

User Guide BRESSER MikroCam SP

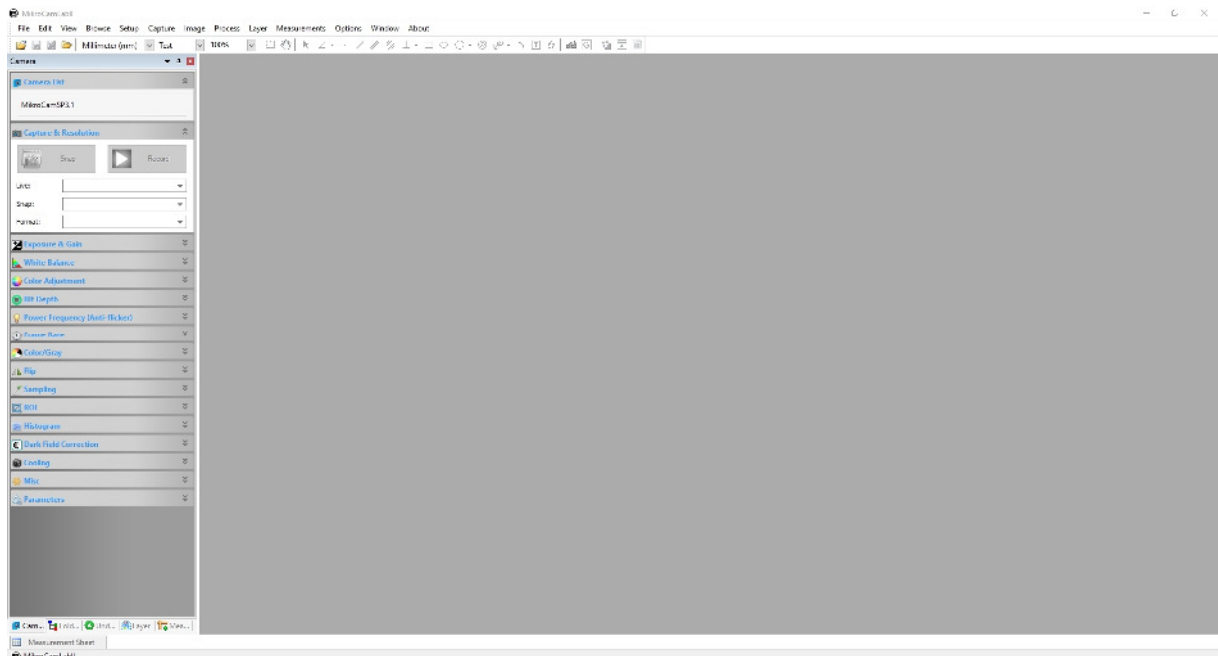
Capture images

To start the imaging process, connect your camera to a free USB port on your computer. Connect the camera to your microscope.

A guide on how to use different adapters is included on the CD. It is recommended to have the microscope ready and the sample already focused before starting.

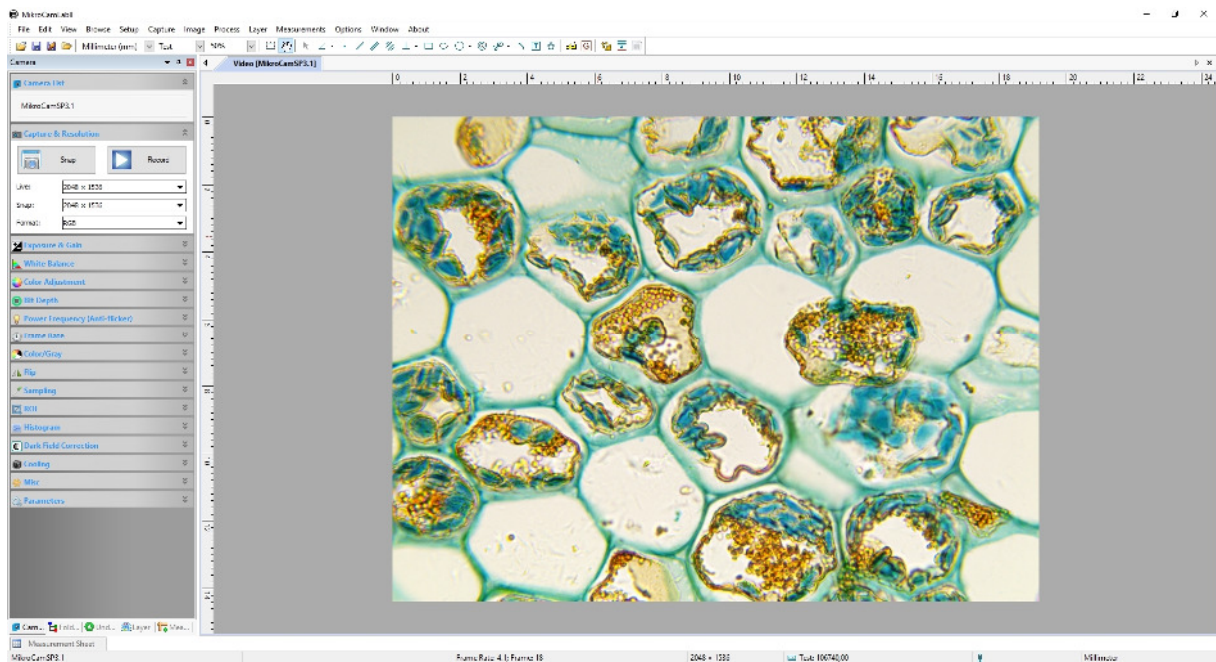
The software is included with different camera models and therefore not all functions shown here might be available with your particular camera model.

When starting the software, you will see this window:



The camera list should show your camera model already.

Click the camera name to start the live view. A new window will open:



If the image is not sharp, focus with the controls on your microscope.

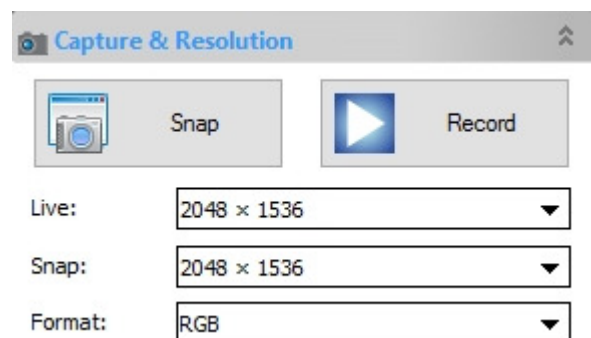
NOTE: The camera's field of view is usually smaller than the field you see through the eyepiece. This is normal. To get a bigger field of view on some microscope models, you can purchase the optional variable reducing lens 0,5x (item-No. 5914005).

A click on the menu bars on the left side will open the respective window panel with controls. Click the menu bar again to reduce the window again. Most panels have a "Defaults" button to restore the factory settings if you are not satisfied with the manual values.

Capture and Resolution

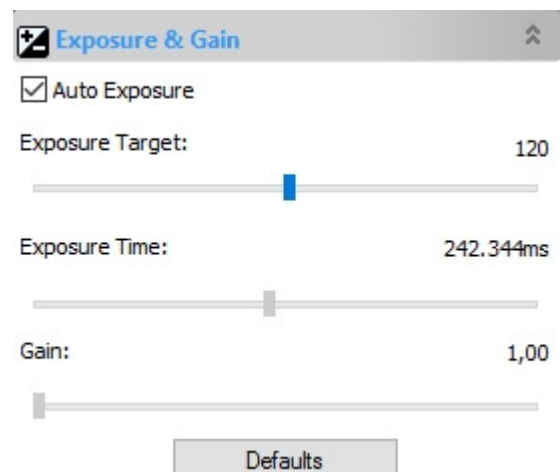
With a click on the dropdown menu you can choose the resolution for both live view and recordings. A lower resolution live view will enhance the frame rate.

Click „Snap“ to take a single image. Click “Record” to start capturing video. A dialogue will open to ask for the video file format and other parameters.



Exposure and Gain

The default setting is auto exposure. Remove the check mark to change settings manually. You can adjust exposure time and Gain separately.

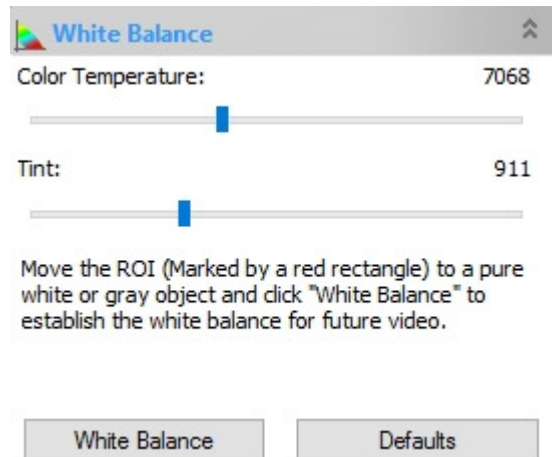


NOTE: High Gain values will add more noise in the image. Long exposure times will reduce the maximum frame rate (images per second).

White Balance

Click „white balance“ to adjust the color rendering to your sample and lighting. You can also adjust the color with the sliders manually.

NOTE: For both exposure time and white balance you can use the „ROI – region of interest“ panel to calibrate the values. Move the red rectangle to a neutral (empty) part of your sample to get values of the background lighting. You can also adjust the size of the ROI region.



White Balance

Color Temperature: 7068

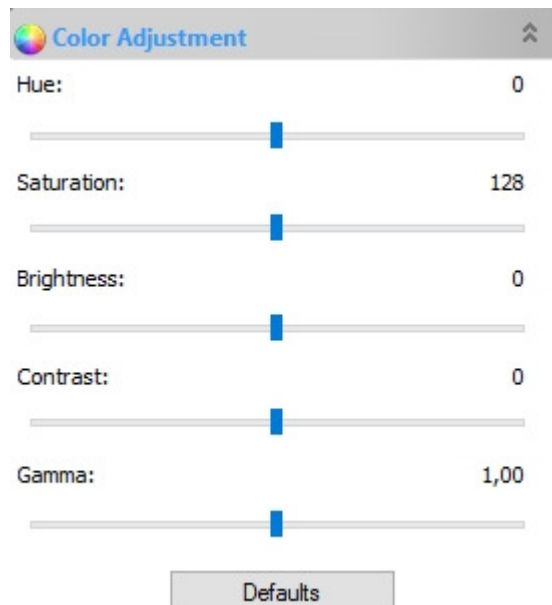
Tint: 911

Move the ROI (Marked by a red rectangle) to a pure white or gray object and click "White Balance" to establish the white balance for future video.

White Balance Defaults

Color Adjustment

Adjust the color rendering, saturation, brightness etc. with the respective sliders. Click "Default" to get back to factory settings.



Color Adjustment

Hue: 0

Saturation: 128

Brightness: 0

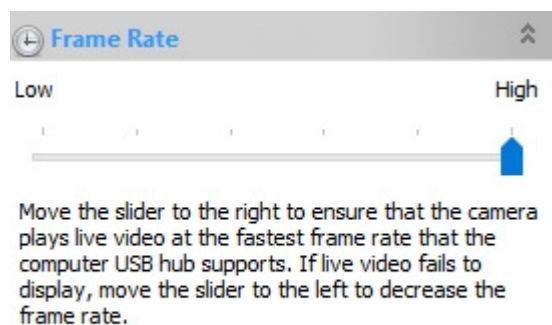
Contrast: 0

Gamma: 1,00

Defaults

Frame Rate

Adjust the camera frame rate (images per second) to match it to the maximum data transfer rate your PC can handle.



Frame Rate

Low High

Move the slider to the right to ensure that the camera plays live video at the fastest frame rate that the computer USB hub supports. If live video fails to display, move the slider to the left to decrease the frame rate.

Color / Grey

Choose whether the image is shown in color or black and white.



Color/Gray

Color

Gray

Flip

Use the check box to flip the image horizontally or vertically (e.g. to match the eyepiece view).

Flip

Horizontal

Vertical

Sampling

When choosing lower resolutions, you can choose whether pixel values should be combined (binned) or some pixel values will be dropped. (Not available with all models).

Sampling

Bin

Skip

Frequency

If the image is flickering, you can adjust the frame rate to match the frequency of your power grid. This is not available for all camera models, and will limit the values you can choose for exposure times. Please keep this in mind.

Power Frequency (Anti-flicker)

AC (50 Hz)

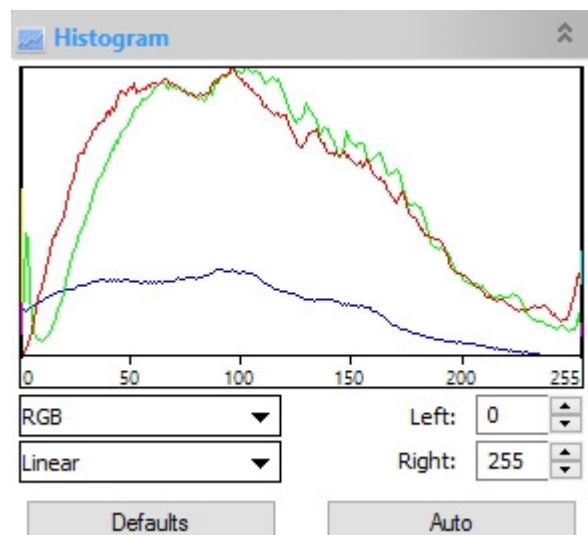
AC (60 Hz)

DC

Anti-flicker function is only available for cameras with rolling shutter detector (most of cmos sensors) and auto exposure mode must be disabled. Enable this function will make only some certain exposure time values available, which depend on the power frequency that is selected.

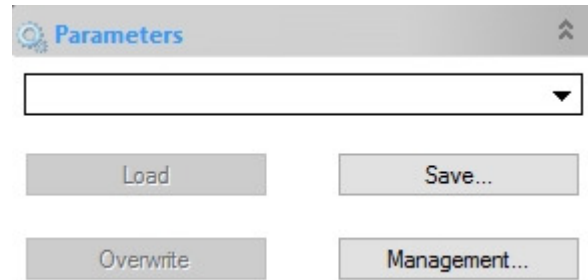
Histogram

You can see the spread of the pixel values for all colors. You can adjust the borders to stretch the values for optimized contrast. You can also use the histogram to choose the correct exposure. Check for blown out highlights (high values at the right edge - overexposed) or blacked out shadows (high values at the left edge - underexposed)



Parameters

To save your settings, click „save“. Click „Management“ to revise your saved values.



Measuring

A measurement with the MikroCam SP is only possible after a calibration.

To calibrate the software, you can use a BRESSER calibration slide (available with 0,1mm and 0,01mm tick marks) or any other standard you might have.

A calibration can be done in the live view as well as in an image captured previously.

Before starting to calibrate, set the zoom value to 100% and choose the maximum resolution available for the live view.

Click the calibrate tool  or go to “options / calibrate”

A window will open, where you can choose a magnification. Some values are already set, but you can use own values as well. To avoid the possibility of confusion, add the objective magnification and microscope name.

Move the calibration line to match your slide or calibration standard. Pull the ends so the line covers the most part of the scale and fits a full value (e.g. 2 mm). Enter this value in the field „actual length“. In the adjacent field you can enter the respective unit of measurement (millimeters, micrometers etc.) Click “ok” to finish the calibration.

The button „End Point“ allows to choose different graphics for the calibration line end points (rectangle, bar).

To manage your calibration values, go to Options / magnifications. There you see a table with all values, where you can delete, or change priority of the saved values in the list.

To measure, choose the magnification and the unit of measurement from the status bar. It is not necessary to have the zoom value at 100%.

To measure your sample, or parts thereof, you can choose from the following:

Angle / Point / Line / Parallel / Two Paralleles / Vertical / Rectangle / Ellipse / Circle / Annulus / Two circles / Arc / Polygon / Curve

For more details, refer to chapter **Measurements**.

File

Open Image: Opens a file on your computer

Open Video: Opens a video file

Camera List: Shows the connected cameras

Twain: Select Device: Choose cameras that are connected as a Twain source

Twain: Acquire: Preview of a Twain device

Save: Save the image

Save as: Save the image at different locations and with different file types

Batch Save: Save several images at once with consecutive numbers, set names or timestamp

Paste as new file: Copy data from clipboard as a new file

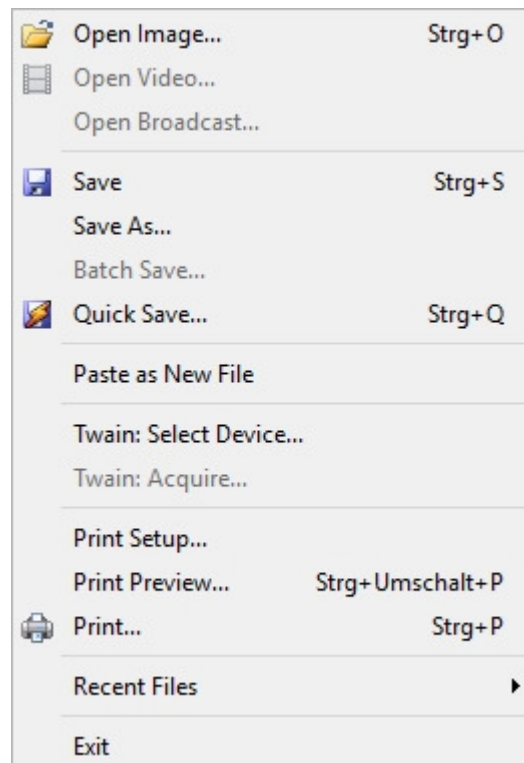
Print settings: Manage your print settings

Print Preview: Shows the preview

Print: Prints the opened file

Recent Files: Shows images that have been used shortly

Close: Ends the software



Edit:

Cut: Cut a part of the picture

Delete: Delete a sketch / measurement

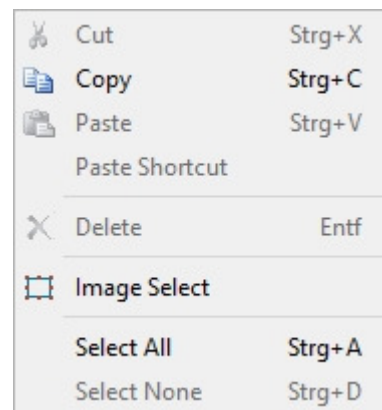
Copy: copy the highlighted part (e.g. to another file)

Paste: Paste the part copied before into other file

Image select: Select a rectangular part of the file

Select all: Select the whole image

Select none: Delete previous selection



View:

Browse: Select image or file from Explorer

Measurement Sheet: Show measurement values

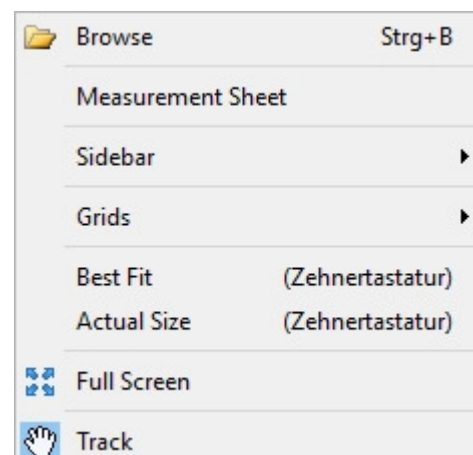
Sidebar: Change view settings for the sidebar

Grids: Show a ruler or grid as overlay on the image

Best Fit: Resize the image to fit the window

Actual Size: Shows the full size of the image

Track: Move image if it is bigger than the window



Setup

Start/Pause: Pause the live view

View Properties:

Video Overlay: see below

Video Watermark: Use a bmp file for a watermark

Move watermark: Edit the position of the watermark

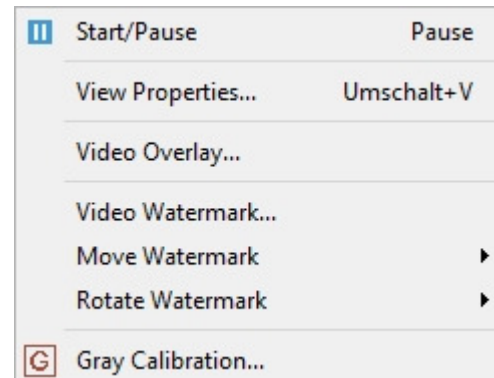
Rotate watermark: Adjust the angle of the watermark

Grey Calibration: see below

Video Overlay: Overlay Graphics in your live image

Overlay: Add a ruler, timestamp or text to your image.

You can adjust font size etc. to your liking.



Note: The ruler is fixed in the software and cannot be changed by the user.

Marker: Put a marker on the image to point to a specific position. You can adjust position and size of the marker.

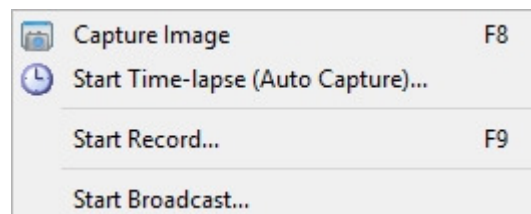
Gray calibration: Adjust the brightness of your image. Click “gray calibration“, a window with luminance values and a selection frame will open. Move the selection frame to a bright part of the image. Check the luminance values and adjust them to a value of about 200. You can also adjust Exposure Time and Gain. Click „OK“ to accept the values.

Capture

Capture Image: Take a single image

Capture Timelapse: see below

Start Record: Start recording a video. You will be asked to set the video parameters, file name, etc.



Capture Timelapse: You can capture a series of images automatically. The number of frames and the time between frames can be adjusted between 2 and 3600 seconds (1 hour). Maximum number of frames is 9999. The time between frames. You can add a timestamp and name to your images. Please make sure you have enough space left on your hard drive to save all images.

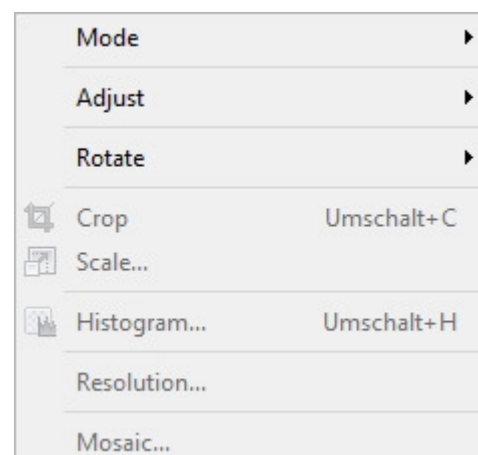
Image

Mode: Set color depth or grayscale

Adjust: see below

Rotate: Rotate the image to your liking with fixed values or to your liking. You can also flip the image horizontally and vertically here.

Crop: Cut the borders of the image to show only the interesting part.



Scale: Scale the image

Histogram: Show the luminance values for each color channel

Resolution: Set image resolution

Mosaic: Capture several adjacent frames and add them automatically to a wide field mosaic

Image Adjust:

Curve: Click and drag with the mouse to adjust the luminance curve.

Brightness: Adjust brightness

Contrast: Adjust contrast

Histogram: Adjust values using the histogram curve

Color: Adjust color values

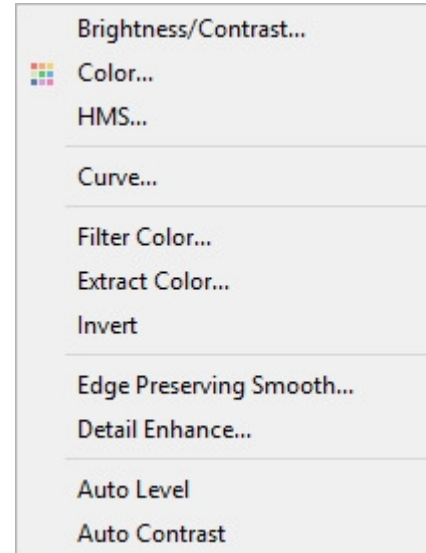
HMS: Adjust values

Gamma: Adjust Gamma values

Filter Color: Execute a software color filter

Extract Color: Show one color only

Invert: Invert colors to negative



Layer

Layers are used to handle overlays like rulers, or different color channels (e.g. from fluorescence). Layers will enable you to activate or deactivate such parts of the image.

New: Make a new layer

Remove: Delete Layer (not for current layer)

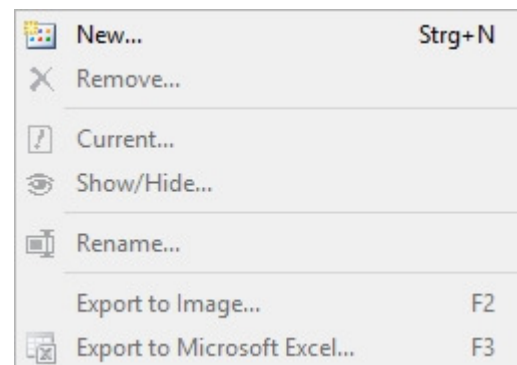
Current: Select current layer

Show/Hide: Show or hide other layers. The current layer will always be shown.

Rename: Change name of Layer

Export to image: Export all layers in one image file

Export to Microsoft Excel: Put the image file including all layers into an Excel file (Excel Software is not included in the package).



Messungen

Object select: Select previous measurement data

Angle: Measure angles in the image

Point: Mark points or features in the image

Line: Measure a distance

Parallel: Measure the distance between two parallel lines

Two parallels: Measure the distance between two parallel line pairs

Vertical: Measure a vertical line (choose Cross- or T-shaped)

Square: Measure area of a square

Ellipse: Measure diameter of an ellipse (short and long axis)

Circle: Measure the diameter of a circle, defined by either center and radius, two points or three points.

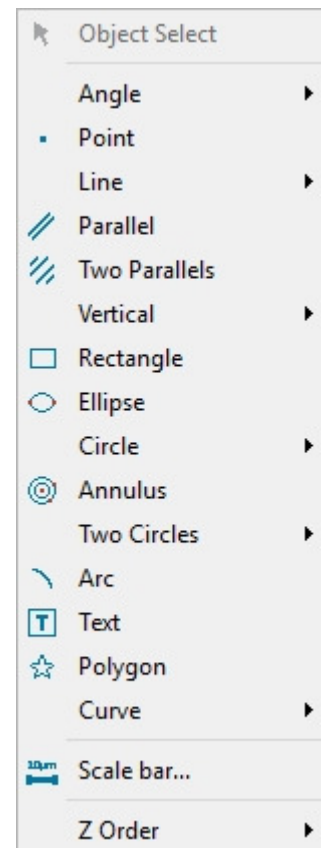
Ring: Measure the respective diameters of two concentric circles

Annulus: Measure two circles adjacent to each other (touching at one point), defined by either center and radius, or by three points

Arc: Measure an arc defined by start and endpoint. Concavity can be adjusted separately.

Text: Add a textbox to your image

Polygon: Measure an irregularly shaped area by defining the edges with several points.



Options

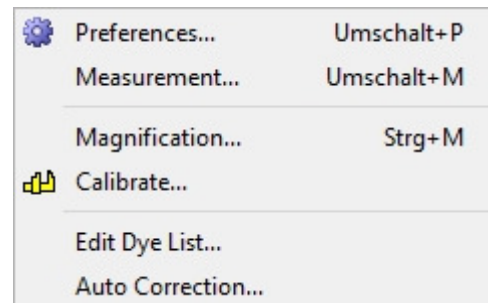
Preferences: Select file options for load and save, grids, software language and more.

Measurement: Select and manage options for measurement units, style of lines, colors etc.

Vergrößerung: Zeigt alle kalibrierten Werte an

Calibrate: Opens the calibration settings

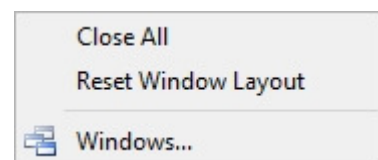
Dye list: Select parameters like wavelength settings for different (fluorescent) dyes



Window

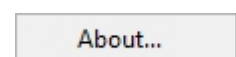
Close all: Close all windows

Window Layout: Put windows in foreground or close selected windows



Help

About: Show copyright and software version information



CE conformity:

Bresser GmbH has issued a "Declaration of Conformity" in accordance with applicable Guidelines and corresponding standards. It can be handed out anytime upon request.

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How to adapt a MikroCamII / SP to your microscope

The BRESSER MikroCamII or MikroCam SP can be adapted to your microscope in several different ways. The following adapters are included with the delivery:



- 1) 23,2 mm adapter with C-Mount
- 2) adapter from 23,2mm to 30.5mm
- 3) adapter from 23,2mm to 30.5mm

Depending on the microscope, you can attach the camera either directly with the c-mount thread or using the adapters. Use adapter „1“ first and then the step up adapters if needed to match the diameter of your photo tube / eyepiece tube.

For microscopes with 23.2mm tube

Screw the adapter „1“ into your camera and put this into the camera tube of the microscope. On models without camera tube pull out the eyepiece (in some cases a locking screw must be removed to do this). Tighten the microscope's locking screw (if available) to secure the camera and keep it from rotating.

Microscopes with 30mm or 30.5mm tubes

If your microscope has an eyepiece barrel with these diameters (most stereomicroscopes) screw the adapter „1“ into your camera. Then remove the eyepiece (in some cases a locking screw must be removed to do this). Choose the respective step up adapter to match the correct diameter. Use a small screwdriver to tighten the locking screw from the adapter. Then put the camera with adapters into the eyepiece tube. Tighten the microscope's locking screw (if available) to secure the camera and keep it from rotating.

Optional adapters:



Reducing lens 0.5x variable Item no. 5914005

This adapter gives a wider field of view and hence reduces exposure time. It may also be used to adjust parfocality. Use instead of „1“



C-Mount MikroCam Adapter Item no. 5942101

This adapter is used to adapt to some BRESSER Science microscopes with the ring dovetail adaptation. It replaces adapter „1“.