted preparations only</p>		<p>With glass-mounted preparations only a small amount of cellular material can be catapulted with each single shot. Therefore larger areas have to be catapulted with multiple shots. The user circumscises the area to be catapulted and defines the laser shot grid in the Setup menu (how many shots per μm^2).</p>

**Close & Cut +
AutoLPC**

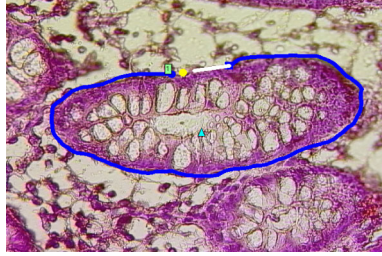
Glass-mounted preparations: An open figure is closed and subsequently cut and catapulted.



Prior to AutoLPC the selected material is completely separated by cutting a closed line around the area of interest. Used for critical preparations, where contamination with neighboring tissues definitely has to be avoided.

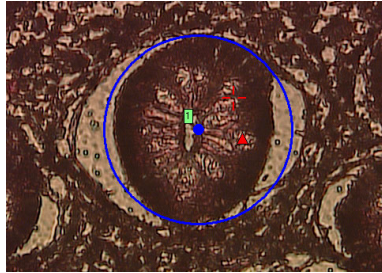
RoboLPC

Cutting and catapulting in a single step!
Only possible with membrane-mounted specimen.



The marked line is entirely closed leaving a small connecting piece from where the entire area is immediately catapulted with one single shot. The size of the connecting piece can be pre-selected in the laser Setup menu and displayed together with the RoboLPC-dot.

Auto Circle
for glass-mounted preparations.



Circular cutting and subsequent catapulting from the sample center. The circle radius can be predefined.