On-Screen-Display User Manual

Software Version

Contents

Introduction

About this Document

Your camera comes with a dedicated operating system (On-Screen-Display menu, OSD menu) to provide stand-alone functionality. The user interaction is enabled via an onscreen display which superimposes a graphical user interface on the microscope image.

This user manual describes the special functions of the OSD menu in stand-alone mode.

For information on the PC mode, refer to the camera user manual and "LAS X Help" of the Leica Application Software X.

The OSD menu can be used in:

- Dedicated Mircoscope Cameras
- Integrated in digital microscopes (Additional functionalities are supported, e.g. coded zoom with automatically adjusted scale. These functionalities are marked with the sign * in this document).

Before using your Leica camera for the first time, please read the "Safety Concept" booklet and the user manual of your camera.

The "Safety Concept" booklet contains additional safety information on handling and care.

Before installing, operating or using the camera, read the documents listed above as well as this document. In particular, please follow all safety instructions.

User manuals and updates are also available for you to download and print from our website www.leica-microsystems.com.

Symbols used in this document:

Warning! Safety hazard!

This symbol indicates especially important information that is mandatory to read and observe. Failure to comply can cause the following:

- Personal injury!
- Instrument malfunctions and damage.

Important information

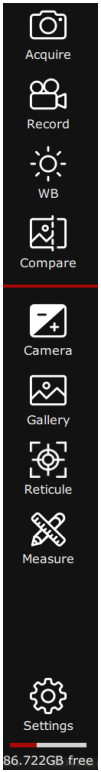
This symbol indicates additional information or explanations that are intended to provide clarity.

Overview of the On-Screen-Display

Note: The screenshots of the On-Screen-Display shown in this user manual are in English, but during operation the display will be shown in the language selected by the user.

On-Screen-Display (OSD)

The individual menu functionality is navigated by a cursor which is controlled via the attached USB mouse.



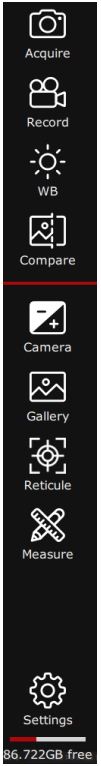
Calling up and Closing the On-Screen-Display

1. Make sure that a USB mouse is connected to the camera and, in the case of a wireless mouse, the mouse is switched on.
2. Move the USB mouse.

   The OSD menu appears on the left side of the screen.

3. Click on a symbol to start a process or open a menu for further operating steps.

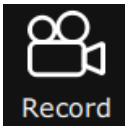
If your mouse cursor is not over the menu bar or on an open panel the OSD menu will disappear after two seconds when no further movement of the mouse is recognised.



On-Screen-Display Menus

The icons have the following meaning:

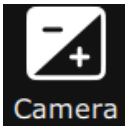
Capture an image.



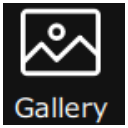
Start and stop a movie recording.

Initiate a white balance.

Compare two images.



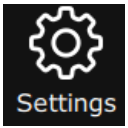
Set camera parameters like resolution and image orientation.



Open the gallery to display acquired images or videos.

Open the [Reticule] menu where you can select overlays provided from the system. You can also choose your own prepared overlays located in the [/overlay] subfolder.

Open the [Measure] window to perform measurements, add text notes, arrows or other annotations etc.

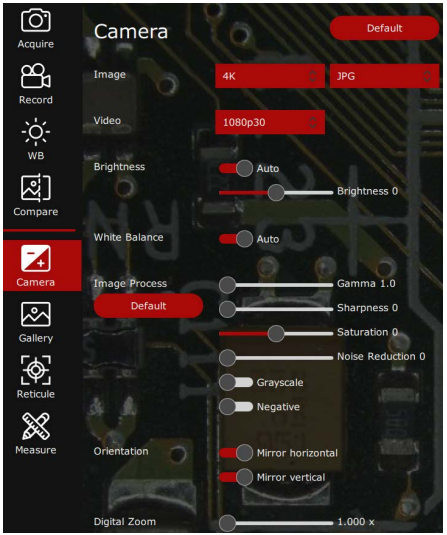


Open the settings panel to change parameters like language, date and time or execute a firmware update.

In the [Settings] menu, you can individually activate / deactivate the menus displayed in the OSD menu ("[Settings] Menu - [General] Submenu", page 14).

[Camera] Menu

Clicking the [Camera] button will open the following panel with the camera settings.



Default

Clicking the "Default" button will reset the camera to the factory values.

Image

Images can be stored in the following formats: JPG, TIF or BMP. Use this section to change the capture resolution:

- 12 MP: 4,000 × 3,000 pixels
- 4K: 3,840 × 2,160 pixels
- FullHD: 1,920 × 1,080 pixels

Video

Use this section to change the resolution and frame rate for video recording. The camera can be set to the following AVI movie formats:

- 1080p30
- 720p60
- 720p30
- 720p15

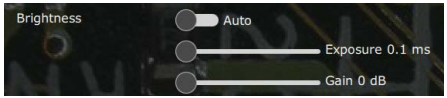
With the camera you can record movies with a maximal length of 29 min.

With a USB thumb drive formatted in FAT32 the size is limited to 4 gigabytes.

Brightness

You can choose between an automatic mode and a manual mode.

In manual mode, the brightness settings can be adjusted by moving the two sliders [Exposure] and [Gain]:



[Camera] Menu (Continued)

White balance

The balance function makes it possible to adapt the camera chip to the ambient light so that color-neutral images can be acquired.

Whenever possible, use a neutral gray chart or another color-neutral object to obtain optimum results.

You can choose either an automatic mode or use a manual mode to set the color gain differently.

For information on making white balance settings, refer to chapter "White Balance", page 27.

Image process

Use the slider to adjust the different image processes like [Gamma], [Sharpness] or [Noise reduction] or use the switch to enable [Grayscale] (change image from color to black/white mode) or [Negative] mode.

Orientation

With these switches you can flip the image horizontally or vertically.

Digital zoom

With the slider or mouse wheel you can digitally zoom in on the live image. On the right bottom you can see the current magnification.

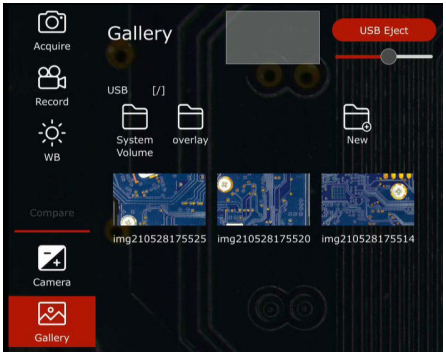
* In case the optical zoom of the microscope is encoded and read out by the OSD, the shown magnification is the magnification of the zoom x the digital magnification.

If you are using dedicated cameras only, you will see the digital magnification if >1.0x.

[Gallery] Menu

Clicking the [Gallery] button will open the following panel with the display options.

The camera can display images and video clips directly on an HD / 4K monitor.

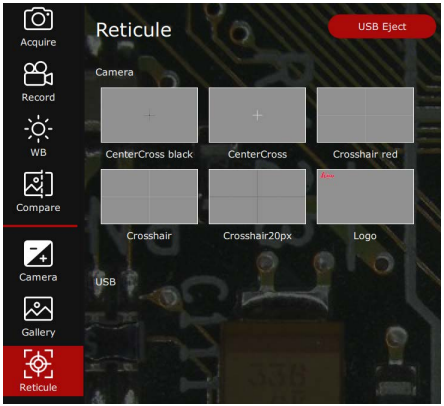


For information on displaying images and movies, refer to chapter "Displaying Images and Videos Without a Computer", page 24.

For information on using the gallery functions, refer to chapter "Working with the Gallery Functions", page 26.

[Reticule] Menu

Clicking the [Reticule] button will open the panel with the pre-defined overlay functions.

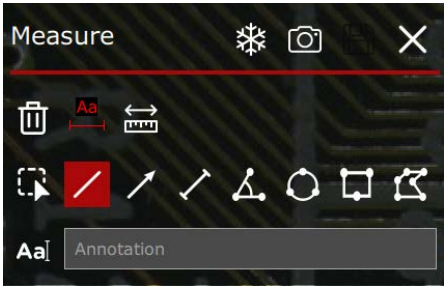


The system allows you to:

- select pre-defined overlays for the live image,
- create your own overlays via the [Measure] menu or
- upload FullHD PNG images located in the USB subfolder [/overlay] which you can use as overlays.

[Measure] Menu

Clicking the [Measure] button will open the panel with the annotation and measurement functions.



Symbol	Function
	Freeze the live image
	Aquire image with annotation / measurement elements in the [Gallery] menu
	Save all annotation / measurement elements as an overlay in the [Gallery] menu

Symbol	Function
	Close the measurement function
	Delete one or more selected elements
	Display a pop-up window to define properties of one or more selected elements (see page 31)
	Display the calibration function (see page 41)
	Select one or more items to modify their properties: • Activated: Select or deselect individual elements • Double-click: Select or deselect all elements
	Draw a line (see page 33)

Symbol	Function
	Draw an arrow (see page 33)
	Draw a linebar (length measurement, see page 34)
	Draw an angle (angle measurement, see page 35)
	Draw a circle (radius measurement, see page 36)
	Draw a rectangle (area measurement, see page 37)
	Draw a polygon (area measurement, see page 38)
Aa Ann	Add editable text via a pop-up online keyboard

[Settings] Menu - [General] Submenu

General notes

The [Settings] menu provides three submenus to configure your device: [General], [Gallery] and [Network].

Clicking the [Settings] button will open the following panel.

Language

Press the button to change the language according your needs.

The system can be set to the following languages:

- English
- German
- French
- Italian
- Spain
- Portuguese
- Chinese
- Japanese
- Korean

Firmware

In this section, the firmware version is displayed.

If an update is available, press the [Update] button to update the firmware of the camera. The camera will be updated with the firmware provided on the USB thumb drive.

When activating the firmware update process you must confirm or cancel the process.

Functions

With these menus you change the function of the middle USB mouse button and the footswitch.

For each device you can choose:

Menu	Function
Aquire	Capture an image
Record	START and STOP the recording of a movie
WB	White balance
Compare	Compare two images

In addition, you can select [Auto. image Copy] to define how images are copied or distributed:

- [None]: Images are not copied
- [To Server]: Images are stored on the server
- [Via E-Mail]: Images are sent to an E-Mail address defined in the [Network] submenu

[Settings] Menu - [General] Submenu (Continued)

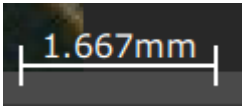
Objective*

In this section, you can select the objective used. The objective number can be found on the product lable of the objective.

ScaleBar

In this section, you can define the scalebar settings (type, unit, color).

Example:



Monitor

In this section, the name of the connected monitor model is displayed and you can select the monitor resolution.

Select a resolution that can be displayed on the monitor correctly without flickering and without an error message.

Info

In this section, time, date and serial number are displayed.

To change the date and time of the internal clock, enter the required values in the corresponding fields.

The internal battery for the buffer of these data has a durability of approx. 10 years and can be replaced in the factory or by a certified service technician.

You can also display the legal notice.

USB drive

In this section, you can format a USB thumb drive conntected to the device. You have to press the [USB Eject] button first before you can erase and format the USB thumb drive with exFAT. Reinsert the USB thumb drive physically afterwards.

Beep

In this section, you can turn off the system beep (0 Hz) or set it to an individually frequency (up to 8327 Hz).

Menu

In this section, you can individually activate / deactivate the menus displayed in the OSD menu.

[Settings] Menu - [Gallery] Submenu

Clicking the [Settings] button followed by the [Gallery] tab will open the following panel.

Image name

In this field you can define the name prefix for images.

Video name

In this field you can define the name prefix for videos.

Time format

In this field you can define the time format for images and videos.

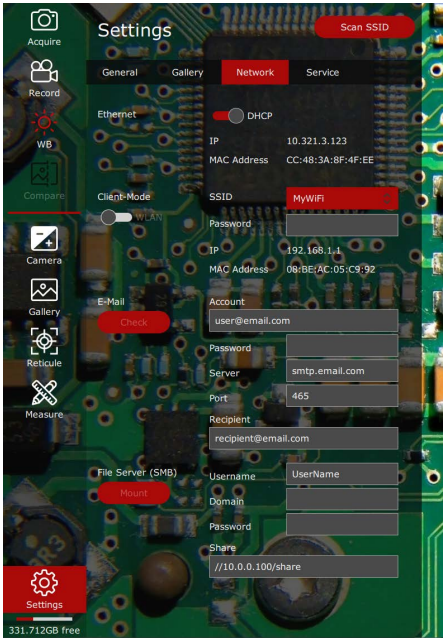
Aquire

In this field you can define how you want to aquire images:

- without overlay
- with overlay
- with and without overlay

[Settings] Menu - [Network] Submenu

Clicking the [Settings] button followed by the [Network] tab will open the following panel.



Network settings are only visible if either an ethernet connection is established or if a USB Wi-Fi dongle is connected.

Ethernet

In the network settings you can configure the Ethernet connection. DHCP will obtain an IP address automatically from the server. If DHCP is not active you can enter the desired values manually.

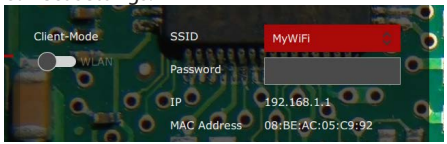
Please contact your IT department for the correct settings.

Client-Mode

When using a Wi-Fi dongle, you can configure the camera to join an existing Wi-Fi network in reach. Press the [Scan SSID] button to search for the current available networks and select the networks of your choice with the SSID selection.

If your IT department needs more properties you can put a customised configuration file /data/wpa_supplicant.conf onto the USB thumb drive.

Please contact your IT department for the correct settings.



E-Mail

In the email settings you can set sender's email address, outgoing SMTP server address, port and the password. Some email providers may not allow sending emails from the camera, others allow you to adjust the account options for apps. In the recipient's address you can specify where the image should be sent with one mouse click.

File Server (SMB, Server Message Block)

It is possible to save images directly to a file server or shared directory via SMB. For the Share please enter the IP of the server (e.g. //192.168.1.100/shared_folder).

Please contact your IT department for the correct settings.

Configuring External Devices

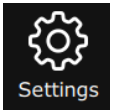
Note: The screenshots of the On-Screen-Display shown in this user manual are in English, but during operation the display will be shown in the language selected by the user.

Configuring External Devices

Configuring the footswitch

✓ Ensure that the footswitch is connected correctly to your camera (see camera user manual).

1. Select [Settings] in the menu.



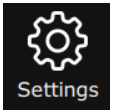
2. In the [Settings] menu, go to the entry [Footswitch] and select the function assigned for pressing [Hand / footswitch].

Menu	Function
Aquire	Capture an image
Record	START and STOP the recording of a movie
WB	White balance
Compare	Compare two images

Configuring the wireless USB mouse

✓ Ensure that the wireless USB mouse is connected correctly to your camera (see camera user manual).

1. Select [Settings] in the menu.

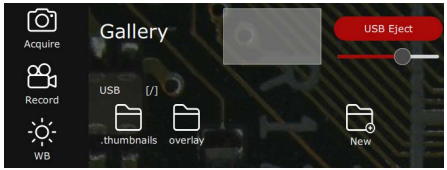


2. In the [Settings] menu, go to the [Middle Mouse Button] field and select the function assigned for pressing the scroll wheel of the wireless USB mouse:

Menu	Function
Aquire	Capture an image
Record	START and STOP the recording of a movie
WB	White balance
Compare	Compare two images

Uninstalling the USB thumb drive

1. Take care that you do not remove the USB thumb drive during the storage process.
2. Go to the [Gallery] menu and press the [USB Eject] button in the menu before pulling out the USB thumb drive.



Operation in Stand-Alone Mode

Note: The screenshots of the On-Screen-Display shown in this user manual are in English, but during operation the display will be shown in the language selected by the user.

Operation in Stand-Alone Mode

For information on setting up and switching on the camera in stand-alone mode, refer to the camera user manual.

Capturing Images Without a Computer

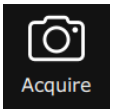
General notes

Before capturing an image, ensure that enough memory is available on the USB thumb drive. The amount of remaining space is shown on the bottom of the menu bar.

In the highest resolution, a single image takes up 1-4 MB (JPEG, depends on image parameters) and up to 35 MB uncompressed (TIF) of storage space on the USB thumb drive. This means that per gigabyte of capacity, you can save approx. 400 JPEG or 30 TIF images.

Acquire an image

1. Plug the USB thumb drive in the USB SPEED port of the camera.
2. Focus on the specimen.
3. Move the USB mouse to the left side of the screen so that the menu opens.
4. To capture an image, select [Aquire] in the menu.



5. Optionally press the middle USB mouse button or the handswitch / footswitch to capture an image or a movie

   You hear a signal tone as confirmation.

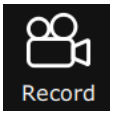
   While the image is being stored, the status light flashes red or orange (depending on your device) and the word "image captured" appears briefly on the HD / 4K monitor.

Storage time depends on the write speed of your USB thumb drive.

Capturing Movies Without a Computer

Acquire an image

1. Plug the USB thumb drive in the USB SPEED port of your camera.
2. Focus on the specimen.
3. Move the USB mouse to the left side of the screen so that the menu opens.
4. To start and stop a movie recording, select [Record] in the menu.



During capturing a clock is displayed to show how long the movie is recording.

With the camera you can record movies with a maximal length of 29 min.

With a USB thumb drive formatted in FAT32 the size is limited to 4 gigabytes.

Optionally you can use the handswitch / footswitch to record a movie. This function has to be configured in the [Settings] menu.

Displaying Images and Videos Without a Computer

For information on gallery settings, refer to chapter "[Settings] Menu - [Gallery] Submenu", page 16.

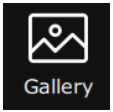
1. Select [Gallery] in the menu.

All captured images and movies are displayed.

2. By double clicking on a picture / movie icon you open the full screen view of the file.
3. By clicking the [<] and [>] button in the left upper corner of the image you can choose the previous or next image.
4. By clicking the [X] button the full screen view closes and you are again in the [Gallery] menu.

Working with Image Comparison

1. Select [Gallery] in the menu.



2. Click on the image you would like to compare with the live image.
3. Right-click on the image.
4. In the context menu, select [Compare].
5. If required, adapt the opacity of the image using the slider beneath the [USB Eject] button.
6. Click on [Compare] in the menu.

The image is compared with the live image.

7. To toggle between different views, repeatedly click on the image.
   - 1x: Full semi-transparent overlay
   - 2x: Side-by-side comparison, comparing left side
   - 3x: Side-by-side comparison, comparing right side

Working with the Gallery Functions

Overlays created in the [Measurement] menu are automatically stored in the [overlay] subfolder.

For information on the compare function, refer to chapter "Working with Image Comparison", page 25.

Creating new folders

1. Select [Gallery] in the menu.
2. Select [New].
3. In the pop-up window, enter a folder name.
4. Confirm with [Ok].

If you select a folder in the [Gallery] menu, all new captured images will be stored in this folder.

Deleting folders

1. Select [Gallery] in the menu and navigate to the folder.
2. Right-click on the folder.
3. In the context menu, select [Delete].

Note that folders containing images cannot be deleted. An error message will be displayed. You have to delete all images within the folder first, then delete the folder itself.

Deleting images

1. Select [Gallery] in the menu and navigate to the image.
2. Right-click on the image.
3. In the context menu, select [Delete].

   The image is deleted.

Note that the image is deleted without further confirmation prompt.

Renaming images

1. Select [Gallery] in the menu and navigate to the image.
2. Right-click on the image.
3. In the context menu, select [Rename].
4. In the pop-up window, enter a new name.
5. Confirm with [Ok].

White Balance

For information on white balance settings, refer to chapter "[Camera] Menu", page 9.

General notes

The white balance of the camera is factory set to automatic, which provides good initial results when used in conjunction with Leica LED illumination.

The balance function makes it possible to adapt the camera chip to the ambient light and ensures that the specimen is shown in neutral colors, so that color-neutral images can be acquired.

Depending on the configuration, one push white balance can also be carried out using the footswitch.

For information on configuring the footswitch, refer to chapter "[Settings] Menu - [General] Submenu", page 14.

Auto White Balance (recommended)

- If you want to use the automatic white balance mode, set the [Auto] switch to ON in the [Camera] menu (see page 9).

White Balance (Continued)

Adjusting the white balance manually / one push white balance

1. If you want to use the manual white balance mode, deactivate the [Auto] switch in the [Camera] menu (see page 9).
2. Place the gray chart or another color-neutral object under the microscope so that the entire field of view is filled in.
3. Adjust the illumination as desired.
4. Press the [One Push White Balance] button or [WB] in the menu.

   A white balance is calculated and applied to the camera.

If you do not have a neutral gray area in the image or if the illumination has a very strong color tint, you can manually set the values for "Red", "Green" and "Blue" in the [Camera] menu (once automatic white balance mode is deactivated), until the image displays the desired colors.

The white balance mode is always set to "Manual" after pressing the [One Push White Balance] button, even if the [Auto] was activated previously in the [Camera] menu.

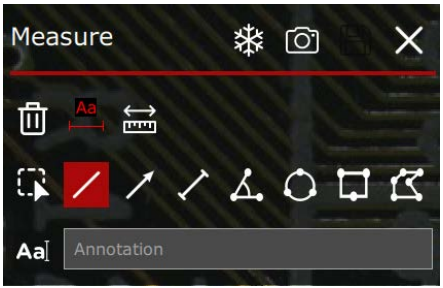
We recommend carrying out a new white balance adjustment whenever you change the illumination type or color temperature. This is particularly necessary if you are working with halogen light that can shift from yellow (low intensity) to blue (high intensity).

Annotation and Measurement Functions

Displaying the Annotation and Measurement Functions

1. Select [Measure] in the menu.

The [Measure] window is displayed:



For detailed information on the available icons in this menu, refer to chapter "[Measure] Menu", page 13.

For detailed information on the different types of annotation and measurement elements, refer to the following subchapters.

Using the digital magnifier

- To activate or deactivate the magnifier, right-click in the live image.

  A digital magnifier is displayed, following the movements of the mouse.

Working with Annotation and Measurement Elements (General Functions)

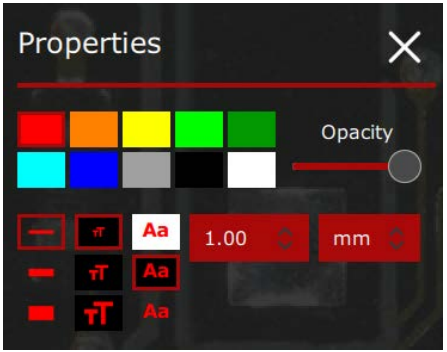
Defining annotation and measurement settings

Prior to using the annotation and measurement functions, define the required settings:

1. Click the icon:

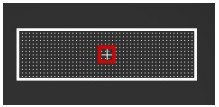
   The Properties [menu] is displayed:



Select the required properties:

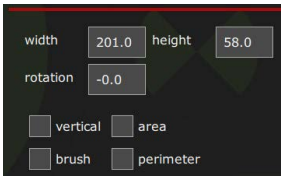
- Color
- Opacity
- Borderline thickness
- Font size
- Font background color
- Measurement decimal points
- Measurement units

To change the properties of an existing element, double-click the rectangular anchor point in the center of the element (or the parameter values):



The Properties [menu] is displayed.

Depending on the element type, additional settings are displayed, example:



Selecting one or more elements

1. Click the rectangular anchor point in the center of the element.

   The element is selected.

2. If you want to select more than one element, click the rectangular anchor point of the next element.

   Both elements are selected.

3. Repeat for all required elements.

To change the properties of all selected elements, click the [Aa] symbol in the [Measure] main menu.

The Properties [menu] is displayed.

To deselect all elements, click any free location in the live image.

Working with Annotation and Measurement Elements (General Functions) (Continued)

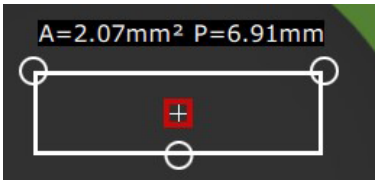
Moving an element

✓ The element is selected ("Selecting one or more elements", page 31).

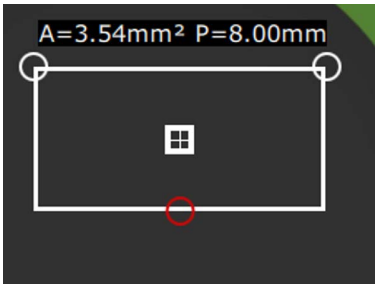
▶ Drag and drop the element to the required location.

Changing element shape and / or orientation by moving anchor points

1. Let the mouse hover the element until its round white anchor points are displayed:



2. Press and hold the left mouse button on the anchor point and change shape and / or orientation.



3. Release the mouse button once the required change is made.
4. Repeat for all required anchor points.

Deleting one or more elements

✓ The element are selected ("Selecting one or more elements", page 31).

▶ Click the icon:

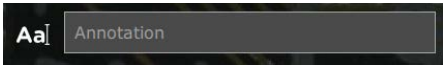
The elements are deleted.

Note that the elements are deleted without further confirmation prompt.

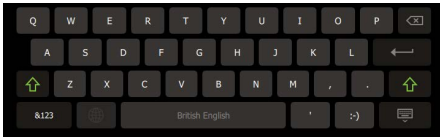
Adding Text, Lines or Arrows

Adding text

1. Click in the text field:



   An on-screen keyboard is displayed:



2. Enter the text.
3. Click at the required location in the live image.

   A text annotation is added to the image:

4. If you want to change the annotation afterwards, click into the text label and modify the text.

Adding a line

1. Click the icon:

2. In the live image, click at the required location of the starting point of the line.

   The starting point is set:

3. Click at the required location of the end point of the line.

   The line is drawn:

Adding an arrow

This function is identical to "Adding a line", page 33.

1. Click the icon:

2. In the live image, click at the required location of the starting point of the arrow.

   The starting point is set.

3. Click at the required location of the end point of the arrow.

   The arrow is drawn.

Performing a Length Measurement

Performing a length measurement

1. Click the icon:

2. In the live image, click at the required location of the starting point of the linebar.

   The starting point is set:

3. Click at the required location of the end point of the linebar.

The linebar is drawn:

The measured length is displayed.

Performing an Angle Measurement

Performing an angle measurement

1. Click the icon:

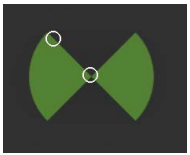
2. In the live image, click at the required location of the angle leg.

   The angle leg is set:

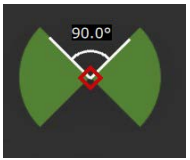
3. Click at the required location of the origin.

   The origin is set:

4. Click at the required location of the base.

   The base is set, the angle is drawn:

   The measurement parameters are displayed.

Performing a Radius Measurement

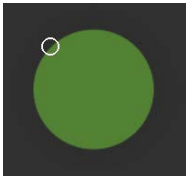
Performing a radius measurement

1. Click the icon:

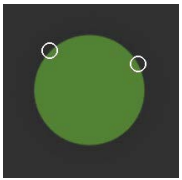
2. In the live image, click at the required location of the first point of the circle.

   The first point is set:

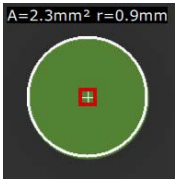
3. Click at the required location of the second point of the circle.

   The second point is set:

4. Click at the required location of the third point of the circle.

   The third point is set, the circle is drawn:

   The measurement parameters are displayed.

Performing an Area Measurement Using a Rectangle

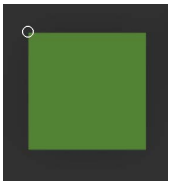
Performing an area measurement using a rectangle

1. Click the icon:

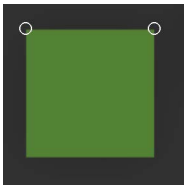
2. In the live image, click at the required location of the origin.

   The origin is set:

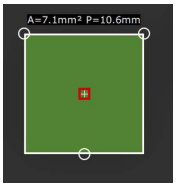
3. Click at the required location of the angle / width.

   The angle / width is set:

4. Click at the required location of the height.

   The height is set, the rectangle is drawn:

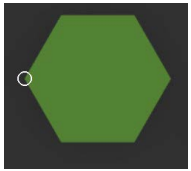
   The measurement parameters are displayed.

Performing an Area Measurement Using a Polygone

1. Click the icon:

2. In the live image, click at the required location of the first point of the polygone.

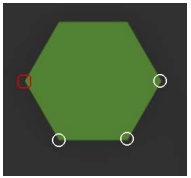
   The starting point is set (square):



3. Click at the required location of the second point of the polygone.

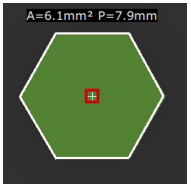
   The second point is set (round).

4. Repeat for all required points (round):



5. Connect the end point with the starting point.

   The starting and end point are connected, the polygone is drawn:



   The measurement parameters are displayed.

To close the polygone you have to connect the starting point (square) and the end point (round).

Note that a polygone has no editable anchor points. Its form cannot be changed once it is created.

Saving Annotation and Measurement Elements as Overlays

✓ All annotation and measurement elements are placed on the live image.

1. Click the icon:

The overlay is saved.

Capturing Images with the Overlay

✓ All annotation and measurement elements are placed on the live image.

1. Click the icon:

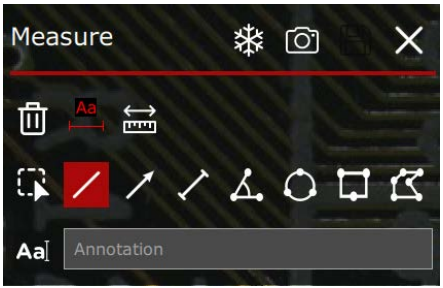
   

   The image with the actual annotations will be captured.

Performing Calibration

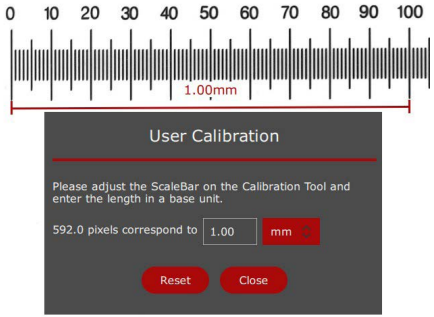
1. Select [Measure] in the menu.

The [Measure] window is displayed:



1. Click the icon:

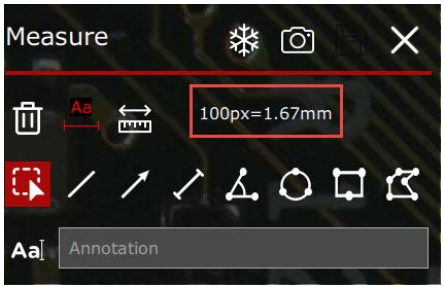
The [User Calibration] window and a red ScaleBar are displayed:



2. Put a stage micrometer (e.g. 10310345) in focus.
3. Measure the length of the red ScaleBar with the ruler, e.g. 1 mm.
4. Enter the actual length in the [User Calibration] window via the on-screen keyboard.
5. Click the Enter key on the on-screen keyboard:

6. Confirm with [Close].

The measurements are calibrated and the new ratio is displayed:



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