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User Manual for JENOPTIK GRYPHAX® software

JENOPTIK GRYPHAX® software

GRYPHAX® SERIES

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Dear user,

Please read the instructions in this manual carefully before starting to operate the JENOPTIK GRYPHAX® camera and the software JENOPTIK GRYPHAX®. By observing the advice in this manual, you can make optimum use from the functions, and you can avoid damages or injuries resulting from operating errors.

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Revision state

Date	Release	Revision	Remarks
August 2017	001	001	initial version
December 2017	001	002	update USB3.0 PCIe cards
September 2018	001	003	update Z-Stack tool, add MetaMorph & Micro-Manager driver
July 2019	001	004	update JENOPTIK GRYPHAX® version 2.1, add new Cameras, add tools Camera-Server & Individual Save, new Measurement, update video links
October 2019	001	005	system requirements update, dual-channel memory, translation correction
December 2020	001	006	update JENOPTIK GRYPHAX® version 2.2, added Slow-Motion, Counter, PRIOR stage control, update Preferences, GUI, Measurement
June 2021	001	007	update XYZ Stage, Korean KC certificate
December 2024	001	008	GUI themes added, new tools Crop, Reporting, Statistics, Cross & Grid, updated Status bar, Preferences, Side by Side, Video, Panorama, Z-Stack

Disclaimer:

This software manual was produced with due care. We reserve the right to make improvements and changes to the device and to this instruction manual at any time without prior notice. No liability will be assumed for damages or injuries arising from noncompliance with the information contained herein, or in any further applicable document!

Property rights:

JENOPTIK GRYPHAX® is a Jenoptik trademark registered for the European Union and the United States of America. All other brand names, trademarks and pictures of products shown or mentioned in this instruction manual are property of their lawful owners and are used here only for the purpose of description.

Scope:

This instruction manual applies for the operation of the JENOPTIK GRYPHAX® application software.

Contents:

This software manual contains all necessary information on capturing and processing microscope images with the JENOPTIK GRYPHAX® application software. The manual does not contain any safety advice and installation instructions for the JENOPTIK GRYPHAX® software nor any repair instructions.

Further applicable documents:

- "JENOPTIK GRYPHAX® microscope cameras – safety and instruction manual"

The instruction manual contains all necessary information on the safe installation and operation of the cameras, on storage and transportation. This document is included in the delivery of your camera. Before you start to operate the software, please read the safety advice carefully and observe the installation instructions.

Technical data:

The technical data of your JENOPTIK GRYPHAX® camera can be found on the installation USB stick and on our web site:

https://www.jenoptik.com/gryphax

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Graphical User Interface (GUI) of JENOPTIK GRYPHAX® software

General description:

JENOPTIK GRYPHAX® software is a modular and platform independent software for state-of-the-art microscopy. It contains camera control and image processing to optimize by a wide range of techniques.

The "Graphical User Interface" of the JENOPTIK GRYPHAX software is platform independent and delivers identical GUI and functionalities under Windows, MacOS and Linux.

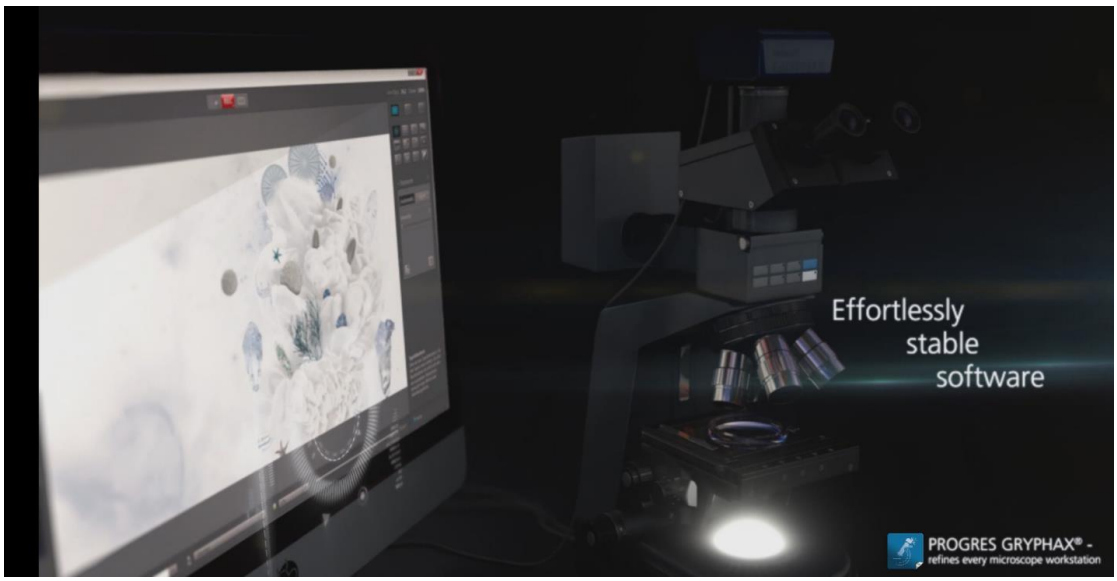
The interface is divided into **three main areas**. In the center screen area of the interface is the image window to display live preview from camera or loaded media files from Gallery.

At the left-hand site are the Gallery tool and the Treeview located. They provide an easy and fast overview about advance file management and displays all images and media files as thumbnails.

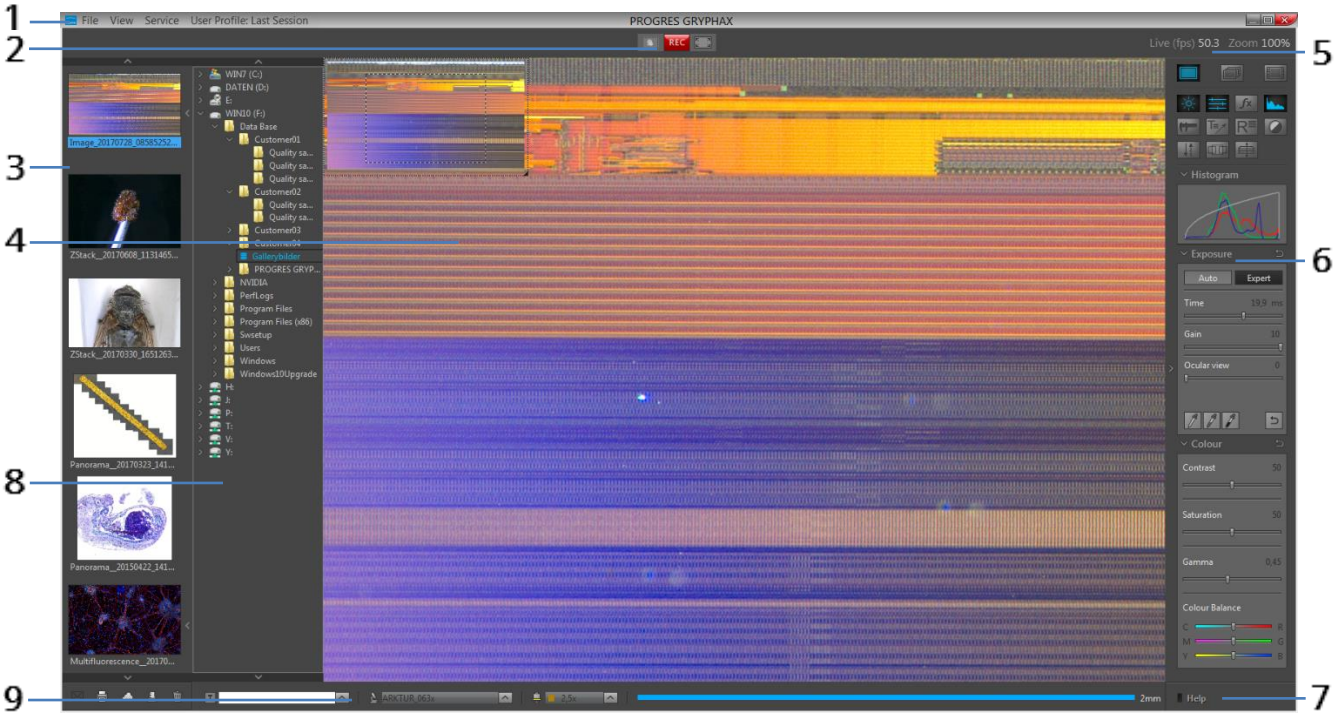
On right-hand site, the toolbar provides access to record modes and all image processing enhancements tools. Additionally, tools to measure and annotate and image acquisition modules like "Panorama", "Z-Stack" (EDF) or Multi-Fluorescence are available.

Video tutorial how to install JENOPTIK GRYPHAX software:

Press the link to watch the video tutorial for **installation** of JENOPTIK GRYPHAX software.



1.1 Overview of JENOPTIK GRYPHAX interface:

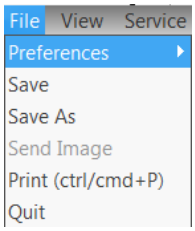


1 Title bar
2 REC bar
3 Gallery
4 Image window
5 Header
6 Tool bar
7 Help bar
8 Treeview
9 Status bar

1.2 Title bar:

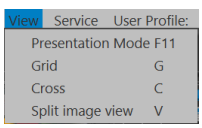
The title bar of JENOPTIK GRYPHAX software contains the menu bar to access all menus you need to manage, edit or to change views. Additionally, you have quick access to create and change current user profiles.

- Minimize program window
- Maximize program window
- Change program window size to any selected
- Close program window | short cut (**alt + F4 / cmd + Q**)



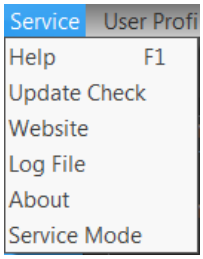
File menu:

- Enter software Preferences
- Save copies of selected media files to alternative destinations
- Save As to convert images or video files into other file format and type of files
- Print selected images from Gallery
- Quit software



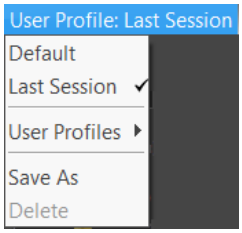
View menu:

- Change to Presentation mode (**F11 | F**)
- Activate / deactivate Grid or Crosshair mode overlaid at image window (**G | C**)
- Activate / deactivate Image comparison view “Split image view” (**V**)



Service menu:

- Help – open JENOPTIK GRYPHAX FAQ website
- Update Check – starts download page to check for software updates
- Website – open JENOPTIK GRYPHAX website
- Log File – open software log file for trouble shooting
- About – displays software information
- Activate "Service Mode" for trouble shooting – saves special tiff image with log files



User Profile:

- Default – reset back the factory "default" software settings
- Last Session – change back to last stored session settings of software
- User Profiles – open list to select or change already created user profiles
- Save As – save current software settings to user profile (opt. password protection)
- Delete – selected user profile from list

Also current user profile e.g. "Last Session" will be displayed directly at title bar and updates accordingly.

Note: Double-click on title bar changes between maximizes program window view and reduced program window view to any selected size.

1.3 REC bar:

The REC bar is the most important tool of the JENOPTIK GRYPHAX software. It controls all image capture and file save. The status of the REC bar buttons is changing accordingly to status of software.

REC button indicates live preview is running, by pressing button images will be captured to Gallery

Live button indicates that no live preview is running and an image from Gallery is displayed instead

Stop button indicates recording / capturing is activated, pressing button stops record / capture process


Magnifier button – activates magnifier glass to observe important image areas and display current and maximum focus level by "focus indicator bar"

Note: During Magnifier mode, Zoom level of displayed image from image window can be changed by keyboard key: "+" or "-"to zoom in or zoom out. Alternatively, use the mouse wheel to change the zoom level at image window.


Arrow tool button – to change back to standard mouse pointer "arrow" to select or adjust e.g. overlays of measurement or annotations


Hand tool button – to activate hand tool during "1:1" view or Zoom. Mouse pointer change to "hand" and image section can be moved.

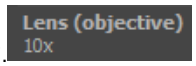
"1:1" button indicates that "Fit to Window" is active, pressing button changes to "1:1" view


Fit to window button indicates that "1:1" view is active, pressing button changes to "Fit to Window" view

 **Objective** button* of calibrated objectives to quick-change objectives by mouse click at GUI. Scale bar and Status bar will change accordingly.

Moreover, objective buttons visually indicates the current selected magnification by highlighting.
Up to 6 objectives / measurement calibrations can be displayed on Rec bar.

In addition, it displays the value by mouse over tool tip 

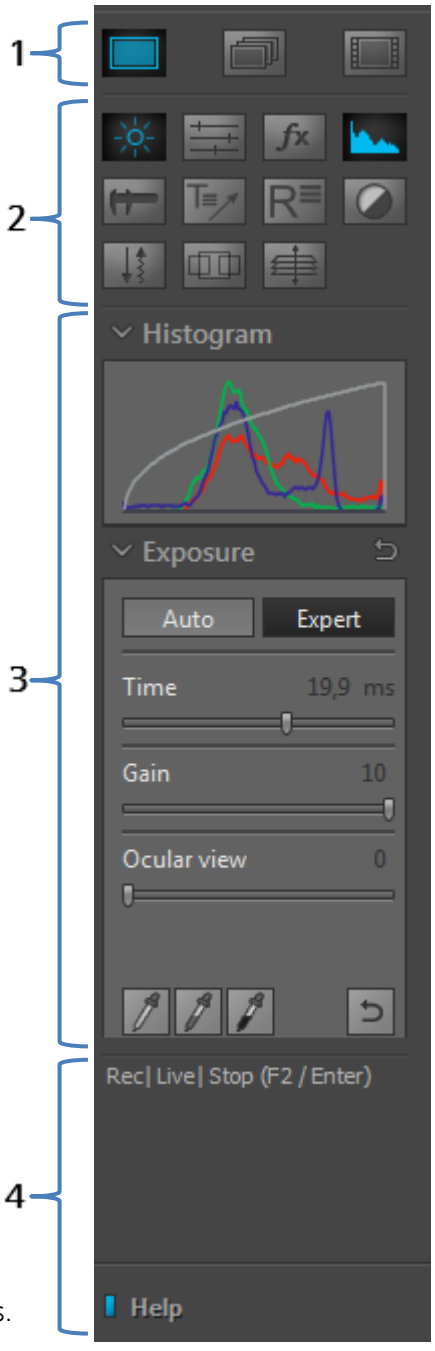
and on help section of tool bar. 

1.4 Tool bar & Help bar:

To open the JENOPTIK GRYPHAX tool bar by pressing the arrow on right-hand software site or use keyboard short cut (**ctrl / cmd + T**)

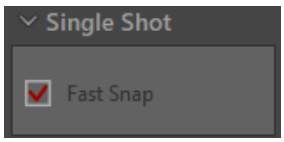
The Toolbar is divided in 4 parts and contains the following sections:

- **1 Record modes** – to change between record modes: "Single shot", "Time-lapse", "Video record" or "SlowMotion video"
- **2 Tools section** – to activate / deactivate tools
- **3 Active tool section** – displays activated tool widgets
- **4 Help section** – shows tooltips and help information of tools by mouse over



Tool status:
- Activated tools are highlighted in blue.
- Tools, which are not access able, are "greyed out" by software automatically and cannot reached.

Mode "**Single shot**" is default recording mode. Check box on widget to activate Fast Record mode. If checked, recorded images will be taken from the live view stream instead of making camera shot! Capture settings from Preferences will ignored!



Note: Fastest record mode in combination with activated option *auto save*.

Collapse / expand button on each tool to hide separate widgets on active tool section.

Reset button on a tool widget sets all properties to their initial values. Initial values are fixed by factory settings.

To activate or deactivate "Help" section, click on the Help icon Help on help bar. Active help section is indicated by blue icon.

Note: Status and accessibility of tools depending on previously activated tools. Not all tools and options can be activated at the same time!

1.5 Gallery:

The "Gallery" of JENOPTIK GRYPHAX software enables user to preview and display all saved media files of media destination folder or from selected destination path of "*Tree view*" tool easily inside of JENOPTIK GRYPHAX software.

To open the GRYPHAX Gallery by pressing the below arrow on left-hand software site or use keyboard short cut (**ctrl / cmd + G**).

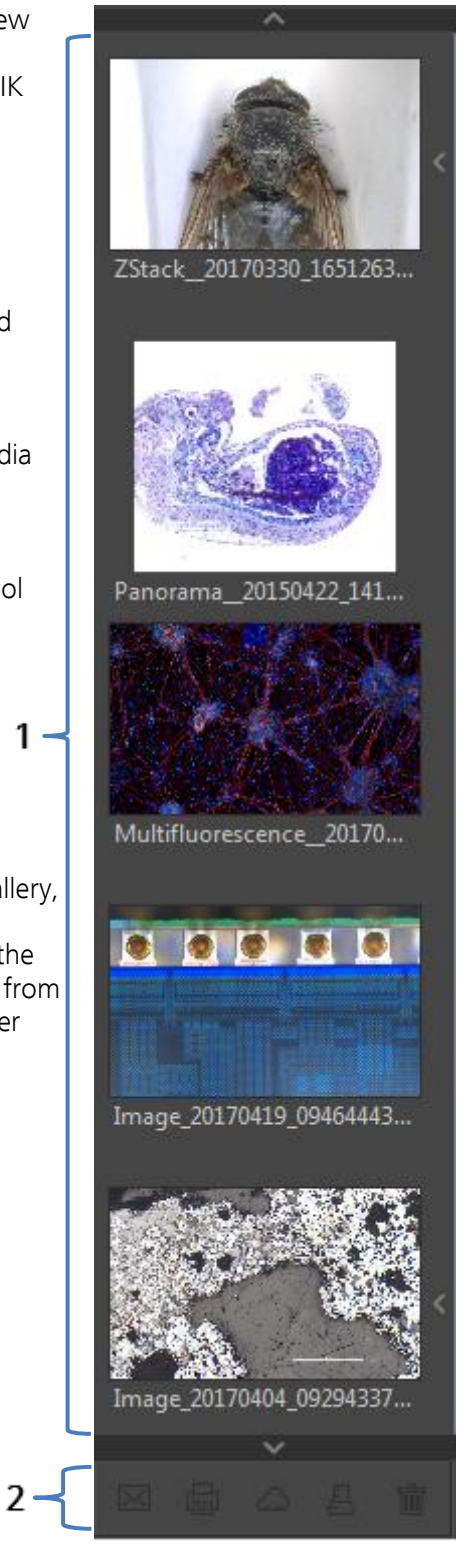
The Gallery consist of two parts. The **Gallery preview window** (**1**) and the **Gallery bar** (**2**).

The Gallery windows shows the media files thumbnails from top to bottom in order of the file time stamp. New recorded images or media files will be add on top position at Gallery preview window.

To change the media destination folder you can use the Treeview tool or change folder at the software preferences under *storage options*.

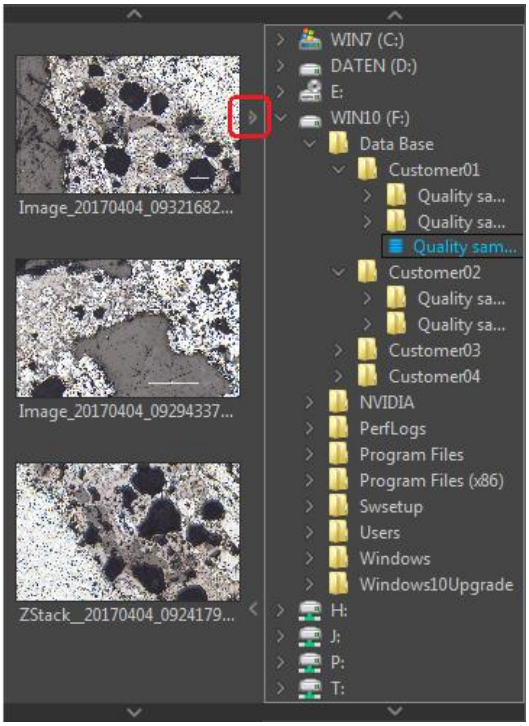
At the Gallery preview window you can use operation system typical short cuts (e.g. ctrl + A; shift key + mouse click) to select items.

Note: The more images are stored in a folder and are loaded in a Gallery, the longer it will take to display a single image. To enable an easier workflow with JENOPTIK GRYPHAX, we recommend you to reduce the number of images in the target folder by changing the target folder from time to time, by deleting some images or by copying them to another folder.



1.6 Treeview:

The Treeview tool is located on the left software side next to the Gallery. It can be used with and without opened Gallery. Treeview deliver two different sizes: "**Narrow**" or "**Wide**" view to display the media target tree.



To open, expand or close of the Treeview tool press the top left arrow on the left-hand software side or use the keyboard short cut (**ctrl / cmd + D**).

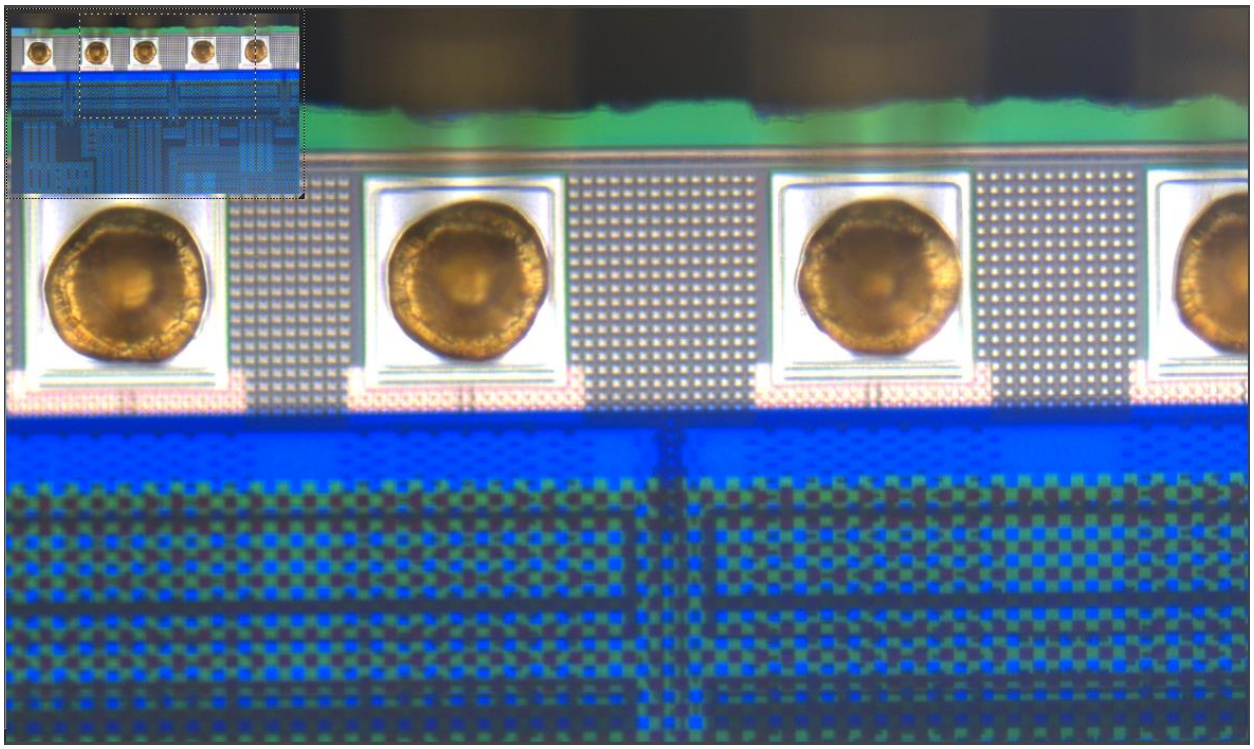
Note: After first software start the Treeview tool is starting and displaying the default destination folder of operating system "own Pictures" from current user.

Alternatively, the Treeview is automatically displaying and using the last used destination folder from last software session or from activated user profile settings.

The media destination folder of Treeview is always synchronized with settings of software preferences under section *storage options*.

1.7 Image window:

The **image window** is the main software area. All other tools can be hidden to have full focus at live preview from active camera or at loaded images from Gallery.



Additionally, a small overview window will be displayed over the image at "1:1" view. The currently displayed part of image is marked as rectangle. The position (ROI) can be moved by mouse operation. Also, size and position of overview window can be changed by mouse operation.

Note: A full screen view without any software GUI can be activated by "Presentation" mode under menu: "View" at the title bar or by keyboard short cut (**F11**).

1.8 Header:

The header section of program window is displaying the following information from image window.

Frame Rate – Indicates the current frame rate in frames per second (**fps**) delivered by the active camera.

Zoom factor – Indicates the current zoom level (in %) of displayed image from image window.

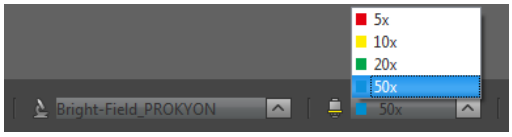
1.9 Status bar:

The status bar of JENOPTIK GRYPHAX software contains powerful options to operate work-flow optimized and intuitive directly at software GUI.

The status bar is divided in 5 sections – text field, device configuration, calibrated objectives, scale and check box* to add status bar to recordings.

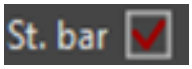
Text field – to enter a comment or notification which is directly saved to the status bar of recorded images.

User can fast switch between created **device configurations** and **calibrated microscope objectives** to apply correct measurement calibrations and scale for the live preview image from camera.



Additionally, the **scale bar** is displayed according selected objective.

Status bar **check box*** to quick enable / disable status bar added to recorded images. This option is synchronized to software preferences settings. (*as of V2.2.0 or newer)



Note: Loaded images from Gallery with included meta-data calibration are displaying the correct values and scale automatically and independent from selected device or magnification of status bar.

1.10 Video tutorial:

Press the link to watch the video tutorial for Graphical User Interface (GUI) of JENOPTIK GRYPHAX software.

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Preferences of JENOPTIK GRYPHAX® software

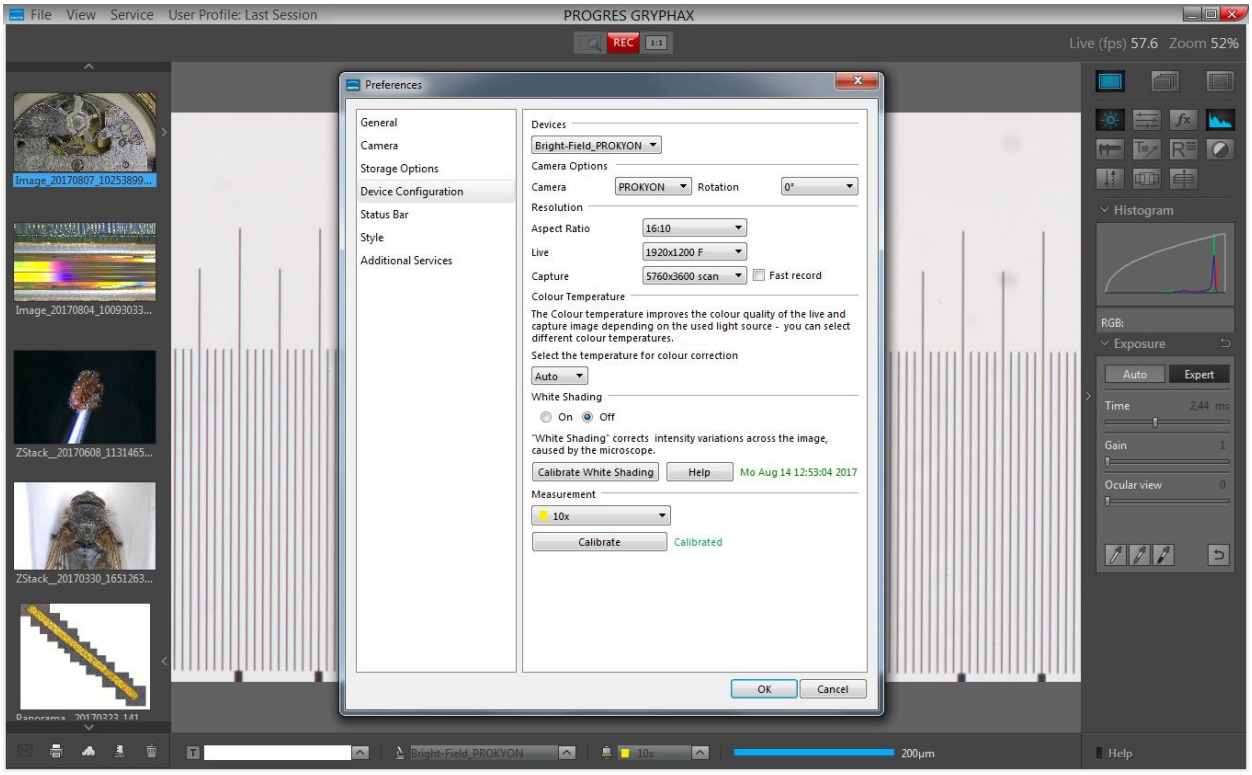
General description:

JENOPTIK GRYPHAX software is a modular and platform independent software for state-of-the-art microscopy. It contains camera control and image processing to optimize by a wide range of techniques.

To work versatile with favorite equipment, user can use the Preferences to create own device configurations, which can optionally transfer to other computers and software platforms.

The "Preferences" menu of JENOPTIK GRYPHAX software is located at the title bar and contains all major software and camera settings for initial software setup and to generate individual device configuration.

Opened preferences during device calibration:

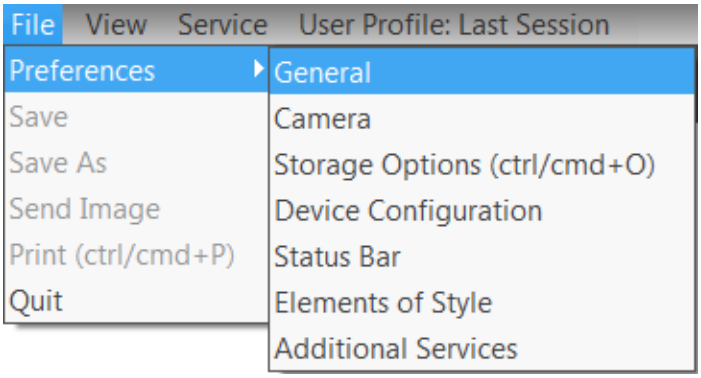


2.1 Enter Preferences:

To enter software Preferences, go to the program title bar under menu File / Preferences. A submenu will be displayed to directly enter specific preferences section.

For the **initial start of the software**, we recommend that you start with the setup in the Preferences. Follow the menu items from top to bottom. In particular, it is necessary to set up a device configuration in order to be able to use all the functions of the software.

File menu and submenu to enter software Preferences.



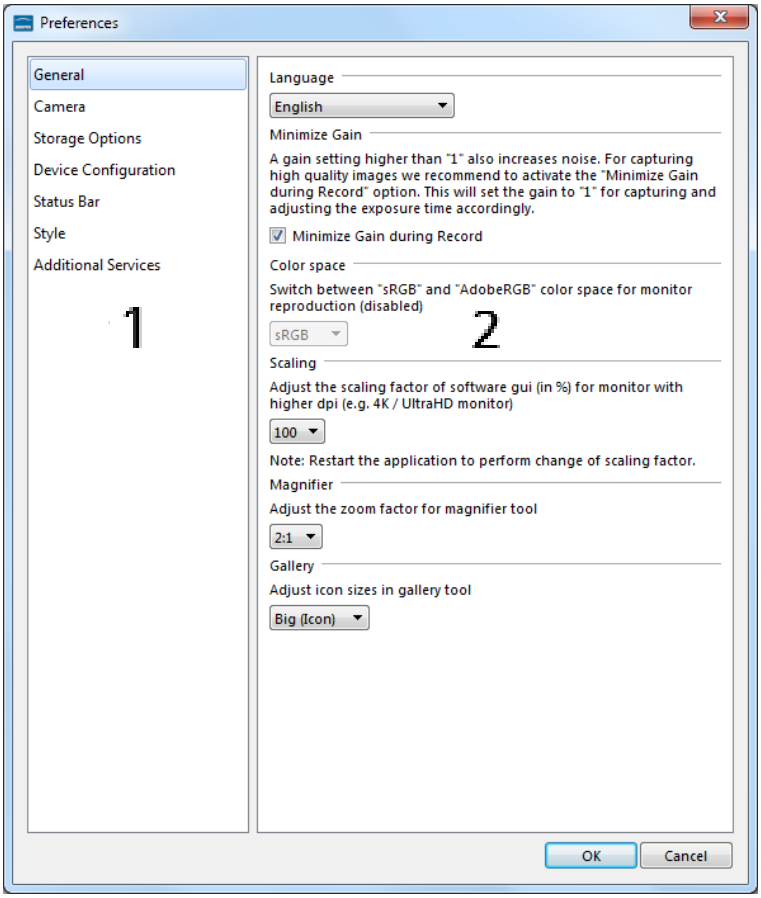
After click on option e.g. "General" a separate "Preferences" window will be opened. The window is separated into two areas:

To navigate through the **preferences sections,** click to the corresponding option from column on the **left** window side (1).

To change options according your needs, edit on **right** window section (2).

To apply any changes to software settings, leave preferences window by "**OK**" button!

To leave preferences without applying any changes press "**Cancel**" button.



Note: Some options depending on camera type. Disabled options are greyed out and can't be reached.

2.2 General:

At “General” menu, all global software settings can be configured. Initial language is assumed from system language. All other settings are pre-defined by software default values.

Language

To change language, select one of the available software languages from drop down list. Entire software GUI will change language after software restart.

Minimize Gain

Option “Minimize Gain” is activated as default. Function increase image quality by **reducing noise level** for recorded images by minimize gain value. Deactivate this function if you want to record images with gain factor from live preview.

Color space

To switch between “sRGB” and AdobeRGB color space to enhance color reproduction on corresponding monitor. AdobeRGB currently disabled.

Magnifier

To adjust the zoom factor of detail window for magnifier tool.

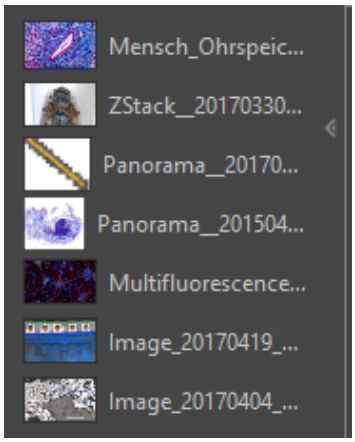
The factor can be chosen in steps from 100% to 300%. Select according zoom factor from drop down list.

Gallery

To adjust the icon sizes of preview thumbnails in gallery window.
The size can be chosen between small preview and big preview thumbnails.
Select according size option from drop down list.

In default, the Gallery thumbnails size is “big”.

Small icons as “list”:

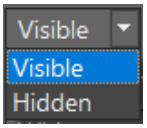


Big icons as “preview”:

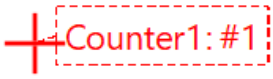
Measurement

Visibility – Selects the visibility of labels from overlaid objects like measurements or counter objects. User can change between the option “Visible” and “Hidden”. Option hidden selected as default.

By option **visible** all detailed description is display on overlay.
By option **hidden** the naming and description is removed on displayed overlay. Only values and counts are displayed instead.

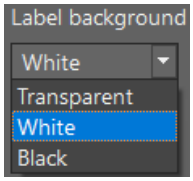


As example for counter labels.
The red counter label is displayed “visible”, the blue counter label is displayed “hidden”:



Background – To highlight measurement labels.
The general label background can be change between tree options: “Transparent”, “White” or “Black”.

Option “transparent” is selected in default.



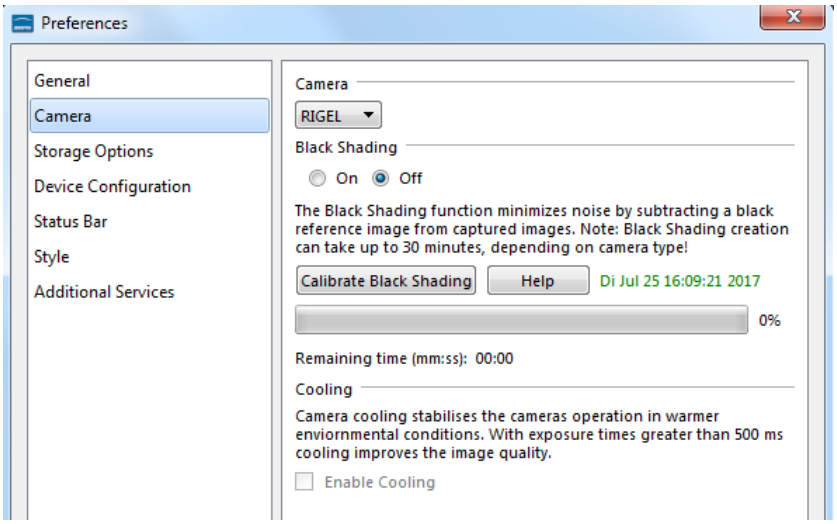
Digits – Choose number of significant digits for measurement values at label.
User can change between “Auto” or reduce from 6 digits till 2 digits.

Option “Auto” is selected in default. It shows all relevant digits for value.

Grid options – Change cell size for grid view. The size will be synchronized with device calibration and selected objective. Activate option to **add grid or crosshair** to saved images. **Grid or crosshair** will be saved as fix overlay on images.

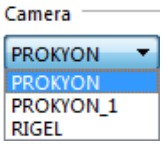
2.3 Local camera:

At “Camera” menu all camera related settings can be adjusted independently from configured devices.



Camera

To select connected camera from drop down list. Camera will be activated immediately. Live preview is starting at image window in background.



Note: Connecting multiple cameras from same type will be displayed by a suffix number at name to distinguish from each other.

Black Shading

The Black Shading function **minimizes noise** by subtracting a black reference image from recorded images.

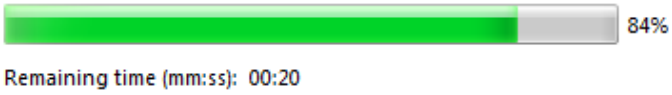
It is recommended to create black shading correction especially for long exposure images e.g. Fluorescence or dark field applications.

Before create a black shading reference file, remove camera from microscope and close the sensor by the protection cap. Take care that no light falls into the sensor; otherwise the creation will be aborted.

Press the icon 

“Calibrate Black Shading” to start and wait until the process is successfully finished.

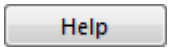
During creation the calculated remaining time and status will be displayed.



After successful creation the file date will be displayed on preferences window. Di Jul 25 16:09:21 2017

Black Shading correction can be switch on or off by selecting of corresponding radio buttons 

.

On the “Help” button 

you will find detailed information to create shading reference file.

Note: Black shading creation can take up to 120 minutes depending on camera type. For cameras with internal “factory created” black shading file, option *Calibrate Black Shading* is greyed out. In addition, the cooling option is enabled instead and can´t be deactivated by users.

Cooling

Option to activate camera cooling to stabilize camera operation in warmer environmental condition.
Note: This option is available for cameras with active cooling function only.

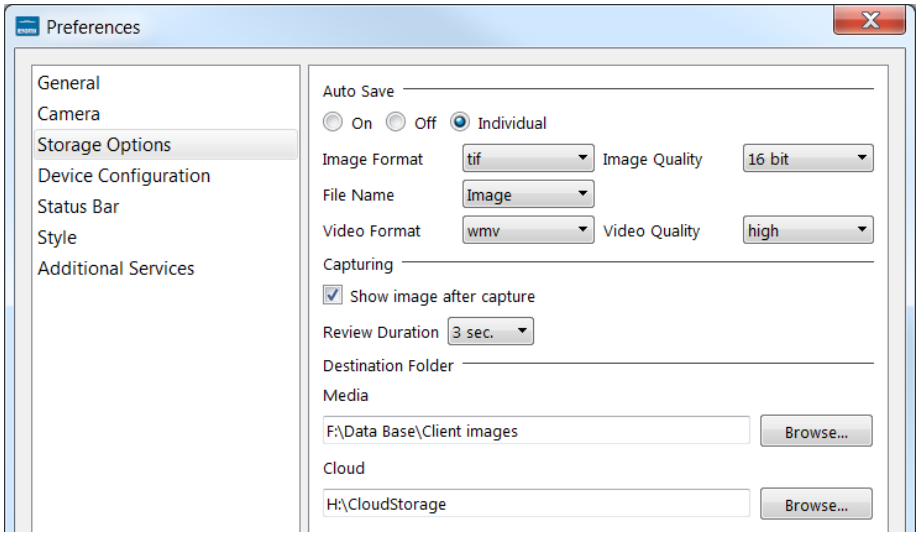
2.4 Storage Options:

At “Storage Options” menu all related options for image format and storage can be adjusted.

Auto Save

Option Auto Save is activated as default. With the storage option *“Auto save”* all recorded media files will be saved with an automatic given naming structure.

Manual file save can be used by deactivate “Off” Auto Save function



By option ”Auto Save Individual” media files can be saved by individual file name structure.*

A separate individual save dialog to configure file naming structure or use of Barcode scanner will appear with hotkey “**F4**”.*

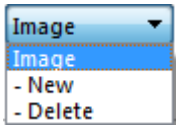
For details, please see the section Barcode & Individual save option.

Image Format can be select from drop down list. The following formats are available: bmp, jpg, tif and png.

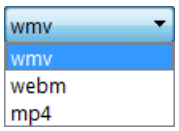
At option Image Quality user can select quality level and bit depth of according selected image format.

Option File Name represents the image name prefix for auto saved images. Create, select or delete file name to any individual prefix at drop down menu.

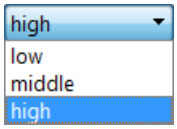
The number for name prefix is limited by 25.



Video Format can be select from drop down list. The following formats are available: wmv, webm and mp4 depending on operating system.



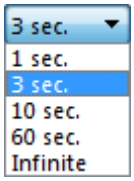
Video Quality can be select from drop down list. The following quality levels are available: High, Middle and Low. The quality level “Low” is pre-selected as default. Because of the best ratio between video frame rate, bitrate and used CPU utilization. The used video decoding bitrate for each video format and quality level varies and is depending on used operating system.*



Note: The video frame rate depends on the used hardware environment of PC, video format and selected quality level. *(Available as of Jenoptik GRYPHAX version 2.1 or newer)

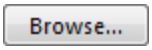
Capturing

By option Capturing user can adjust preview duration time of recorded images after capture. The time can be chosen in steps from 1 second until infinite by drop down list.



If option "Show image after capture" is deactivated, live image immediately restarts after image capture.

Destination Folder

To change media file destination folder where to save recordings. Click on "Browse" button 

and a separate window will be opened. Select correspond folder by browse folder structure of hard drive. Confirm new destination folder by "Select Folder" button.

After change of destination folder, the *Gallery* will display all media files of new selected folder. All new captured images and media files will be saved to the selected folder. Furthermore, the media destination folder of Tree view tool is synchronized with the software preferences.

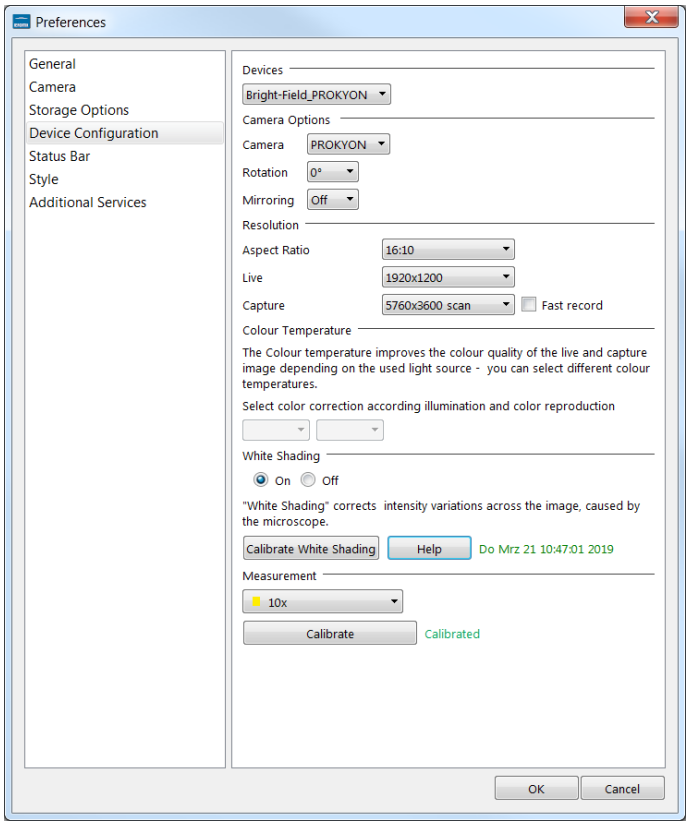
Additionally, a separate media files destination folder for cloud services can be predefined.

2.5 Device Configuration:

At menu "Device Configuration" user can create individual device sets to enhance user's daily work-flow by changing between different cameras or workstations within seconds from Status bar at main GUI!

Devices

To create, select, rename or delete **device configurations** at drop down menu.



Camera Options

To select a connected **camera** from list (either local as well as network cameras are displayed on drop down list).

Change image orientation according camera mounting from drop down list in steps of 90° (degree). Default value is 0°.

Choose option mirroring to activate mirror option horizontally (Flip from left to right)*

Select Framerate limit according available values. Depending on camera type from 15 fps up to **120 fps**. Lower frame rate can reduce CPU consumption and relieve PC*.

After initial start, default frame rate limit is used.

Note: Lower limit to reduce CPU consumption. Recommended on older or low performance computers.

Resolution

Choose available aspect ratio from list. Resolutions for "Live" & "Capture" will be displayed accordingly.

Define camera resolution **separately** for live preview and captured images.

Activate "Fast record" option for **fast image capture**. Recommended for high-resolution images and network storage. Not supported for scanning modes.

Colour Temperature

To select the temperature for colour correction according light source at drop down list to reach best colour reproduction. With option "**Auto**" software automatically choose best fitting colour correction according your light source after grey balance adjustment.

White Shading

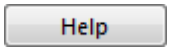
Before create a white shading reference file, remove specimen from microscope and activate the light source. Take care that no dust or specimen is in the light path, otherwise the white reference file will correct temporary objects.

Press the icon 

"Calibrate White Shading" to start and wait until the process is successfully finished.

After successful creation, the file date will be displayed on preferences window. Di Jul 25 16:09:21 2017

White Shading correction can be switch on or off by selecting of corresponding radio buttons: ○ On ◉ Off

On the "Help" button 

user will find detailed information to create shading reference file.

Note: White shading reference will be connected to the currently used objective from microscope. By change of objective at microscope, a new white shading reference must be created!

White shading calibration associated with device set.* This enables user to create multiple white shading calibrations for different objective. To change magnification with correlated white shading user can change device set.

Measurement (calibration)

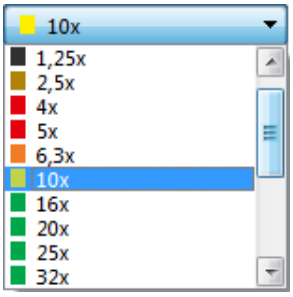
To use Measurement tools you have to calibrate your microscope objectives in advance! Otherwise, the Measurement tool or Scale bar cannot be activated and used.

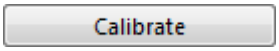
To calibrate the microscope you can use the JENOPTIK GRYPHAX® calibration slide / stage micrometer (order number: 648806).

*(Available as of JENOPTIK GRYPHAX version 2.1 or newer)

2.5.1 Create:

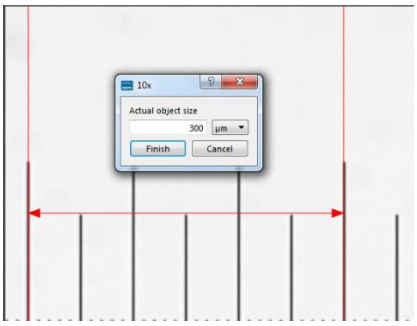
To create measurement calibration please oriented the object micrometer horizontally on the microscope stage. Select objective type from drop down list according to the currently used objective from microscope e.g. 10x.

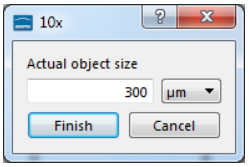


Press "Calibrate" button  to start drawing a reference line onto live preview at image window.

Start drawing by left-hand mouse click on first reference point and release. Move mouse to reference endpoint confirm position by click and release again. While drawing a detail window will appear to find exact positions.

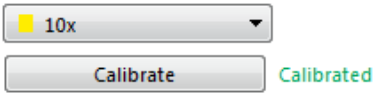
Reference line will be drawn as overlay onto the image window and the calibration value window will appear.





Enter **reference length** into the calibration value window. Choose the correct **unit** from drop down list and finally confirm by button "Finish".

After successful objective calibration the status for each objective from list is displayed by "Calibrated" in green.



Note: If a specific objective is not listed, user can create individual *custom objectives* as well.
Please see section "Create custom objectives" below.

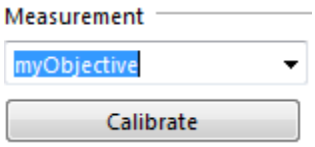
2.5.2 Remove:

To remove created calibration from list, select corresponding objective type and use the drop down menu entry "Remove Calibrations" --Remove Calibration. Only calibration information will be deleted.

After remove, calibration status of objective will be displayed as not calibrated "Not Calibrated".

2.5.3 Create custom objectives:

To create a custom objective use the drop down menu entry **Create Custom Objective** from drop down list.



Enter custom objective name at input field and start objective calibration with button "Calibrate" Calibrate.

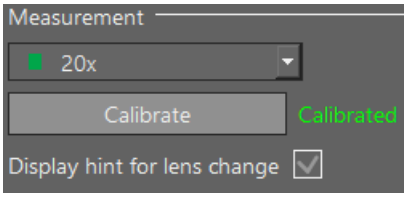
After successfully calibration the custom objective is added to the objective drop down list of measurement and the status for objective from list is displayed by "Calibrated" in green. The new custom objective will be available at magnification menu of status bar.

2.5.4 Remove custom objectives:

To remove custom objective calibration from list, select corresponding objective type and use the drop-down menu entry "Remove Objective Calibrations". Custom objective entry at list and calibration information will be deleted.

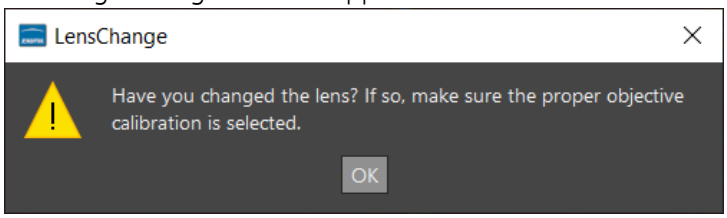
Automatic lens change detection

Activate the option "display hint for lens change" to display a hint by potential lens change at microscope. The AEC (exposure mode "AUTO" is able to detect a rapid brightness change from live preview, after detection the pop-up message will be shown.



Note: This function is available when automatic exposure control (Exposure mode **AUTO**) is active and one or more lenses are calibrated, only! With Exposure mode "Expert" no warning will appear.

Following message window appear. You can confirm and close message by "OK" button.



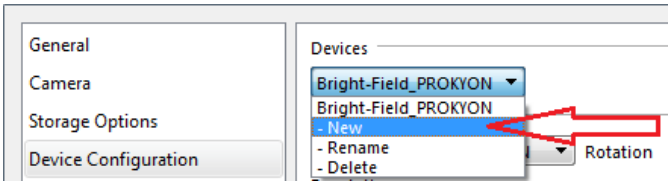
The option lens change detection is deactivated in default.

Video tutorial:

Press the link to watch the video tutorial **how to calibrate** the microscope objectives.

2.5.5 Create device:

(1) To start with "device" creation follow up the given structure step by step by choose option "**New**" to enter individual "device name" at first.



(2) Select a camera from camera list and set all relevant parameters from "Device Configuration" page and calibtrate all objectives of microscope.

(3) To save device configuration and confirm all changes from preferences press button "OK" OK.

(4) After succesfull device configuration users are able to switch easily between created devices and calibrated magnifications at the "Status Bar" of JENOPTIK GRYPHAX software.

Note: Remove device configurations by option "**Delete**" will lost all settings and calibrations of those!

2.6 Status Bar:

At "Status Bar" menu all related options for status bar and scale bar can be defined. In addition, a "status bar" can be added at the bottom of captured images to display significant information like scale, device name, used magnification and notification from text box.

Note: As of version 2.3.0, the status bar can be added to video files and Time-lapse images also.

Settings

Decide if status bar should be added to the captured images by radio buttons **On / Off**.

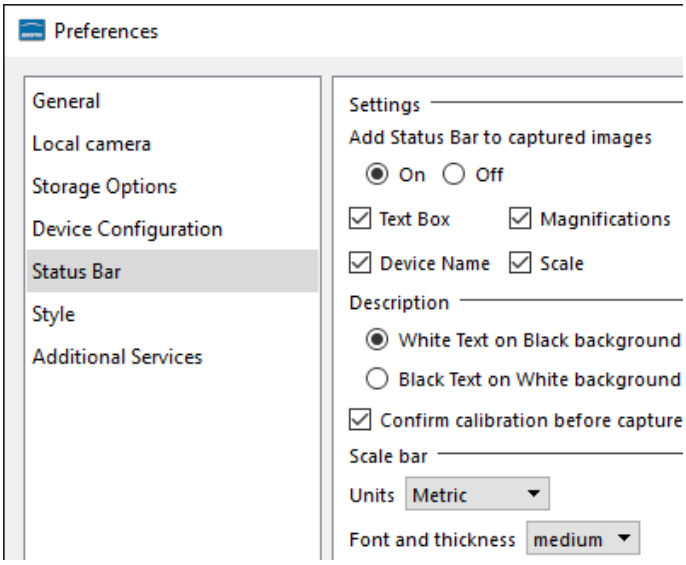
Moreover, the status will displayed and can be changed on the Status Bar from GUI as well.

St. bar Unselect the check box to switch off added status bar for recorded images quickly.*

Check mark all information, which has to displayed on added status bar of recorded images.

16.09.2024 | 17:30:51 | myDevice | 5x

Displayed information on status bar



Description

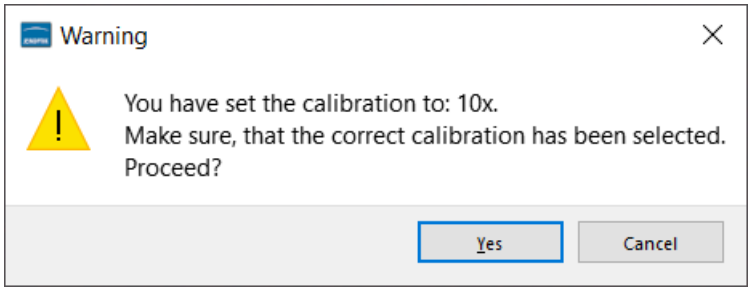
Choose the appearance of the added status bar between:

(a) "White text on Black background" or
(b) "Black text on White background"

Activate the option "*Confirm calibration before capture*" to display an additional warning message which appear after "REC" record to confirm the current selected magnification.

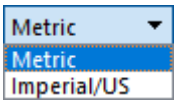
The current applied magnification will be displayed on pop-up warning.

If selected magnification is correct user can proceed with "**Yes**" or if not abort by "**Cancel**" button.

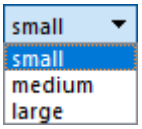


Scale bar

To adjust the scale bar unit of status bar from software and at added status bar to captured images. Adjust between units: "Metric" or "Imperial/US".



To select the appearance for font and thickness for overlaid scale bar on images in 3 sizes:



- **small** - (default value from factory settings)
- **medium** - (about 4 times bigger as small)
- **large** - (about 16 times bigger as small)

Activate option "keep scale bar visible" – scale won´t disappear after image record.

If the scale bar was added to the live image, it will stay in previous position after image record, until deleted manually.

Note: The drag and drop scale bar from status bar will appear within these setting overlaid on the image window. (For live preview and displayed items from gallery)

For detailed description about drag and drop scale bar, please read the section Scale bar tool

2.7 Elements of Style:

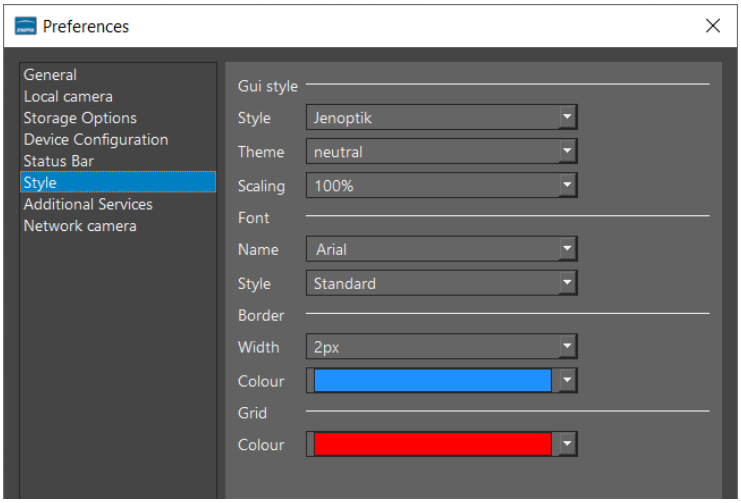
At “Style” menu general options for software appearance like style, colors and scaling can be adjusted.

As of GRYPHAX version 2.3.0 and newer the whole Gui style are moved to style section.

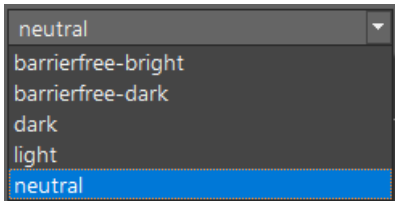
Gui style

Gui style can be change if available. Select the Gui style from list to change the whole software appearance.

In default the style “Jenoptik” is selected.



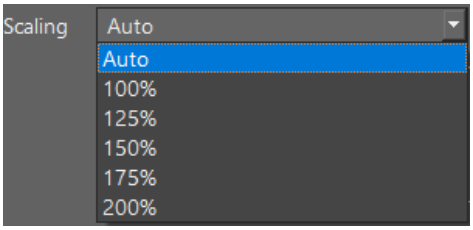
Gui theme – select the Gui theme from list according to your system theme or your personal choice.



For Jenoptik style we offer the following themes:

- Neutral – most similar to old GYPHAX style theme)
- Light
- Dark – (default gui theme)
- Barrierefree-bright – with enhanced contrast for people with visual impairments
- Barrierefree-dark – with higher contrast and dark background for people with visual impairments

Scaling – To adjust scaling factor of software (GUI) and mouse pointer in correlation to monitor scaling from operating system. Especially for high resolution screens (e.g. Ultra-HD / 4K / 5K).



Default scaling value is Auto. Auto read the OS settings and adopt to GRYPHAX Gui scaling. Alternatively, select manually scaling factor from drop down list.

The Entire software GUI will change scaling after software restart.

Grid

Lines colour for Grid and Crosshair view can be pre-defined by colors of drop-down list.

Note: Grid cell size and option to add as overlay to image can be changed under section General | Measurement. For detailed, please have a look to the separate manual section "Grid & Crosshair ".

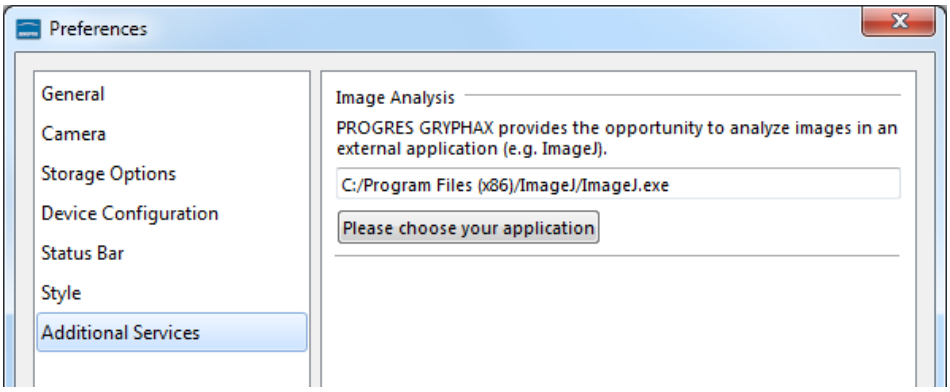
2.8 Additional Services:

At "Additional Services" menu the image analyses settings can be pre-defined. The "Image Analysis Option" enables user to open image from GRYHAX Gallery directly at 3rd party "analysis" applications.

Define:

To select an **external application,** press the button Please choose your application and choose appropriate application e.g. ImageJ from your computer.

Selected application file path will be displayed at preferences window.



To activate the image transfer to 3rd party software tool, select the according image file thumbnail from GRYPHAX Gallery by left-hand mouse click and press the "Image analysis" button from Gallery bar.

The analysis function immediately opening the pre-selected 3rd party software and transfer the selected image.

For detailed information, please have a look to the separate manual section for " Image Analysis function".

2.9 Network camera:

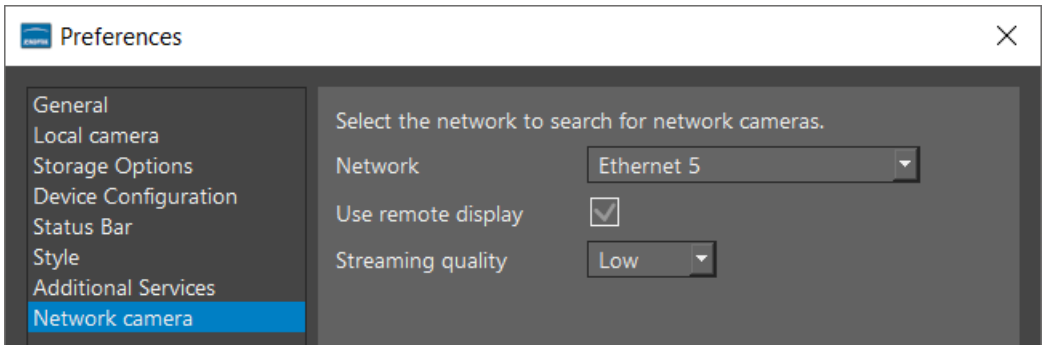
With GRYPHAX version 2.3.0 a new section for Network camera settings are added to preferences. On this section the parameters for network camera operation and search options for **GryphaxServer.exe** tool can be adjusted.

Network – to select the network adapter to search for network cameras. Open the drop down list and select the active network adapter from your client PC where to search for a network camera in your local network envirionment.

Use remote display – to activate the live video preview on monitor at host PC. Note: this will may occur additional CPU load on the host PC side. It may have effect on the streaming performance as well.

Streaming quality – to change the live streaming quality for remote cameras over network. Choose the quility level according your network connection. For WiFi connection, we recommend to reduce the level to enhance the latency of streaming.

For set-up and operation with GryphaxServer.exe tool, please look at the separate chapter for further details: GRYPHAX Server Tool.



2.10 Transfer software settings:

Software settings or "user profiles" can be transferred to other computer (platform independent) to work with same settings or devices! User can **copy and paste** the software settings file from current computer and transfer to others.

The current software settings are stored at settings file: "**lastsession.ini**" located under following system folder depending on used operating system:

- Windows OS: „C:\ProgramData\Jenoptik\..."
- MacOS: „MacHD\Library\Application Support\Jenoptik\..."
- Linux OS: „/var/lib/Jenoptik/..."

Please note: Deleting or rename of settings files will lost all software settings and calibrations!
Please handle with care! For details about transfere software settings, please have a look to the separate manual section: "**Transfer software settings**" at user profile tool.

Video tutorial:

Press the link to watch the video tutorial for **Preferences** of JENOPTIK GRYPHAX software.

Limitations:

For correct software operation, it is mandatory that user have permission of "**full control**" for software settings location (system folder of OS) and settings files.

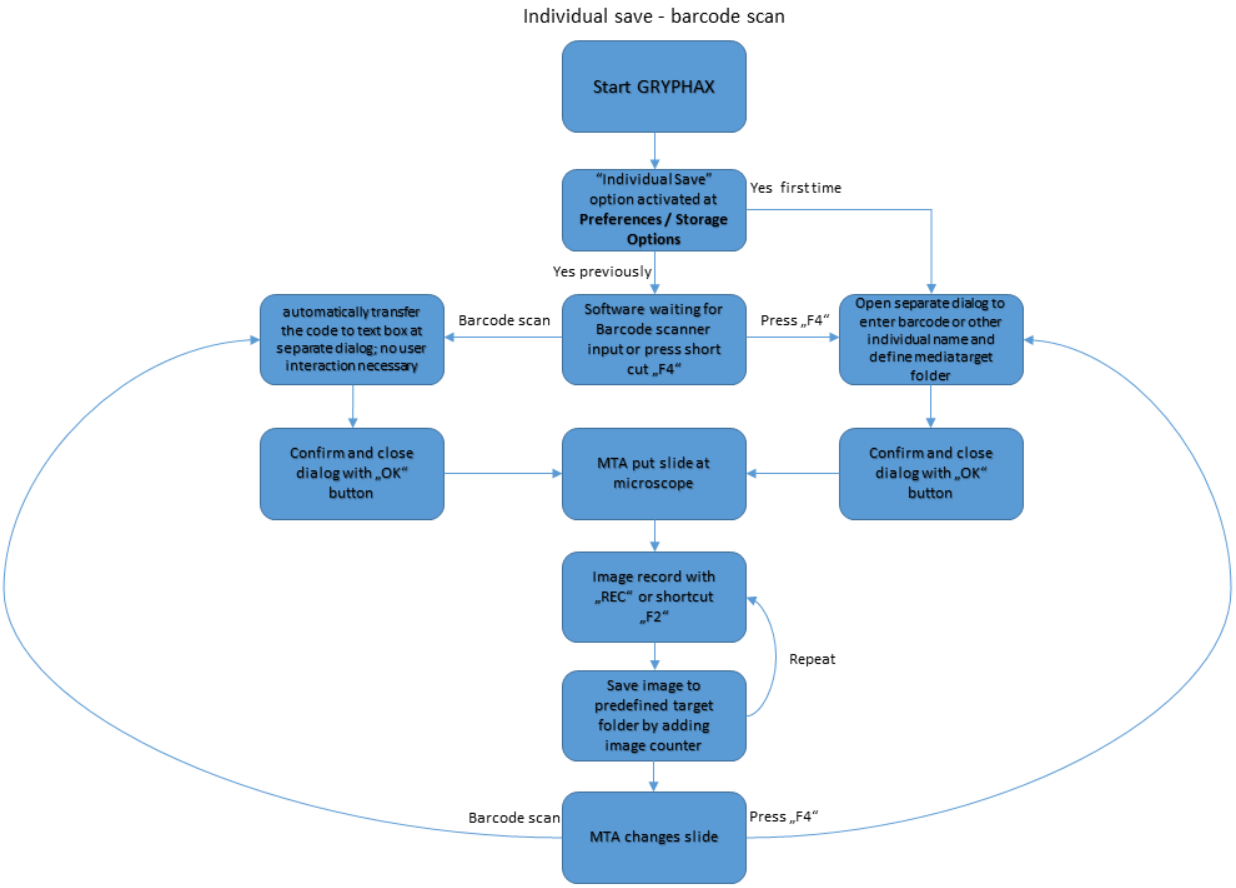
User Guide for Barcode & Individual Save Option of JENOPTIK GRYPHAX® software

General description:

JENOPTIK GRYPHAX software is a modular and platform independent software for state of the art microscopy. It contains camera control and image processing to optimize by a wide range of techniques.

The "Individual Save Option"* of JENOPTIK GRYPHAX® software enables user to store images by individual given naming structure and folders. Furthermore, a barcode scanner input can be used to change image-naming workflow optimized.

Workflow diagram for barcode scanner:



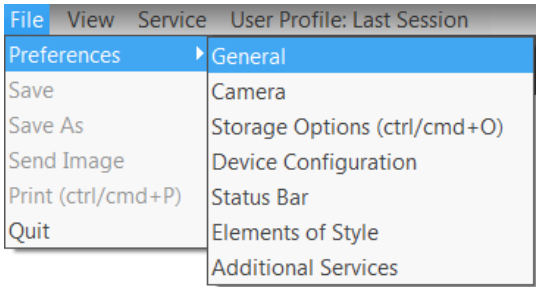
*(Available as of JENOPTIK GRYPHAX version 2.1 or newer)

3.1 Preparation:

To enable "Individual Save Option" enter software Preferences. Go to program title bar under menu: File / Preferences. A submenu will be displayed to directly enter specific preferences section.

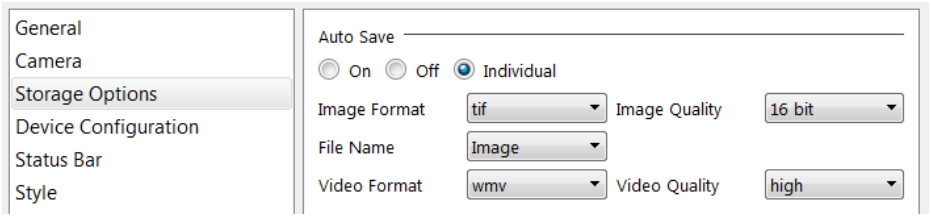
Navigate to preferences entry: "**Storage Options**" and activate Auto Save option: "**Individual**".

File menu and submenu to enter software Preferences.



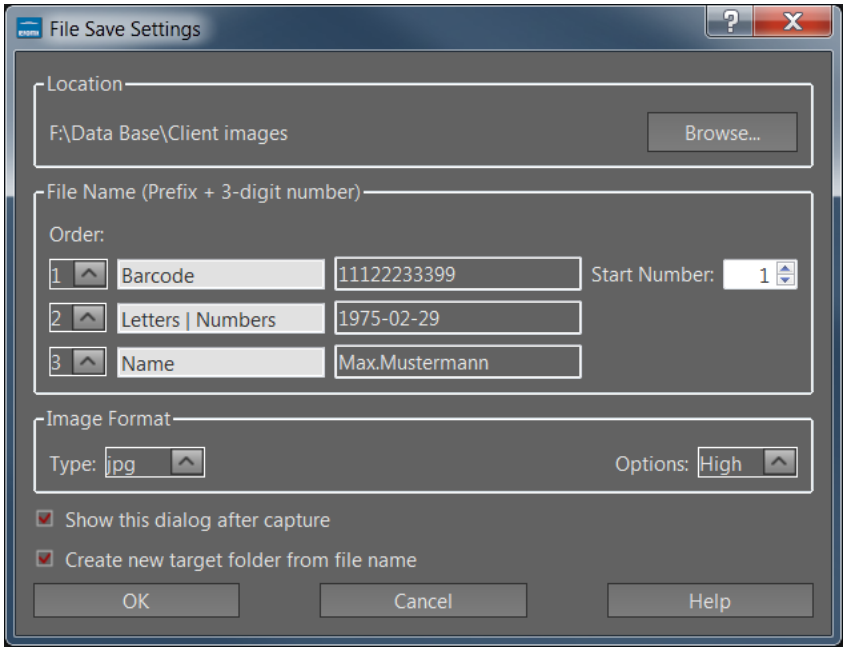
At menu "Storage Options" all related options for image format and storage can be adjusted.

Activate Auto Save option: "**Individual**" – a separate dialog appear to define individual file name structure.

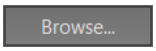


3.2 Individual save dialog:

The dialog is separated by **4 sections**. It contains all options to store media files by individual file name structure.



Location:

To select target path; click on "Browse" button 

to navigate to media target folder.

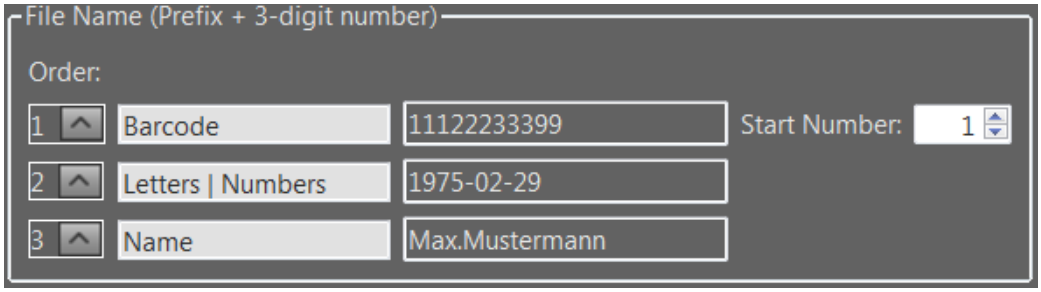
File Name:

The file name structure can contain up to 4 parts:

- **Barcode** text field – will be automatically filled in by scan of connected **Barcode scanner** device or enter manually by user for e.g. patient ID or experiment number etc.
- **Letters | Number** field – can be filled by user individually e.g. date of birth or address
- **Name** field – can be filled by user individually e.g. patient name, fall number etc.
- **Start Number** – to set image start number for counter (3 digits)

With option "Order" – the structure and order for file name will be defined as follows:

- Order: (**0**) – equates field **not used** (deactivated)
- Order: (**1**) – equates **first** section of naming structure
- Order: (**2**) – equates **second** section of naming structure
- Order: (**3**) – equates **third** section of naming structure



In case ALL File name edit boxes are deactivated (with Order: 0 | 0 | 0), only image counter number will be used for file name.

By change of naming structure or content the image start number for counter will be reset to default value (#001) automatically by software.

Note: An underscore "_" will be always added automatically to combine folder name and file name.

To avoid storage issues with OS - a warning message will appear if special characters are used for edit boxes of file name!

Please remove special characters from dialog!

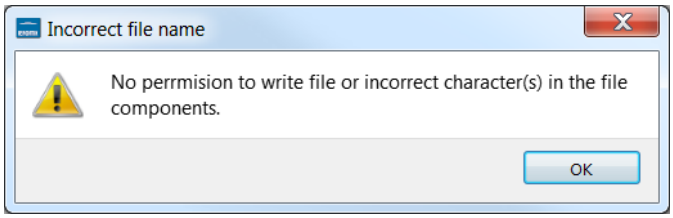


Image Format:

To pre-select the file format and format option.

Supported file format and options are similar to auto save (format: jpg, bmp, png, tif | quality: high, medium, low or 8 bit & 16 bit).

Additional Options:

Activate Check box "**Show this dialog after capture**" – to review all settings before file will be stored. (Deactivated in default)

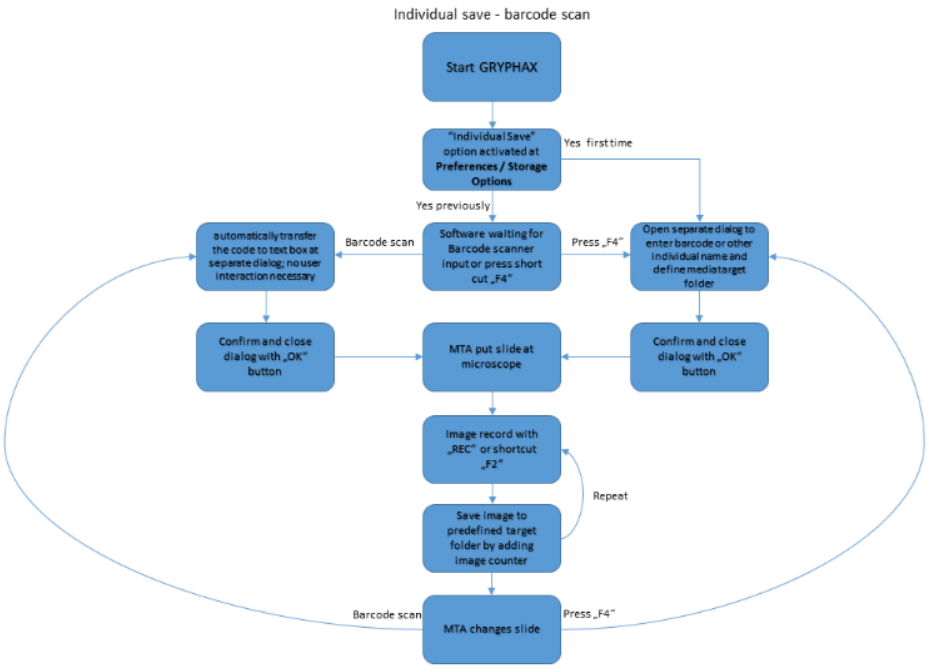
Activate Check box to **create a new target folder from given file name** "structure". A new sub-folder will be created under selected target path after change of each name structure. (Deactivated in default)

3.3 Start:

At the **first** activation of "Individual Save" option, the Individual save dialog will be opened automatically to configure the file naming structure and individual save options.

Press "**F4**" key at any time to open individual save dialog to configure file naming structure or use of Barcode scanner.

Put object under the microscope.



Press "**F2**" or "**REC**" 

button to record images. Files are stored to pre-defined target folder by using individual naming structure plus adding image counter (3-digits).

Every repeat of file record will count up the image counter as long as the file name wouldn't change by user's interaction. Please see the **workflow diagram** for details.

3.4 Using Barcode scanner:

To use a **barcode scanner** user has to connect (e.g. USB interface) and prepare barcode scanner device first. All necessary device driver are delivered from scanner or operating system.

After activation of Auto save option: "**Individual**" the software detects the barcode scan and fill in the **barcode data** into the edit box 

of Individual save dialog automatically!

In case that the dialog was closed the dialog opens automatically and enter the new scanned barcode data into the edit box.

Confirm the data and close the Individual save dialog by: "**OK**" 

button.

Display current file name at status bar:

Currently used individual file name structure or barcode from scan are displayed at text field of status bar from GUI to observe whether the file name is correct.

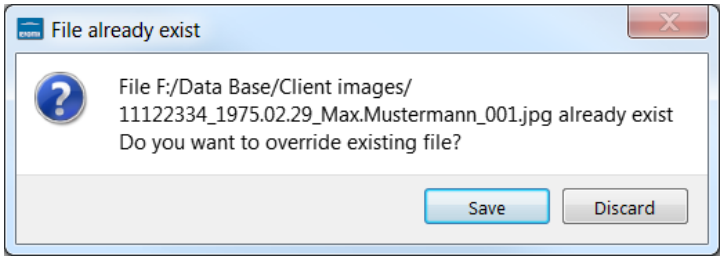
Furthermore, the individual file name will be added to the status bar of recorded images in case that option *add status bar* is activated at software Preferences.

Overwrite protection:

In case that the defined image name is already used in target folder, the software will pop up a warning message with two options:

"**Save**" – Overwrite existing image at target folder

"**Discard**" – Aboard image storage



Afterwards, change the target folder or re-name file name and record image again.

Limitations:

- Individual file save settings are ignored for Video record function.
- Individual file save settings are not used for "Auto save" and "Manual save" option.

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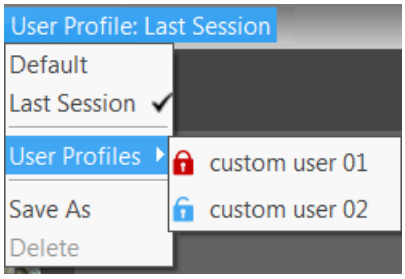
User Profile tool of JENOPTIK GRYPHAX® software

General description:

The "User Profile tool" of JENOPTIK GRYPHAX software enables user to create user specific software settings profiles to get reproduce able results by identical software and camera settings.

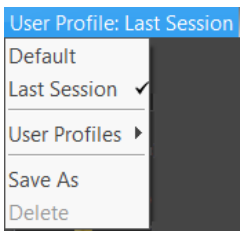
The currently active software settings can be saved in a user profile (preference file). These user profiles can be loaded and applied. Furthermore, the user profiles can be transferred to other computer or platforms. (Windows, MacOS and Linux)

Overview of User Profile menu:



4.1 Location:

The User Profile menu is located at the title bar from software. User has quick access to create or load user profiles. Additionally, the **current** user profile e.g. "Last Session" is prominently displayed at title bar.

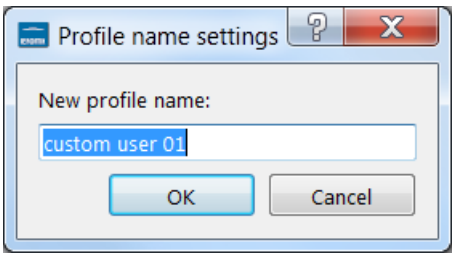


User Profile menu provides the following options:

- Default – **Caution!** Reset all back to factory "default" software settings!
- Last Session – change back to **last stored session** settings of software
- User Profiles – open **profile list** to load already created user profiles
- Save As – save **current** software settings to user profile (optional password **protection**)
- Delete – to delete selected user profile from list

4.2 Create:

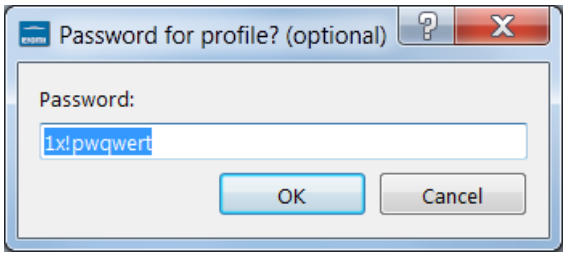
To create a unique user profile, pre-define all software setting as required in advance!



After define go to user profile menu and click on option "**Save As**" to save all current settings to file.
A new window to set name of profile will be opened.
Enter profile name and proceed with "OK".

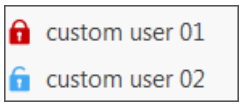
After confirm of profile name user can **optionally protect** the user profile by password. (Recommend)
Enter an individual password and confirm with "OK" button.

In case that no password protection is needed press "Cancel" button to create profile without password.



Note: Please remember, or make a note of the given password. It can't be changed afterwards!

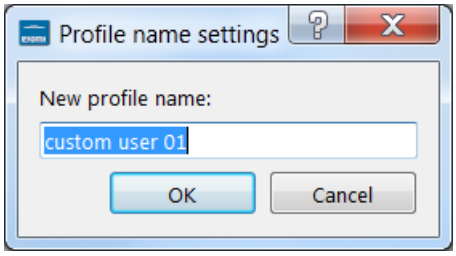
Protected user profiles are indicated by a **red padlock** at the name.
Blue padlock at name indicates an unprotected user profile.



4.3 Load:

To load a user profile go to user profile menu and click on option "User Profiles" to select profile from list. After loading the profile all software settings from file are loaded as current.

If user change user profile or change back to "Last Session" settings all intermediate changes are not saved and will be lost!



Change profile settings:

To change values or setting **from existing user profiles**. Load profile first and make any changes. Afterwards, go to user profile menu and click on option "**Save As**" and enter profile name which has to be changed. By press "**OK**" button all changed software settings will be overwritten from user profile.

Note: protected user profiles can't be changed afterwards. Create alternatively a new protected profile.

4.4 Delete:

To delete a user profile load the corresponding profile from list. Afterwards go to user profile menu and click on option "**Delete**" to remove profile from list. Profile "Last Session" can't be deleted.

Note: To delete password protected user profiles you have to enter correct password to proceed!

4.5 Transfer software settings:

Software settings or "user profiles" can be transferred to other computer (platform independent) to work with same settings or devices! User can **copy and paste** the software settings files from current computer and transfer to others. User profile file name is similar to given name with extension *.ini.

The current software settings called "Last Session" are stored at settings file: "**lastsession.ini**" located under following folder depending on used operating system:

- Windows OS: „C:\ProgramData\Jenoptik\PROGRES GRYPHAX\profiles\..."
- MacOS: „MacHD\Library\Application Support\Jenoptik\PROGRES GRYPHAX\profiles\..."
- Linux OS: „/var/lib/Jenoptik/PROGRES GRYPHAX/profiles/..."

Important note: Deleting or renaming of settings files will **lose all software settings and calibrations**!
Please handle with care!

Gallery tool of JENOPTIK GRYPHAX® software

The "Gallery" of JENOPTIK GRYPHAX software enables user to preview and display all saved media files from selected media destination folder or from selected destination path of "*Tree view*" tool easily inside at software.

General description:

The *Gallery* is located on the left software side next to the *Tree view* tool. It can be used with and without opened *Tree view* tool. The Gallery consist of two parts. The Gallery preview window and the Gallery bar.
The Gallery preview window shows thumbnails from the media files of selected destination folder. The Gallery bar contains additional options for selected items from Gallery.

To open or close of the *Gallery tool* press the bottom arrow on the left software side or use the keyboard short cut (**ctrl / cmd + G**).

The *Gallery* shows the thumbnails in order of the file time stamp from top to bottom. New recorded images / media files will be add on top position of Gallery preview window.

After first software start the *Gallery tool* is collapsed and will displaying the media files of default destination folder of operating system: "own Pictures" from current user after opening.

To change the media destination folder you can use the *Tree view* tool or change folder at the software preferences under *storage options*.

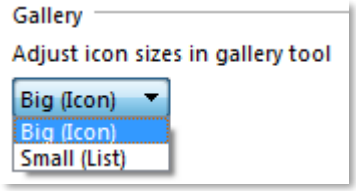
At the Gallery preview window you can use operation system typical short cuts (e.g. ctrl + A; shift-key + mouse click) to select items.

Note: The more images are stored in a folder and are loaded in a Gallery, the longer it will take to display a single image. To enable an easier workflow with JENOPTIK GRYPHAX, we recommend you to reduce the number of images in the target folder by changing the target folder from time to time, by deleting some images or by copying them to another folder.

Change thumbnail view

The thumbnail view can be displayed by two different options:

- A large thumbnail preview as default setting
- Or a small list preview



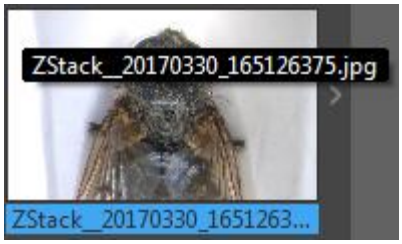
To change thumbnail preview of Gallery window, open Preferences / General / Gallery

Navigation:

Vertically scrolling via mouse wheel or scroll bars.  Scroll bars appears if number of media file thumbnails exceeds available space of gallery window.

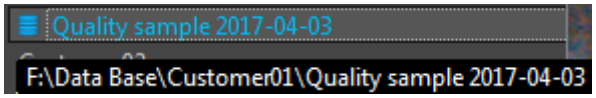
Show complete file name:

To show the complete name of media file, you can use the tooltip of thumbnail.
Hold the mouse pointer over according media thumbnail at gallery window until complete file name will be displayed (hover).

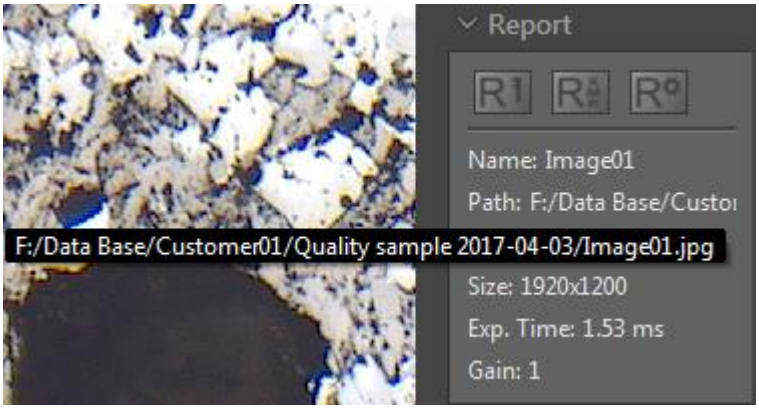


View destination path:

To quickly display the complete destination path of each folder you can use the tooltip at *Tree view tool*. Hold the mouse pointer over according folder of tree view until complete path will be displayed (hover).



To display the destination path of saved images from Gallery without *Tree view tool* you can use the path information of "*Report*" widget. Hold the mouse pointer over Path of Report widget until complete path will be displayed (hover).



5.1 Media file structure:

With the storage option *"Auto save"* all recorded media files will be saved with an automatic given naming structure. The file name contains the following: **prefix**, **date**, **time** and the **file extension** separated by an underline "_". This structure cannot changed by user.

As example: "Image_20170419_094644439.jpg"
prefix_date_time.file extension

The **prefix** for single shot images is "Image" as default setting and can be changed by user under Preferences / Storage Options / File Name (default = "Image")

Depending on media type the file "**prefix**" will be automatically given by software as follows:

- For Panorama images = **Panorama**_date_time.file extension
- For Z-Stacking images = **ZStack**_date_time.file extension
- For merge Fluorescence images = **Multifluorescence**_date_time.file extension
- For Fluorescence filter set images = **Filterset**_date_time.file extension
- For Video files = **Video**_date_time.file extension
- For Service images = **Service**_date_time.file extension

With this structure user can easily distinguish between different images file types.

The **date** and **time** structure: YYYYMMDD_ hhmmss (ms)(ms)(ms) is the given date stamp automatically during file saving by software.

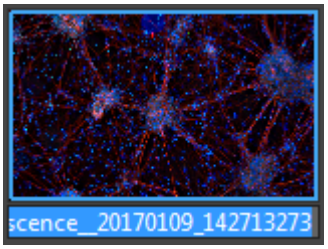
- Y = Year
- M = Month
- D = Day
- h = hour
- m = minutes
- s = seconds
- ms = milliseconds

The **file extension** depends on the used storage file format (*.jpg ; *.bmp ; *.tif ; *.png). Storage format can be changed under Preferences / Storage Options / Image Format.

Note: By storage option: "Individual Save" – media file structure are not applied.

Rename files:

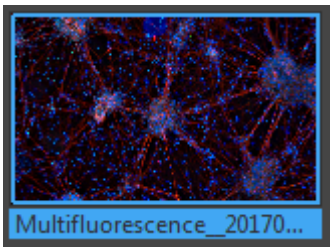
To rename media files, please make a mouse click on the according thumbnail to mark and click a second time to the displayed name text under the thumbnail to activate renaming. You can now overwrite the current image name by a new text containing letters or numbers. You can leave the overwrite mode by clicking on another image or by press enter key.



Note: The file extension does not change at Gallery tool.

Status of selection:

To display a "recorded" item from Gallery on main image window - double-click to the according thumbnail at Gallery.



The thumbnail in the Gallery change their display state. Thumbnail will be bordered by a blue line and file name background will be colored in blue.

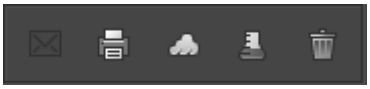
Select item by left-mouse click to the thumbnail within the gallery to remove or execute any option from Gallery bar.

The thumbnail in the Gallery change their display state. Thumbnail file name background will be colored in blue.

Note: To select multiple items you can use operation systems typical short cuts (e.g. ctrl + A; shift-key + mouse click).

5.2 Gallery bar:

The *Gallery bar* is located at the bottom of Gallery preview window and contains the following options:



 **E-Mail** – to send selected items by E-Mail (currently deactivated)

 **Print** – to print selected items (keyboard shortcut **ctrl / cmd + P**)

 **Cloud** – to copy selected items to cloud storage folder (Cloud folder can be changed at preferences)

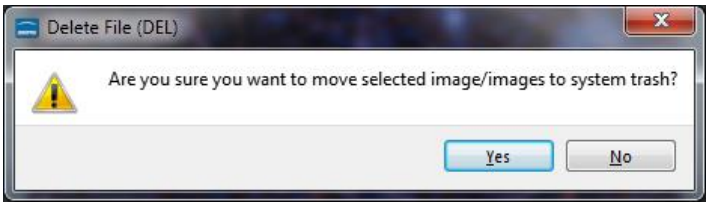
 **Analyze** – to analyze selected items from Gallery in external applications (Choose App at preferences)

 **Trash** – to move selected items from Gallery (destination folder) to system trash

Delete media files:

To delete media files from Gallery select the according items and use the trash of Gallery bar or use the keyboard key “DEL”.

You will need to accept the prompt “Are you sure to move selected image/ images to system trash?” with “Yes“.



Note: The media files will be deleted from the destination folder and are moved to operating system trash!

Limitation:

- Gallery is not visible during “Presentation” view.
- Gallery cannot show external media files.
- Gallery functions are limited during Multi-Fluorescence mode

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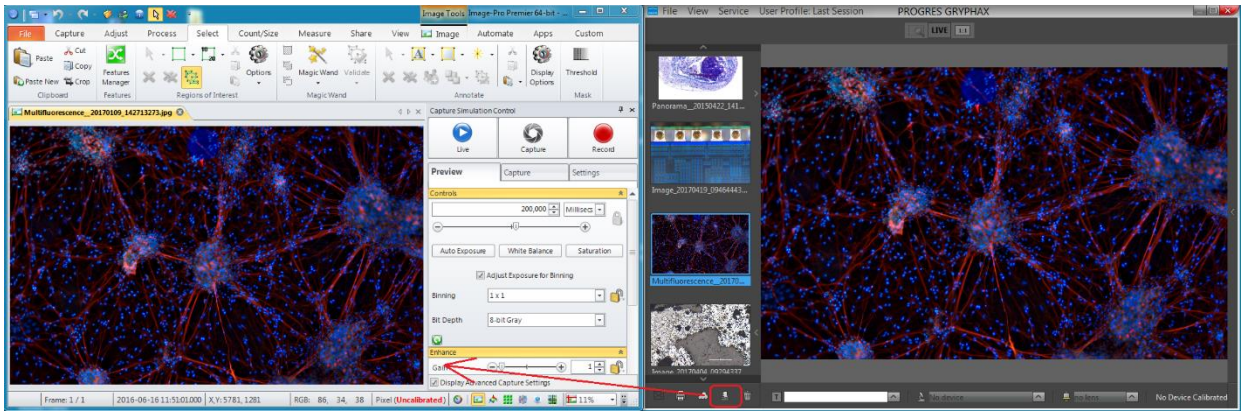
"Image Analysis" function of JENOPTIK GRYPHAX® software

The "Image analysis function" of JENOPTIK GRYPHAX software enables user to send saved media files from Gallery to external 3rd party imaging software tools directly from GRYPHAX software. So user are able to process images further or use specific methods from analysis software.

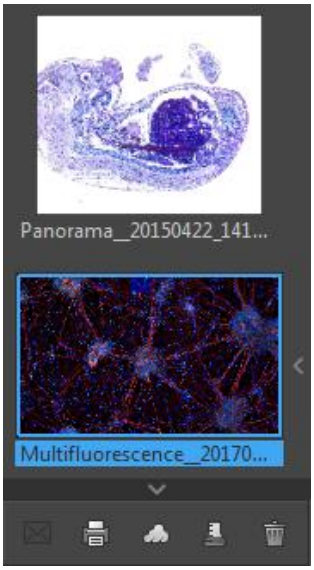
Overview:

Image from software directly transferred to **3rd Party software** e.g. "ImagePro Premier" (Media Cybernetics)



General description:

The "Image analysis function" is part of the *Gallery bar.* Located on the left software side at the bottom of the Gallery.



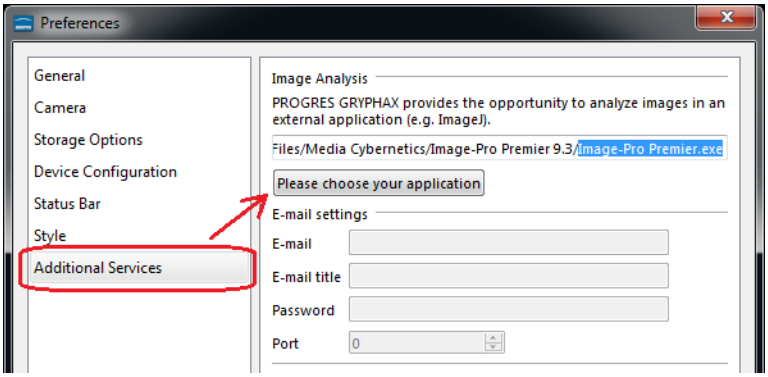
The Gallery preview window shows thumbnails from the media files of selected destination folder. The Gallery bar contains additional options for selected items from Gallery.

To open or close of the *Gallery tool* press the bottom arrow on the left software side or use the keyboard short cut (**ctrl / cmd + G**).

Note: The Gallery bar will be active after selection of one media thumbnail.

6.1 Preparation:

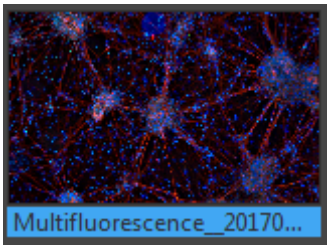
To use the "Image analysis function" open Preferences and navigate to the section: "Additional Services" and pre-define the Application you want to transfer the images from JENOPTIK GRYPHAX software.



Press the bottom "Please choose your application" Please choose your application and a separate file selection windows will be opened to search and select the appropriate 3rd party software. (e.g. ImageJ or ImagePro)

6.2 Start image transfer:

To activate the image transfer to 3rd party software tool, select the according image file thumbnail from Gallery by left-hand mouse click and press the "Image analysis" button from Gallery bar.



The analysis function immediately opening the pre-selected 3rd party software and transfer the selected image.

Note: Multiple items cannot by transferred by "Image analysis" function.

Video tutorial:

Press the link to watch the video tutorial for **Image Analysis** function.

Limitation:

- Single images can be transferred by "Analysis" function only.
- Gallery and Analysis function are not visible during "Presentation" view.
- Gallery cannot show external media files.
- Gallery bar functions are limited during Multi-Fluorescence mode session.

Side by Side tool of JENOPTIK GRYPHAX® software

The new "Side by Side tool" of JENOPTIK GRYPHAX software version 2.3.0 enables user to compare images from Gallery with each other or images with live stream from camera easily inside of software. In addition, compared images can be saved as a combined comparison image for reporting.

General description:

The *Side by Side tool* is part of the *Gallery tool.* The Gallery is located on the left software side next to the *Tree view* tool. The Gallery preview window shows thumbnails from the media files of selected destination folder. The *Side by Side* tool will be activated by operating with mouse or started under menu "**View**" from title bar.

To open or close of the *Gallery tool* press the bottom arrow on the left software side or use the keyboard short cut (**ctrl / cmd + G**).

7.1 Start Side by Side mode:

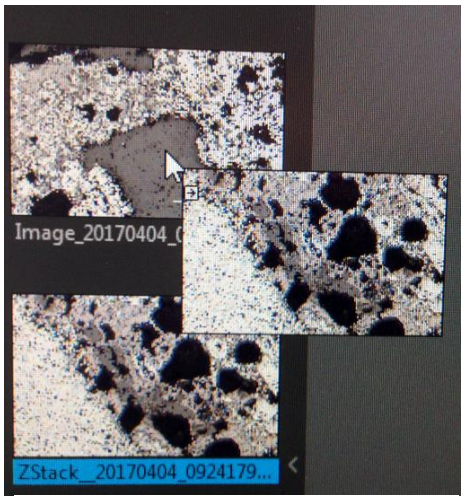
To start the *Side by Side* mode there are **different** possibilities:

1. Go to the title bar and navigate to option "View" – activate new option "split image view" or use the keyboard key ("**V**").

2. Drag and drop an image thumbnail from Gallery **over each other** will enable the image comparison of two images. Both images will be displayed side by side at the main image window of software.

3. Select one image from Gallery by double-click on the thumbnail. Image will be displayed on the main image window. Drag and drop second image thumbnail from Gallery into the main image window of software while first image is displayed. The image can be added on left or right side to the main window.

4. Drag and drop one image thumbnail into the main image window of software while live stream from camera is running. You can drop on the left or the right side of the live window. The Side by Side tool will add the Gallery image according the used side.

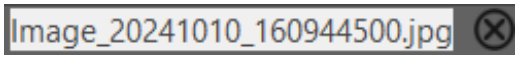


Example for drag & drop image

Note: Video files are not supported by Side by Side mode.

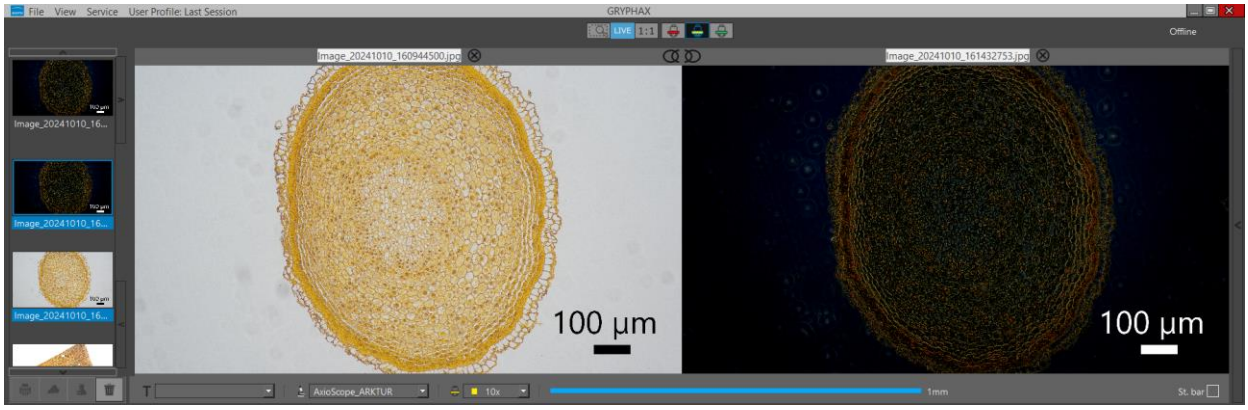
Overview:

At the *Side by Side* mode the image file name of displayed images will be shown on top of the each image.



If a live image from camera is used for comparing at *Side by Side* mode the live stream is named with given "Device name" AxioScope_ARKTUR instead of the image file name.

Screen shot of active Side by Side "comparing" mode using two different images from Gallery:



Note: The image size of different image resolution will be displayed scaled to the image main window of JENOPTIK GRYPHAX software. The image with the smaller size is the master, the larger image will be scaled according the size of smaller image.

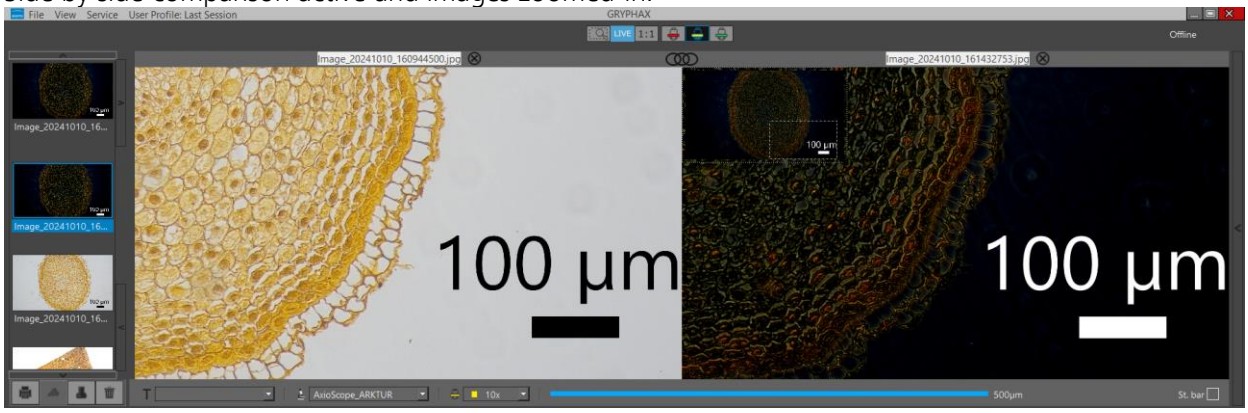
7.2 Activate | deactivate comparison:

To activate images comparison at *Side by Side* mode just click on the central "**connect**" button  once. Afterwards, both images are connected to each other for detailed review – side-by side.
The zoom factor and image position are connected to each other.

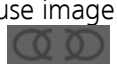
To zoom in and out on images change zoom factor by keyboard key "**Z**" or use the magnifier tool from rec bar. 

In addition, you can use the mouse wheel to change zoom on left image.

Side by side comparison active and images zoomed-in:



To deactivate connection, click again to the "**connect**" button  . Afterwards, each image is separate to observe. You can use different zoom or position on image.

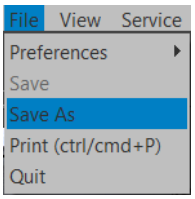
Important note: The images must have identical **aspect ratio** to use image compare by side-by-side view. If the aspect ratio from images is different the "**connect**" button  is displayed as greyed out.

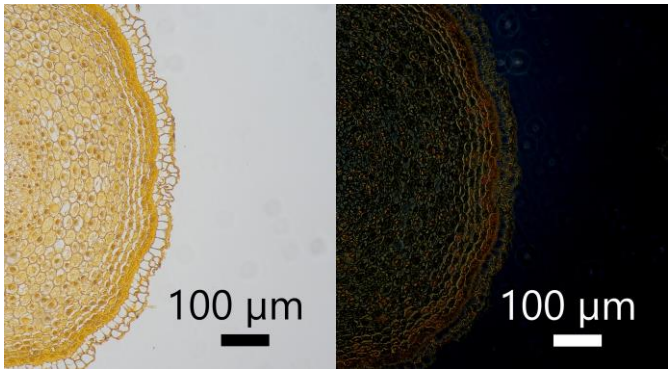
7.3 Change images:

To change images at *Side by Side* mode just drag and drop one image thumbnail into the main image window of software while Side by Side mode is active. You can drop the image on the left or the right side of the main window. The Side by Side tool will exchange the previously displayed image by the new added image from Gallery according the used side.

7.4 Save compared images:

To save compared images at *Side by Side* mode go to title bar open menu **File / Save As** after prepare of image content. Afterwards, the shown image content will be saved as a combined compare image to gallery.





7.5 Leave Side by Side mode:

To leave the *Side by Side* mode just close one of the displayed image by using the cross  or double-click on any image thumbnail at the gallery.

Alternative, leave by uncheck option "Split-image-view" from title bar | View or using keyboard key "**V**".

Limitation:

- Images must have identical **aspect ratio** to use function connect for image compare.
- Side by Side mode is possible with image files only. Video files are not supported.
- Measurement and Annotation tool are deactivated during Side by Side mode

Ease of use –
giving your work an effortless feel.

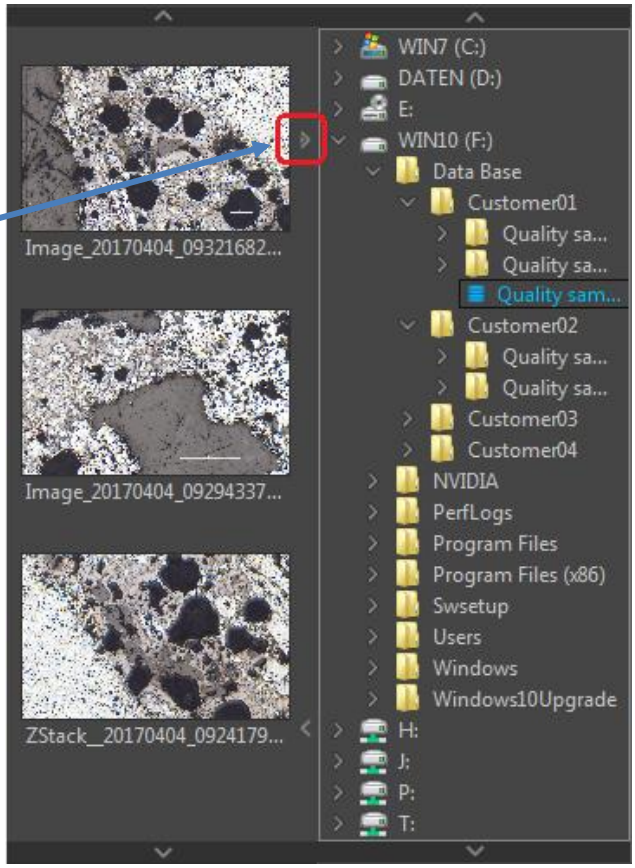
Tree view tool of JENOPTIK GRYPHAX® software

The "Tree view tool" of JENOPTIK GRYPHAX software enables user to save, organize and handle media destination folder structure easily inside JENOPTIK GRYPHAX without leaving software.

General description:

The *Tree view tool* is located on the left software side next to the Gallery. It can be used with and without opened Gallery. Tree view delivers two different sizes: "**Narrow**" or "**Wide**" to display the media target tree.

To open, expand or close of the *Tree view tool* press the top left arrow on the left software side or use the keyboard short cut (**ctrl / cmd + D**).



Note: After first software start the *Tree view tool* is starting and displaying the default destination folder of operating system "own Pictures" from current user.

Alternatively, the Tree view is automatically displaying and using the last used destination folder from last software session or from activated user profile.

The media destination folder of Tree view is always synchronized with the software preferences settings under section: *storage options*.

The currently used destination folder for media storage is displayed with the save icon and colored in "blue" characters. Quality sample 2017-04-03 Additionally, all images and media files of selected destination folder are displayed at the software *Gallery* by preview thumbnails.

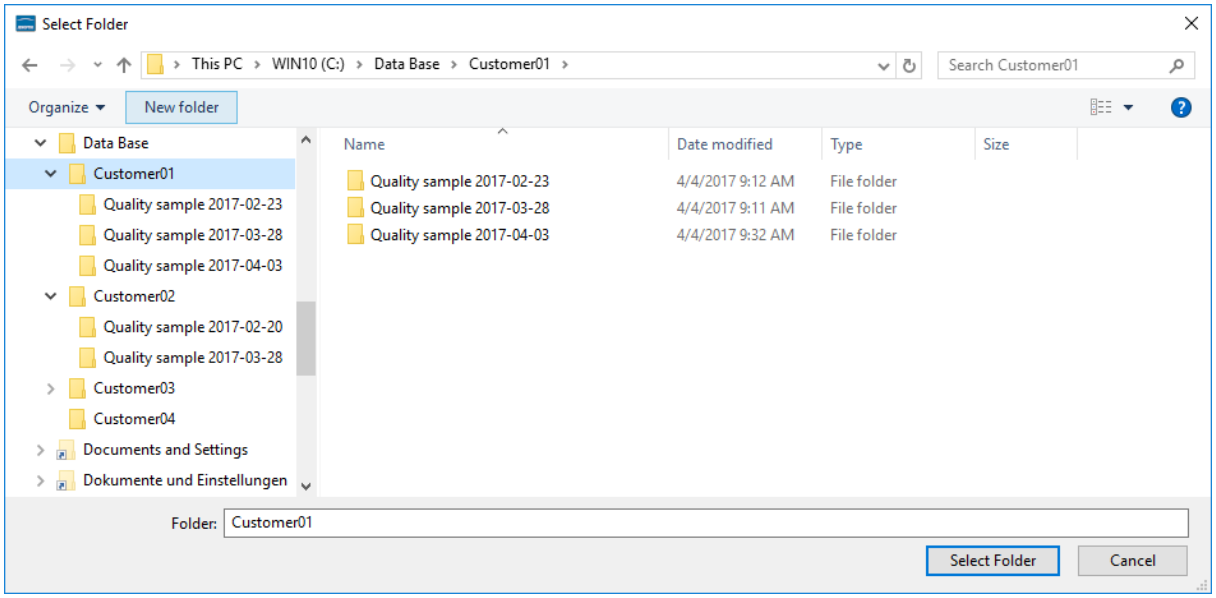
8.1 Change storage folder:

To change media destination folder please double click by left-hand mouse click on according destination folder from tree view. After change of destination folder, the *Gallery* will display all media files of new selected folder. All new captured images and media files will be save to the selected folder.

8.2 Create storage folder:

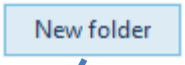
To create new folder or subfolders, please make a right-hand mouse click into the folder tree to activate the *Tree view* edit option menu: Select media target folder using File Explorer

With mouse click on menu: "**Select media target folder using File Explorer**" an operating system specific edit window will be opened.

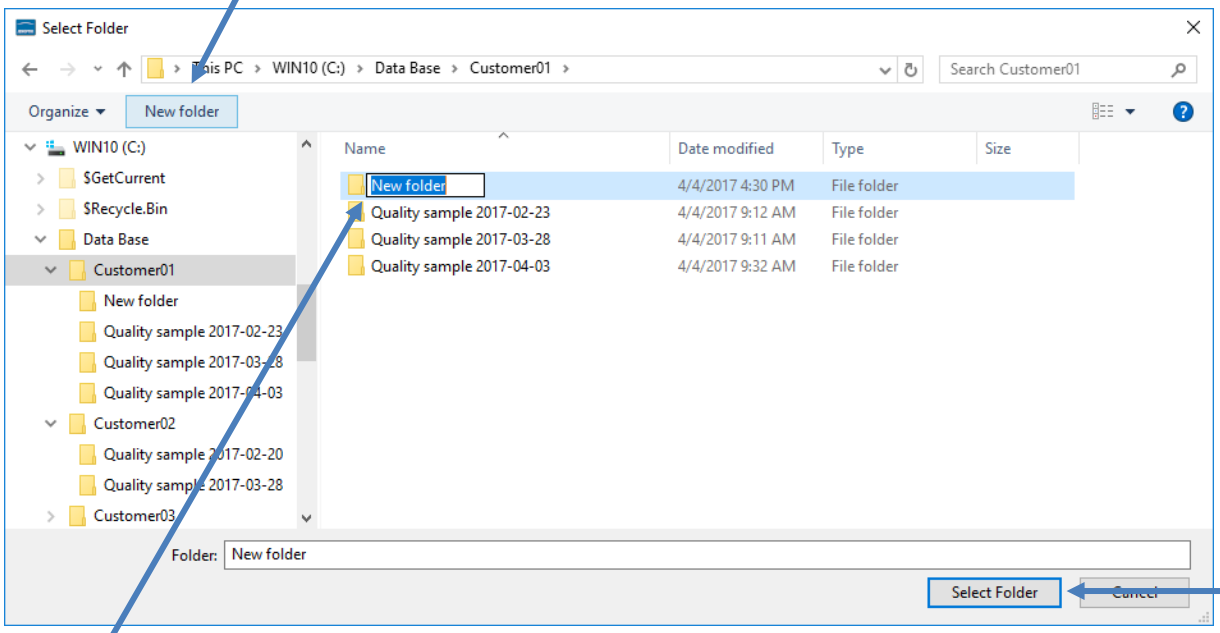


Note: At the "select folder" dialog of Tree view tool, you can use the typical functions from operating system.

To add a new folder or subfolder you have to navigate to the folder tree and press button:

"New folder" 

A new folder will be created and can be renamed afterwards.



To rename an existing folder please use the operating system function by "right-hand mouse click" and option: "Rename".

To delete an existing folder after selection use keyboard key "DEL" or use operating system function by "right-hand mouse click" and option: "Delete".

To select the media destination folder for images and media files by double click and define with button:

"Select Folder" 

Note: The edit window will close automatically after folder selection by press "Select Folder".
With close of edit window using button: "Cancel" the software select the default destination folder of operating system "own Pictures" from current user as media destination folder.

Record to new destination folder

To record new images or media files to new defined destination folder just press "REC" button 

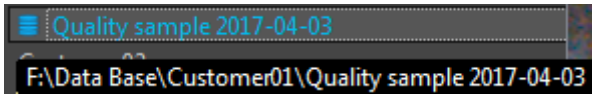
to start record and the files will be displayed at the JENOPTIK GRYPHAX *Gallery*.

Navigation:

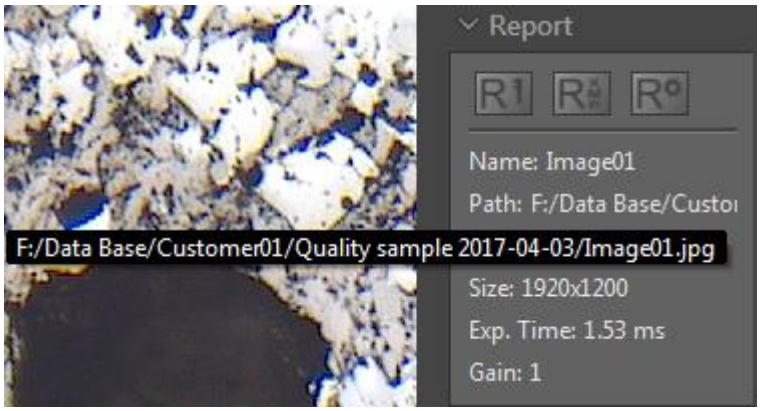
Vertically scrolling via mouse wheel or scroll bars.  Scroll bars appears if current tree view does not fit into available space.

View destination path:

To quickly display the complete destination path of each folder you can use the tooltip at *Tree view tool*. Hold the mouse pointer over according folder of tree view until complete path will be displayed (hover).



To display the destination path of saved images from Gallery <u>without</u> *Tree view tool* you can use the path information of "*Report*" widget. Hold the mouse pointer over Path of Report widget until complete path will be displayed (hover).



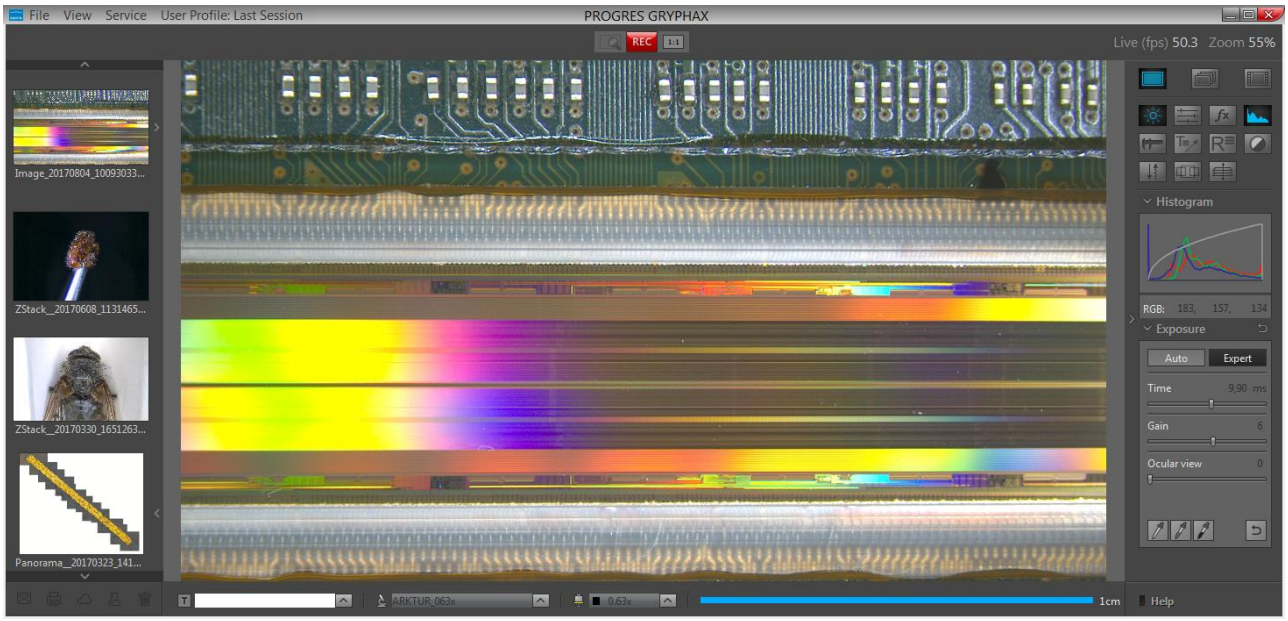
High image quality – giving you the details to make the right decisions.

Exposure tool and Histogram of JENOPTIK GRYPHAX® software

General description:

The "Exposure tool" of JENOPTIK GRYPHAX software enables user to control camera image brightness manually or **automatically** to reach optimal exposed images. By using the "Histogram" user can observe optimal image brightness conditions at a glance.

Overview JENOPTIK GRYPHAX software with activated Exposure tool and Histogram:



Open Tool bar:

All JENOPTIK GRYPHAX camera control and image processing tools are located at the "Toolbar".

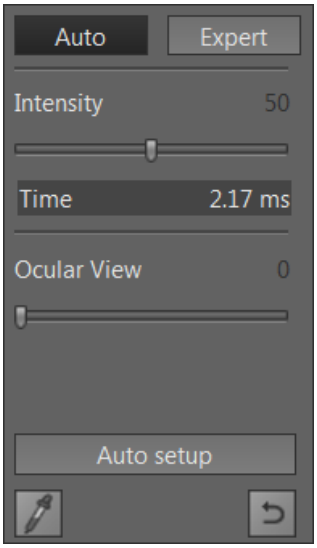
To activate the "Exposure tool" or "Histogram" open the software "Toolbar" by pressing the arrow on right-hand software site or use keyboard short cut (**ctrl / cmd + T**)

9.1 Open Exposure:

To open Exposure tool click to the Exposure icon  at the "Toolbar", the Exposure widget will be opened and contains two separate mode Tabs for: 

"Auto" – for automatically brightness control for optimal tracking of brightness by e.g. objective change

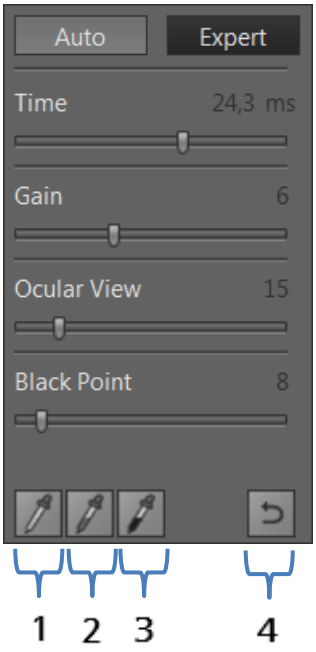
"Expert" – for manually brightness control by using Exposure time and Gain value to reach max. exposure time



Auto tab is activated as default and contains the following functions:

- Intensity – to adjust image desired target brightness of image preview from active camera displayed on screen by slider or value
- Current exposure time – display current exposure time of live preview (changing according automatic exposure control)
- Ocular view – optional to adapt the color impression from microscope eyepieces to the image at screen (Color cameras only)
- Auto (Bright-Field)-Setup* – option can be used at any time to set all camera image parameter to default values. Additionally, the automatic white balance and the color correction to the used light source will be applied and "Auto Exposure control" is enabled.
- Grey balance pipette – set manually grey balance at live preview
- Reset Grey balance – reset grey balance back to factory settings

Expert tab contains the following expert functions:



- Time – set exposure time manually by slider or enter value
- Gain – set gain value manually by slider or enter value
- Ocular view – optional to adapt the color impression from microscope eyepieces to the image at screen (Color cameras only)
- Black Point* – optionally to enhance noise level in dark image areas; values according the black point pipette
- White Point pipette (1) – set manually white point at live preview
- Grey balance pipette (2) – set manually grey balance at live preview
- Black Point pipette (3) – set manually black point at live preview
-  Reset balances (4) – reset back to factory settings

*(Available as of JENOPTIK GRYPHAX version 2.1 or newer)

9.2 Maximum exposure time

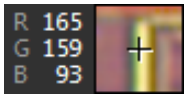
Maximum exposure time for captured images can be reached by using max. exposure time **in combination** with max. gain value at "Expert tab". For e.g. RIGEL camera max. live exposure is 2000 ms + max. gain value of 60 = **120 seconds exposure time** for captured images in case that option "Minimize Gain" is activated at preferences!

Enter values directly by click on value – edit box appear to change and update the value.

Note: To reset grey balance or black / white point separately, select according option before press reset button! Otherwise, all balance and points will be reset together.

9.3 Set Grey Balance:

Activate grey balance icon from Exposure widget. Mouse pointer immediately change to pipette pointer and display small magnifier window and pixel values of corresponding image position at image window. As of GRYPHAX 2.3.0 the software shows the grey balance preview on mouse pointer position at image window before a click into image.



Click into **"grey" region** of preview image to set new grey values and the image will automatically change the grey balance of RGB preview image.

Note: This option is most important to get best color reproduction from specimen! Option only available for color cameras.

9.4 Set Black Point:

Activate black point icon from Exposure widget. Mouse pointer immediately change to pipette pointer and display small magnifier window and pixel values of corresponding image position at image window.

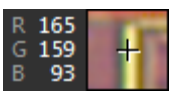
Click into **"black" (dark image) region** of preview image to set manually new black offset and the image will automatically change the black offset at preview image and the noise level will be reduced instantly.

At **Black Point slider*** the current used black point value is displayed and can be adjust manually.

Important Note: Black point is a very powerful function and will reduce the image bit depth of preview and captured images! Image can be destroyed or show pixel artefacts. Do not set "Black Point" into bright image areas to avoid corrupted images!

9.5 Set White Point:

Activate white point icon from Exposure widget. Mouse pointer immediately change to pipette pointer and display small magnifier window and pixel values of according image position at image window.

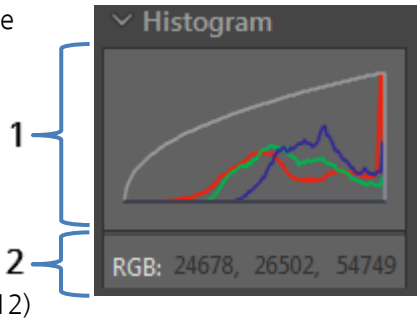


Click into **any region** of preview image to set new brightest area at preview image. The software will automatically set RGB values to max value (255) at related region and the "Expert" Exposure tool change the exposure time accordingly.

*(Available as of JENOPTIK GRYPHAX version 2.1 or newer)

9.4 Open Histogram:

To open Histogram click to the Histogram icon  at the tool bar, the Histogram widget will be opened and is separated into two different sections: **Histogram section** (1) and **Pixel value section*** (2).



Histogram widget is displaying the following information:

- Histogram curve (RGB or Monochrome) according image data
- Gamma curve according select Gamma value
- Pixel value* of current mouse position (*valid as of version 1.1.12)

Note: "Pixel values" are displayed while mouse pointer is inside of image window only. The values depends on the image bit depth. For live preview and recorded images with 8 bit format, the values are displayed in 8 bit (0-255).For recorded images with 16 bit format the values are displayed as 16 bit (0-65535).

Perform Auto-Setup:

Auto (Bright-Field)-**Setup*** – option is supposed to set-up all relevant camera image parameter to reach best image quality! It can be used at any time. Additionally, the automatic white balance and the color correction to the used light source will be applied. "Auto Exposure control" is enabled as well.

Note: Remove the specimen **before** proceed the Auto-setup function to get optimal results!

Tool status:

- Activated tools are highlighted in blue. Click on tool icon again to deactivate appropriate tool.
- Tools which are not access able are "greyed out" by software automatically and cannot be reached.

Collapse / expand  button on each tool to hide separate widgets on active tool section.

Reset button  on a tool sets all properties to their initial values. Initial values are fixed.

Video tutorial:

Press the link to watch the video tutorial for Exposure tool & Histogram of JENOPTIK GRYPHAX software.

Limitations:

- Exposure tool is not reachable during Multi-Fluorescence mode.
- Exposure tool widget is blocked while video record or time-lapse, Z-stack or Panorama is running.
- Exposure mode "Auto" is disabled and cannot be reached during Panorama and Z-Stack mode.
- Exposure tool can be activated while image live preview from camera is active only.
- Auto-Setup is designed to work for bright-field application with color and monochrome cameras.

*(Available as of JENOPTIK GRYPHAX version 2.1 or newer)

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to make the right decisions.

Image Enhancement tools – Color & FX of JENOPTIK GRYPHAX® software

General description:

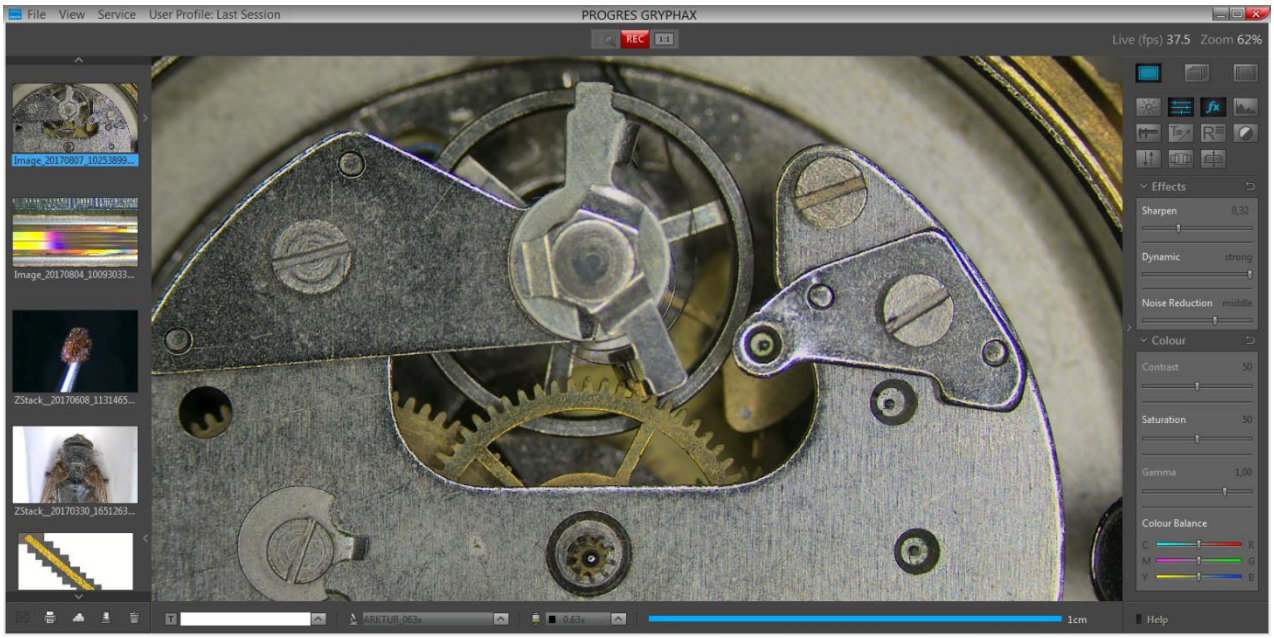
The "Image Enhancement tools" – Color & FX of JENOPTIK GRYPHAX software enables user to optimize images by wide range of techniques to reach perfect images results with true color representation of specimen.

A number of factors influences color representation of specimen. In addition of functions white balance and Ocular view from Exposure tool, enhanced functions available in the tools "Color" & "FX (Effects)" can be used to match the image display to the colors and contrasts in the specimen. The FX tool provides options to enhance image-processing using sharpen, noise reduction or high Dynamic function.

Any settings defined here are immediately displayed in the live image preview, and will be applied to the captured image as well.

All changes of the Image Enhancement tool settings are saved as preferences "Last Session" and will be available next time the software is started.

Overview JENOPTIK GRYPHAX software with applied High-Dynamic mode from FX tool:



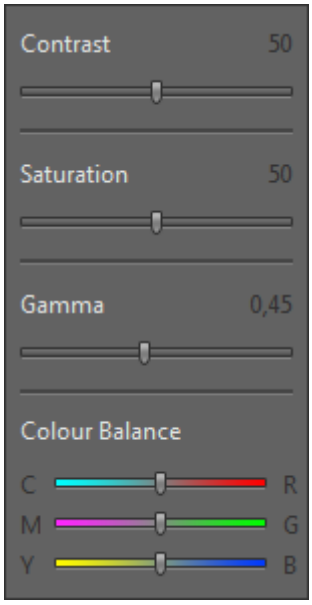
Open Toolbar:

All JENOPTIK GRYPHAX camera control and image processing tools are located at the “Toolbar”.

To activate the Image Enhancement tools “Color” or “FX” open the JENOPTIK GRYPHAX “Toolbar” by pressing the arrow on right-hand software site or use keyboard short cut (ctrl / cmd + T).

10.1 Open Color tool:

To open Color tool click to the Color icon at the “Toolbar”, the Color widget will be opened and contains the following image color enhancement tools:



- Contrast – to adjust image desired target contrast of image preview from active camera displayed on screen by slider or value
- Saturation – to adjust image desired target saturation of image preview from active camera displayed on screen by slider or value
- Gamma – to adjust image desired target Gamma value of image preview from active camera displayed on screen by slider or value
- Colour Balance – optionally to set manually color balance of image preview from active camera displayed on screen by slider

Note: To reset separate tool value to initial factory value, double-click on slider at any position. According slider and value will be reset to default.

Contrast

Use the slider controls to adjust contrast, in the displayed image preview according to your needs. A low contrast value results in a lower contrast, a high contrast value results in a higher contrast. A contrast value of 50 is preset as initial factory value, which represent contrast function is off.

Saturation

Use the slider controls to adjust saturation in the displayed image preview according to your needs. Value of 0 is displaying a completely de-saturated image preview. A high saturation value results in an over saturated image preview. A saturation value of 50 is preset as initial factory value and color reproduction will be displayed as neutral.

Gamma

The gamma slider control enables the conversion of camera pixel values into the pixel values displayed in the image window. A low gamma value results in a brighter, low contrast image, a high gamma value results in a darker image with higher contrast. The gamma settings do not influence the dynamic range of your image. The current used gamma curve is visualized at “Histogram” widget and changes will be immediately applied.

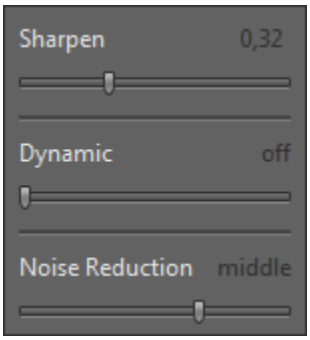
Note: Gamma adjustment does not reduce the dynamic range of the image. Please note that the preset gamma value is 0.45 for color cameras, which results in a well-balanced, contrasting color reproduction. For linear reproduction of the image data, select a gamma value of 1.0 which is used for monochrome cameras as default.

Colour Balance

Use the slider controls to adjust the color balance in the entire image between an RGB base color and the respective complementary CMYK color. The color balance adjustments will also be kept when a white balance is carried out using the functions in the Exposure tool.

10.2 Open FX tool:

To open FX (Effects) tool click to the FX icon  at the "Toolbar", the Color widget will be opened and contains the following image color enhancement tools:



- Sharpen – to adjust image desired target sharpness of image preview from active camera displayed on screen by slider or value A sharpen value of 0 is preset as initial factory value, which represent sharpen function is off. A high sharpen value results in a higher sharpness impression.
- Dynamic – optionally tool to activate special image dynamic extension by one-image-high-dynamic-mode. Which will take advantage of the new generation sensor technology used by JENOPTIK GRYPHAX cameras. It will be applied directly at image preview and to captured images as well.

  Note: Dynamic extension mode requires a high demand of CPU performance and can reduce the live speed performance on certain computers. Please also take note of the system requirements.

- Noise Reduction – to reduce the noise level at image preview from camera by select noise reduction level by slider. It is recommend to enable noise reduction function especially by high gain values or long exposure times e.g. Fluorescence applications. The following options can be selected:
  - off – no noise reduction enhancement
  - soft – slightly noise reduction
  - middle – moderate noise reduction
  - strong – maximum noise reduction, especially for high gains or long exposure times

Note: FX tools can reduce the live speed performance due to high CPU utilization.

Tool status:

- Activated tools are highlighted in blue. Click on tool icon again to deactivate appropriate tool.
- Tools which are not access able are “greyed out” by software automatically and cannot be reached.

Collapse / expand button on each tool to hide separate widgets on active tool section.

Reset button on a tool sets all properties to their initial values. Initial values are fixed.

Video tutorial:

Press the link to watch the video tutorial for **Exposure tool & Histogram** of JENOPTIK GRYPHAX software.

Limitations:

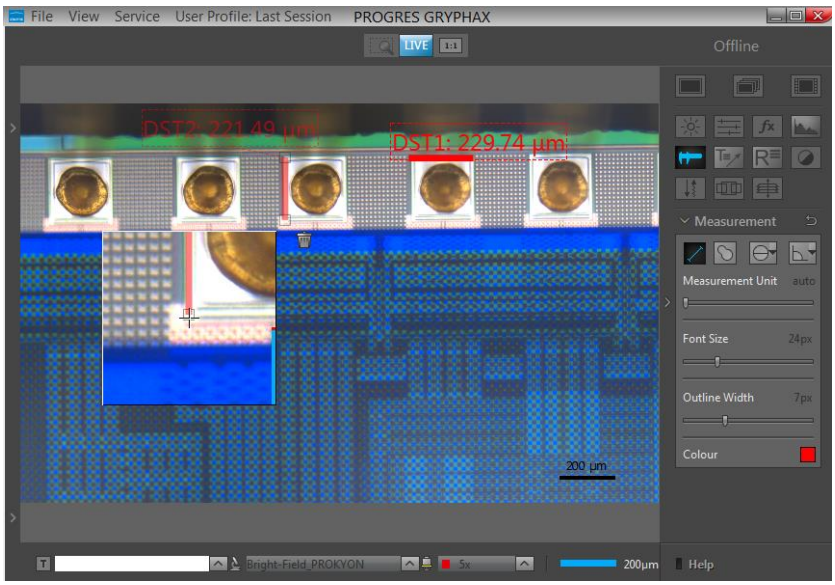
- FX tools can reduce the live speed performance due to high CPU utilization.
- Contrast and Gamma will be deactivated while FX tool “Dynamic” is active.

Measurement Tool of JENOPTIK GRYPHAX® software

The "Measurement tool" of JENOPTIK GRYPHAX software enables user to measure basic methods directly at the live image or at recorded images from Gallery.

General description:

The "Measurement tool" is part of the JENOPTIK GRYPHAX software. It contains scale bar and basic measurement methods as real-time measuring directly at the live preview or at recorded images from *Gallery* afterwards.



Preparations general:

To use Measurement tool you have to calibrate your microscope objectives in advance! Otherwise, the Measurement tool cannot be activated and used. To create measurement calibration you have to open software Preferences and navigate to option "Device Configuration".

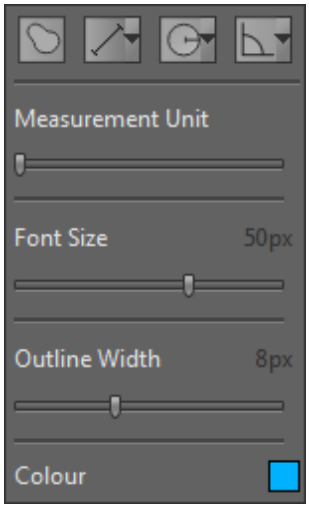
To calibrate the microscope you can use the JENOPTIK GRYPHAX® calibration slide / stage micrometer (order number: 648806).

Please see the video tutorial how to calibrate the microscope objectives:
Click here to watch the Video Tutorial – Device Configuration & Status Bar

11.1 Start Measurement tool:

To activate the *Measurement tool* open the GRYPHAX Tool bar by pressing the arrow on right-hand software site or use keyboard short cut (**ctrl / cmd + T**)

Click to the Measurement icon at the tool bar, the Measurement widget will be displayed and contains the following measure tools and options:



- **Line** (2-point) measurement for distances
- **Free-hand-line** measurement for non-straight distances
- **Multi-line-distance** measurement for multi-line distances
- **Parallel-line-distance** measurement for parallel distances
- **Circle-to-circle-distance*** measurement for distances of circle centers
- **Freeform** measurement for areas and distances
- **Circle** (3-point) measurement for radius & diameter
- **Angle** (4-point) measurement for interior & exterior angles

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- **Measurement unit** contains the following units in respect to the used method: Auto selection as default or nm, µm, mm, cm, m, mil, inch, ft, deg (°) as well as similar area units
- **Font size** by value 8 – 72px
- **Outline width** by value 1 – 20px
- **Colour** can be selected by color selector, click on color rectangle to open color selector

(***available as of GRYPHAX version 2.2.0 or newer)

Note: Measurement tool is enabled only if record mode "Single shot" is selected and live image is activated before. Or a recorded image which were captured with calibration information is opened from Gallery. Images captured without measurement calibration cannot be measured afterwards!

Reset button on a tool sets all properties to their initial values. Initial values are fixed.

11.2 Pre-define settings:

When no object is current or selected, the tool widgets show default properties. In this state default properties can be modified. They are stored in settings/profiles.

To predefine the general settings of measurement tool e.g. font size, outline width or colour by change of the according parameter without selecting any measurement method.

The settings for each drawing object can be individual adjusted after start of drawing or by selecting a drawn object from image window.

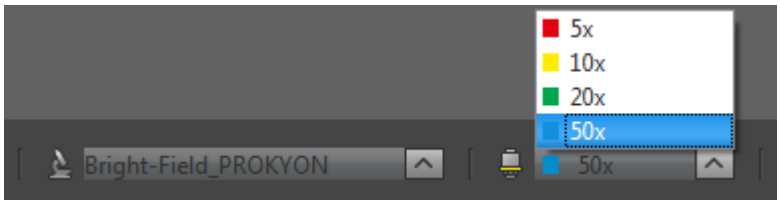
11.3 Start measuring:

To start measuring select record mode “Single shot” and **start live** by pressing the “Live”-button  or open a **recorded image** from Gallery which is captured with calibration information.

By pressing “Rec”  button all previously drawn measurement from **live preview** will be merge into the image. And cannot be modified afterwards. The according measurement data are stored at image meta-data and can be review by Report tool.

To save drawn measurement at loaded **recorded images** from Gallery, start Live preview  or load another image from Gallery. An **image copy** will be always saved automatically by software with a file name extension: “_copy_1” and increment the image copy number accordingly.

Attention: Take care that the correct “device” and “magnification / objective” is selected from *Status bar* **before** start with any measuring. Otherwise, the measurement results are not correct!

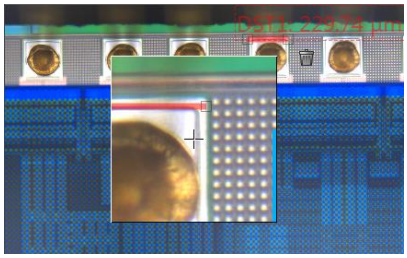


11.4 Creation (drawing) of objects:

In general, after clicking one of the measurement method buttons  (distances, freeform, circle or angle), the cursor changes into a cross and user can draw a measurement object of the type selected.

Additionally, a small floating pane is opened as image window overlay and shows a detailed view of a selected sector like as the magnifier tool.

Zoom level of magnifier can be adjusted on the used section of "**zoom level**" under *Preferences / General / Magnifier*



Pressing “Del” or “Esc” key before finishing an object, aborts the creation and removes unfinished objects.

Each drawn measurement object will be labelled by a fixed prefix name and a counting number according the object type and quantity.

For further details, please see measurement button descriptions below.

11.5 Draw a distance (2-point-line or Free-hand-line) & freeform measurement:

The line & free-hand-line and freeform measurement are 2-point-measurements.

To draw an object start with left mouse-click on first point and release. The start point is marked.

Move the mouse away and a colored semi-transparent line is drawn from the start point to the current mouse position (refreshed as long as the mouse is inside the image window) additionally the currently measured value is displayed near the start point.

Go to the end point and make left mouse-click and release.

For freeform the drawn curve will be completed by a straight line to the start point if end position is different from start point. The measured value is written near the starting point (including an auxiliary line) and will be shown the default unit automatically.

As long as the measurement object is selected the line and text are semi-transparent. A trash button appears right beside the measured value and the start- and end points are marked.

11.6 Draw a Multi-line-distance:

The Multi-line-distance consists of two parts. The first part is the "**base-line**". Second part are the **measured distances** (Multi-line) which are aligned perpendicular to the base line.

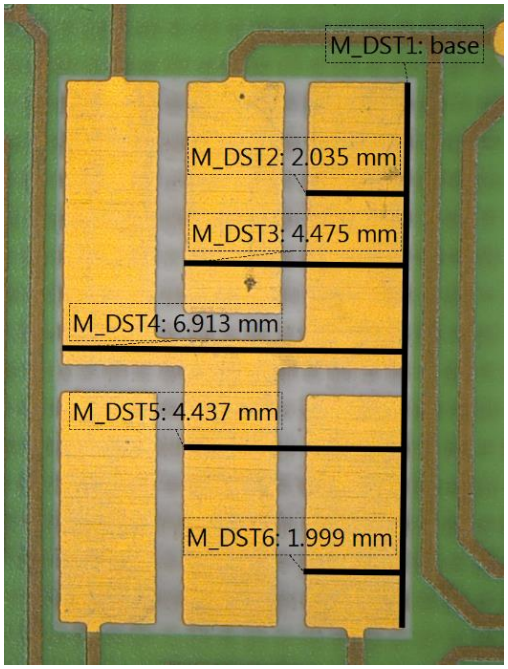
User can draw multiple distance lines which are correlated to the base line.

To draw a base-line start with left mouse-click on first point and release. The start point is marked.

Move the mouse away and a colored semi-transparent line is drawn from the start point to the current mouse position (refreshed as long as the mouse is inside the image window) additionally the currently measured value is displayed near the start point.

Go to the end point and make left mouse-click and release.

The base-line will display a green "status" icon which signal that the multi-line-distances can be drawn.



Add a multi-line-distances by left mouse click on measure point. A straight-line aligned perpendicular from this point to the base-line will be added. To add additional distance line repeat the step again.

Click on the green "status" icon when measurement is finished. Status of icon change to colour "grey", which signal that the measurement is deactivated.

To reactivate and change the multi-line-distance click on the grey status icon again.

As long as a measurement object is selected, the line and text are semi-transparent. A trash button appears right beside the measured value and the start- and end points are marked.

11.7 Draw a Parallel-line-distance:

The Parallel-line-distance consists of two parts. The first part is the "**base-line**". Second part are the **measured distances** (Parallel-line) which are parallel to the base line.

User can draw multiple distance lines which are correlated to the base line.

To draw a base-line start with left mouse-click on first point and release. The start point is marked.

Move the mouse away and a colored semi-transparent line is drawn from the start point to the current mouse position (refreshed as long as the mouse is inside the image window) additionally the currently measured value is displayed near the start point.

Go to the end point and make left mouse-click and release.

The base-line will display a green "status" icon which signal that the Parallel-line-distances can be drawn.

Add a Parallel-line-distances by left mouse click on measure point. A straight line aligned parallel from this point to the base-line will be added. To add additional distance line repeat the step again.

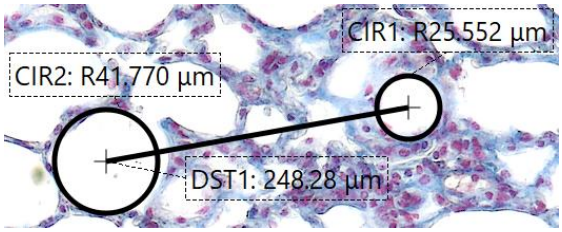
Click on the green "status" icon when measurement is finished. Status of icon change to colour "grey", which signal that the measurement is deactivated.

To reactivate and change the Parallel-line-distance click on the grey status icon again.

As long as a measurement object is selected the line and text are semi-transparent. A trash button appears right beside the measured value and the start- and end points are marked.

11.8 Draw a Circle-to-circle-distance measurement:

The Circle-to-circle-distance measurement is a 2-point measurement which enables to measure distances of two circle centers.
It is a combination of *Circle* measurement and *Distance* line.



To perform 2 or more crircles must be drawn before. Afterwards the Circle-to-circle-distance measurement can be used.

By click into the center position of a circle the start position will be connected to the center position automatically. Draw the distance line to the next circle center and release the mouse. Afterwards the end point automatically connects to the second circle center and the distance value will be displayed in between of both circles. Drawing of line is identical to the normal *line distance* measurement.

Note: Circle-to-circle-distance does not automatically re-connect to center position by change of position from Circle afterwards! Manual adjustment is not possible for Circle-to-circle-distance.

11.9 Draw a radius & diameter (circle) measurement:

The circle measurement is a 3-point-measurement which enables to measure circle which are bigger as the field of view of camera / image.

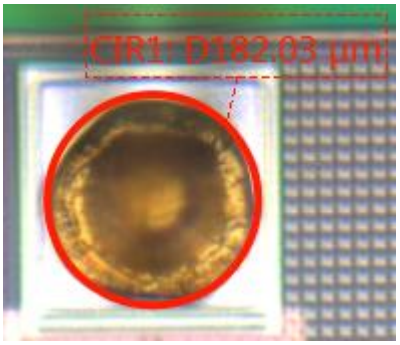
To draw an object start with left mouse-click on **first point** and release. The start point is marked.

Move the mouse away and a colored semi-transparent line is drawn from the start point to the current mouse position (refreshed as long as the mouse is inside the image window)

Go to the **second point** and make left mouse-click and release.

Move the mouse away and a colored semi-transparent circle is drawn instead of line from the first two points to the current mouse position. Additionally the currently measured value is displayed near the start point.

Go to the **end point (3rd)** and make left mouse-click again and release. The measured value is written near the starting point (including an auxiliary line) and will be shown the default unit automatically.



As long as the measurement object is selected the circle and text are semi-transparent. A trash button appears right beside the measured value and the start- and end points are marked.

Note: The measured value can be displayed as diameter or radius (marked by a “D” or “R”). Before the measurement will be done the user has to make the proper choice.

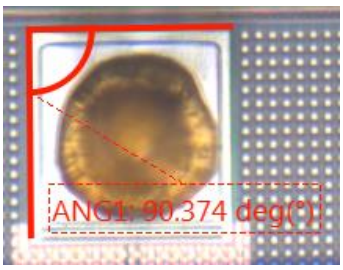
11.10 Draw an angle measurement:

The angle measurement is a 4-point-measurement which enables to measure angle which are bigger as the field of view of camera / image.

To draw an object start with left mouse-click on **first point** and release. The start point is marked.
Move the mouse away and a dashed auxiliary line is drawn from the start point to the current mouse position (refreshed as long as the mouse is inside the image window).

Go to the **second point** and make left mouse-click and release. The first dashed auxiliary line is drawn.

Go to the **3rd point** and make left mouse-click and release. A second dashed auxiliary line is drawn from this point to the current mouse position (refreshed as long as the mouse is inside of image window).



Go to the **end point (4th)** and make left mouse-click again and release. The dashed auxiliary lines becomes continuous line. The measured value is written near the angular point (including an auxiliary line).

As long as the measurement object is selected the angle and measurement value are semi-transparent. A trash button appears right beside the measured value and the start- and end points are marked.

11.11 Object selection:

Every object can be selected as the current one at live and captured images before image is recorded / saved with measurement overlay. The current object is displayed as semi-transparent and decorated with the trash icon. Most objects (except freeform & Free-hand-line object) when selected as the current one, also display grey, square control points which are used to modify the geometry of the object.

An object can be selected as the current one, by clicking it with the pointer tool - 'arrow' button on the main window's top bar. But when an active tool is other than the pointer tool (e.g. circle drawing tool), this requires switching the active tool off and switching the pointer tool on. To make it more convenient, the pointer tool can be temporarily activated by pressing the **"ctrl / cmd"** key. As long as the key is pressed, the pointer tool is active. When **"ctrl / cmd"** is released, the previously active tool activates again.

The current object can be moved and reshaped (except freeform & Free-hand-line object) using the pointer tool. When the annotation or measurement GUI widget is visible on the tool bar, the properties of the current object (colour, line width, etc.) are set in the widget.

11.12 Object multi-selection:

By marking a rectangular area with the pointer tool at the image window, one can also select more than one object. Multi-selected objects are also displayed as semi-transparent, but without their trash buttons. A multi-selection trash will be displayed in center of the selected objects to delete all. Pressing "**del**" key remove all selected objects.

Multi-selection can be also created, extended or modified by clicking on objects with the pointer tool while "**shift**" key is pressed. Objects selected can be moved together as well.

11.13 Deleting objects:

The current object can be deleted by clicking its trash icon  , or pressing "del" key. Objects selected can be deleted together by pressing "del" key.

11.14 Changing object properties:

Object's properties can be modified using controls on the tool widget appropriate for the object. I.e. annotation objects (arrow, text) can have their properties modified using annotation tool widget and measurement objects - measurement tool widget. The properties of the current object are visible in the widget and can be modified. When more than one object is selected (multi-selection), some common properties (like: color or line width) for all selected objects can be modified.

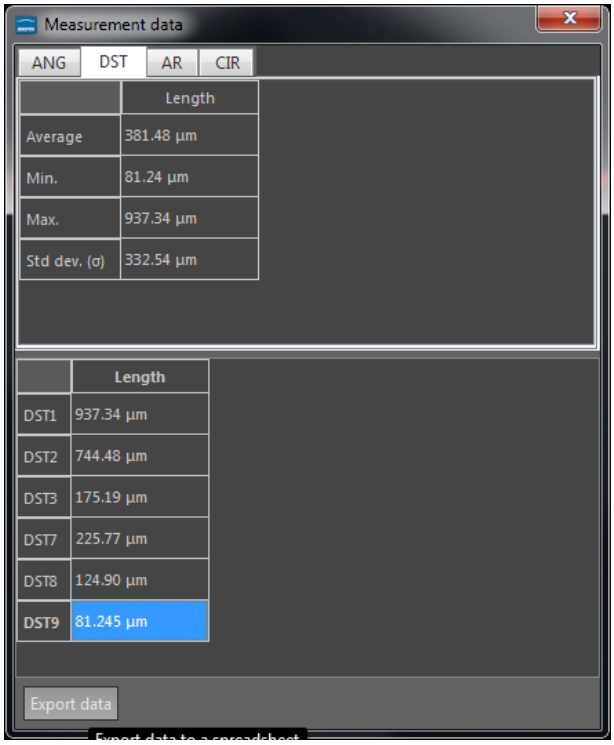
Note: If a tool widget is closed, double-click on an object makes the object current and opens the appropriate tool widget at the toolbar.

Export Measurements:

With "Report tool" of JENOPTIK GRYPHAX software, you can review measurement values, measurement statistics or export all measurement data from live or recorded images into file.

The "Measurement data" table of *Report Tool* contains the following statistics:
Average value, minimum value, maximum value and standard deviation (σ) according to measurement type.

To export measurements objects open Report tool and activate the "Measurement data" table .
Press button *"Export data"* to save all measurements data into *.xml file.



Note: All functions and possibilities of *Report Tool* are described separately on Report tool section at manual.

Limitations:

- Measurement and Annotation are not available during time-lapse, video record, Z-stacking, Panorama or Fluorescence mode.
- No measurement available for images captured without measurement calibration data.

Video tutorial:

Press the link to watch the video tutorial for measurement tool of JENOPTIK GRYPHAX software.

Scale bar tool of JENOPTIK GRYPHAX® software

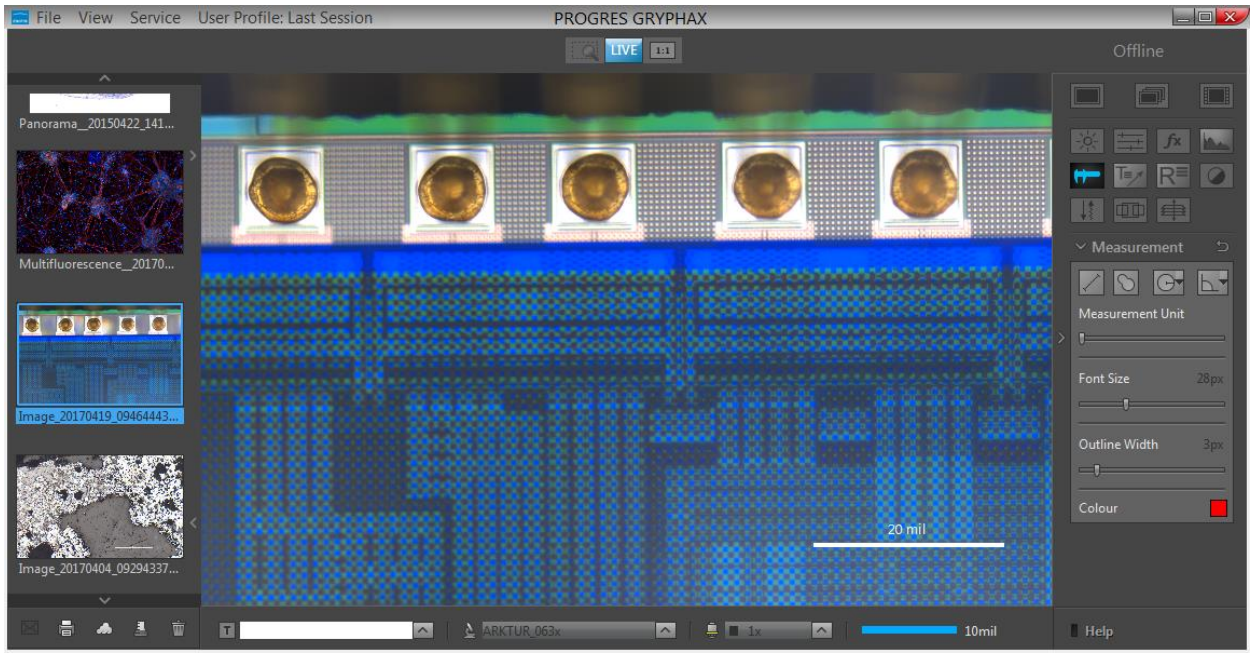
The "Scale bar tool" of JENOPTIK GRYPHAX software enables user to place scale bar directly at the live preview or at loaded images from Gallery.

General description:

The "Scale bar tool" is part of the JENOPTIK GRYPHAX software. It is available for calibrated cameras and images from Gallery. It contains a moveable / adjustable scale bar, which can directly be overlaid at the live preview or at loaded image from Gallery. Additionally option to add a status bar with scale fitted to the bottom of recorded images as well.

Overview:

Scale bar placed by mouse drag & drop to loaded image from Gallery.



12.1 Preparations general:

To use *Scale bar* tool you have to calibrate your microscope objectives in advance! Otherwise, the *Scale bar* tool cannot be activated and used. To create measurement calibration you have to open software Preferences and navigate to option "Device Configuration".

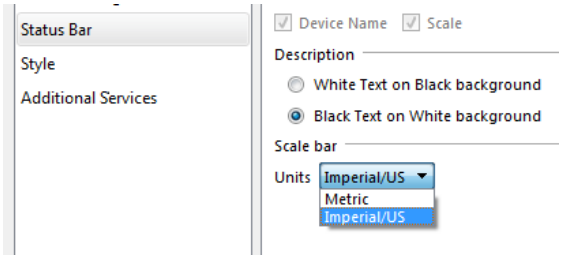
To calibrate the microscope you can use the JENOPTIK GRYPHAX® calibration slide / stage micrometer (order number: 648806).

Press the link to watch the video tutorial how to calibrate the microscope objectives.

After successfully objective calibration the objectives will be added to the magnification list at the status bar at software GUI. And the according scale bar will be displayed with best fitting value and unit depending on software window size.

12.2 Select unit type and color:

To select preferred **unit type** and **size** for font and thickness you have to open software Preferences and navigate to section: "Scale bar". (Available as of V1.1.10 or newer)

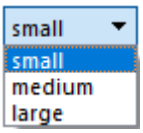


By dropdown menu, you can choose unit type between the two options:

- **Metric** units
- **Imperial** / **US** units

By dropdown menu, you can choose font size and thickness by the following options:

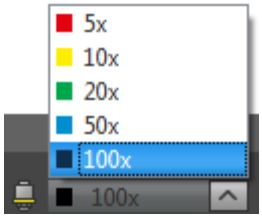
- **small** size (default value)
- **medium** size
- **large** size



The color of scale bar can be predefined and is connected according the color of "Status Bar".
It can be changed between "black" or "white".

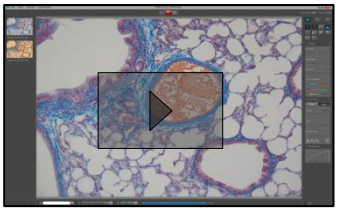
12.3 Activate scale bar:

To activate the *scale bar* from status bar select the **correct** "Device" and previously calibrated "Magnification / Objective" according your current objective from microscope before place of scale bar to the image.



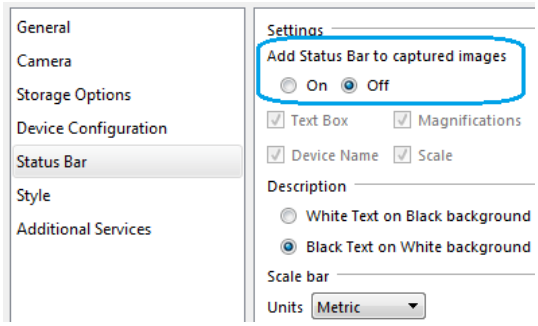
Alternately, choose correct Magnification / Lens by **Objective** button of calibrated objectives to quick-change objectives by mouse click at GUI. Scale bar and Status bar will change accordingly.

12.4 Place scale into image:



The "Scale" from status bar can be placed by drag & drop via mouse into the image on any desired position.

Press the link to watch the video tutorial how to drag & drop scale bar from status bar.



Alternatively, the feature: "Add Status bar to captured images" can be activated. A complete status bar will be added at the bottom of recorded images.

Check box* St. bar on status bar to quick enable / disable status bar added to recorded images.
This option is synchronized to software preferences settings. (*as of V2.2.0 or newer)

The following information can be add to status bar of recorded images:
Text | Device | Magnification | Scale bar

Note: Scale bar is enabled only if live image is activated before. Or a recorded image which were captured with calibration information is opened from Gallery. Images captured without measurement calibration cannot display scale bar at the status bar. A warning No Device Calibrated will be displayed instead.

12.5 Modify scale bar:

After drag and drop, scale can be modified by length and position at the image. Measurement unit is fixed and automatically adapt to the length and cannot change by user. Fond size and style is fixed.

12.6 Delete scale bar:

Scale can be deleted by clicking its trash icon , or by pressing "Del" key after selection by mouse click.

12.7 Save scale to live:

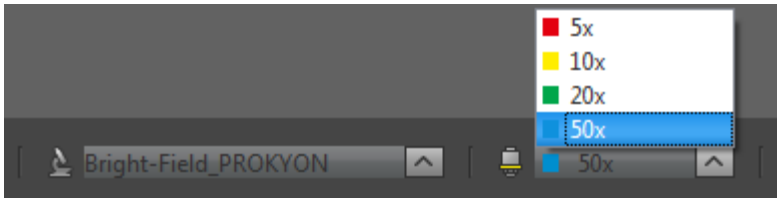
The scale on the **preview image** will be merged into the recorded image by pressing "REC" REC button. It cannot be modified afterwards on recorded images.

12.8 Save scale to recorded images:

To save a drag & drop scale at loaded **recorded images** from Gallery, start live preview 

or load another image from Gallery.
An **image copy** with merged scale will be always saved automatically by software with a file name extension: "_copy_1" and increment the image copy number accordingly.

Attention: Take care that the correct "device" and "magnification / objective" is selected from *Status bar* **before** start with save of scale. Otherwise, the displayed scale is not correct!



Limitations:

- Drag & drop scale bar is not available during time-lapse, video record, Z-stacking, Panorama or Fluorescence mode.
- No scale available for images captured without measurement calibration data.

Annotations Tool of JENOPTIK GRYPHAX® software

The "Annotations tool" of JENOPTIK GRYPHAX software enables user to highlight and comment important areas at images directly at live preview image or at recorded images from Gallery.

General description:

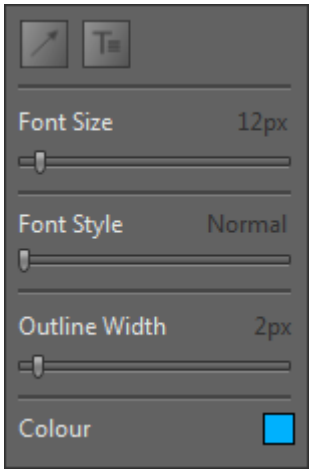
The "Annotations tool" is part of the JENOPTIK GRYPHAX software. It contains arrow and text tool to highlight and comment important areas at images directly at live preview or at recorded images from Gallery afterwards.

Text tool and arrows applied on loaded z-stack image from Gallery:

13.1 Start Annotations tool:

To activate the Annotations tool open the software tool bar by pressing the arrow on right-hand software site or use keyboard short cut (**ctrl / cmd + T**)

Click to the Annotations icon at the tool bar, the Annotations widget will be displayed and contains the following tools and options:



- **Arrow tool** – to add arrows to highlight important locations at images
- **Text tool** – to add comments directly at images

- **Font Size** – by value 8 – 72px
- **Font Style** – by option Normal, Bolt, Italic or Bold + Italic
- **Outline Width** – by value 1 – 20px
- **Colour** can be selected by colour selector, click on colour rectangle to open colour selector

Note: Annotations tool is available only if record mode "**Single shot**" is active and live image is activated before. Or a recorded image is opened from Gallery. No support for Time-lapse preview or video files.

Reset button on a tool sets all properties to their initial values. Initial values are fixed.

13.2 Pre-define settings:

When no object is current or selected, the tool widgets show default properties. In this state default properties can be modified. They are stored in settings/profiles.

To predefine the general settings of Annotations tool e.g. font size, outline width or colour by change of the according parameter without selecting any Annotations method.

The settings for each drawing object can be individual adjusted after start of drawing or by selecting a drawn object from image window.

13.3 Start & save drawings:

To start drawing select record mode "Single shot" and **start live** by pressing the "Live"-button LIVE or open a **recorded image** from Gallery.

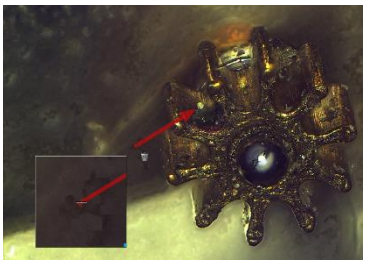
By pressing "Rec" REC button all previously drawn annotations from **live preview** will be merge into the image and cannot be modified afterwards.

To save drawn annotations at loaded **recorded images** from Gallery, start live preview LIVE or load another image from Gallery. An **image copy** will be always saved automatically by software with a file name extension: "_copy_1" and increment the image copy number accordingly.

13.4 Creation (drawing) of objects:

In general, after clicking one of the annotations method buttons  (Arrow or Text), the cursor changes and user can draw an annotation object of the type selected.

Additionally, a small floating pane is opened as image window overlay and shows a detailed view of a selected sector like as the magnifier tool.



Zoom level of magnifier can be adjusted on the used section of "zoom level" under *Preferences / General / Magnifier* (valid as of version 1.1.8)

Pressing "Del" or "Esc" key before finishing an object, aborts the creation and removes unfinished objects.

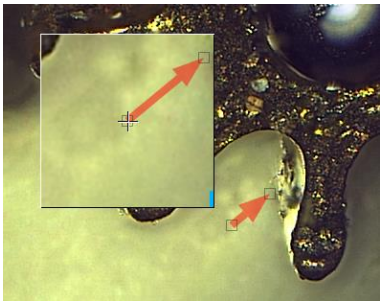
For further details, please see annotations button descriptions below.

13.4.1 Draw an arrow:

The arrow tool  is a 2-point drawing object.

To draw an object start with left mouse-click on first point and release. The start point is marked.

Move the mouse away and a colored semi-transparent arrow is drawn from the start point to the current mouse position (refreshed as long as the mouse is inside the image window).



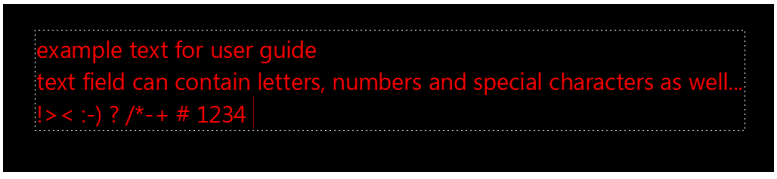
Go to the end point and make left mouse-click and release.

As long as the annotation object is selected the arrow is semi-transparent. A trash button appears right beside the end point. The start- and end points are marked.

13.4.2 Draw a text field:

To draw a text  object click with left mouse-click on point of interest and release. The text field is applied and ready to fill in with text. The size of field will be adapt automatically according the insert text.

As long as the text object is selected the text are semi-transparent and a rectangle border is visible. A trash button appears right beside the start point.



By click again into the image, a new text object will be added to the image.

Note: Text objects can contain letters, numbers and special characters as well.

13.5 Object selection:

Every object can be selected as the **current one** at live and captured images before image is recorded / saved with annotations overlay. The current object is displayed as semi-transparent and decorated with the trash icon. Most objects (except text object) when selected as the current one, also display grey, square control points which are used to modify the geometry of the object.

An object can be selected as the current one, by clicking it with the pointer tool - 'arrow' button on the main window's top bar. But when an active tool is other than the pointer tool (e.g. text tool), this requires switching the active tool off and switching the pointer tool on. To make it more convenient, the pointer tool can be temporarily activated by pressing the **"ctrl / cmd"** key. As long as the key is pressed, the pointer tool is active. When **"ctrl / cmd"** is released, the previously active tool activates again.

The current object can be moved and reshaped (text object only moved) using the pointer tool. When the annotation GUI widget is visible on the tool bar, the properties of the current object (colour, line width, etc.) are set in the widget. Note: For Arrow object only start point can be modified.

By double-click at text object the content can be modified as long as the object isn't merged to the image.

13.5.1 Object multi-selection:

By marking a rectangular area with the pointer tool at the image window, one can also select more than one object. Multi-selected objects are also displayed as semi-transparent, but without their trash buttons. A multi-selection trash will be displayed in center of the selected objects to delete all. Pressing "**del**" key remove all selected objects.
Multi-selection can be also created, extended or modified by clicking on objects with the pointer tool while "**shift**" key is pressed. Objects selected can be moved together as well.

13.6 Deleting objects:

The current object can be deleted by clicking its trash icon, or pressing "del" key. Objects selected can be deleted together by pressing "del" key.

13.7 Changing objects properties:

Object's properties can be modified using controls on the tool widget appropriate for the object. I.e. annotation objects (arrow, text) can have their properties modified using annotation tool widget. The properties of the current object are visible in the widget and can be modified. When more than one object is selected (multi-selection), some common properties (like color or line width) for all selected objects can be modified.

Note: If a tool widget is closed, double-click on an object makes the object current and opens the appropriate tool widget at the toolbar.

Limitations:

- Annotations are not available during record of time-lapse, video, Z-stacking, Panorama or Fluorescence mode.
- Annotation tool is active only if record mode “Single shot” is selected and live image is activated before. Or a recorded image is opened from Gallery. No support for Time-lapse preview or video files.

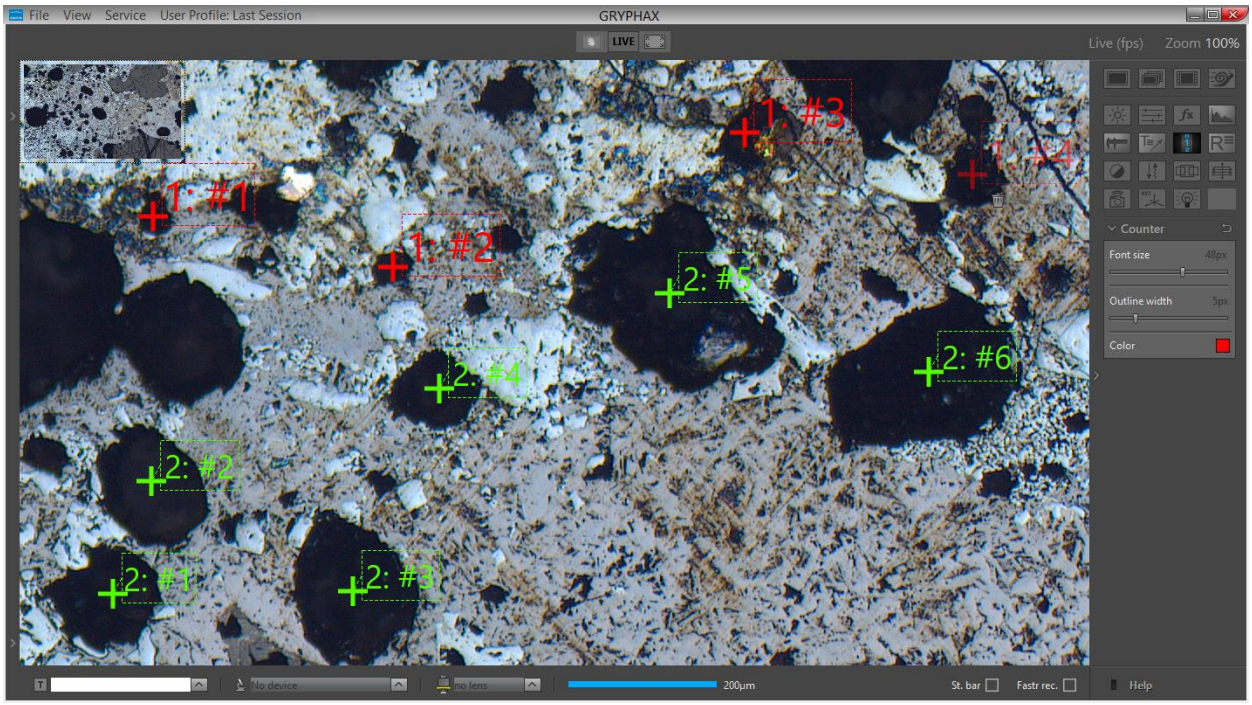
User Guide for Counter tool of JENOPTIK GRYPHAX® software

General description:

The GRYPHAX Counter Tool enables users to count important items directly at live preview or at images loaded from gallery. In Addition, the counting statistics can by analyzed and exported by Report tool.

Overview:

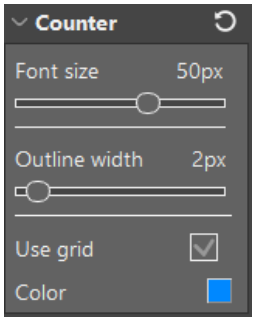
Multiple Counting objects on loaded Panorama image from Gallery:



Start Counter tool:

To activate the *Counter tool* open the GRYPHAX tool bar by pressing the arrow on right-hand software site or use keyboard short cut (**ctrl / cmd + T**)

Click to the Counter icon at the tool bar, the Counter widget will be displayed and contains the following tools and options:



- **Font Size** – by value 8 – 72px
- **Outline Width** – by value 1 – 20px
- **Use grid** – uses grid to separate counters
- **Colour** can be selected by colour selector, click on colour rectangle to open colour selector

Option "**use grid**" Use grid combines the **Counter tool and Grid view**.
If grid is visible, counters are created and updated per grid cell. The colour of counters change automatically by change the grid cell.

Note: Counter tool is available only if record mode "Single shot" is selected and live image is activated before. Alternatively, a recorded image is opened from Gallery.
No support for Time-lapse preview or video files.

Reset button on a tool sets all properties to their initial values. Initial values are fixed.

Pre-define settings:

When no object is current or selected, the tool widgets show default properties.

To predefine the general settings of Counter tool e.g. font size, outline width or color by change of the according parameter without set Counter to the image window.

The settings for each drawing object can be individual adjusted after start of drawing or by selecting a drawn object from image window.

Start & save drawing:

To start drawing select record mode "Single shot" or **start live** by pressing the "Live"-button LIVE or open a **recorded image** from Gallery.

By pressing "Rec" REC button all previously drawn Counter from **live preview** will be merge into the image and cannot be removed afterwards. In addition, new counts can be added to the existing countings.

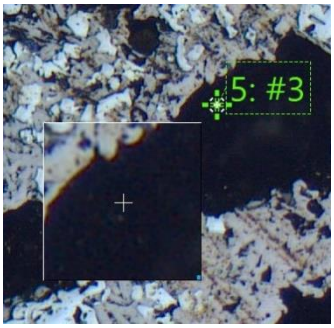
To save drawn counter at loaded **recorded images** from Gallery, start live preview  or load another image from Gallery. An **image copy** will be always saved automatically by software with a file name extension: "_copy_1" and increment the image copy number accordingly.

Creation (drawing) of Counter:

In general, after clicking of the Counter icon from tool bar  , the cursor changes to an crosshair and user can draw an counter object into the image window.

The Counter tool is a 1-point drawing object.

To draw an object with left mouse-click on point of interest and release. A cross will be drawn and the counter label display the number of counting series and the count number e.g. "**Counter1: #1**"
For any further click into the image window, another count with increment number (Counter1: #2, Counter1: #3 …) will be placed.



To draw multiple count series – deactivate the focus / marking of current count by using the **"ctrl / cmd"** key or deactivate the Counter tool.
Click into the image window once and re open Counter tool.
Afterwards, the next counting series can be drawn.

In addition, a small floating pane is opened as image window overlay and shows a detailed view of a selected sector like as the magnifier tool.

Zoom level of magnifier can be adjusted on the used section of "zoom level" under *Preferences / General / Magnifier* (valid as of version 1.1.8)

Pressing "**del**" or "**esc**" key before finishing an object, aborts the creation and removes unfinished objects. With each additional "Del" click, the last counter number of series is marked and can be deleted as well.

To extent existing counting series, select an already drawn counter object. The counting series will be extended by new object with consecutive numbering.

Object selection:

Every object can be selected as the current one at live and captured images before image is recorded / saved with overlay. The current object is displayed as semi-transparent and decorated with the trash icon.

An object can be selected as the current one, by clicking it with the pointer tool - 'arrow' button on the main window's *Record bar*. But when an active tool is other than the pointer tool (e.g. text tool), this requires switching the active tool off and switching the pointer tool on.

To make it more convenient, the Counter tool can be temporarily activated by pressing the **"ctrl / cmd"** key. As long as the key is pressed, the pointer tool is active. When **"ctrl / cmd"** is released, the previously active tool activates again.

The current object can be moved using the pointer tool. When the counter tool widget is visible on the tool bar, the properties of the current object (color, outline width, font size) are set in the widget.

The label of active counts can be moved to different position by mouse operation as well. In case, select a counter in advance the label position can be adjusted by holding **ctrl / cmd"** key pressed and move the label.

Object multi-selection:

By marking a rectangular area with the pointer tool at the image window, one can also select more than one object. Multi-selected objects are also displayed as semi-transparent, but without their trash buttons. A multi-selection trash will be displayed in center of the selected objects to delete all. Pressing "**del**" key remove all selected objects.

Multi-selection can be also created, extended or modified by clicking on objects with the pointer tool while "**shift**" key is pressed. Objects selected can be moved together as well.

Deleting objects:

The current object can be deleted by clicking its trash icon, or pressing "del" key. Objects selected can be deleted together by pressing "del" key.

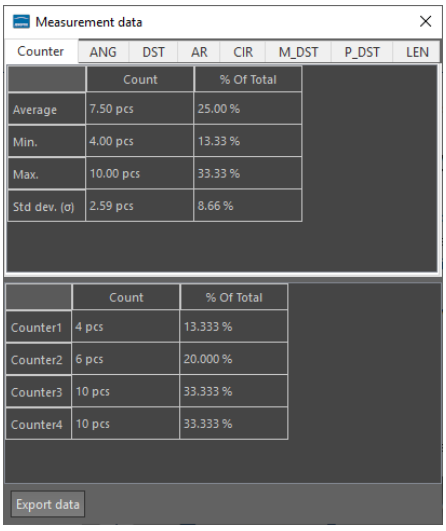
Changing object properties:

Object's properties can be modified using controls on the tool widget appropriate for the object (color, outline width, font size). The properties of the current object are visible in the widget and can be modified. When more than one object is selected (multi-selection), some common properties (like color or line width) for all selected objects can be modified.

Note: If a tool widget is closed, **double-click** on an object makes the object current and opens the appropriate tool widget at the toolbar.

Reporting counters:

To analyze the counters statistics from live preview or recorded images from gallery - start "Report" tool  and activate option "Measurement data table"  .



In addition, the reported data and statistics can be exported. To export measurements data, press button: *"Export data"* to save all measurements data information into *.xml file.

Note: To open exported *.xml file a 3rd party software like MS Excel or comparable is needed.

For detailed information, please see the separate section for Report tool.

Extent existing counting series to gallery images

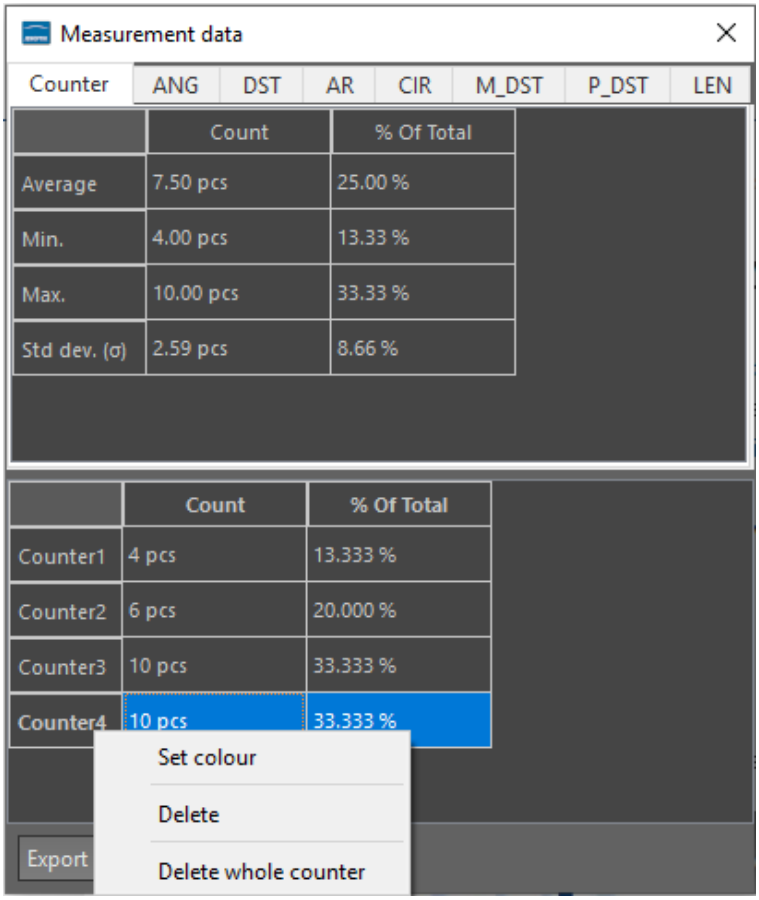
To extent existing counting series, open the image from gallery to display on main image window.

Afterwards, start “Report tool”  from tool bar and activate Measurement data table  .

Select a counting series from Counter list by mouse click to **add** further counters to existing counts from recorded gallery images. The counting series will be extended by new object with consecutive numbering.

Furthermore, a separate menu will appear by right-hand mouse click on counter series to change the colour or to delete the whole counter series from unsaved images.

<u>Note:</u> Merged counter object cannot removed or changed afterwards.



Limitations:

a) Counter are not available during record of time-lapse, video, Z-stacking, Panorama or Fluorescence mode.
b) Counter tool is enabled only if record mode “Single shot” is selected and live image is activated before. Or a recorded image is opened from Gallery. No support for Time-lapse preview or video files.

Stability –
giving you a reliable research tool
you can count on.

Report tool of JENOPTIK GRYPHAX® software

The "Report tool" of JENOPTIK GRYPHAX software enables user to review and export measurement data, software settings and image meta-data directly at JENOPTIK GRYPHAX software.

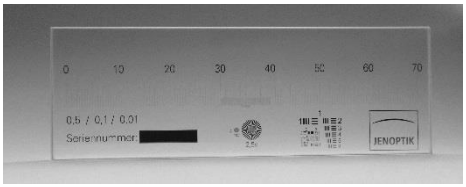
General description:

The "Report tool" is part of the JENOPTIK GRYPHAX software. It enables user to review and export measurement data from live and recorded images, current software settings and media files meta-data directly at JENOPTIK GRYPHAX software.

Preparation:

To use all feature of *Report tool* you have to calibrate your microscope objectives in advance! Otherwise, the *Report tool* cannot be display measurement data information. To create measurement calibration you have to open software Preferences and navigate to option "Device Configuration".

To calibrate the microscope you can use the JENOPTIK GRYPHAX® calibration slide / stage micrometer (order number: 648806).

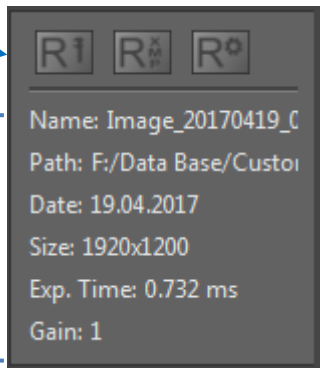


Overview:

Report tool contains the data tables and views for:

- Measurement data table & statistics
- Image meta-data view
- Software settings view

Show image information from selected media file



15.1 Start Report tool:

To activate the *Report tool* open the *Toolbar* by pressing the arrow on right-hand software site or use keyboard short cut (**ctrl / cmd + T**)

Click to the Report icon at the toolbar, the report widget will be opened and contains the following tools and information of live preview or from selected media file from Gallery:

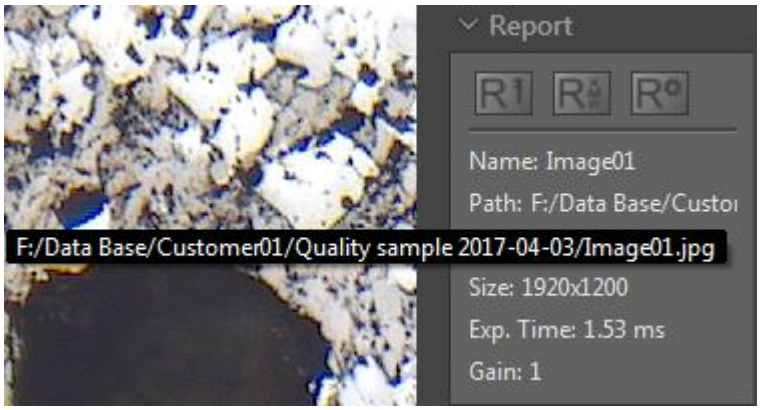
- **Measurement data table** – shows measurement data and statistics for each measurement methods and offers option export as file
- **Image meta-data view** – shows image meta-data information and offers option export as file
- **Software settings view** – shows software settings and offers option export as file

- **Name:** – display media file name of selected media file
- **Path:** – display media file destination folder of selected media file
- **Date:** – display creation date of selected media file
- **Size:** – display media file resolution of selected media file or live preview
- **Exp. Time:** – display used exposure time of selected media file
- **Gain:** – display used Gain value of selected media file

Note: Image size is shown at image information only at report widget, during display of live preview from camera.

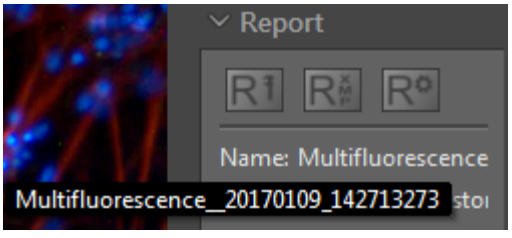
Show destination path:

To display the destination path of saved media files from Gallery without *Tree view tool* you can use the path information of *Report* widget. Hold the mouse pointer over path of Report widget until complete path will be displayed (hover).



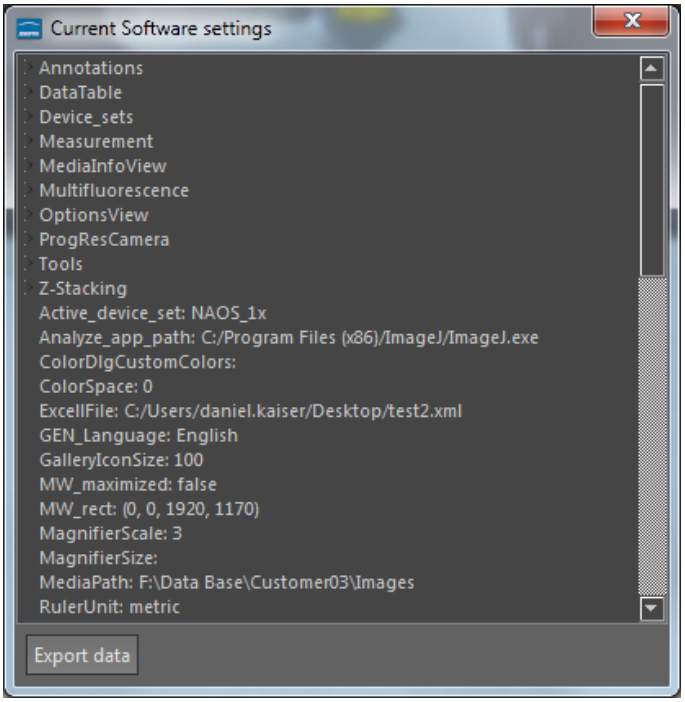
Show name:

To display the complete name of saved media files from Gallery without *Tree view tool* you can use the name information of *Report* widget. Hold the mouse pointer over name of Report widget until complete name will be displayed (hover).



15.2 Software settings view:

All software settings of JENOPTIK GRYPHAX software are stored permanently during software operation. The current software settings can be reviewed und exported by report tool.



To view current software settings of software, open Report tool and activate the Software settings view:

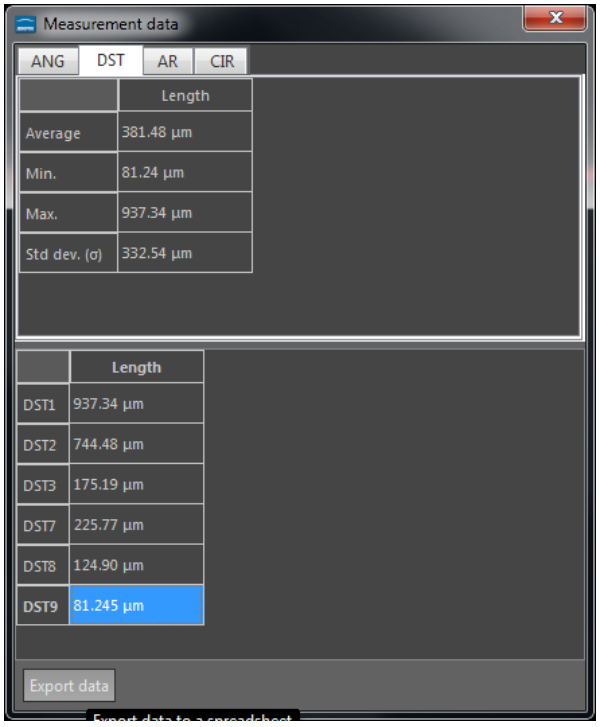
To export software settings, press button: *"Export data"* to save all current software settings into *.txt file.

15.3 Measurement data table:

With *Measurement data table* of Report tool user can review measurement values, measurement statistics or export all measurement data from live or recorded images into file.

The *Measurement data table* contains the following statistics related to selected measurement type:

- **Average** value
- **Minimum** value
- **Maximum** value
- **Standard deviation (σ)**



To view measurements objects, open Report tool and activate the Measurement data table:

To export measurements data, press button: ***"Export data"*** to save all measurements data information into *.**xml file**.

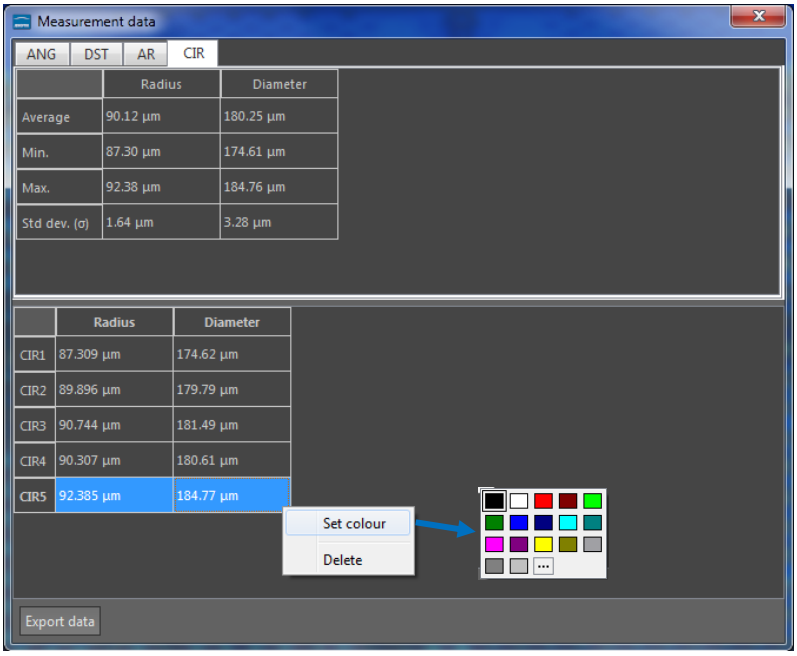
Note: To open exported *.xml file a 3rd party software like MS Excel or comparable is needed.

15.3.1 Select or delete measurements at data table:

As long as the displayed image is not saved by "REC" button. It is possible to select, change color or delete measurements from data table directly.

To select make a left-hand mouse click at the according measurement. The measurement will be marked in blue and displayed semi-transparent at the image window. Also selected measurements from image window will be marked at data table as well.

To change color or delete make a right-hand mouse click. A submenu will be opened.



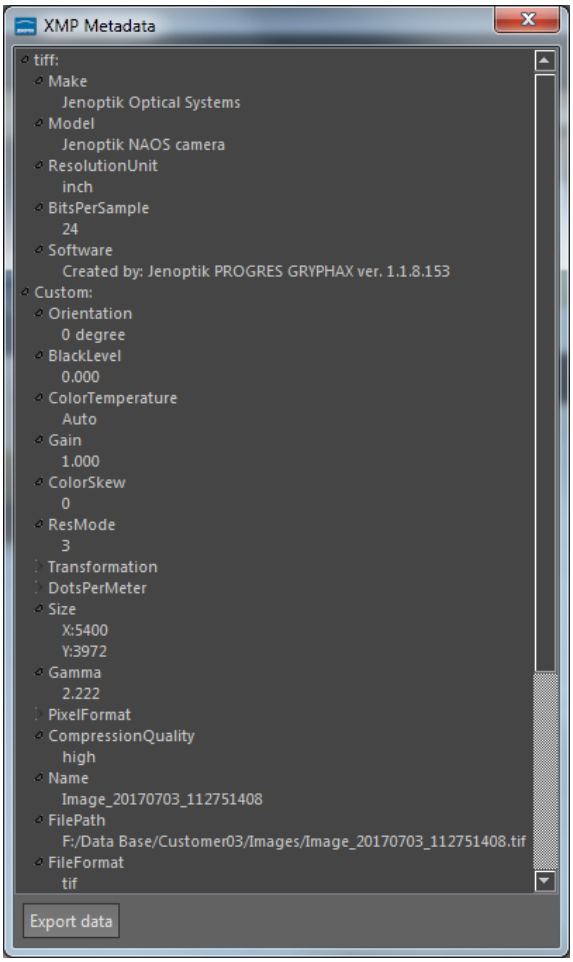
15.4 Image meta-data view:

All files recorded by JENOPTIK GRYPHAX software are saved with meta-data information depending on file format. The meta-data are saved as XMP meta-data and can be reviewed and exported by report tool.

To view meta-data of media files, open Report tool  and activate the Image meta-data view: 

To export image meta-data, press button: *"Export data"* to save all meta-data information into *.xml file.

Note: To open exported *.xml file a 3rd party software like MS Excel or comparable is needed.



Example file:

Example for exported measurement data file opened by MS Excel.

	A	B	C	D	E	F
1	Media file:	F:/Data Base/Customer03/Images/Image_20170419_094644439.jpg				
2						
3	Object name	Radius	Diameter			
4	CIR1	87,309 µm	174,618 µm			
5	CIR2	89,896 µm	179,791 µm			
6	CIR3	90,744 µm	181,488 µm			
7	CIR4	90,307 µm	180,615 µm			
8	CIR5	93,09 µm	186,18 µm			
9						

Limitations:

- Report tool are designed to work with media files created by JENOPTIK GRYPHAX® software only.
- During live preview from camera, image size information is shown at Report widget only.
- No measurement meta-data available for images captured without measurement calibration data.

Ease of use –
giving your work an effortless feel.

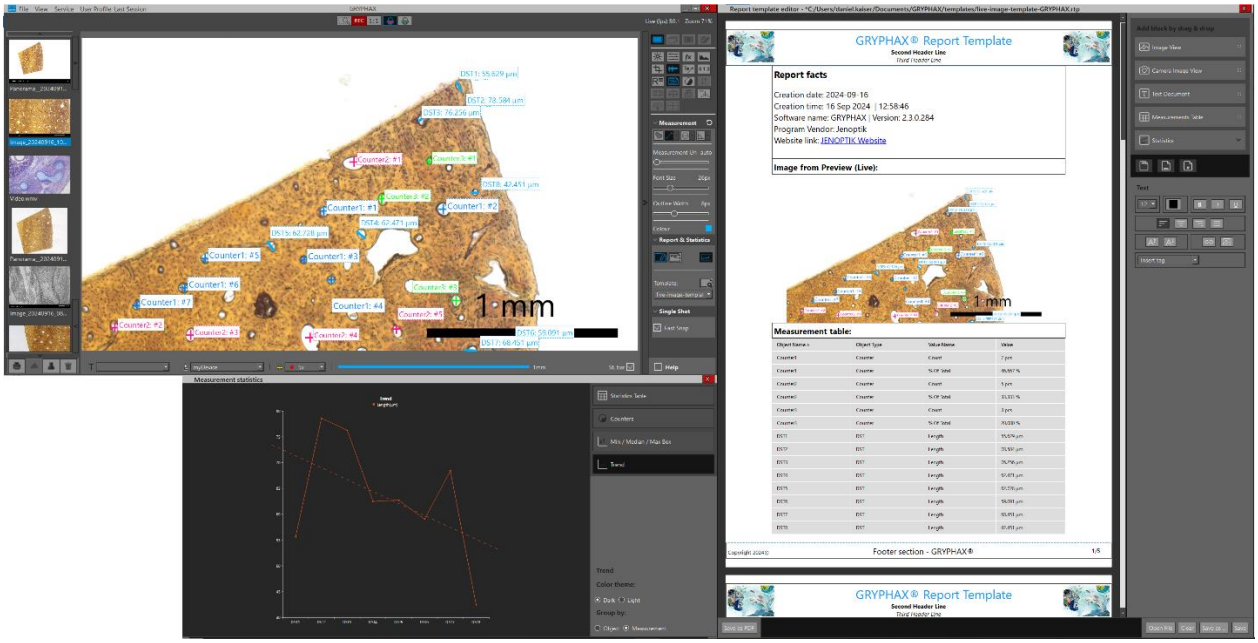
Reporting & Statistics tool of JENOPTIK GRYPHAX® software

General description:

The GRYPHAX Reporting & Statistics Tool* enables users to create reporting documentation based on templates and analyze measurement statistics of images.

Overview:

Report editor and statistics tool activated simultaneously with GRYPHAX software:



Preparations general:

To use the GRYPHAX reporting tool efficiently, user shall **create own reporting templates** for JENOPTIK GRYPHAX application. Two template examples are supplied as blueprints during software installation. File location: "C:\Program Files\Jenoptik\GRYPHAX-V2.3.0.xxx\bin\templates"

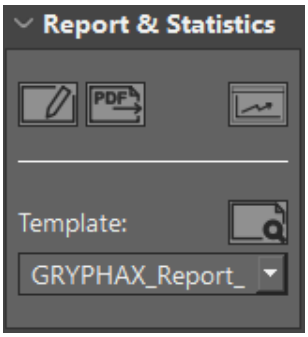
NOTE: **The display of the measured values in tables and the statistical evaluation are limited to the display of the current image from image window of GRYPHAX GUI!**

*(Available as of GRYPHAX V.2.3.0 and newer)

Start Reporting tool:

To activate the *Reporting tool* open the GRYPHAX Tool bar by pressing the arrow on right-hand software site or use keyboard short cut (**ctrl / cmd + T**)

Click on the **Report & Statistics** icon at the tool bar, the widget will be displayed and contains the following tools and options:



- **Template Editor** – to generate or modify reporting templates
- **Save report file as PDF** – export a report from predefined template
- **Opens Statistics window** – to analyze image from image window

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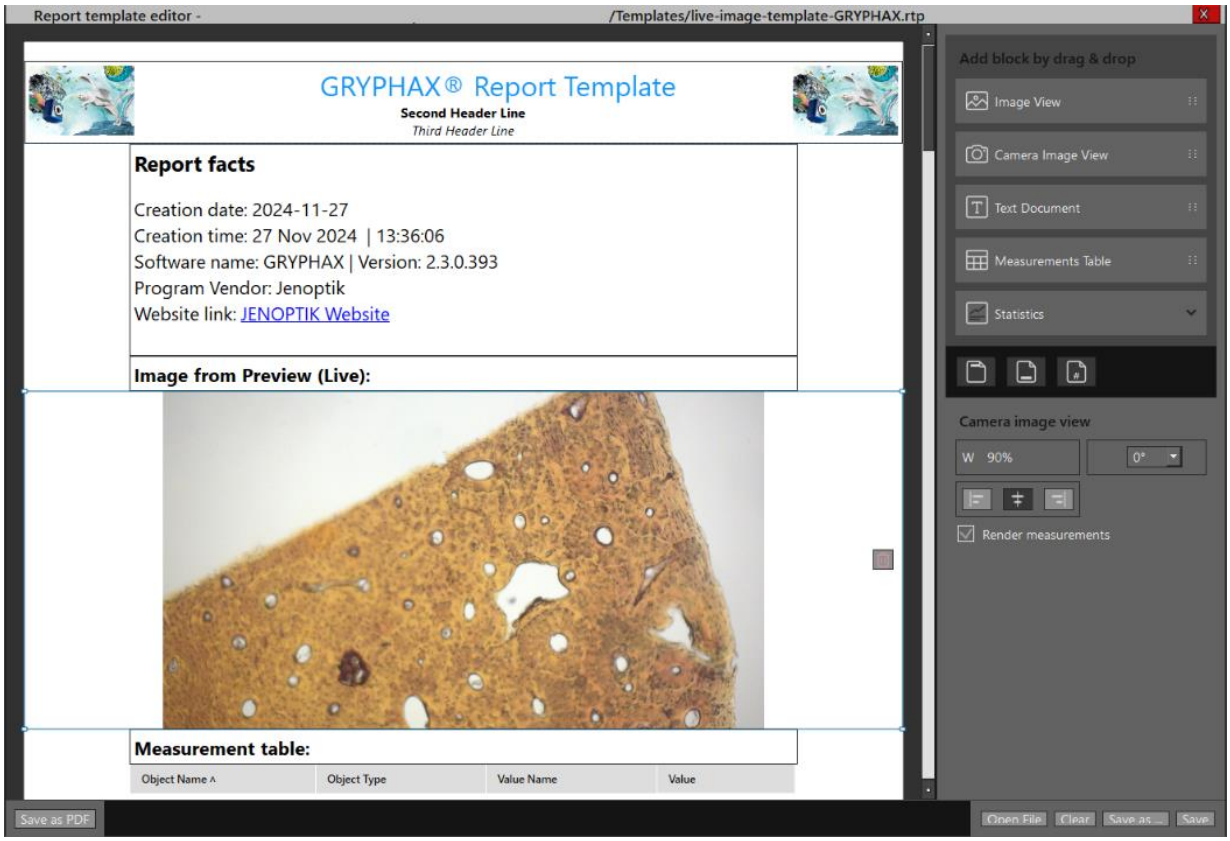
- **Browse template** – to add a template to selection drop down list
- GRYPHAX_Report_ **Template list** – to select active template and show last 5 template files for report export as PDF file

Start generating a report template file:

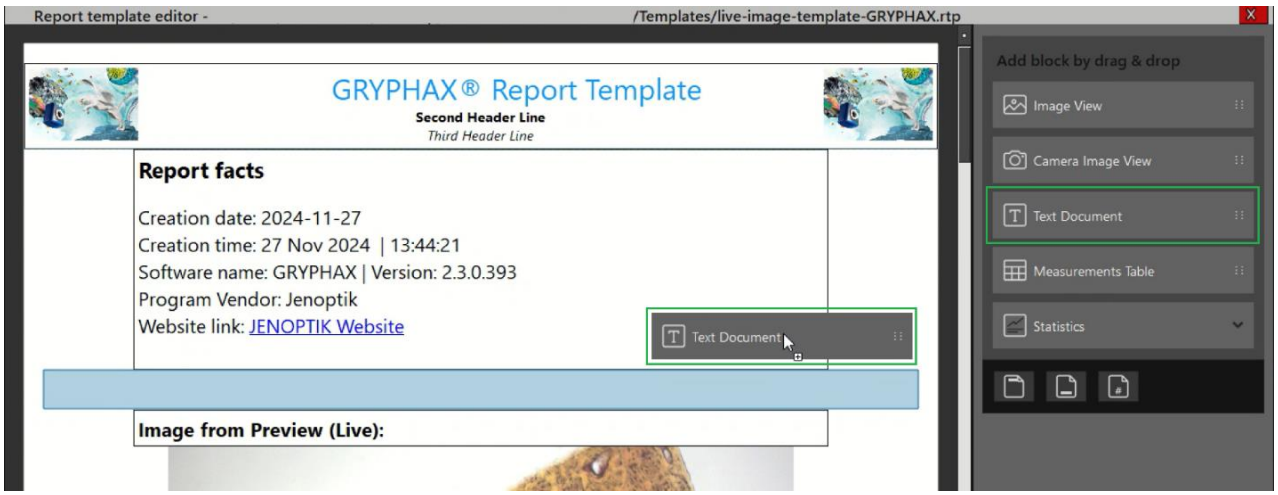
To start click on **template editor icon** . A separate window will open, which can be positioned freely. On left window side, the preview of report template is shown. On right window side, the menu with template tools and option are displayed. The corresponding functions are displayed for the tool used. On the bottom is the menu bar for the open, save and save as PDF file buttons. Here you can load existing template files to modify or re-save a new template. In addition, a live export as PDF is available.



Add a report template tool:

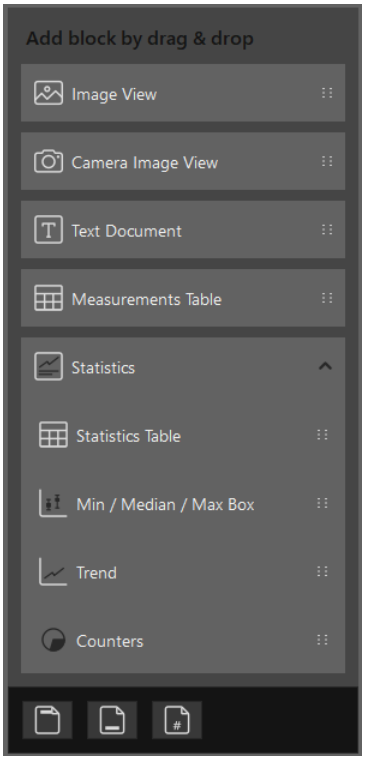
To add a report template tool, user must **drag and drop** the according tool from right tool list into the template preview window at position they want by mouse. The position where to place the new field e.g. text document will be highlighted by a light blue color at template preview. After release the mouse the new field are added on template. It can be modified or filled by user afterwards.

Note: Also, similar template tools can be placed multiple times into the template preview.



Overview about available template tools:

Multiple items can be added to the template preview by drag & drop.



- **Image View** – add a single image field on template to show a gallery image (multiple images can be added to the template)
- **Camera Image View** – to add the live preview from camera into template | any update of preview or overlay will be updated as well
- **Text Document** – to add a text field into template
- **Measurement Table** – to add a table of measurements from the image window for live preview or gallery image

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- **Statistics** – offers a various list of additional statistics tools as graph or table as follows:
  - **Statistics Table** – to list and analyze measurements
  - **Min / Med / Max diagram** – to find the threshold values
  - **Trend diagram** – to display trend line and values graphically
  - **Counter circle diagram** – for graphical analysis of the counters

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- **General options** – to add a page header or footer or page numbering

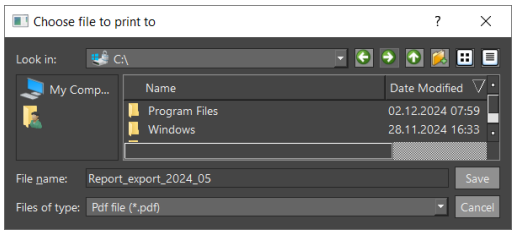
Menu bar:

The following options are available on the menu bar of template editor window:

- **Open File** – to load a "*.rtp" template file into editor to preview, modify or save as PDF file
- **Clear** – to remove all items from template preview window
- **Save as …** – to save current template status as new template
- **Save** – to save current template status as "*.rtp" template file

With the "**Save as PDF**" button 

user can generate and **export a PDF file** from currently shown report template preview as file. The save dialog opens to assign a name and the save location.



Modify of template:

To modify a template, click into the according field on template preview. Afterwards, the field is highlighted by light blue rectangle. The according options will be displayed on tools menu of right window site.

In addition, the position of tools at template preview can by moved by **drag & drop** via mouse, at any time.

Delete of template fields:

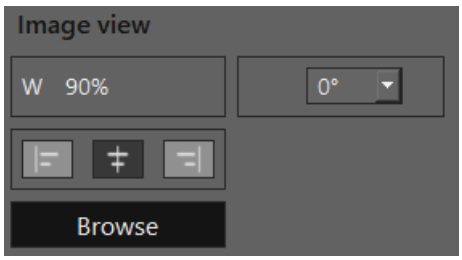
To delete a template item, select the according item field on template preview. The field will be highlighted by light blue rectangle and a small trash icon will be shown. After click on trash icon the whole field and all content will be deleted from template preview.

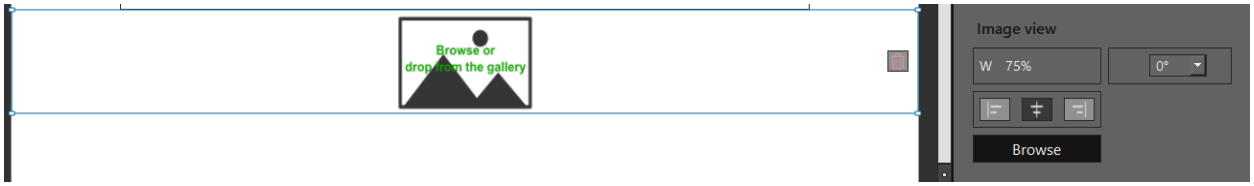
- **Image View options:** 

Option to define image **width** in (%) and **orientation** in (°).

Also, the **alignment** on the template preview can be chosen. With the "**Browse**" button an image can be load from Gallery into image field of template.

Moreover, a **drag and drop** of images from gallery into template image field is possible.



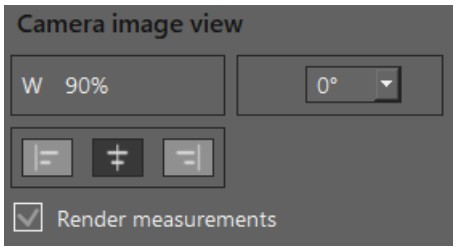


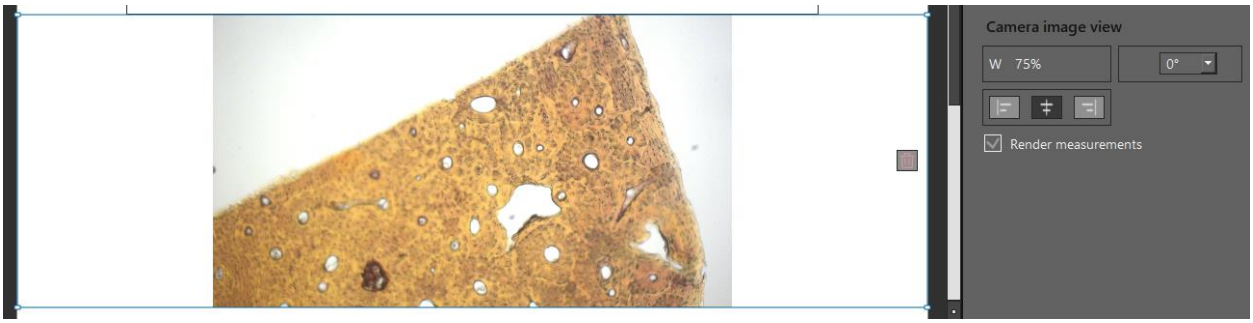
- Camera Image View options: 

Options to define camera preview image **width** in (%) and **orientation** in (°).

Also, the **alignment** on the template can be chosen.

With the "**Render measurements**" checkmark – all overlays from preview will be shown on image from template.





- Text Document options for text field, header, and footer section: 

All text related options are available on tools page after select a text field on template preview.
The properties of text can be changed after selecting text at the text field.

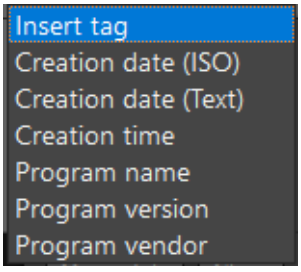
- Text **size** from 6 to 72 

- Text **color** a separate system color selection window will appear 
- Text **appearance** like **bold** | *italic* | underline can be enabled 

- Text **alignment** 
- Add **URL** link  or **image** file 

- Option to **superscript** or **subscript** of text 

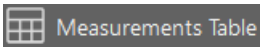
- Add software **tag** – for automatic date and time creation on report file during storing. The following tags can be insert into text field:

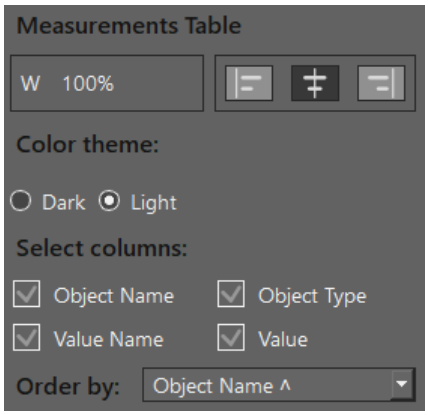


Example for tags at text field:

Report facts

Creation date: 2024-11-28
Creation time: 28 Nov 2024 | 15:28:00
Software name: GRYPHAX | Version: 2.3.0.393
Program Vendor: Jenoptik
Website link: JENOPTIK Website

- Measurement Table options: 

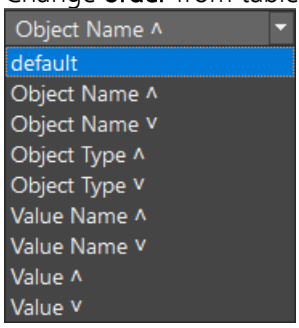


Options to define table **width** in (%) and the **alignment** on the template.

Also, the **color theme** can be changed to dark or light appearance.

Select the **columns** for table by checkmark – all activated columns will be shown on measurement table on template.

Change **order** from table columns at drop down list:

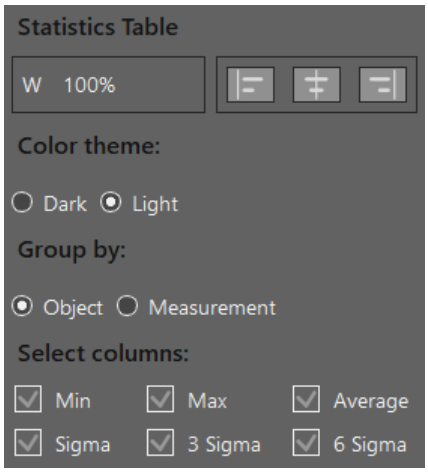


Example for measurement table:

Measurement table:

Object Name ∧	Object Type	Value Name	Value
CIR1	CIR	Radius	46.167 µm
CIR2	CIR	Radius	44.565 µm

- Statistics Table options: 



Options to define table **width** in (%) and the **alignment** on the template.

Also, the **color theme** can be changed to dark or light appearance.

Select the **columns** for table by checkmark – all activated columns will be shown on measurement table on template.

Select **group by** object or measurement by radio buttons.

Example for statistics table:

Statistics table:

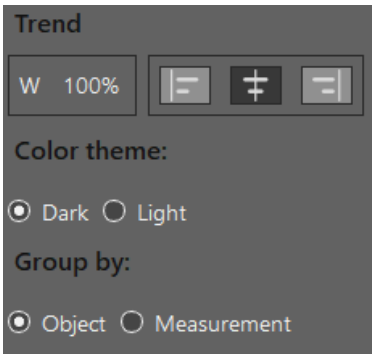
Object Type	Measurement Type	Min	Max	Average	Sigma	3 Sigma	6 Sigma
CIR	Radius	44.565 µm	52.580 µm	48.117 µm	3.059 µm	9.176 µm	18.351 µm
DST	Length	101.01 µm	184.75 µm	139.66 µm	24.495 µm	73.484 µm	146.97 µm

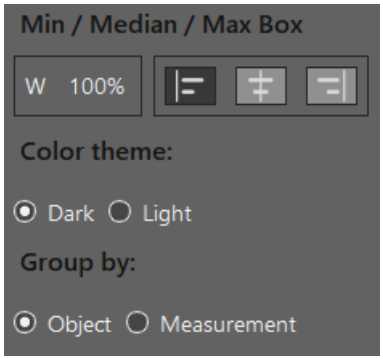
- Diagram options for Trend and Min / Med / Max:

Options to define table **width** in (%) and the **alignment** on the template.

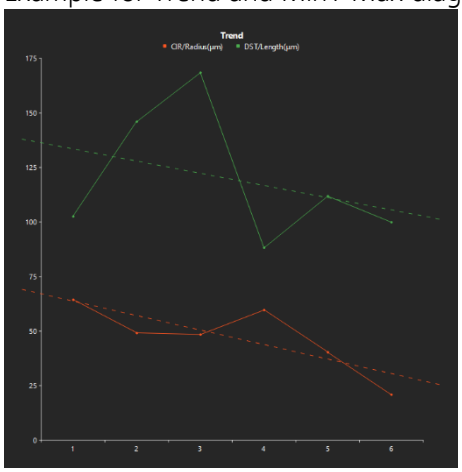
Also, the **color theme** (background of graph) can be changed to dark or light appearance.

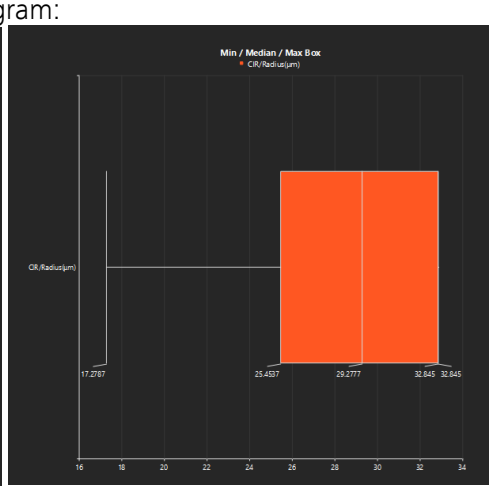
Select **group by** object or measurement by radio buttons.





Example for Trend and Min / Max diagram:

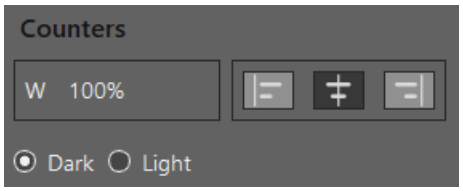




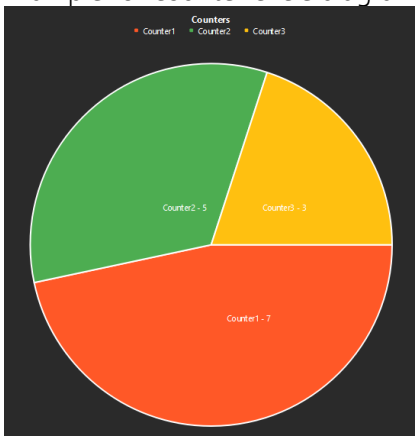
- Counter circle diagram options: 

Options to define table **width** in (%) and the **alignment** on the template preview.

Also, the **color theme** (background) can be changed to dark or light appearance.



Example for counter circle diagram:

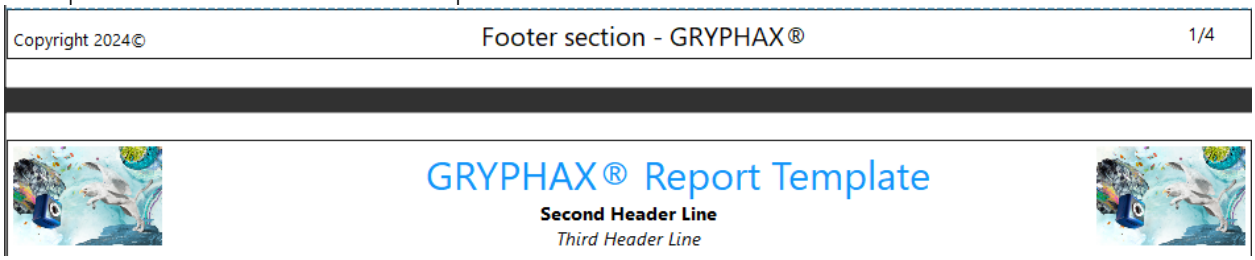


- General options:

Header and **Footer** option can be enabled by corresponding icons  . For detailed text options description, please see the "Text Document" description above.

The **Page Number** can be enabled by page number icon 

Example for header and footer of template:



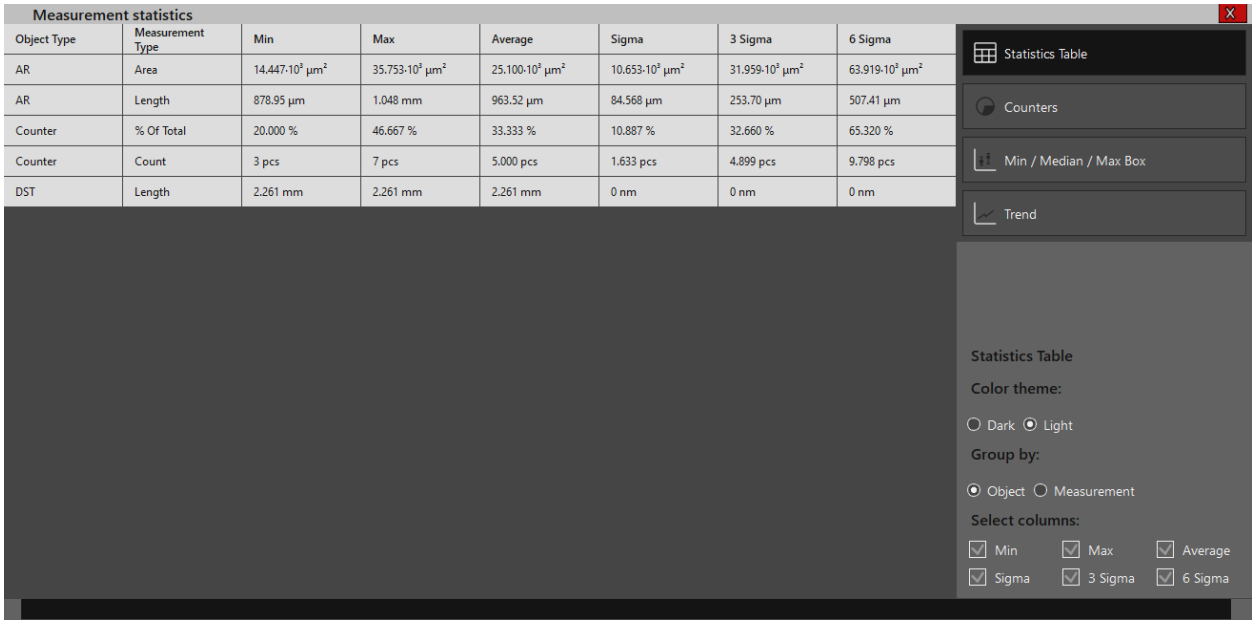
Start statistics tool:

To start click on **statistics icon**  . A separate window will open, which can be positioned freely. On left window side the preview of **statistics table** or **graph** are shown. On right window side the menu with statistics tools and option are displayed. For selected statistics tool corresponding options will be shown. For detailed description for statistics options, please see the template editor section above.

Note: The statistics tools only show the evaluation of the current image from image window of GRYPHAX GUI. It cannot analyze and evaluate multiple images.

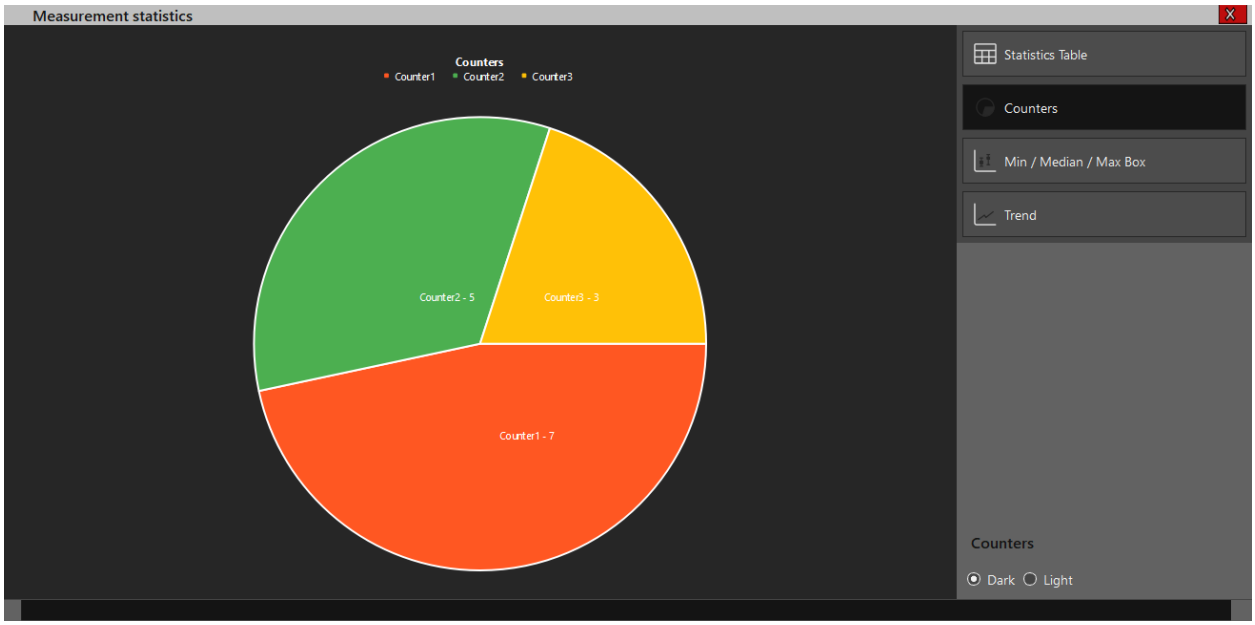
Statistics table:

Shows the measurement statistics as table from current active image in regard to the chosen options. Select the **columns** for table by checkmark – all activated columns will be shown on statistics table.



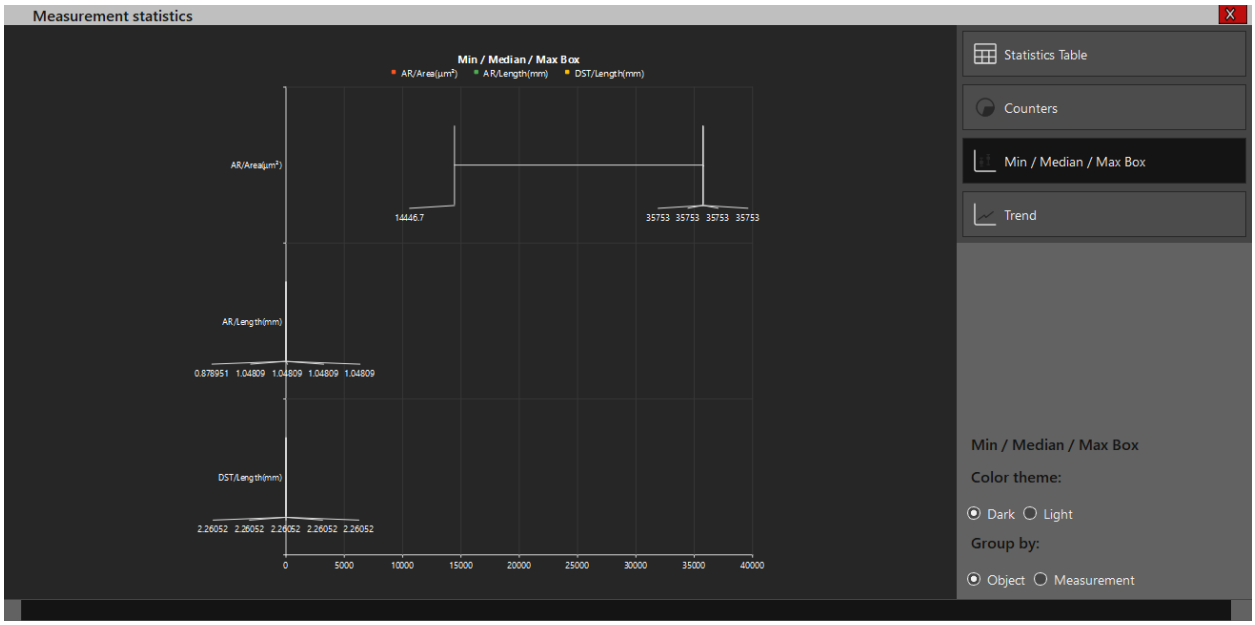
Counter graph:

Shows the circle graph of counters from current active image.
Either live preview results or gallery image measurements can by displayed as graph.



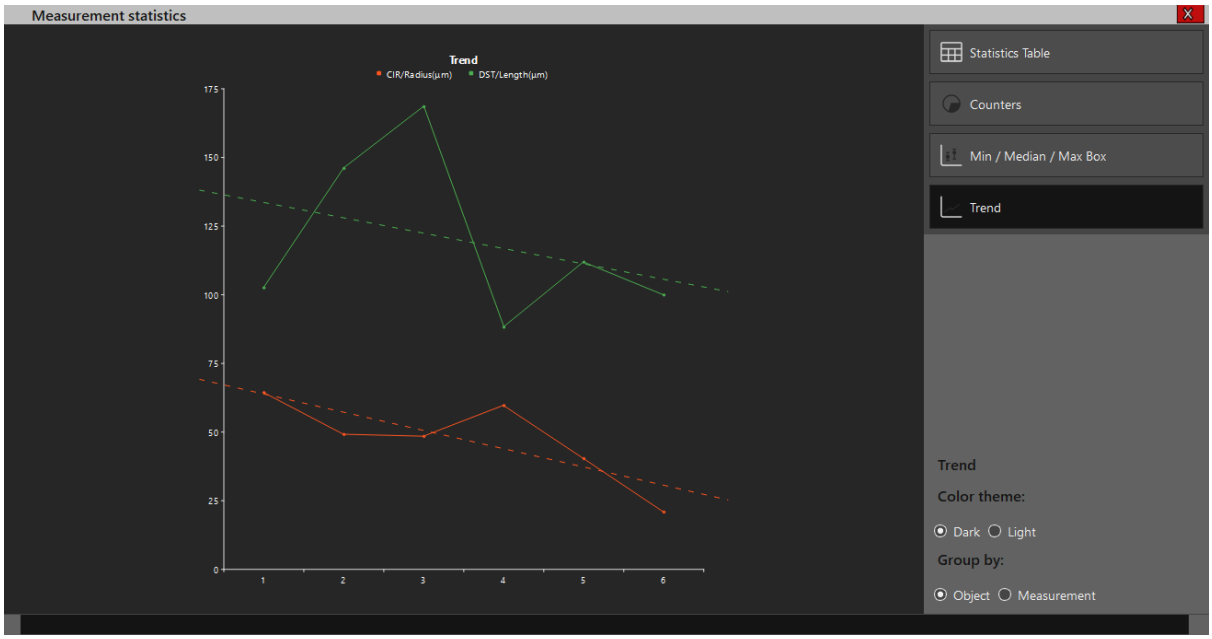
Min / Med / Max graph:

Shows the graph of measurements threshold values according to the chosen option group by.
For different measurement types, threshold and value graphs will be shown as example:



Trend graph:

Shows the trend line and values graphically of measurements according to the chosen option group by. For different measurement types, separate trend line and value graphs will be shown as example:



Limitations:

a) The Template editor window and Statistics window will overlay the GRYPHAX software GUI in foreground.
b) The statistics tool only shows the evaluation of the current image from image window of GRYPHAX GUI. It cannot analyze and evaluate multiple images.
c) On report and template preview the measurement table and statistics tools are limited to the current image from image window of GRYPHAX GUI only. With multiple images the statistics won't show measurement results.

Ease of use –
giving your work an effortless feel.

MonoChrome mode of JENOPTIK GRYPHAX® software

The "MonoChrome mode" of JENOPTIK GRYPHAX software enables user to convert a color image preview from a color camera into a grayscale | monochrome (black & white) image.

General description:

The "MonoChrome mode" is part of the JENOPTIK GRYPHAX software. It is available for all color cameras to become details more visible. This mode provides manipulation to converts a color image to a grayscale or *monochrome* (black & white) image. It is applied for live preview from camera and to recorded images.

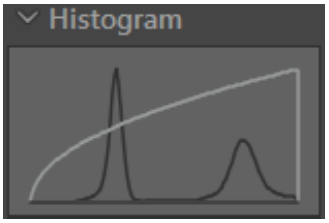
MonoChrome mode applied at live preview from NAOS color camera:

16.1 Start MonoChrome mode:

To activate the *MonoChrome mode* open the tool bar by pressing the arrow on right-hand software site or use keyboard short cut (**ctrl / cmd + T**)

Click to the *MonoChrome* mode icon at the tool bar, the color image preview will be converted into grayscale or monochrome (black & white) image.

Additionally, the Histogram changes to grayscale mode and display image information as monochrome image.



Note: *MonoChrome* mode is enabled only if any record mode like "Single shot" is selected and live image is activated before. It cannot applied to already recorded images from Gallery afterwards.

Start & save converted images:

To start - select record mode e.g. "Single shot" and **start live** by pressing the "Live"-button LIVE.

Press *MonoChrome* mode icon at the tool bar to activate image converting.

By pressing "Rec" REC button concerted color to greyscale image will be saved to pre-selected destination folder and will be visible at software Gallery. Recorded converted images cannot be modified back to color images afterwards.

Note: By using *MonoChrome* mode the images will be saved as single channel greyscale images. The file size is **reduced threefold** depending to selected file format.

16.2 Deactivate MonoChrome mode:

To deactivate *MonoChrome* mode by pressing "*MonoChrome*" button again, colored image preview will be displayed again. Histogram change back to RGB mode to display each color channel separately.

Limitations:

- *MonoChrome* mode is available for color cameras only.
- *MonoChrome* mode is not available during Fluorescence mode session.
- *MonoChrome* mode can be enabled only if record mode "Single shot", "Time-lapse" or "Video" is selected and live image preview is activated before.

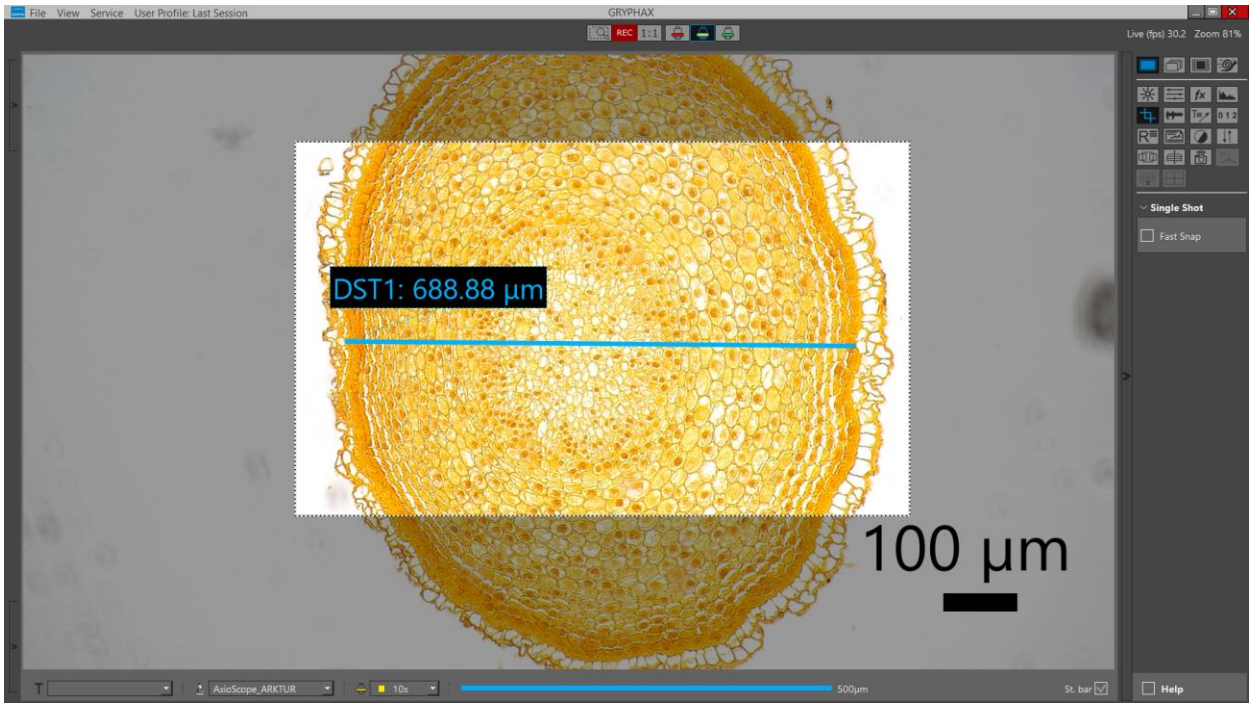
Ease of use –
giving your work an effortless feel.

Cropping tool of JENOPTIK GRYPHAX® software

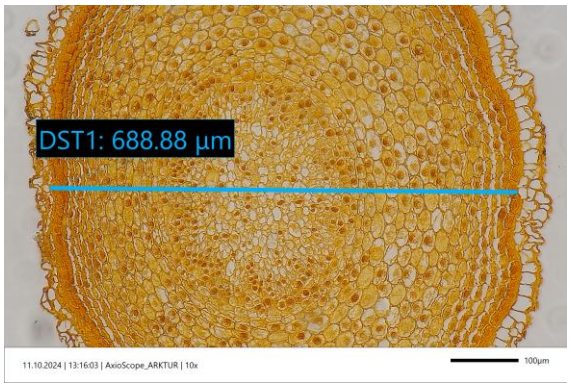
General description:

The "Crop tool" of JENOPTIK GRYPHAX software enables user to capture image ROI (region of interest) directly from live preview and from images from Gallery.

Crop tool applied at live preview from ARKTUR color camera:



Cropped result image from Gallery (with overlay and status bar):



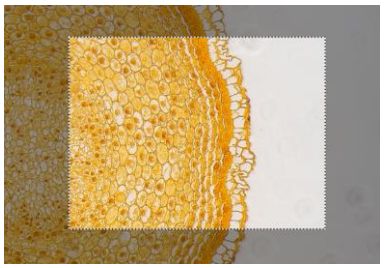
18.1 Start Crop tool:

To activate the *Crop tool* open the tool bar by pressing the arrow on right-hand software site or use keyboard short cut (**ctrl / cmd + T**)

Click to the *Crop tool* mode icon at the tool bar, the last used crop ROI will be restored and overlayed to the image preview.

Additionally, the "active" ROI will be displayed in full brightness the image area outside will be shows semi-transparent to clearly differentiate.

Note: *Crop tool* is enabled for image record only. E.g.: "Single shot" is selected, and live image is activated before.



Start & save cropped images:

To start - select record mode e.g. "Single shot" and **start live** by pressing the "Live"-button LIVE.

Press *Crop tool* icon at the tool bar to activate cropped image preview.

By pressing "Rec" REC button an image with defined crop ROI will be saved to pre-selected destination folder and will be visible at software Gallery.

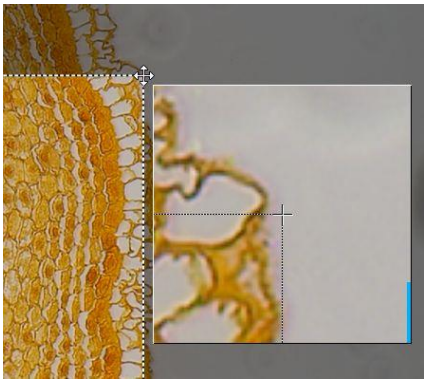
Adjust crop ROI:

To modify the ROI of crop – move the crop area by mouse on image window.

Also, the **size** can be modified by click in the ROI border by mouse and change **position** on image window.

The position and size of crop ROI will be saved, restored, and applied after image record on the live preview as long as the crop tool is active.

All active overlays, like measurements, scale or grid, which are inside of crop ROI on preview image will be saved to recorded image as well.



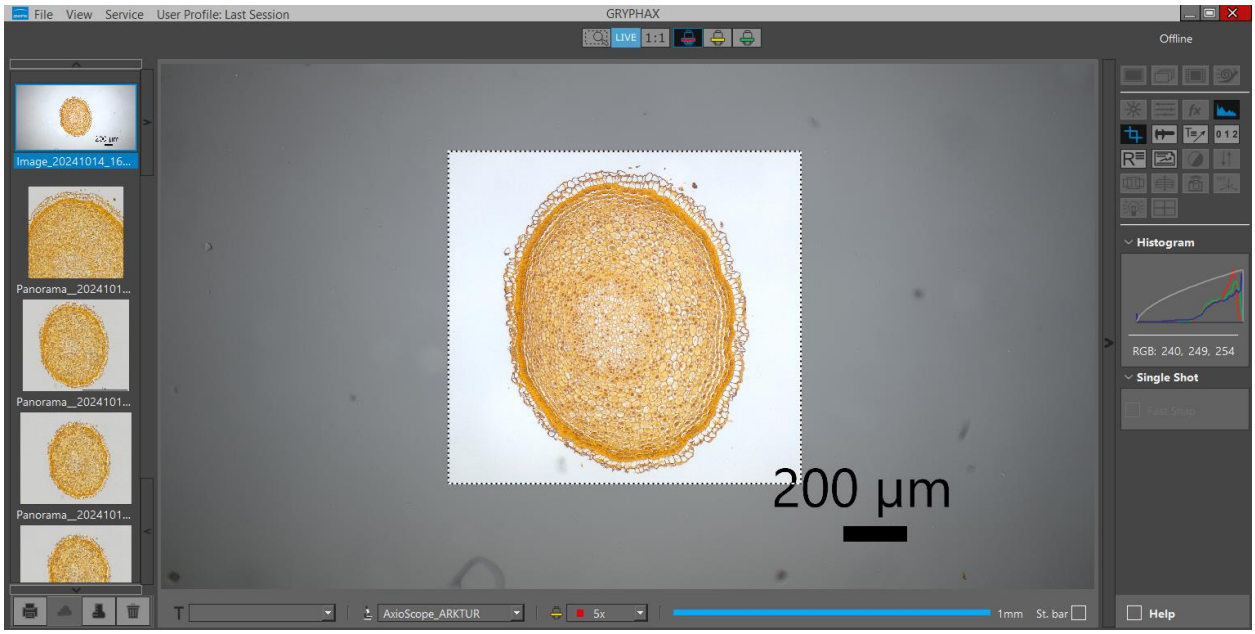
Note: The minimal size for ROI is limited by 640 x 480 pixels Size: 640x480. It depends on the settings of resolution for image record.

Use crop for Gallery images:

To apply crop to gallery images, open the corresponding image from the software gallery. After the image is displayed in the image window, the cropping tool can be used similar to the live preview.

To save a cropped image press the "Live" button on rec bar or open another image preview from gallery image. In both scenarios an image copy with the crop ROI will be saved to the gallery.

Crop tool applied on gallery image:



18.2 Deactivate Crop tool:

To deactivate *Crop tool* by pressing "Crop" button  again, full image preview will be displayed again.

Limitations:

- *Crop* tool is available for image record only. Not available for video files.
- *Crop* tool not applicable for stacked panorama images.
- *Crop* ROI is limited by minimum image size of 640 x 480 pixels.

Multi-Fluorescence tool of JENOPTIK GRYPHAX® software

The "Multi-Fluorescence tool" of JENOPTIK GRYPHAX software enables user to create single or multi-color fluorescence images. Also you can merge RGB and colored fluorescence images easily.

Note: The *Multi-Fluorescence* tool is available for both monochrome and color cameras. Color cameras will be automatically set to the monochrome mode when this function is activated.

19.1 Preparations general:

Important note: All camera image parameter (e. g. capture resolution and storage format) should be set in advance before you start with *Multi-Fluorescence* image tool.

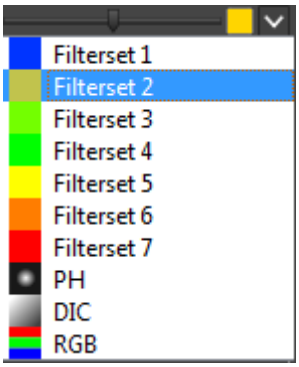
We are recommend to use "16 bit" image format to reach best image results with *Fluorescence tool*.

In case of scanning camera use, please set the capture resolution to a non-scanning mode under "Preferences/Device Configuration". Otherwise, the image capturing time can be up to 36 minutes depending on used Exposure Time and Gain value!

To reach to best results with *Fluorescence tool* you have to activate the option *"Minimize Gain during Record"*.

To enhance the image results of long exposed image, we strongly recommend creating a so called: *"black shading"* correction to reduce the noise level before starting fluorescence image capture.

The *Multi-Fluorescence* tool is designed to save up to 10 different filter parameter settings sets.



- **Filter set** 1 to 7 for different Fluorescence filter
- **PH** settings for Phase Contrast
- **DIC** settings for Differential Interference Contrast
- And **RGB** settings for colored images from color cameras

Note: All user interaction and changes of filter set parameter will be saved after change accordingly.

19.2 Overview:

Multi-Fluorescence tool contains two separate windows:

- **Filter list** with active filter sets
- **Settings widget** which contains all camera parameter

Fluorescence filter set (1) of 7 different available set-ups can be changed by filter menu settings.

Dropdown filter menu to change filter set number, order and position at *Fluorescence* tool filter list.

Checkbox to activate or deactivate filter set to combine at "merge" image.

Intensity slider to adjust the filter intensity after image record. To correct brightness on merge image.

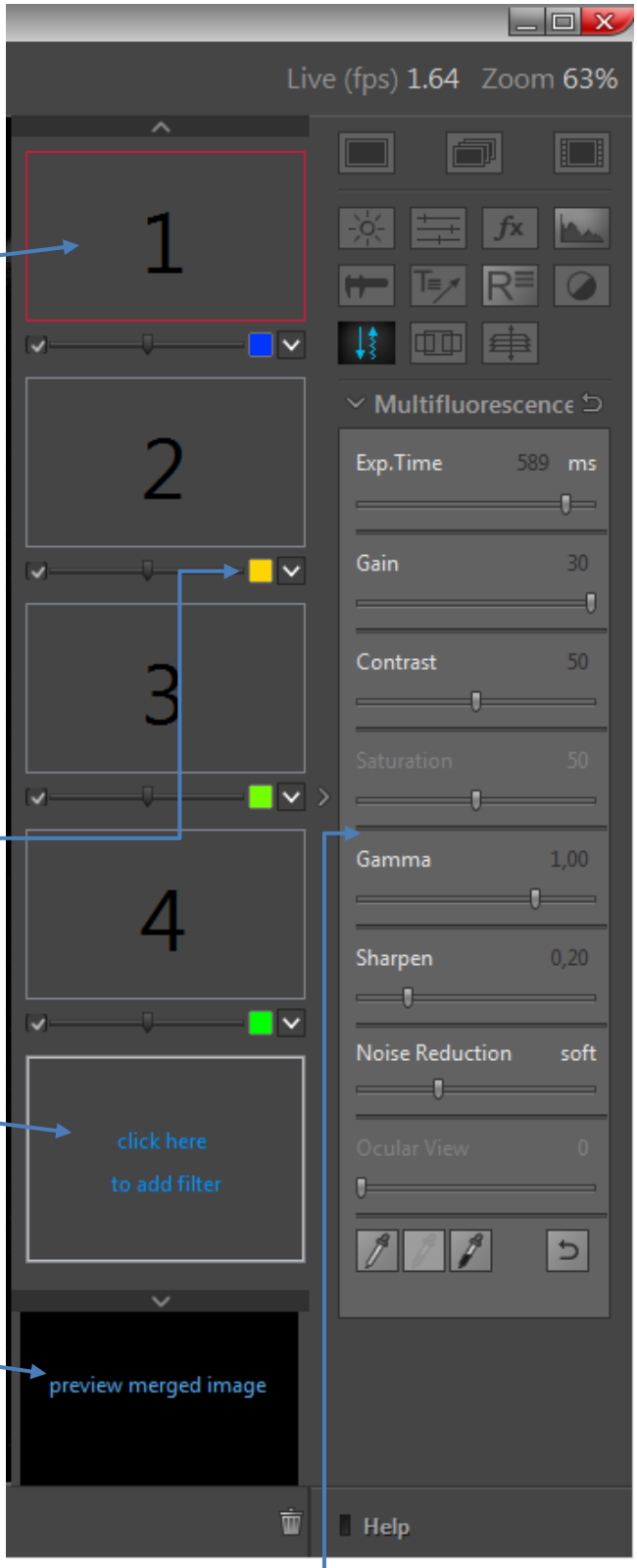
Color selector - by click on the color icon the "*Wavelengths Selector*" will be opened and you can enter the exact emission wavelengths in **nm** for the appropriate filter set.

Add new filter - click on empty filter set to add new filter to *Fluorescence tool* filter list.

Arrows to scroll manually at Fluorescence filter list.

Preview thumbnail of "merged" image, depending on selected filter set.

Trash to delete selected filter set from Fluorescence filter list. All previously settings will be saved and reused after add filter set number again.



Filter specific camera settings are connected to each separate filter set.

19.3 Status of filter set:

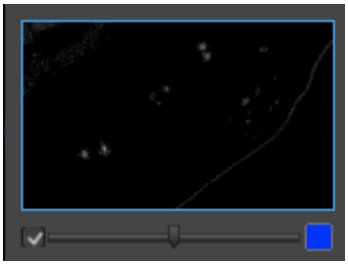
To support different interactions, the filter set thumbnails indicates the following status of filter set.

Red frame rectangle indicates ready for record. All image parameter of Fluorescence tool are active to adjust all parameter. The corresponding live image is activated and displayed on the image main window of JENOPTIK GRYPHAX software.

Press "REC" button 

to save filter set image into the temporary image list of *Fluorescence tool*. The Filter set preview thumbnail will be updated accordingly.

Blue frame rectangle indicates displaying of already recorded filter set image. The recorded image is activated and displayed on the image main window of JENOPTIK GRYPHAX software. The image parameter of Fluorescence tool are deactivated.

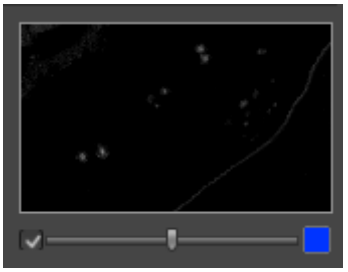


Press "REC" button 

to save filter set image into the Gallery.

After successful save of filter set image the preview thumbnail will be marked with a save icon  .

Grey frame rectangle indicates that no interaction can be performed.



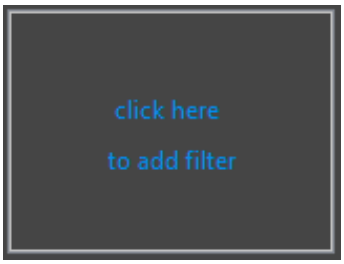
19.4 Start & initial set-up:

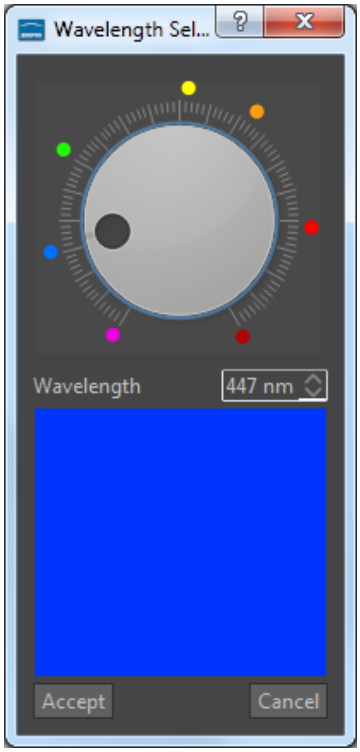
After successfully preparation you can open *"Multi-Fluorescence tool"* by click on Fluorescence icon  at *Tool bar*.

Note: To start a new Fluorescence session you have to toggle the icon  , all settings of filter set will be saved and the previously recorded images are removed and cannot be re-loaded.

At the first use of *Multi-Fluorescence* tool you have to set-up your specific filter set-up of Microscope. No initial filter set is displayed.

1) **Add new filter set** with click on empty filter thumbnail a new filter set will be **added** to the filter list *Fluorescence tool*. Add the number of necessary filter sets according to your number of fluorescence filter.

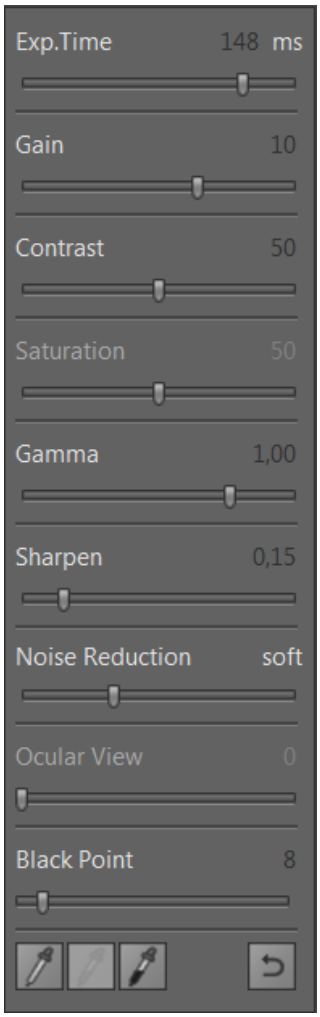




2) Change Emission wavelength by click on the Color selector  the *"Wavelengths Selector"* will be opened and you can enter the exact emission wavelengths in "**nm**" for the filter set / fluorochromes.

With "**Accept**" of the selected emission wavelengths, the wavelengths is saved to the filter set and the recorded monochrome image will be colored with this color after press "REC"  button.

3) **Adjust camera specific parameter** separately for each created filter set.



4) Press "REC" button 

to **start record** filter set image into the filter set. The already recorded filter set images will be displayed at the merge preview thumbnail and updated after change or add of each filter set image.

5) *Fluorescence tool* will **jump to the next** "empty" filter set automatically. In order from top to button of the filter list.

6) **Repeat** the points 2. to 4. to fill-up all filter set.

7) **After record** of each filter set image the software jump to the merge preview thumbnail and will display the merge image at the image window of JENOPTIK GRYPHAX software. (Red frame around merge thumbnail)

8) Press "REC" button 

to save merge image to Gallery. The save icon  will display that the currently displayed "merge" image is saved to the Gallery.

9) With the intensity slider  of each filter set you can adjust the filter image brightness afterwards according to your needs.

10) To save the adjusted "**merge**" image, press "REC" button 

again to save new "merge" image into the JENOPTIK GRYPHAX Gallery.

19.5 Re-record images:

In case that previously captures images are not acceptable, user can "**re-record**" filter set images with single click into the filter set thumbnail at any time. **Red frame** is displayed to the filters set. The live image is started with previously used parameters on image windows again. All image parameter can be adjusted now and will be applied to the image preview.

Press "REC" button 

to start record a new filter set image into the filter set.

The preview thumbnail and the "merge" image will be updated according to the new filter set image.

19.6 Save to Gallery:

To Save "Merged" image - click onto the "Merged" image thumbnail. The blue frame rectangle will be visible at "Merged" thumbnail at fluorescence filter list.

Press the "REC" 

button to save the composed merge image to the JENOPTIK GRYPHAX Gallery, at any time if you are satisfied with the result image. After successful save of "merge" image the thumbnail will be marked with an save icon  .

To Save "Filter set" image – double click to the filter set thumbnail at any time during *Fluorescence* tool session is active. The blue frame rectangle will be visible at "filter set" thumbnail.

Press the "REC" 

button to save the filter set image to the JENOPTIK GRYPHAX Gallery. After successful save of "filter set" image the thumbnail will be marked with an save icon  .

In case of large image size, the remaining time to save the images will be displayed. The image record can be aborted by press "Cancel" button.

Additional hints:

Show emission wavelengths of filter set via mouse over. Hold the mouse pointer over according color box. The tool tip will display the currently selected emission wave lengths.

Limitations:

- Measurement and Annotation are not allowed during *Fluorescence tool*.
- Preferences and Gallery are not reachable during *Fluorescence tool*.
- The number of images and filter set for *Fluorescence tool* is limited by approx.: 2 GB of memory.

Ease of use –
giving your work an effortless feel.

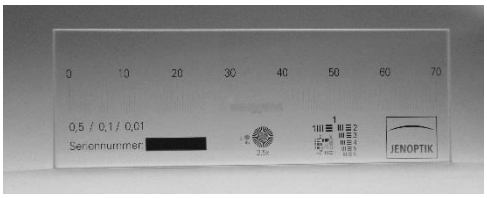
Panorama tool of JENOPTIK GRYPHAX® software

The "*Panorama tool*" of JENOPTIK GRYPHAX software enables user to create large images of specimen without motorized x/y stages at live!

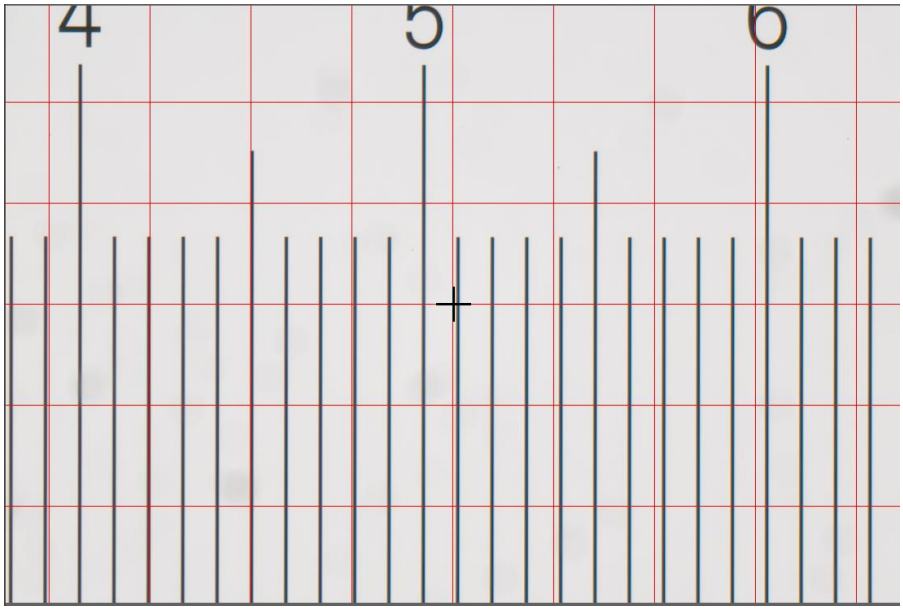
20.1 Preparations:

To reach to best results with *Panorama tool* you have to adjust the alignment of camera related to the stage before you start using *Panorama tool*.

To adjust the alignment, you can use the "Grid" function (keyboard short cut "g") and the JENOPTIK GRYPHAX® calibration slide / stage micrometer (order number: 648806).



Grid overlay on live image to adjust alignment:



Note: To improve the panorama image creating the camera should deliver the highest live frame rate. Reduction of live resolution and exposure time enables highest live frame rate. Furthermore, deactivate of FX tools "Sharpen", "Dynamic" and "Noise reduction" increases live frame rate as well.

20.2 Start:

After successfully preparation, you can open *"Panorama tool"* by click on Panorama icon: 

To define the Panorama start position for image combining, please move the live rectangle via mouse drag & drop to the start position on image window.

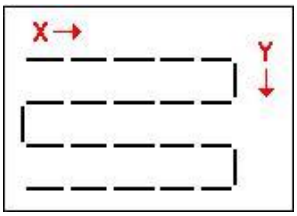
Press "REC" button 

to start panorama image record.

The *Panorama tool* change to "painting mode" (this is the basic mode). The live rectangle shows a red frame and the tool is observing the live image for movement of the specimen. Additionally, the "REC" button change to "STOP" 

to save the composed image at any time if you are satisfied with the panorama image. After save of panorama image the software returns back to *Panorama tool* to start a new image creation.

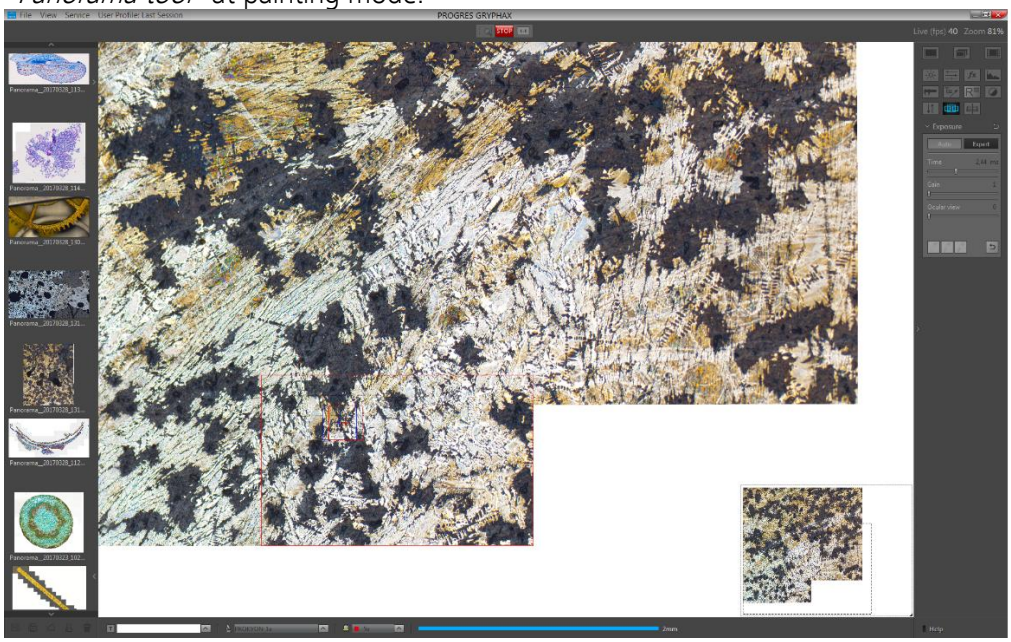
To start image combining please move the microscope stage gently to compose panorama image by a meander loop like as follows and keep an overlap of 1/3 of the live rectangle!



During stage movement, the *Panorama tool* detects and tracks the movements and accordingly moves the live rectangle on the background. The image is painted (stamped) on the background-creating panorama. The stamp happens when the rectangle reaches some distance since the last stamp.

Note, that the image must be stable during stamping to avoid blurring. Therefore, user should move the stage gently, pausing occasionally to allow stable images. If the tracking is lost for any reason, the tool goes to "recovery mode".

"Panorama tool" at painting mode:



20.3 Lost matching:

In case of lost matching point the tool change to "recovery mode" the live preview rectangle displays semi-transparent live image from the camera. The camera button continue shows the "REC" label.

Furthermore, the software tries to find a match between the current live image from the camera and the surrounding background. When the match is found, the live rectangle jumps to the matched position automatically and the state changes to "painting mode" again. Now you can continue with panorama image combining.

Hint: During "recovery mode" you should move the microscope stage to some previous position, so the image will show an area which has recently been painted into the background. Then the match can be easily found and painting will continue from the position where tracking had been lost.

If the "REC" 

button is pressed during recovery mode, the tool goes back to "painting mode" from the current position immediately. In addition, you can continue with image combining.

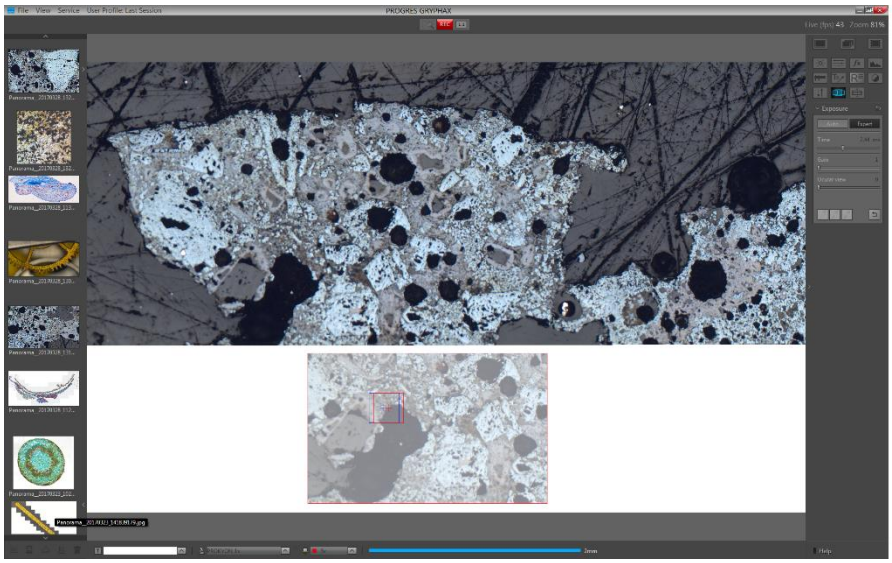
20.4 Manual mode:

At any time, user can drag the live rectangle on the background area using the mouse. After dragging, the "manual mode" is activated. The live rectangle displays semi-transparent live image from the camera and the camera button continue shows the "REC" label.

After dropping, the image combining can be continued by pressing the "REC" 

button. When user hover the live rectangle on the background area where the match between the background and the image can be found, the matched area is marked by a white border rectangle. If during that, user drops the rectangle, it snaps to the matched area and the painting mode activates automatically!
"Manual mode" can be used to start the panorama composition from an arbitrary position on the background, or to continue painting from well-defined position in a case, when tracking has completely lost.

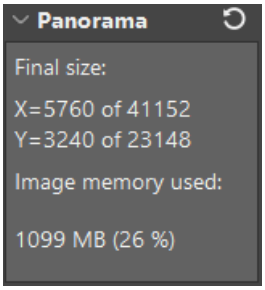
"Panorama tool" at manual mode:



Panorama widget:

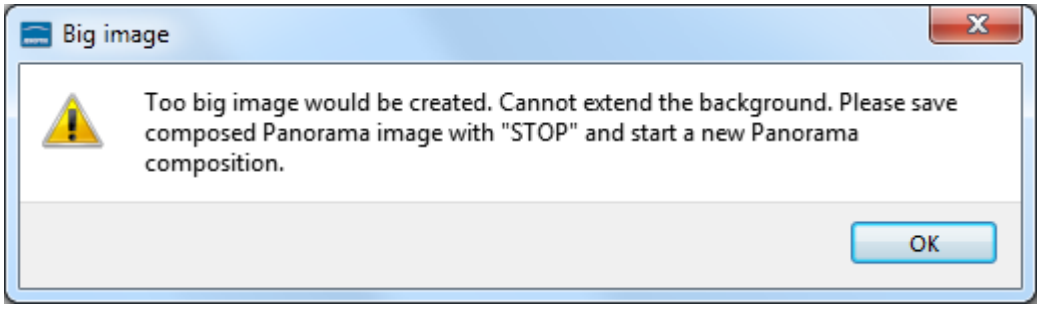
On the Panorama widget you can see the status of Panorama tool during image combining.

To prevent sudden interruptions, the current image size and memory requirements are displayed.



Limitations:

a) The image size for Panorama images is limited to approx.: 120 MP (mega pixels)
The software will display a warning message as follows:



Please stop painting image and save the panorama image by using “STOP”  button.

b) The movement detection and tracking algorithm is based on well-defined features (details) in the live image. It cannot work well when those features cannot be found i.e:

- When the image shows empty, even areas. Very bright or very dark.
- When the image is blurry or out of focus.
- When the image shows a repetitive pattern (e.g. grid) so identical features appear everywhere.
- When the framerate is low due to a high camera resolution or high exposure time.

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Z-Stacking tool of JENOPTIK GRYPHAX® software

The "Z-Stacking tool" of JENOPTIK GRYPHAX software enables user to create EDF (extended depth of focus) images of specimen without motorized z-stages at live! The sharp areas of the specimen are automatically recognized and combined to one consistently sharp, so called, EDF image.

21.1 Preparations:

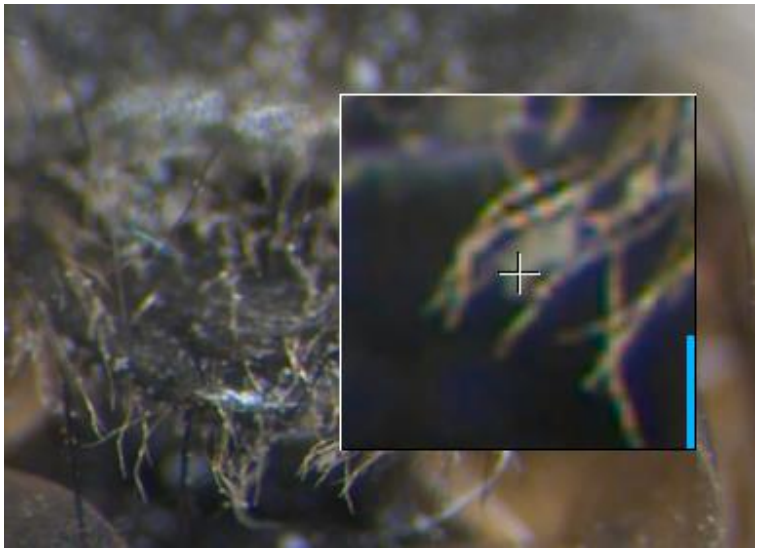
All camera image parameter (e. g. colour, white balance) must be set in advance before you start with Z-Stacking image combining tool.

To reach to **best results** with *Z-Stacking tool* you have to adjust the focus level of specimen to the top focus point and change to "Expert" exposure control before you start using *Z-Stacking tool*.

To find the best focus start point you can use the **focus indicator** bar of "Magnifier tool"  (or use keyboard key: **space bar**)

Magnifier tool with "focus indicator bar":

- "**red**" bar – shows the max peak of focus level of magnifier ROI
- "**blue**" bar – shows the current relative focus level of magnifier ROI



The zoom factor of "Magnifier tool" can be adjusted at software preferences by 3:1 | 2:1 or 1:1.

Note: To improve the Z-Stacking image creating the camera should deliver highest live frame rate. Reduction of live resolution and exposure time enables highest live frame rate.
Furthermore, deactivating of FX tools: "Sharpen", "Dynamic" and "Noise reduction" increases live frame rate as well.

21.2 Start:

After successfully preparation, you can open *Z-Stacking tool* by click on Z-Stacking icon: 

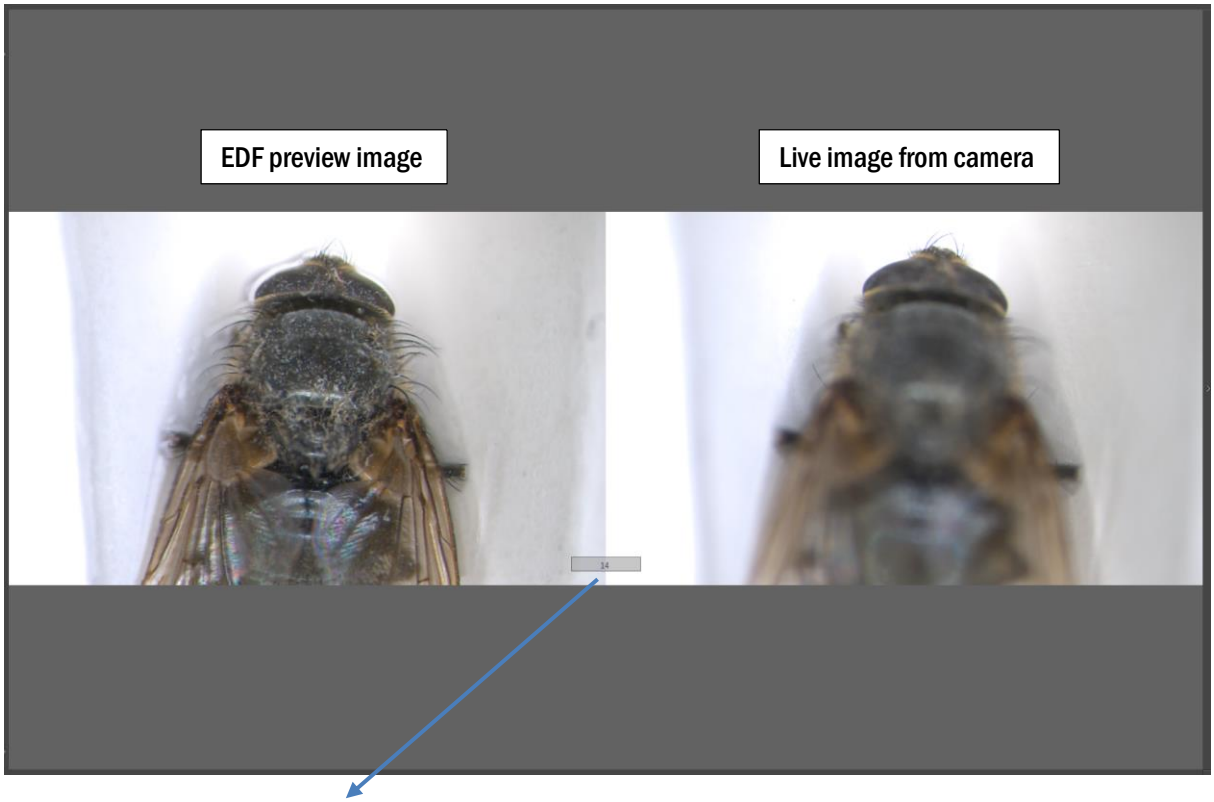
As of JENOPTIK GRYPHAX software version 2.3.0 or newer the *Z-Stacking tool* **automatically** corrects the image composition with parallax shift correction of e.g. stereo microscopes during live instantly.

This reduces image calculation time for parallax shift correction compared to previously versions of Z-Stacking / EDF tool.

Press "REC" button 

to start Z-Stacking image combining.

The *"Z-Stacking"* tool is displaying the **screen split into two sections**. On the **left** the composed result preview image is shown. On the **right** site the live image getting from camera as displayed.



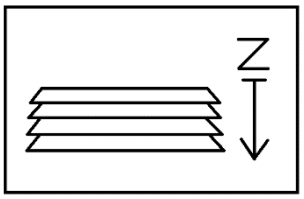
The image counter 

is displaying the current number of used different focus images.

Additionally, the "REC" button change to "STOP" 

to save the composed EDF image.

To start image combining please move the microscope stage at "Z-axis" gently to compose "Z-Stacking" image starting **from top focus to bottom** like as follows in one not changing direction.



During stage movement the *Z-Stacking tool* detects and tracks the sharp image areas automatically and accordingly save the different focus images to the internal memory. The result preview image is painted and shows where the Z-Stacking tool has found different sharp area and combined them to one image.

To add image layer manually use the key "**Insert | Ins**" from keyboard. One layer image will be added from current focus. The image counter  will increased by one image.

21.3 Save:

Press the "STOP"  button to save the composed EDF image to the Gallery, at any time if you are satisfied with the result image. After save of EDF image the software returns to *Z-Stacking tool* to start a new image creation.

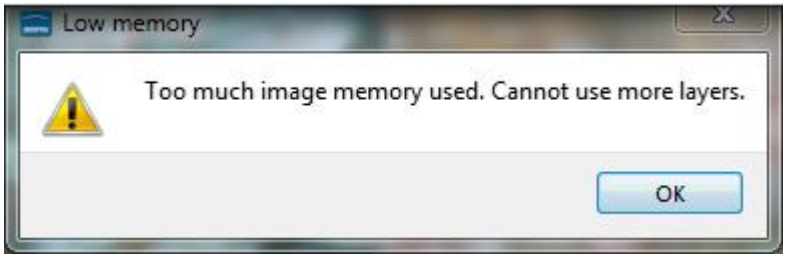
For image composition without parallax shift correction - the EDF image will be saved immediately after press "STOP" to the Gallery.

For image composition with parallax shift correction the EDF image will be generated from the current number of different found focus images.
This will be more time-consuming. The remaining time will be displayed.

The image calculation can be aborted by press "**Cancel**" button.

Limitations:

- Measurement and Annotation are not allowed during *"Z-stacking tool"*.
- Save of separate focus layer images are not available.
- The image number for Z-Stacking images is limited by approx.: 2 GB of memory
  The software will display a warning message as follows:



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User Guide for Camera server tool of JENOPTIK GRYPHAX® software

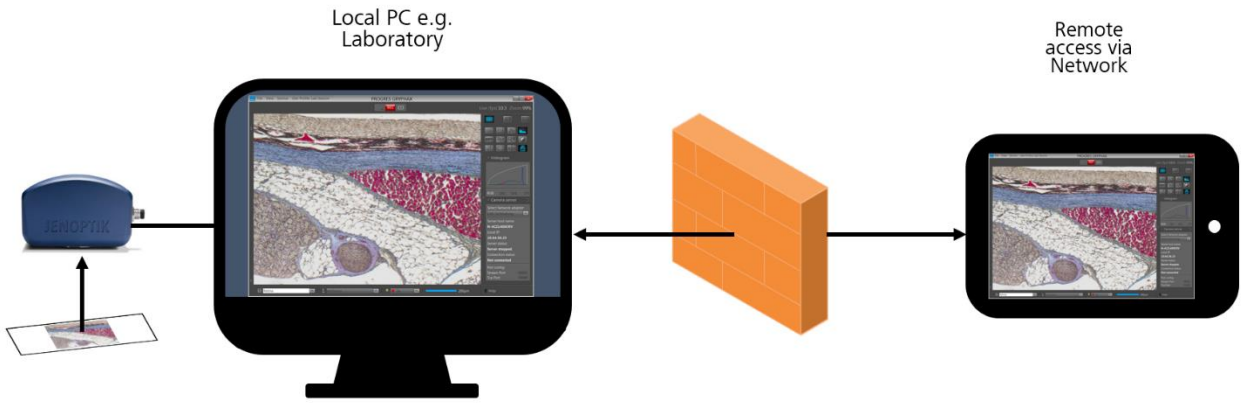
General description:

The GRYPHAX Camera Server Tool enables users to share images from locally connected GRYPHAX cameras via network connections into a client PC.

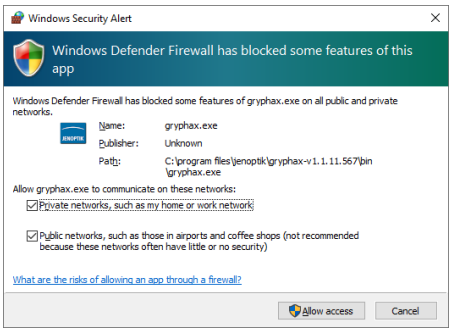
By using the GRYPHAX software on the same network, users have the ability to watch streaming live images from the different networked cameras and have remote control of the shared network cameras where users can control the software features and settings on the networked cameras. The GRYPHAX software will store all media files of captured images directly on client PC.

Overview:

Camera server tool running on host PC | remote control at client PC:



Preparations general:



To use the Camera Server tool user have to **allow network access** for JENOPTIK GRYPHAX application to communicate over network without blocking by firewall protection of operation system.

Select active network adapter at Camera Server Tool. As default, the first network adapter from list will used by software. The pre-selected or user selected network adapter will be saved into the software settings as well as user profiles.

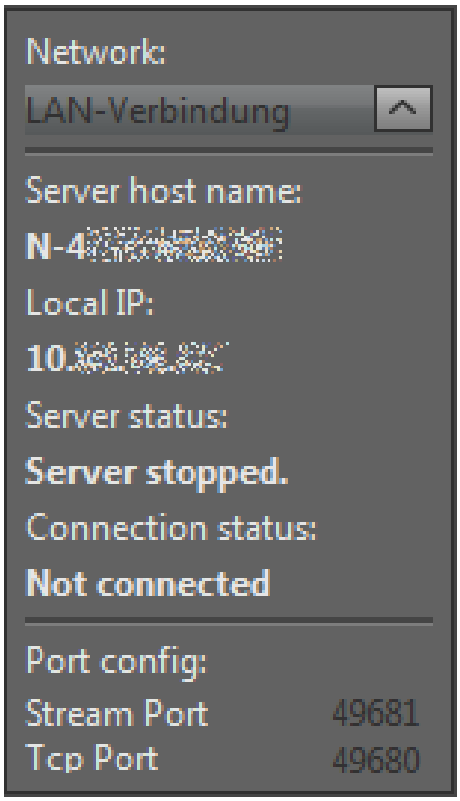
The default values for communication ports for “Streaming” port and “Tcp” port are pre-defined and is changeable by user to individual port values according local network guidelines. Please contact your IT-department for further details!

Location:

The Camera server Tool is located at the *Toolbar*. Open the toolbar by pressing the arrow on right-hand software site or use keyboard short cut (ctrl / cmd + T)

Click on the *Camera server* icon from toolbar, the tool widget will be displayed and contains the connection settings and status information.

The widget is separated into three different sections by horizontal dividing line.



- Top section to select the active network adapter from drop down box. By press of arrow all available network adapter will be visible on drop down list - as default the first network adapter from list will be pre-selected by software! Select individual network adapter from list to broadcast a camera server connection.

  The selected network adapter will be saved into the software preferences as well as user profiles!

- Middle section is an information section only - it displays the following information:
  - Server host name of PC
  - Local IP address
  - Server status: Server started or stopped
  - Connection status: "Connected" or "Not connected" to client PC

- Bottom section to define port configuration - by edit box. Following port selection are available:
  - Stream port
  - Tcp port

  Detailed explanation for port configuration:

  Stream port - this is the TCP port used by the server PC to stream live video data to the connected client. No need to set it for the client PC!
  Clients in a network are informed about the port and address to connect by an UDP message broadcast by the server every 5s.

  TCP port - it is another TCP port used by the server PC to communicate with connected client PC (camera and accessories control). As above, there is no need to set it on the client side!

Note: Default port values are pre-selected by software. User can define user specific port values according local network guidelines. Please contact your IT-department for further details!

Reset Camera server settings:

To change back to software default network and port values, press “Reset” button.

Start Camera server:

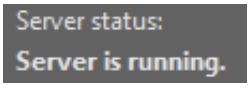
To start the *Camera server* tool by pressing the "START" button 

, which instantly changes to "STOP" to signal the user, that the Camera server mode is active!

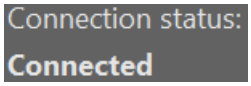
After start of camera server mode, live video resolution change to the predefined mode (usually the same one used during video recording) regardless of the mode selected before the server tool was activated. If the current video framerate is higher than 10 fps, it will be reduced to about 10 fps. Otherwise, it will remain unchanged. The predefined live resolution mode and reduced framerate ensures low latency video streaming between the camera server and connected camera client!

Only one client can be connected to the running server at the same time. When a client is connected, the camera server is not visible to other computers.

Additionally the Camera server status at widget will change to: "Server is running".



After successful Camera server connection by client computer from network, the connection status at widget will be change to "Connected" to avoid unintentionally disconnection!



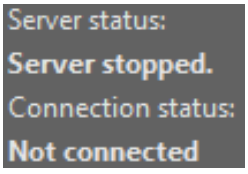
Note: After Camera server start the network adapter and port configuration can't be changed. Important, only one connection between client PC and host PC can be established.

Stop Camera server:

To deactivate the *Camera server* tool press "STOP" 

button.
All connections will be stopped. The camera will be no more available for another user.

The *Camera server* status at widget will change to "Server stopped" and the Connection status change to "Not connected".

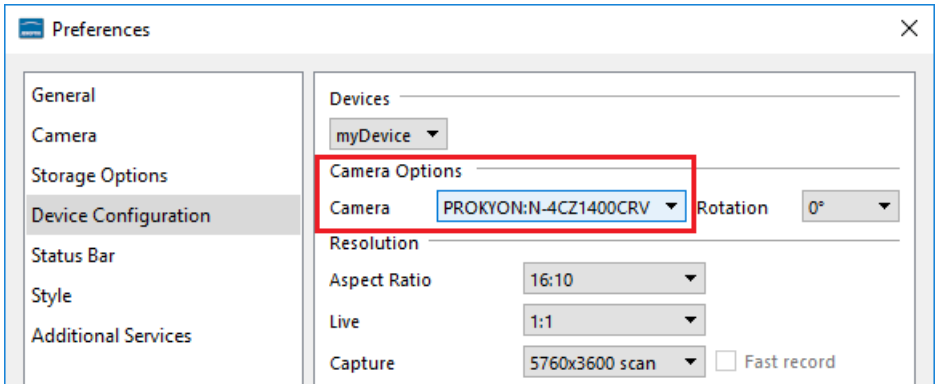


Note: Deactivate of *Camera server* tool by press: "Camera server icon"  will stop connection as well!

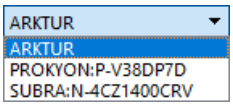
Connect to server camera:

To connect to a server camera from a host computer, open the software *Preferences* of client PC. The user can select and connect to the remote cameras the same way as with the local cameras.

Navigate to the section: "Device configuration" and select the server camera of host PC from camera drop down list.

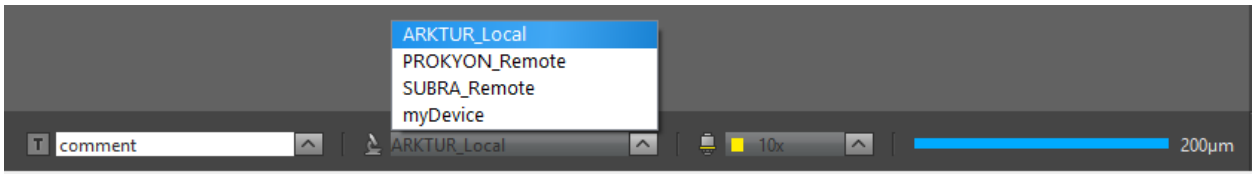


Multiple cameras from different host will be listed on drop down menu. The camera name of server cameras are **extended** by "server host name" of host PC!



Fast camera switching for optimize workflows:

Create device configurations for remote cameras to change quickly between locally connected cameras and network "remote" cameras directly at status bar.



Operation with server camera on client PC:

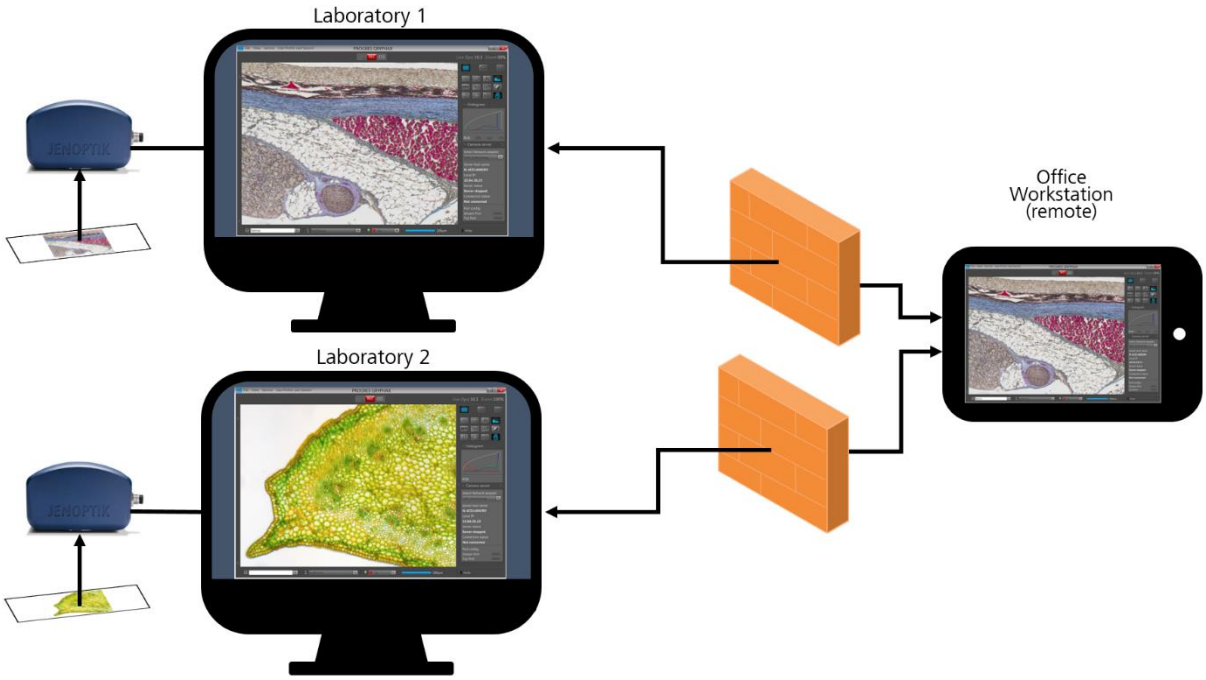
After establish of server camera connection, most camera settings and enhancements are remote controlled by client PC. User can utilize most functions and tools of local JENOPTIK GRYPHAX software.

The recorded media files (images, videos, etc.) will be always saved on client PC and are displayed on client Gallery as well.

Important Note: To operate with *Camera server* tool both computer has to be at the same network environment, otherwise no camera connection would be established!

Example for multi-remote-camera use:

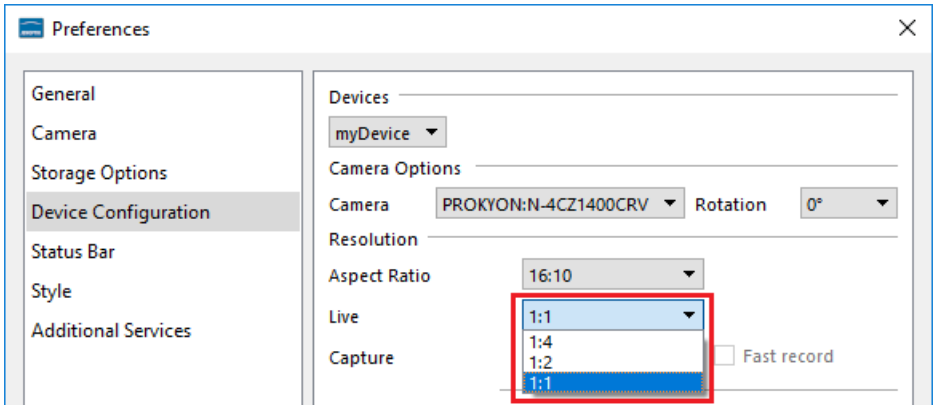
Different laboratory can enable camera sever tool on their computer to share the locally connected cameras via network environment. Office workstations are able to remote control the camera and observe the experiments. Office workstation (client PC) can change between different network cameras.



Reduce live image resolution:

The image size for live preview of server cameras can be reduced at client PC by option: “1:2” or “1:4” of original live resolution, depending on image size, to enhance the live image transfer rate and latency.

To change image size for live and capture, navigate to software Preferences under section Device configuration / Resolution.



Note: The live image stream is transferred by compression depending on network speed.

Limitations:

a) The Camera server tool will be inactive at host PC during active record modes below:

- Time-Lapse record is running
- Video record is running
- Z-Stack record is running
- Panorama record is running
- Single image record (especially REC with long time exposure)
- Active Fluorescence tool

b) During active *Camera server* tool, the software *Preferences* and the *Gallery* are not reachable on host PC!

c) Camera server tool is inactive at client PC in case of already established server camera from other PC.

d) Only one client PC can connect to the server camera of host PC!

Remote cameras have some limitations in control compared to local connected cameras:

- The Camera server tool is working with GRYPHAX 2.2.0 and older only! For GRYPHAX 2.3.0 the new GRYPHAXServer.exe tool replaces the Camera server tool.
- The live resolution cannot be changed
- The maximum live framerate is limited to 10 fps, regardless of the exposure time
- Some control actions are not available e.g. white/ black/ auto calibration or black level
- Live video recording is not possible
- Recorded images are 8 bit only

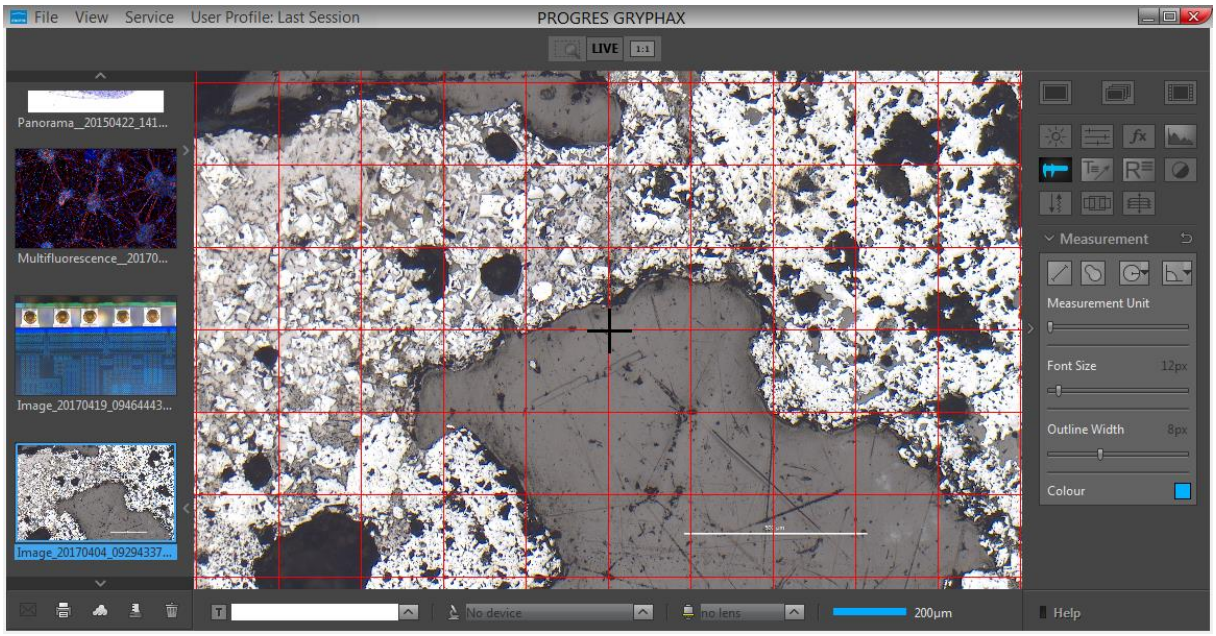
Grid and Crosshair view of JENOPTIK GRYPHAX® software

General description:

The "Grid view and Crosshair view" of JENOPTIK GRYPHAX software enables user to overlay a **Grid or crosshairs** over the live image stream or recorded items from Gallery. The overlay can also be saved in the image.

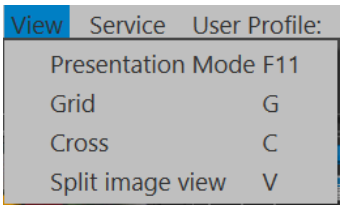
Use the grid to adjust the alignment of specimen to the image stream of camera. See also example below. Additionally, the crosshairs will display the center of the image. The appearance of the crosshair depends on the image scene. It adapts automatically from black to white appearance.

Grid view activated:



23.1 Start Grid or Crosshair view:

To start the *Grid or Crosshair* use the keyboard key (**G** | **C**) or start by using the title bar menu from software under "**View**".

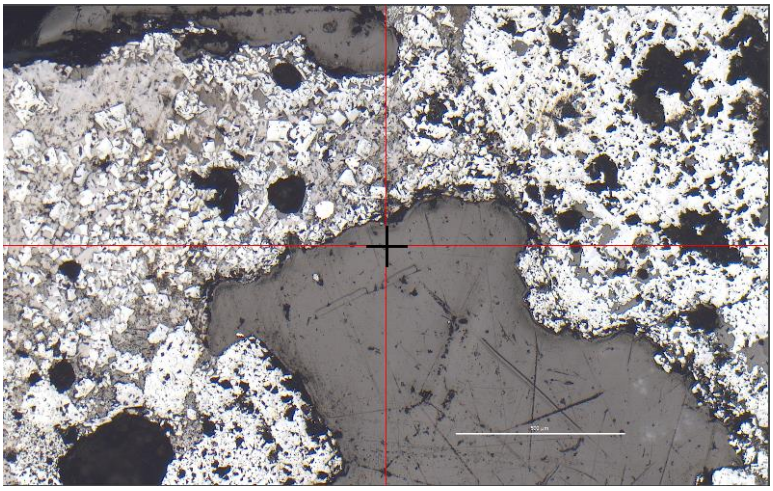


Note: This submenu is enabled if any meaningful image / video is shown in the image window.

Change line distance:

To change the line distance / cell size of *Grid* open the **Preferences |General** and change the value for "Grid cell size".

Additionally, a small **crosshair** would be displayed for Grid view. See adjacent screen shot.



To save the Grid or Crosshair overlay in the image – activate the option "**add grid to saved image**" at **Preferences | General**.

Note: The appearance of the crosshair depends on the image scene. It adapts automatically from black to white appearance.

Change color:

To change the color of Grid and Crosshair, open Preferences from title bar and change the color of Grid section under Preferences / Elements of Style / Grid.

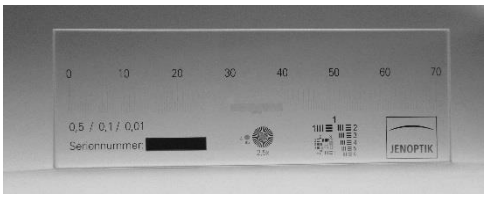
Leave Grid mode:

To leave the *Grid mode* use the keyboard key (**G** | **C**) or by using the title bar menu from software under View.

Note: Last used line distance / cell size and grid colour will be stored at software settings and are reused after start of *Grid view* again.

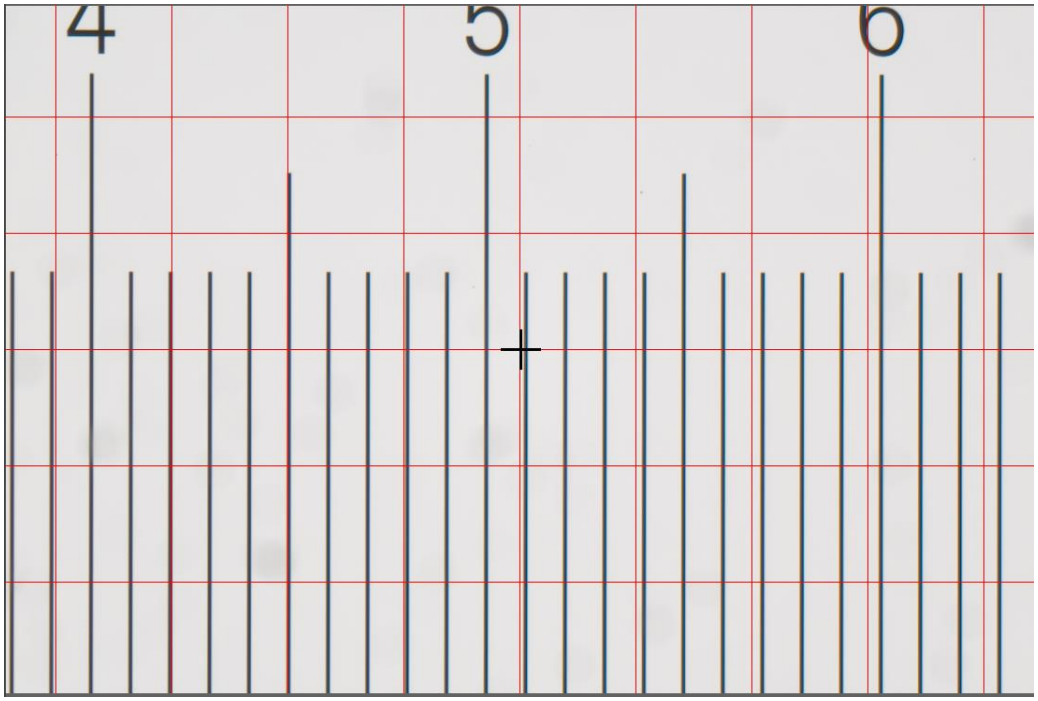
Example for Grid view:

To reach to best results with e.g. *Panorama tool* you have to adjust the alignment of camera related to the stage.

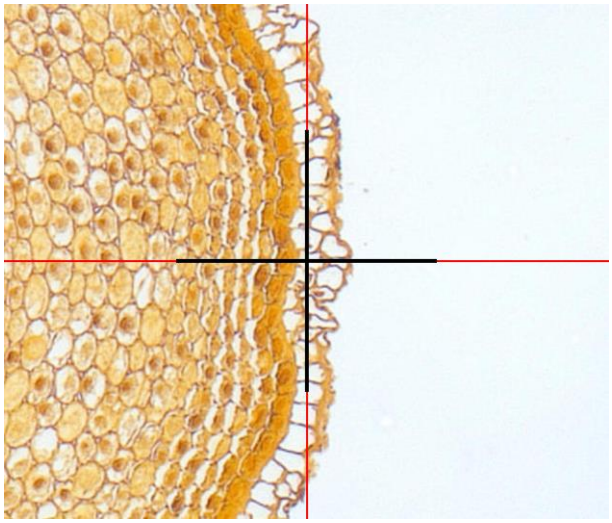


To adjust the correct alignment you can use the Grid function and the JENOPTIK GRYPHAX® calibration slide / stage micrometer (order number: 648806).

Example for **Grid** overlay on live image of stage micrometer to adjust alignment:



Example for **Crosshair** overlay applied on image:



Ease of use –
giving your work an effortless feel.

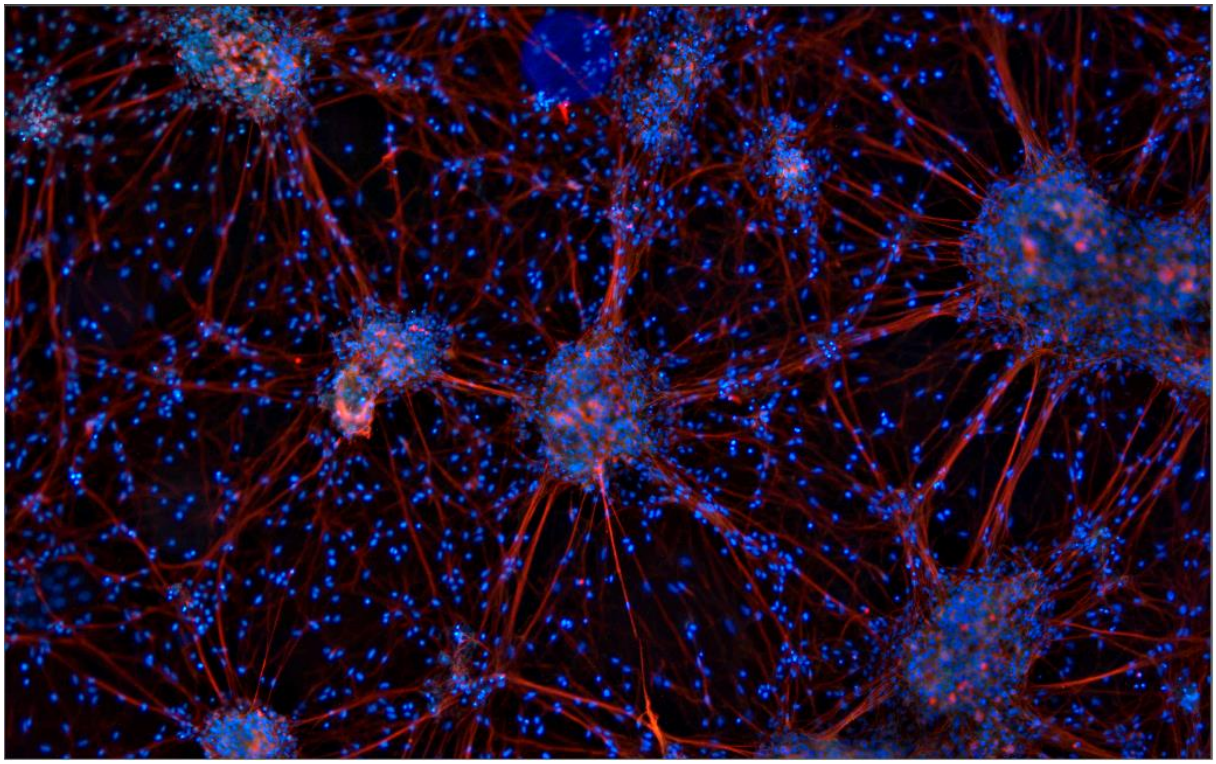
Presentation mode of JENOPTIK GRYPHAX® software

The "Presentation mode" of JENOPTIK GRYPHAX software enables user to display the live image stream or recorded items from Gallery on whole screen to see all details of images.

General description:

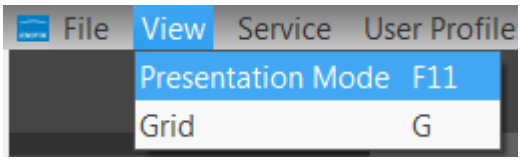
The *Presentation mode* is part of the JENOPTIK GRYPHAX software. It enables user to change from standard software view to full screen mode to display the live image stream or recorded items on whole screen. All software tools will be still active at the background but not visible.

Presentation mode activated:



24.1 Start Presentation mode:

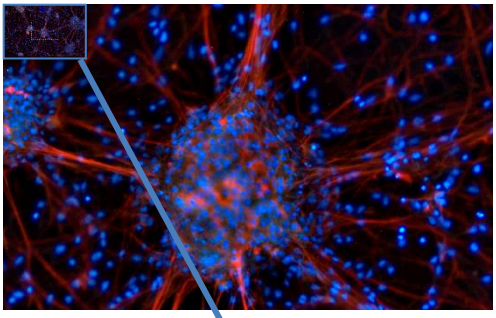
To start the *Presentation mode* use the keyboard function-key (**F11**) or start by using the Title bar menu from software …**View / Presentation Mode**.



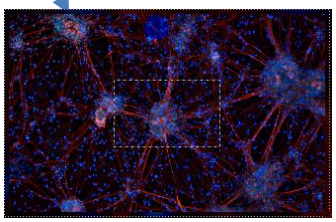
Note: This submenu is enabled if any meaningful image / video is shown in the image window.

Change zoom factor:

To change the zoom factor at *Presentation mode* between "1:1" view and scaled "Fit To Screen" view use the keyboard key (**Z**). The Default view at JENOPTIK GRYPHAX software is "**Fit To Screen**" view. At "**1:1**" view the image will be display one pixel of the camera/ image as one pixel on the screen.



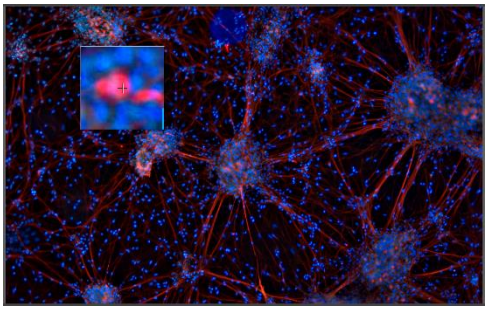
Additionally, a small overview window will be displayed over the image at "1:1" view. The currently displayed part of image is marked as rectangle. The position (ROI) can be moved by mouse operation. In addition, size and position of overview window can be changed by mouse operation.



Activate magnifier:

To activate the *Magnifier tool*  during *Presentation mode* use the keyboard key (**Space bar**).
Hold the space bar and a small floating pane is opened as image window overlay and shows a view of a selected sector as long as the key is pressed.

Zoom level is depending on the used section of "zoom level" under Preferences / General / Magnifier



Record images:

To record images during *Presentation mode* you can use the keyboard key (**Enter**) or (**F2**).
All images will be recorded to previously selected destination folder and can be previewed at software Gallery.

Leave Presentation mode:

To leave the *Presentation mode* use the keyboard key (**F11**) or (**ESC**). Software will change back to the standard software view with all last opened tools as before.

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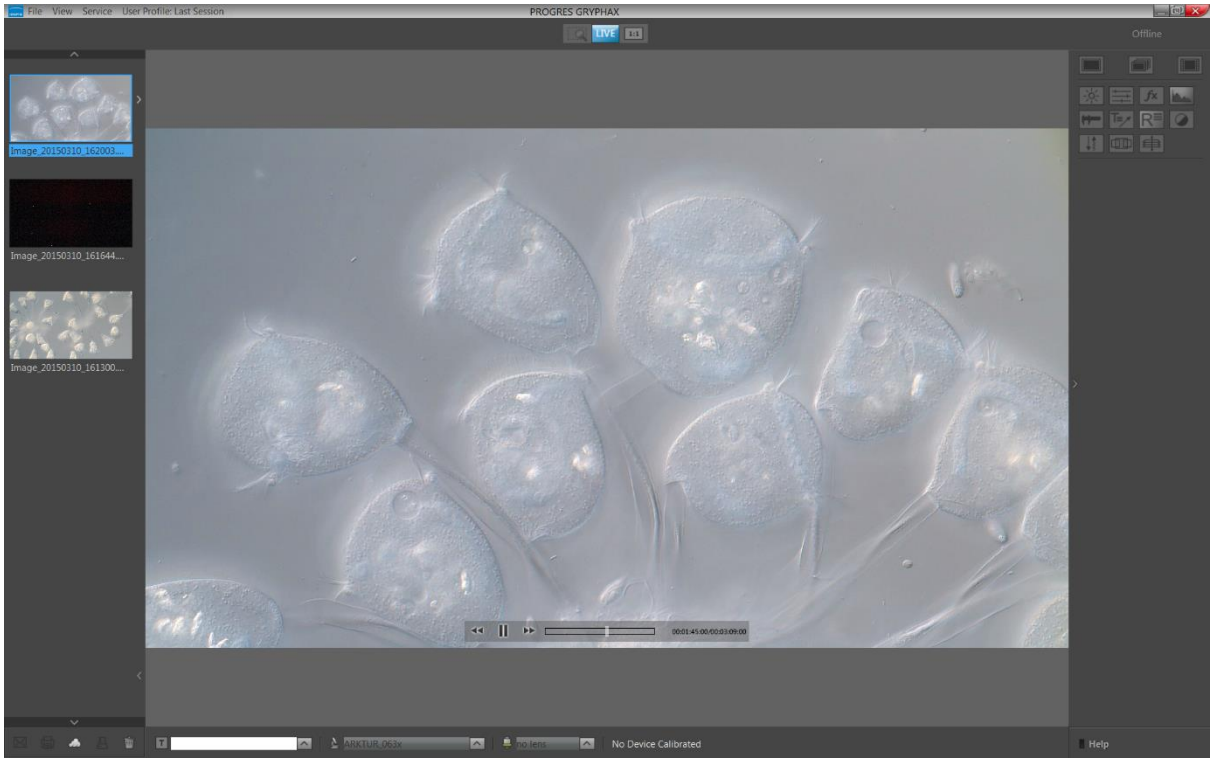
Video mode of JENOPTIK GRYPHAX® software

The "Video mode" of JENOPTIK GRYPHAX software enables user to record video files in high image quality and video speed.

General description:

The *Video mode* is part of the JENOPTIK GRYPHAX software. It enables user to record video files in high image quality and video speed. The video resolution is fixed to the used camera type and aspect ratio. Additionally, user can replay / review recorded video files from gallery.

Video replay mode activated:

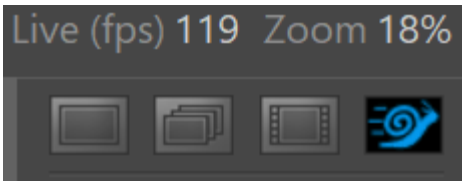


Preparations general:

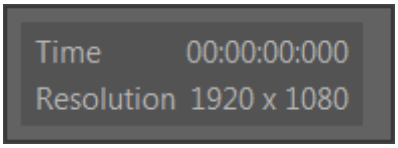
No additional preparation are necessary, all software settings will be used from current settings.

25.1 Start Video mode:

To activate the *Video mode* use the video mode icon  on the tool bar. All camera settings and tools are enabled to adjust the current camera image by enabling additional tools as well.



A video widget will be opened and display the recording time and video record resolution.



Note: Change to record mode is enabled only if live image is activated before and live stream is shown in the image window.

To start the video record by pressing the "REC"-Button 

, which instantly changes to "STOP" to signal the user, that the recording mode is active.

Note: During the recording mode only a few additional tools can be activated.

Save Video file:

Press the "STOP" 

button to save the recorded video file to the Gallery, at any time if you are satisfied with the results. After save of video file the software returns back to *Video record mode* to start a new video record in case that the function "Show image after capture" is deactivated under Preferences / Storage Options. Keyboard short cut (**ctrl / cmd + O**).

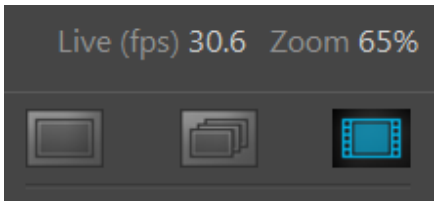
If the video file saving will be time consumption, the remaining time to save the file will be displayed.

The video saving can be aborted by press "Cancel" button.

With the storage option *"Auto save"* under Preferences / Storage Options all recorded video files will be saved with an automatic given naming structure to the selected destination folder. The file name contains the: **prefix**, **date**, **time** and the **file extension** separated by an underline "_". This structure can´t be changed by user. The **prefix** for video files is "Video" e.g.: **Video**_date_time.file extension.

Leave Video mode:

To leave the *Video mode* use the alternate record mode icons "**Single shot**", "**Time-lapse**" or "**Slow Motion**" from Tool bar.



Note: Last set software settings will be still used and saved at software settings.

25.2 Replay Video files:

To replay / playback video files from gallery, double-click on the according video file thumbnail. The video file will be displayed on the image main window together with an overlaid function bar.

The video replay function bar contains the following options:

a) Video controls for Back / Play / Pause / Forward. 

b) Progress bar to display position of video file or to seek the whole video file by mouse operation. 

c) Display the time-stamp and total video time. 

25.3 Change storage format:

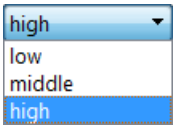
To change the storage format for video files, please enter the software Preferences at title bar under "Storage Options" or use keyboard short cut (ctrl / cmd + O).

Note: The available video storage format of the cameras depends on the operating system.

25.4 Change video quality:

To change the quality for video files, please enter the software Preferences at title bar under "Storage Options" or use keyboard short cut (ctrl / cmd + O).

Video Quality can be select from drop down list. The following quality levels are available: High, Middle and Low.*



The quality level "Low" is pre-selected as default. Because of the best ratio between video frame rate, bitrate and used CPU utilization.

The used video decoding bitrate for each video format and quality level varies and is depending on used operating system.*

Note: The video frame rate depends on the used hardware environment of PC, video format and selected quality level.

*(Available as of Jenoptik GRYPHAX version 2.1 or newer)

Limitations:

- Measurement, Annotation and Counter are not available during video record.
- Video resolution is fixed to the used camera type and aspect ratio.
- The video file size is limited by approx.: 2 GB of memory.
- The max video frame rate is limited up to 25 fps depending on used hardware environment.
- The max exposure time is limited to 33 ms. Option Gain can be used instead.

Video tutorial:

Press the link to watch the video tutorial for video mode of JENOPTIK GRYPHAX software.

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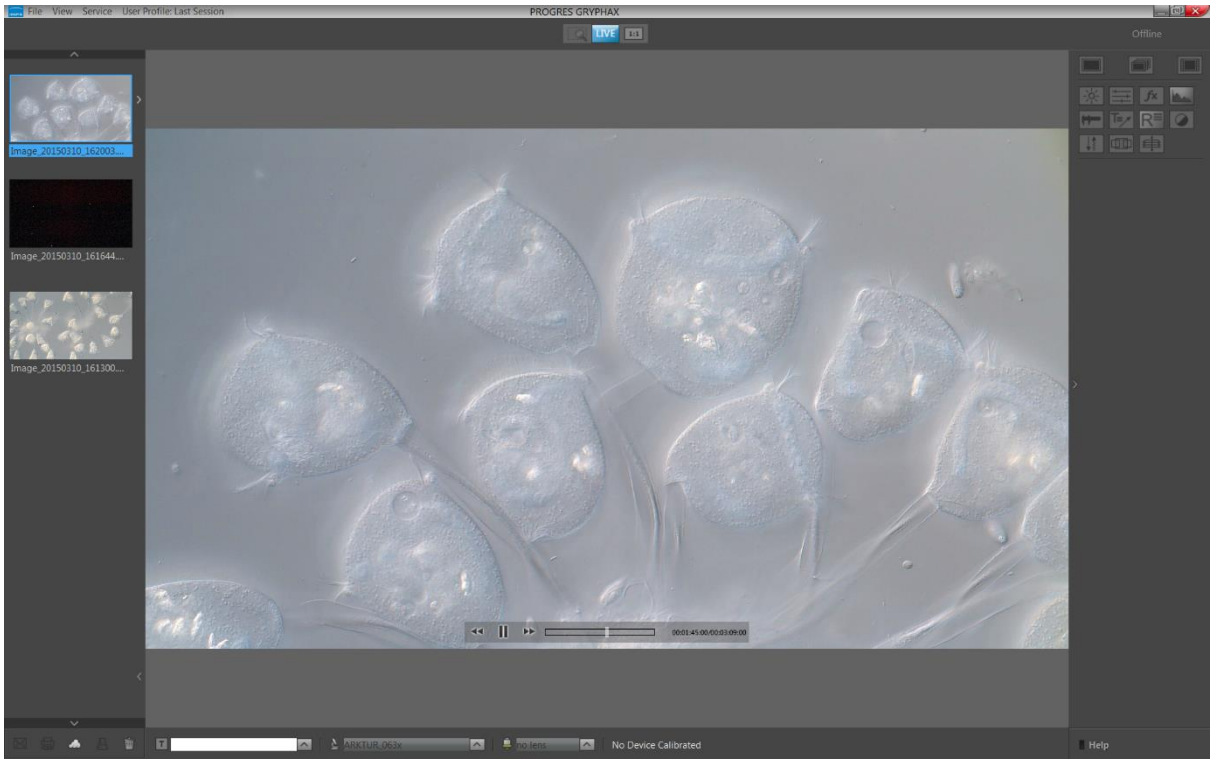
Slow Motion Video mode of JENOPTIK GRYPHAX® software

The "Slow Motion Video mode" of JENOPTIK GRYPHAX software enables user to record video files in high image quality and high speed up **120 fps**. Depending on camera type.

General description:

The *Slow Motion video mode* is part of the JENOPTIK GRYPHAX software version 2.2.0 or newer. It enables user to record High Speed or Slow Motion video files in high image quality up to 120 fps. The video resolution is fixed to the used camera type and aspect ratio. Additionally, user can replay / review recorded video files from gallery.

Video replay mode activated:



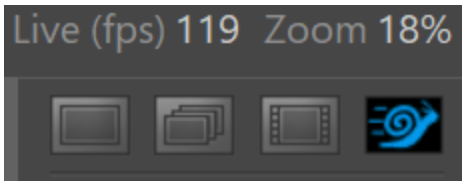
Preparations general:

To reach the best Slow Motion performance, additional function from *FX tool* and *Histogram* should be disabled in advance.

Furthermore, the object to be recorded should be illuminated in the best possible way to reach greatest results. All software settings will be used from current settings.

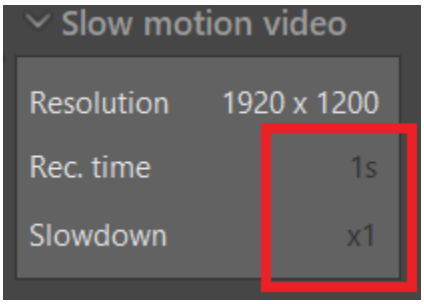
26.1 Start Slow Motion video mode:

To activate the *Slow Motion video mode* use the Slow motion icon on the tool bar. All camera settings and tools are enabled to adjust the current camera image by enabling additional tools as well.



Note: The maximum possible exposure time will be limited according max. possible camera frame rate!

The slow motion widget will be opened and display the video resolution, recording time and slowdown factor.



Set the recording time in seconds (the maximum recording time depends on the installed memory "RAM" and the used video resolution)

Set the slowdown factor to archive a high-speed video or a slow-motion video.

- For **high-speed** set slowdown factor "**x1**" – frame rate live = video frame rate (up to 120 fps)
- For **slow-motion** video factor to e.g. "**x4**" – slow motion video frame rate = ¼ of live frame rate

Note: Change to record mode is enabled only if live image is activated before and live stream is shown in the image window.

Start the slow motion video record by pressing the "REC"-Button REC, which instantly changes to "STOP" to signal the user, that the recording mode is active.

Slow motion tool will record video file with pre-selected **recording time** and **slowdown factor**.

After finish of slow motion video record, the video file will processed and saved. This will take additional time depending on recording time and computer performance. The calculated remaining time will be displayed at the progress indicator.

Afterwards, the software returns back to *Slow motion video mode* to start a new video record in case that the function "Show image after capture" is deactivated. (under Preferences / Storage Options. Keyboard short cut (**ctrl / cmd + O**)

Note: After starting the slow motion video mode no additional tools can be activated.

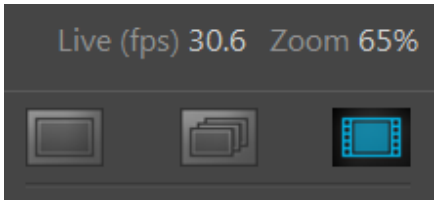
Abort Slow Motion video:

Press the "STOP" 

button to abort the video recorded at any time if needed. No file will be saved.

Leave Slow Motion video mode:

To leave the *Video mode* use the alternate record mode icons "**Single shot**", "**Time-lapse**" or "**Video**" from Tool bar.



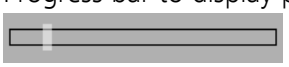
Note: Last set software settings will be still used and saved at software settings.

26.2 Replay Video files:

To replay / playback video files from gallery, double-click on the according video file thumbnail. The video file will be displayed on the image main window together with an overlaid function bar.

The video replay function bar contains the following options:

d) Video controls for Back / Play / Pause / Forward. 

e) Progress bar to display position of video file or to seek the whole video file by mouse operation. 

f) Display the time-stamp and total video time. 

26.3 Change storage format:

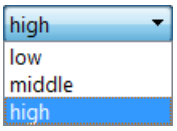
To change the storage format for video files, please enter the software Preferences at title bar under "Storage Options" or use keyboard short cut (**ctrl / cmd + O**).

Note: The available video storage format of the cameras depends on the operating system.

26.4 Change video quality:

To change the quality for video files, please enter the software Preferences at title bar under "Storage Options" or use keyboard short cut (**ctrl / cmd + O**).

Video Quality can be select from drop down list. The following quality levels are available: High, Middle and Low.*



The quality level "Low" is pre-selected as default. Because of the best ratio between video frame rate, bitrate and used CPU utilization.

The used video decoding bitrate for each video format and quality level varies and is depending on used operating system*.

Note: The video frame rate depends on the used hardware environment of PC, video format and selected quality level.

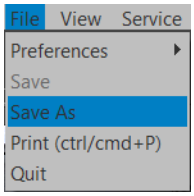
*(Available as of Jenoptik GRYPHAX version 2.1 or newer)

26.5 Video files encoding

With GRYPHAX version 2.3.0 a new option to encoder video files is added to GRYPHAX application. All recorded video files from GRYPHAX cameras can be modified and re-saved afterwards.

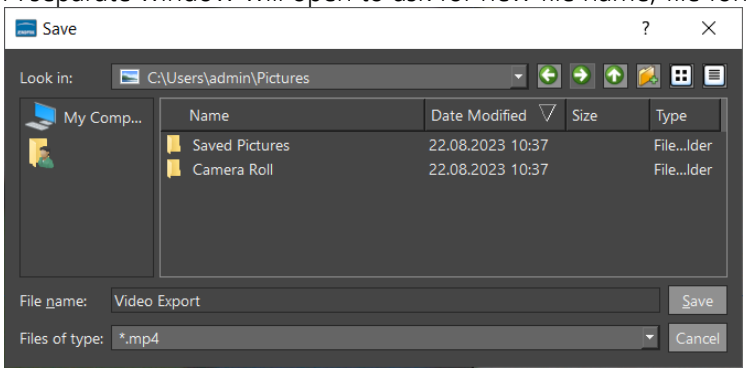
Start video export

Go to Gallery and open a video file via mouse double-click. Afterwards, the video is opened and displayed on the image main window from GRYPHAX.



Navigate to the **title bar** and click on option "**Save as**" under menu "File.

A separate window will open to ask for new file name, file format and target path.

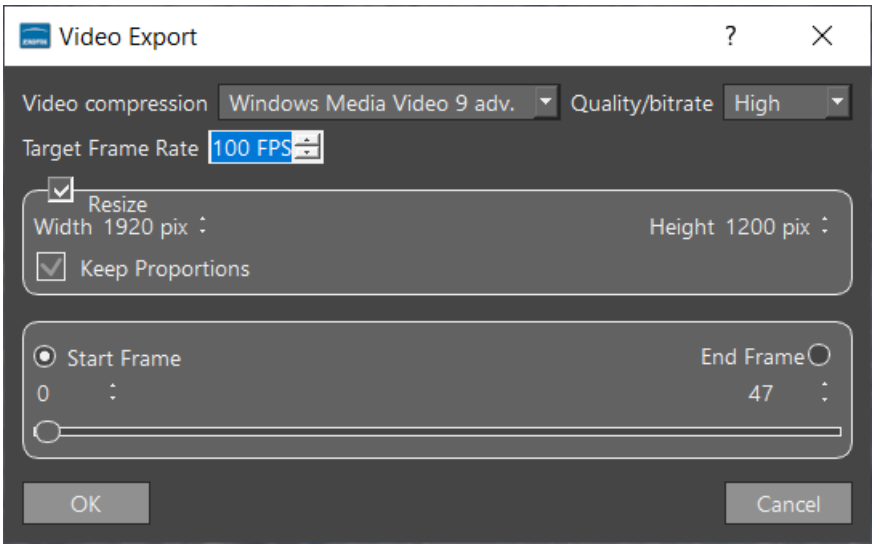


Choose a **new name** and select the **video file format** and press "**Save**" to continue with video export. After that, another window opens with video export options.

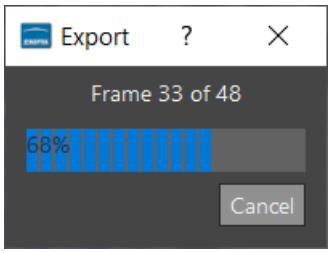
Note: Depending on video **file format** the software shows different video compression options.

The following parameter are offered for video export:

- **Video compression method** – select method from list (list varies depending on the file format)
- **Video quality** – select the quality option from list
- **Target frame rate** – keep or modify target frame rate for new video file
- **Option to resize** whole video file – keep or resize video file for export
- Select **start frame and end frame** for new video file – to optionally shorten the video



To start the video encoding process press "**OK**" button the export status is display as follows:



You can abort the export process by "Cancel" button at any time.

Note: The video compression options are depending on file format and hardware environment.
To support hardware acceleration, a Nvidia graphics card or an Intel CPU with hardware acceleration must be available. Otherwise, the software encoder the video files by software encoders only.

Limitations:

- No live preview is displayed during slow motion video record and processing.
- Slow motion video file creation can be time combustion depending on hardware environment.
- Measurement and Annotation are not available during slow motion video record.
- Video resolution is fixed to the used camera type and aspect ratio.
- The video file size is limited by approx.: half size of installed memory (RAM).
- The max video frame rate is limited up to 120 fps depending on used hardware environment.
- The max exposure time is limited by given frame rate limit from camera. Gain can be used instead.

Time-lapse mode of JENOPTIK GRYPHAX® software

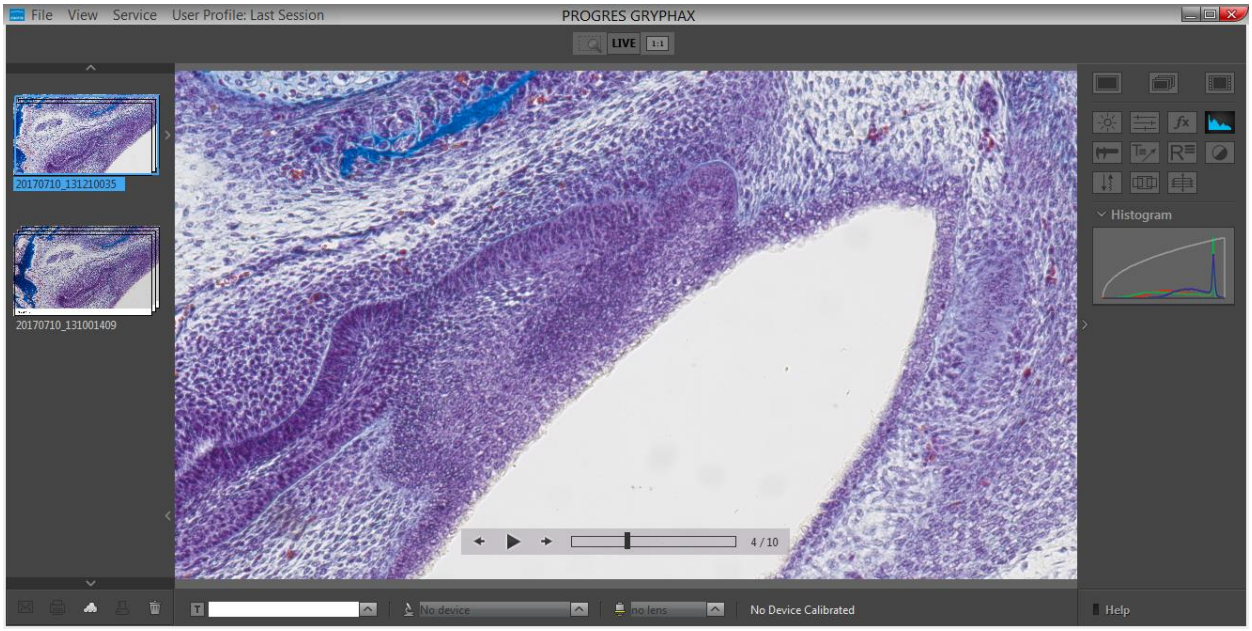
The "Time-lapse mode" of JENOPTIK GRYPHAX software enables user to capture time controlled image sequences by a specified time duration or within a given time interval.

General description:

Some applications require the time controlled capture of image sequences.
The necessary settings for these applications can be set with the functions at "Time-lapse mode".
Time interval and number of images can be selected. All time settings in this record mode are set in seconds. When the software is closed, the current settings are always saved and will be automatically loaded when the software is restarted.

Overview:

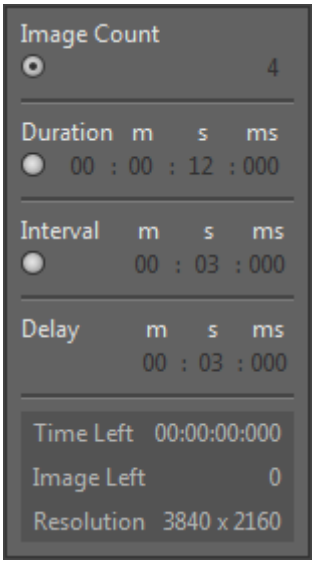
Time-lapse replay mode activated:



27.1 Start Time-lapse mode:

To activate the *Time-lapse mode* open the toolbar by pressing the arrow on right-hand software site or use keyboard short cut (**ctrl / cmd + T**)

Click to the Time-lapse icon at the toolbar, the *Time-lapse* widget will be displayed and contains the following information and options:



- "**Image count**" – total image number you want to record
- "**Duration time**" – specifies the intended time for complete record
- "**Interval time**" – specified the intended time between image record
- Optionally, a start "**Delay**" time can be defined

The first three options depending on each other!
The selected values of option which has the active point "dot" is fixed and can't be changed unless the "dot" will be moved to other option.

As example: User can set the "Image count" to a value of total images e.g. 100 and change afterwards the "dot" to: 

"Image count".

So the value of 100 images is fixed and all other changes of values depending on the fixed "Image count" value! If another value is changed, the respective value will be adjusted automatically to the settings.

At the bottom of Time-lapse widget the information about running image sequence will be displayed for leftover: **time** and **image number** for sequence. And the currently used **image resolution**.

Image resolution for sequence image record is connected to the capture resolution from preferences.
To change the resolution open preferences under *Device Configuration*.
Additionally, we recommend to activate option: "**fast capture**"* for time-lapse image sequence record.
*(valid as of version 1.1.10 and newer)

Reset button on a tool sets all properties to their initial values. Initial values are fixed.

Important note: "Time-lapse" mode is enabled only if record mode "Multi-Fluorescence", "Z-Stacking" or "Panorama" are deactivated and live image is activated before.

27.2 Change storage format:

To change the storage file format for time-lapse image files, please enter the software Preferences at title bar under "Storage Options" or use keyboard short cut (**ctrl / cmd + O**).

Note: The saving time for each time-lapse image depends on the used storage format of the cameras.

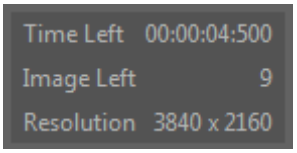
27.3 Start Recording:

To start the image sequence record by pressing the "REC"-Button 

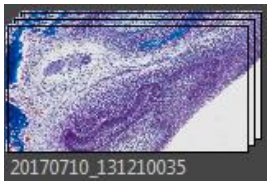
, which instantly changes to "STOP" to signal the user, that the recording mode is active.

During image sequence record, the live preview will be deactivated and each single image will be displayed on image window.

Additionally, the leftover amount of recording time and image number will be displayed on the time-lapse widget.



After save of image sequence files a new time-lapse sequence thumbnail will be created at Gallery. On hard drive a **separate** folder with date- and time-stamp will be created automatically which contains all images from time-lapse sequence record.



The software returns back to *Time-lapse* record mode and showing live preview to start a new sequence record in case that the function "Show image after capture" is deactivated under Preferences / Storage Options. Keyboard short cut (**ctrl / cmd + O**).

Time-lapse is using storage option *"Auto save"* under Preferences / Storage Options. All recorded image files will be saved with an automatic given naming structure to the selected destination folder. The file name contains the: **image number** (beginning with "0") **date**, **time** and the **file extension** separated by an underline "_". This structure can´t be changed by user.

Note: During time-lapse recording mode only a few additional tools can be activated. Option "manual save" will be ignored for image sequence record if selected.

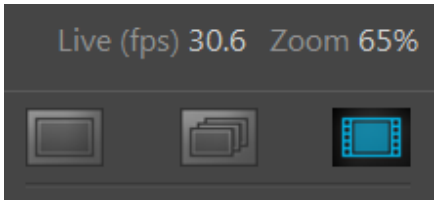
Abort time-lapse record:

Press the "STOP" 

button to abort image sequence record to the Gallery.
Already recorded time-lapse images will be still saved anyhow.

Leave time-lapse mode:

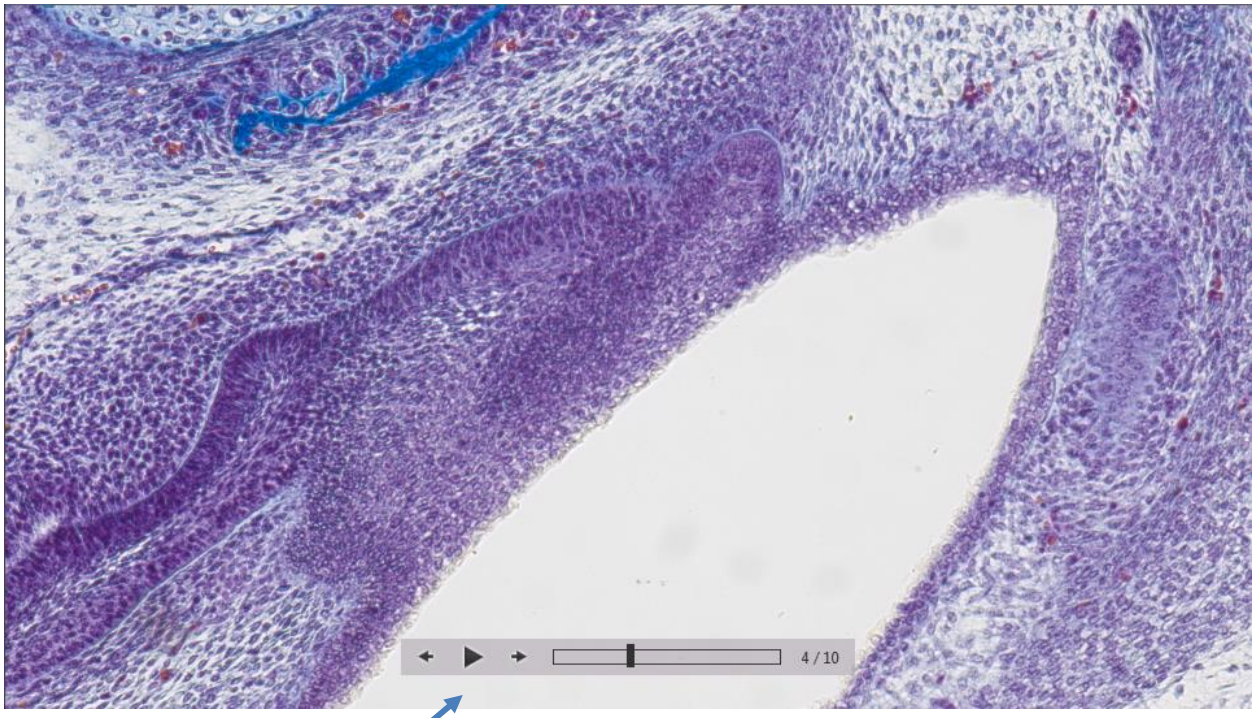
To leave the *Time-lapse* mode use the alternative record modes "**Single shot**" or "**Video**" or "**SlowMotion Video**" icons from the tool bar.



Note: Last set software settings will be still used and saved at software settings.

27.4 Replay Time-lapse sequences:

To replay / playback image sequence files from gallery, double-click on the according time-lapse thumbnail. The image sequence files will be displayed on the image main window together with an overlaid function bar.



The time-lapse replay function bar contains the following options:

a) **Image controls** for Back / Play / Pause / Forward 

b) **Progress bar** to display position of image files or to seek the whole image files by mouse operation. 

c) Display of current **image number** of total image sequence. 

Video tutorial:

Press the link to watch the video tutorial for Graphical User Interface of JENOPTIK GRYPHAX software.

Limitations:

- Measurement and Annotation are not available during Time-lapse image record.
- The max sequence frame rate is limited due to used resolution and capture mode and on used hardware environment (hard drive).
- No afterwards measurement available for images captured without measurement calibration data.

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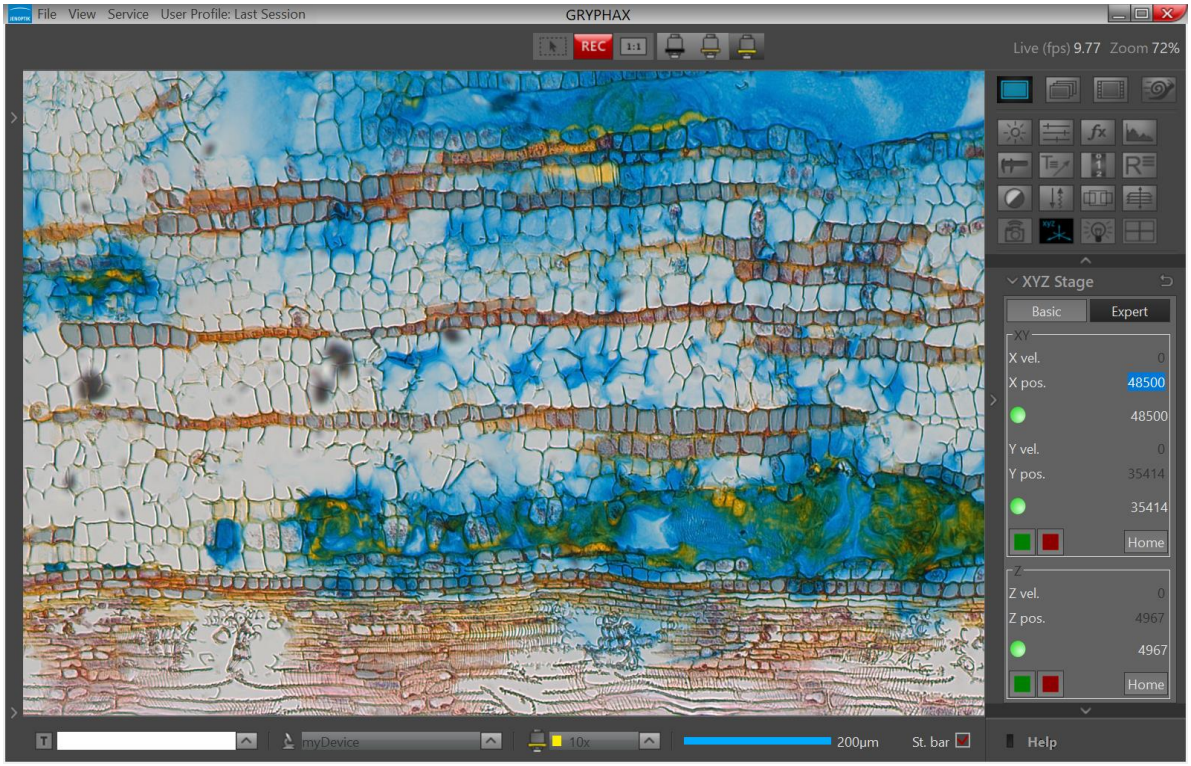
XYZ Stage tool of JENOPTIK GRYPHAX® software

General description:

The "XYZ stage tool" of JENOPTIK GRYPHAX software enables user to control automation systems include motorized stages from 3rd party manufacturers.

The motorized stage devices are supported to intuitive controls manually X, Y and Z-axis directly inside at GRYPHAX application by fly-by-wire control.

Overview JENOPTIK GRYPHAX software with activated XYZ Stage tool:



Open Tool bar:

All JENOPTIK GRYPHAX tools are located at the "Toolbar".

To activate the "XYZ stage tool" open the software "Toolbar" by pressing the arrow on right-hand software site or use keyboard short cut (**ctrl / cmd + T**)

General preparation:

To detect and operate with connected motorized stages from 3rd party manufacturers, the manufacturer software and driver must be installed in advance! In addition, the correct COM port for communication must be pre-set at the default software settings file "default.ini".

To observe the correct COM port, open System preferences / device manager of Operating System (OS).

Check the section "Ports (COM)" and notice the valid com port number of connected stage controller.

Go to GRYPHAX target folder e.g. C:\Program Files\Jenoptik\GRYPHAX-V2.X.0.xxxx\bin\Settings\

Open "default.ini" file by editor and add the used COM port number under line:

PriorDevices\ScanPort="number"

```
#PRIOR device communication port
PriorDevices\ScanPort=7
```

Figure 1 default.ini

Afterwards save file and restart GRYPHAX application. The PRIOR stage would be detected and XYZ stage tool  will be available.

Note: Permission of full control is necessary to save or change file under system folder C:\Program Files\ .

In the unlikely case that the tool does not appear, please check whether the correct port number is used and the stage controller is turned on. Alternatively, please test function of stage and controller by manufacturer demo application.

Important Note: Never change any other content in the file "default.ini"! Otherwise, the whole software would not work anymore!

Automatic port detection:

With GRYPHAX version 2.3.0 the port detection for PRIOR devices is added to software start. In case of missing COM port or change the configuration, the software will ask for new port settings.

28.1 Open Stage tool:

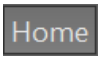
To open XYZ stage tool* click to the tool icon  at the "Toolbar", the stage widget will be opened and contains two separate mode tabs for: 

"Basic" – for manually stage control to control X, Y and Z-axis with joystick slider

"Expert" – for manually stage control by using specific positions, speed settings and additional expert options

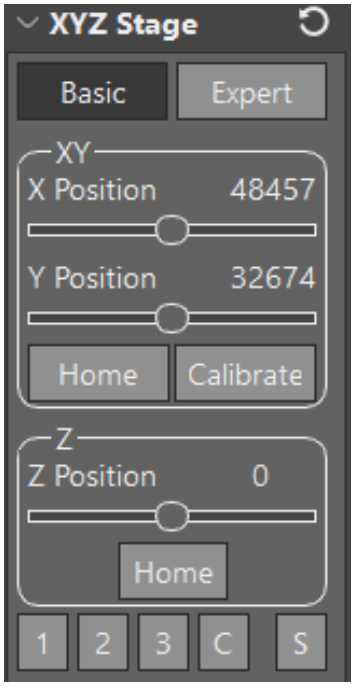
28.2 Preparation:

To operate with XYZ Stage tool the motorized stage device must be calibrated for home position for all axis's (X, Y ,Z) after each software start! Otherwise, tool controls are not available.

To perform home position calibration and re-calibrate of stage – press the according buttons "Home" 

on the tool widget!

Basic tab is activated as default; it contains **software joystick control** of XYZ:



- **X Position slider** – to control X-axis by joystick slider and display the current position; slider combines speed and increment
- **Y Position slider** – to control Y-axis by joystick slider and display the current position; slider combines speed and increment
- **Home button** – to reset X- and Y-axis home position and re-calibrate stage – **Necessary to operate with stage after each software start!**
- **Calibrate button** – to optionally calibrate device for measurement calibration automatically by stage control

---

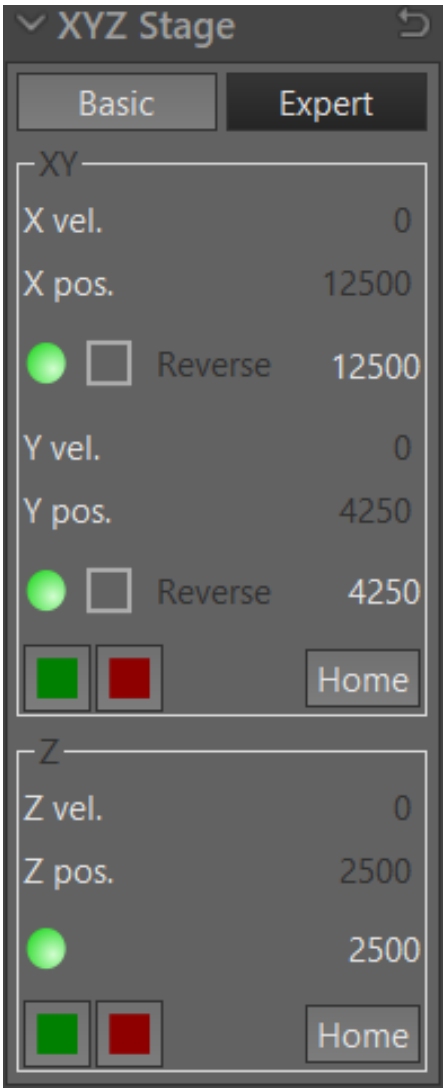
- **Z Position slider** – to control Z-axis by joystick slider and display the current position; sider combines speed and increment
- **Home button** – to reset Z-axis home position and re-calibrate stage – necessary to operate with stage after each software start

---

- **User positions buttons** – definable position **1 | 2 | 3** for x/y position
- **Center button** – to drive the x/y stage to center position
- **Save positions button** – to save current position into user positions **1 | 2 | 3**
  To define the position press "**S**" button and then one of the user buttons **1 | 2 | 3.**

Note: To operate with XYZ-stage tool the COM port must configured beforehand and re-calibrate for home position of stage is necessary after each software start! Otherwise, tool controls are not available.
Always keep attention to the motorized stage and microscope during automatic home calibration and auto measurement calibration. User is always responsible for any stage movement during operation!

Expert tab contains the following expert functions:



- X velocity – set X-axis velocity by enter value if supported
- X position – set X-axis position by enter value

- Status LED
  grey – no stage support or no home calibration done
  green – target position reached
  orange – indicates stages movement
  red – emergency stop or error occur (restart home calibr.)

- Reverse check box – to invert X-axis movement

- Y velocity – set Y-axis velocity by enter value if supported
- Y position – set Y-axis position by enter value

- Status LED – see description above
- Reverse check box – to invert Y-axis movement

- Stop & Emergency Stop buttons – to force the X/Y axis of stage to stop movement gently or promptly

- Home button – to reset X- and Y-axis home position and re-calibrate stage – necessary to operate with stage after each software start!

- Z velocity – set Z-axis velocity by enter value if supported
- Z position – set Z-axis position by enter value

- Status LED – see description above

- Stop & Emergency Stop buttons – to force the Z-axis of stage to stop movement gently or promptly

- Home button – to reset Z-axis home position and re-calibrate stage – necessary to operate with stage after each software start!

- Reset button – to reset back to factory settings (disabled)

*(Available as of JENOPTIK GRYPHAX version 2.2 or newer)

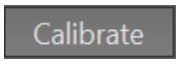
Note: To operate with XYZ Stage tool the COM port must configured beforehand and re-calibrate for home position of stage is necessary after each software start! Otherwise, tool controls are not available.

Important Note: Always keep attention to the motorized stage and microscope during automatic home calibration and auto measurement calibration. User is always responsible for any stage movement during operation!

28.3 Perform Auto-Calibration:

Automatic-(measurement)-Calibration – option is supposed to calibrate measurement for the active device configuration automatically by stage movement within a regular specimen under microscope.

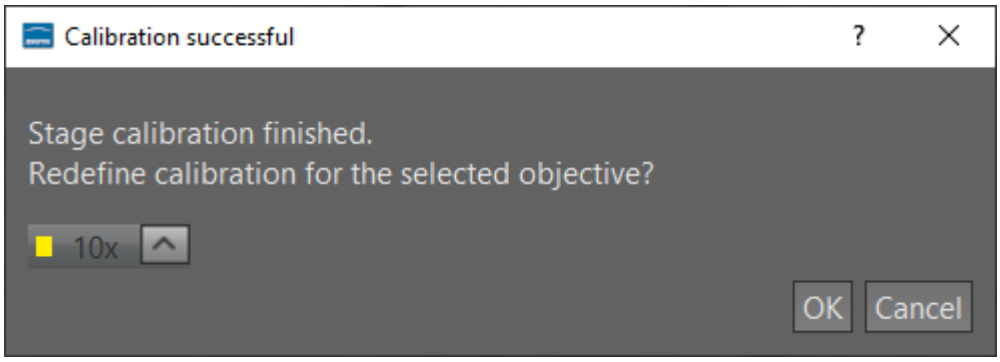
Insert a specimen with a well-defined and non-recurring structure. Set image brightness to regular and well-exposed value.

Press the "Calibrate" 

button to start the automatic calibration procedure. This will takes several seconds.

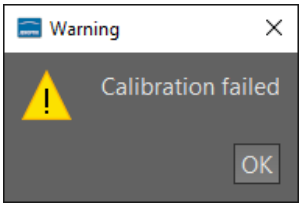
The stage will move in X- and Y-axis and calibrate the device setup. During process, an overlaid rectangle will be displayed and user can observe the movement on image window.

After successfully calibration, a pop-up message window will appear to define the current used magnification from the microscope. Select the magnification according from drop down list and accept by "OK" button.



Now the used magnification is calibrated and other lens / objectives can be calibrated as well.
All calibrations and updates are synchronized to the current "device configuration" and user settings.

In the unlikely case that the automatic calibration failed, a warning message will be displayed. Please change stage position or change specimen and proceed the calibration once again.



Note: Do not remove the specimen before procedure is finished. Avoid any vibrations to the scope! Otherwise, the calibration results would be incorrect!

Tool status:

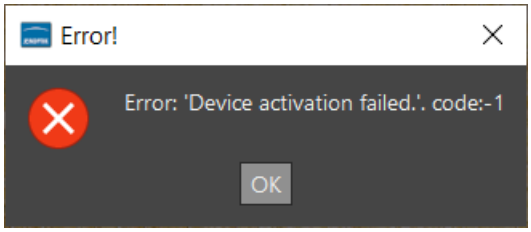
- Activated tools are highlighted in blue. Click on tool icon again to deactivate appropriate tool.
- Tools which are not access able are “greyed out” by software automatically and cannot be reached.

Collapse / expand button on each tool to hide separate widgets on active tool section.

Reset button on a tool sets all properties to their initial values. Initial values are fixed.

Trouble shooting:

In case of lost connection to 3rd party devices, a warning message will be shown like example:



Please check whether the correct port number is used for device detection and the stage controller is turned on. Alternatively, please test function of stage and controller by manufacturer demo application.

Video tutorial:

Not available, yet.

Limitations:

- PRIOR Scientific and Maerzhaeuser motorized stages supported, only.
- Deactivated during Camera Server tool operation.

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XY Scan tool of JENOPTIK GRYPHAX® software

General description:

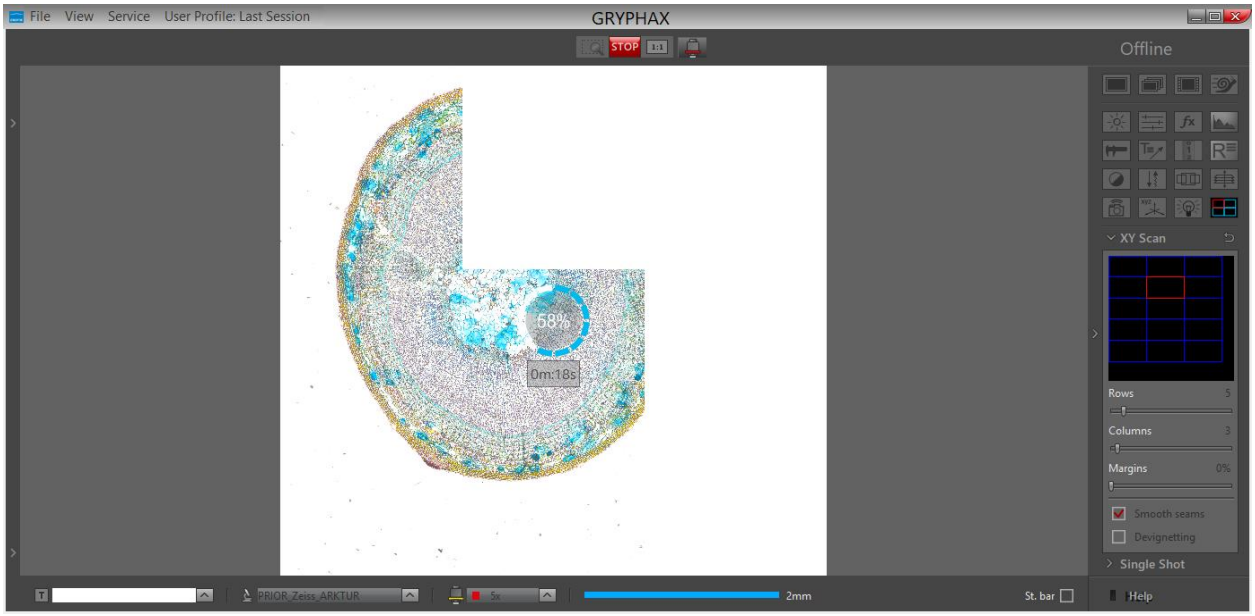
The "XY Scan tool" of JENOPTIK GRYPHAX software enables user to control automation systems include motorized stages from 3rd party manufacturers to create automated panorama images by stage support.

The motorized stage devices are supported to automatically scan X-, Y-axis directly inside at GRYPHAX application to create automated panorama images. I.e. to scan a specimen area bigger than the current camera view using XY motorized stage (if available).

The scan process is based on moving the stage in XY direction on a predefined grid, capturing images at grid cells and stitching them together to create the single, bigger picture.

The XY-Scan tool is supporting motorized scan devices **PRIOR ProScan III** controller & **Märzhäuser Tango*** controllers.

Overview JENOPTIK GRYPHAX software with activated XY Scan tool:



*(Available as of JENOPTIK GRYPHAX version 2.3.0 or newer)

General Preparations:

In order to allow the XY scan tool to work, the connected XY stage has to be activated first.
The activation can be done by using HOME button in XYZ stage tool. Without activation, the tool will display 'XY stage not activated' message on the preview box. After activation, the preview area gets black background and the message disappears.

Open XYZ Stage tool and press the button "Home"  for stage calibration and home position movement. Afterwards, the XYZ Stage tool and the XY Scan tool are ready for use.

For detailed information, please see chapter XYZ Stage tool!

Note: To operate with XY Scan tool the COM port must configured beforehand and re-calibrate for home position of stage is necessary after each software start! Otherwise, tool controls are not available.

Important Note: Always keep attention to the motorized stage and microscope during automatic home calibration and automatic scan movement! User is always responsible for any stage movement during operation!

Open Tool bar:

All JENOPTIK GRYPHAX tools are located at the "Toolbar".

To activate the "XY scan tool"  open the software "Toolbar" by pressing the arrow  on right-hand software site or use keyboard short cut (**ctrl / cmd + T**)

Stage Preparation:

1. Connect the stage device to the computer and configure the communication port (COM) before open GRYPHAX application.
2. Calibrate "Home"  position at XYZ Stage tool. It must be done in advance after each application start!
3. Use the XYZ Stage tool to move to image start position by motorized stage or alternatively set-up the **TL**- and **BR** buttons for start and end position on xy stage.
4. Configure XY Scan parameters from widget before start record of automated panorama images.
5. Use the TL and BR position buttons for easy set the start and end position on specimen / stage.
6. Select the correct lens / measurement calibration otherwise the combined images are defective!

In case the connected XY stage device is not calibrated, a warning message will be displayed and the whole XY scan tool are disabled. Without calibration, the tool will display 'XY stage not activated' message on the preview box.

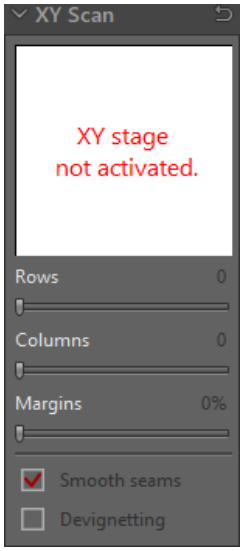


Figure 2 - XY Scan tool offline

In addition, the lens / measurement calibration must be done in advance.
In case of invalid or missing calibration, the software will show a warning message as follows:

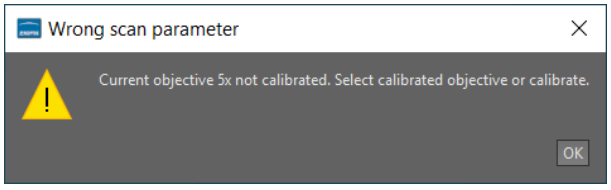
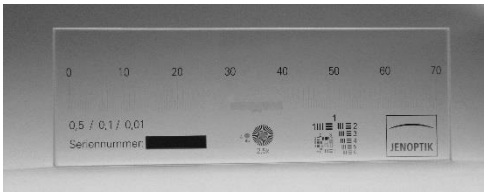


Figure 3 - warning message

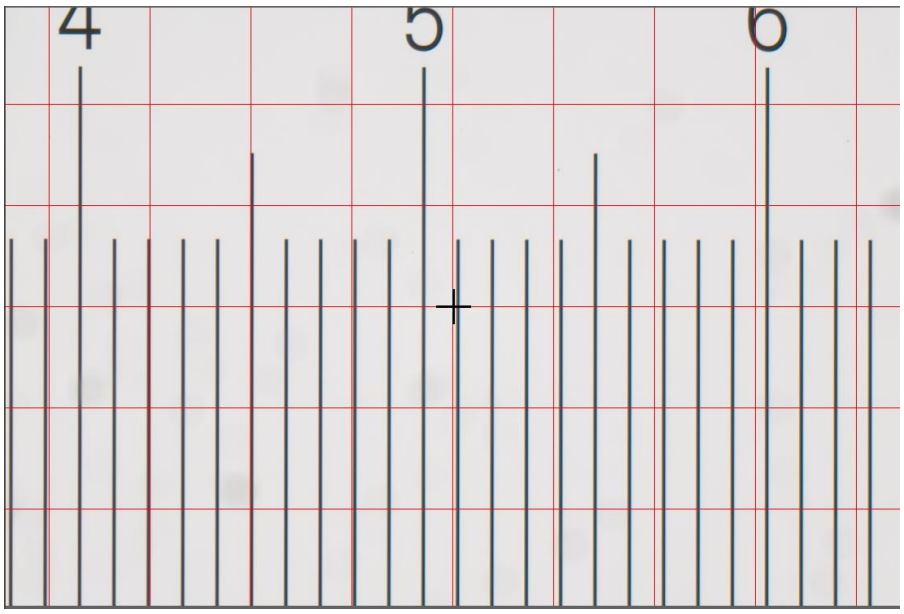
Camera Preparation:

To reach to best results with *XY scan tool* you have to adjust the alignment of camera related to the stage before you start using *XY scan tool*.

To adjust the alignment, you can use the "Grid" function (keyboard short cut "g") and the JENOPTIK GRYPHAX® calibration slide / stage micrometer (order number: 648806).



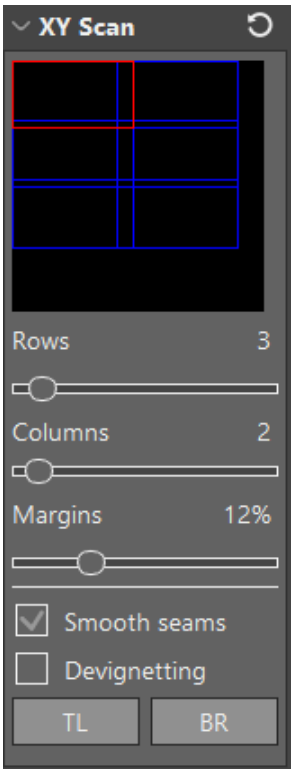
Grid overlay on live image from JENOPTIK stage micrometer to adjust alignment:



Operation:

To open XY scan tool click to the tool icon  at the “Toolbar”, the automated XY Scan widget will be opened and contains the following options by two sections:

Overview section:



Position overview section – displays the number of combining images
Also see live the current position of scan image and update during scan

The preview box shows the actual scan grid relative to the whole XY stage area. The grid is drawn with blue colour. By clicking with the mouse on the preview box, one can change the view to the 'zoom' mode where only the current scan area is presented instead of the whole XY stage area.

Options section:

Rows – number of possible rows can be adjusted by slider or value box

Columns – number of possible columns can be adjusted by slider or value box

Margins – to overlay image and position for scan (to avoid hard transitions between each image) Values from 0% to 45%; recommended to use 10-15%

Smooth seams – to smooth the seams between neighbors images

Devignetting – to avoid vignetting at the edges of images

TL button – define current position as **top left** position on specimen | x/y stage

BR button – define current position as **bottom right** position on specimen | x/y stage

Note: After setup of all XY scan parameter from widget. Do not move the stage, unless the image position at XY scan tool will be not correct anymore.

Margins

Sets how individual grid cells overlaps vertically and horizontally during scanning. The value sets a percentage of a single image (cell) width and height.

Smooth seams

If 'Margins' value is set above 0%, this check box allows the overlapping areas of adjacent images to blend via gradual transparency. This may reduce visibility of edges (seams) between adjacent images.

Devignetting

When this option is on, individual images are post-processed after the capture to reduce vignetting. I.e. the difference in average lightness between the center and corners of the image. Devignetting helps reducing 'checkered' look of the final image.

Start:

To start automated image stitching, press the "REC" button 

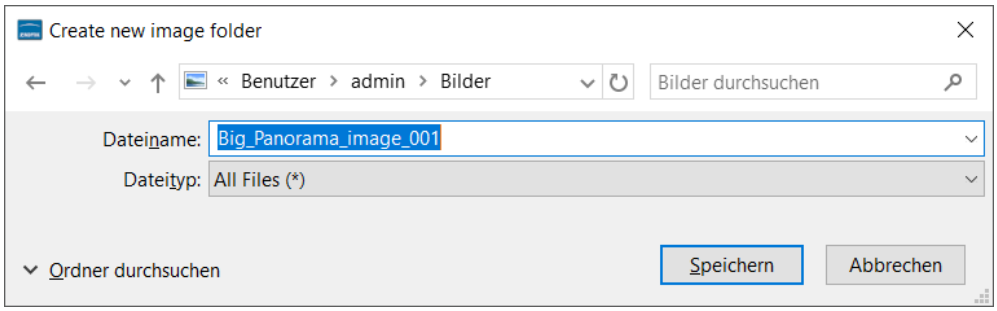
and wait until the whole sample is scanned and the generated panorama image is finished.

The acquisition time to scan the sample is depending on the number of images (rows, columns).

During recording, the status indicator is displayed on the image window.
An approximate time to finish will be displayed.

Please avoid vibrations during scan process. Otherwise, the images combining would be affected!

The maximum image size is unlimited as of version 2.3.0 and newer. If the calculated result image reaches 300 Megapixels in total a special vector image stack as a folder will be created instead.
GRYPHAX software detects stack image folder as vector image on Gallery.
In that case a separate target save window opens to give a file name.



If warning message for image size appear, please reduce the number of images (rows, columns) or save panorama scan image as vector stack folder.

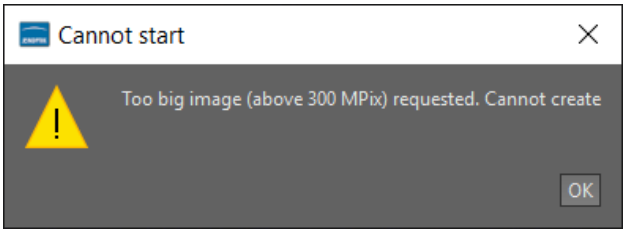


Figure 4 - warning too big image

The automated panorama gives a limited level of control for example, there is only one, predefined direction of scanning - top to bottom - right - bottom to top - right etc. See figure 5 scanning movement.

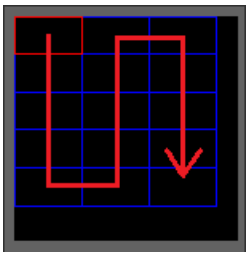


Figure 5 - scan movement

NOTE: The result of combining image is related to the camera orientation! In case of distorted combined image results, please change the **image rotation** at software Preferences under section "Device Configuration" by **180 degrees**!

Stop:

To stop automated image combining press "Stop" 

button. The combining will be canceled and stage will immediately stops at current position. No image file is saved!

Limitation:

- Available as of JENOPTIK GRYPHAX version 2.3.0 or newer
- Only available for supported motorized scan devices (PRIOR ProScan III controller & Märzhäuser Tango controller)
- No live preview during image combining visible
- Movement direction is fix and cannot be changed
- No script programming available
- No Z-focus support for panorama scan
- Deactivated if the following tools are activated:
    - Time-Lapse
    - Video
    - Slow-Motion
    - Panorama
    - Z-Stack / EDF
    - Multi-Fluorescence
    - Camera-Server

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Illumination tool of JENOPTIK GRYPHAX® software

General description:

The "Illumination tool" of JENOPTIK GRYPHAX software enables user to control illumination devices from 3rd party manufacturers directly inside at GRYPHAX application.

Overview JENOPTIK GRYPHAX software with activated Illumination tool:

Open Tool bar:

All JENOPTIK GRYPHAX tools are located at the "Toolbar".

To activate the "Illumination tool" open the software "Toolbar" by pressing the arrow on right-hand software site or use keyboard short cut (**ctrl / cmd + T**)

General preparation:

To detect and operate with connected illumination devices from 3rd party manufacturers, the manufacturer software and driver must be installed in advance. In addition, the correct COM port for communication must be pre-set at the default software settings file "default.ini".

To observe the correct COM port open System preferences / device manager of Operating system.
Check the section "Ports (COM)" and notice the valid com port number of device controller.

Go to GRYPHAX target folder e.g. C:\Program Files\Jenoptik\GRYPHAX-V2.2.0.xxxx\bin\Settings\

Open "default.ini" file by editor and add the used COM port number under line:

PriorDevices\ScanPort="number"

```
#PRIOR device communication port
PriorDevices\ScanPort=7
```

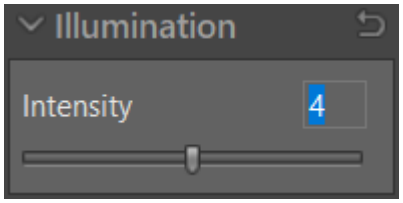
Figure 6 default.ini

Afterwards save file and restart GRYPHAX application. The Illumination device would be detected and Illumination tool  will be available.

In the unlikely case that the tool does not appear, please check whether the correct port number is used and the device controller is turned on. Test device and controller by manufacturer demo application.

30.1 Open Illumination tool:

To open Illumination tool* click to the tool icon  at the "Toolbar", the illumination widget will be opened and contains the option to set intensity by slider or enter value:



Limitations:

Tool only available if Illumination device is supported. Otherwise, the tool icon is disabled.

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System requirements – JENOPTIK GRYPHAX® software & USB 3.0 microscope cameras

JENOPTIK GRYPHAX® microscope camera software

DOWNLOAD

Note 1: For software and driver installation, temporary administrator permission is necessary.
Please contact your local IT department in advance!

Note 2: For software operation, it is required permission of „**full control**" for system folders & subfolders of OS:

Windows OS	"C:\ProgramData\Jenoptik\..."
Mac OS	"MacHD\Library\Application Support\Jenoptik\..."
Linux OS	"/var/lib/Jenoptik/..."

RECOMMENDED SYSTEM REQUIREMENTS (valid as of GRYPHAX version 2.3.0)

Personal Computer	Intel 11th Gen i7 (min. 3.0 GHz) processor | 16 GB RAM (dual-channel*) Apple Mac mini M4 Pro 2024 | 16 GB RAM
Operating System	Windows 10 version 22H2 or newer | Windows 11 22H2 – 64 bit MacOS Sequoia – 64 bit Linux Ubuntu 18.04 LTS – 64 bit
Data Interface	USB 3.0 integrated over PCI Express V2.0 (Renesas chipset)
Graphic Interface	Dedicated Graphic card equipped with on-board video memory
Monitor Resolutions	1920x1200 for AVIOR & SUBRA & KAPELLA & RIGEL & WEGA & POLARIS & PROKYON 3840x2160 for BETRIA & ALTAIR & ARKTUR & NAOS

* dual-channel memory architecture mandatory to reach full camera performance

MINIMUM SYSTEM REQUIREMENTS

Personal Computer	Intel i5 (Dual-Core) processor or comparable | 4 GB RAM (dual-channel*) Apple Mac mini M2 Pro 2023 | 8 GB RAM
Operating System	Windows 10 version 22H2 or newer | Windows 11 22H2 – 64 bit MacOS Sequoia – 64 bit Linux Ubuntu 18.04 LTS – 64 bit
Data Interface	USB 3.0 over PCI Express V1.1
Monitor Resolutions	1280x720 or higher

To re-use existing system environments with or without USB 3.0 interface, we recommend installing the **recommended** USB 3.0 PCI-Express interface card, equipped with "Renesas" chipset, for DESKTOP operation.

Alternatively, you will find our recommended USB 3.0 interface cards, which are tested by Jenoptik, listed on the JENOPTIK GRYPHAX® price list:

- USB 3.0 PCI-Express card for LAPTOP operation
- USB 3.0 PCI-Express card for DESKTOP operation, including two brackets (standard bracket and low profile bracket for mini-PC).

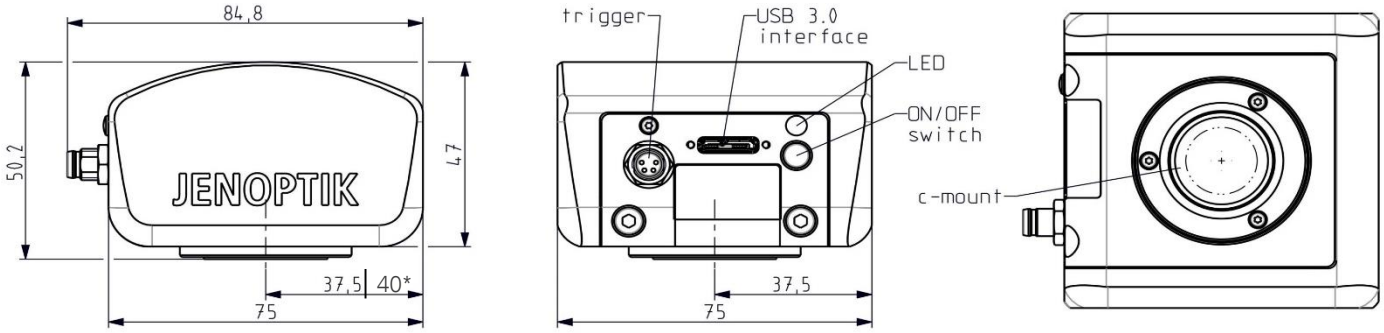
NOT SUPPORTED:

JENOPTIK GRYPHAX® cameras on USB2.0 interface! Connection issues & bad images can occur!

JENOPTIK GRYPHAX® cameras under Windows 7 / 8 or older and 32-bit operating systems!

Dimensions and interfaces of JENOPTIK GRYPHAX® camera series

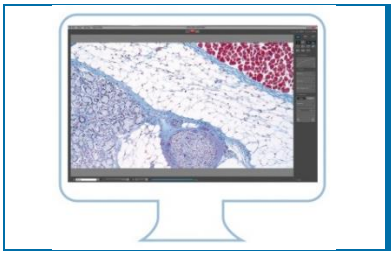
Technical drawings and interfaces of JENOPTIK GRYPHAX cameras:



* only valid for JENOPTIK GRYPHAX® PROKYON

GRYPHAX cameras are equipped with the following interfaces:

1. Optical interface via c-mount – to connect the cameras to every microscope
2. Electrical interface USB 3.0 – SuperSpeed (USB 3.1 Gen 1 | USB 3.2 Gen 1x1) connection socket type micro-B – for data communication and power supply. No additionall power supply is needed!
3. Trigger connection socket – to connect an external device (trigger out signal is supported by camera)
4. "ON / OFF" switch – to turn on or off the camera
5. Status LED – to inform about the camera status as follows:
    - 5.1. LED is permanently green – camera is connected to the computer and ready for operation
    - 5.2. LED is blinking green – camera is delivering live image to the computer
    - 5.3. LED is off – camera not connected to the computer or no power from USB interface



Keyboard Shortcuts of JENOPTIK GRYPHAX® software

JENOPTIK GRYPHAX software is workflow-optimized and very easy to use. Therefore, software includes many time-saving keyboard shortcuts.

Keyboard button:	Shortcuts for:
F1	Open **help**
F2 | ENTER	Start **capturing** in "Capture Mode" (single shot, time-lapse, video)
F3	Return to "**Live**" mode
F4	Open **Individual Save** dialog
F5	Activates | deactivates live image **freeze**
F6*	Switch between **Device configurations** at Status bar
F7*	Switch between **Magnifications / Lens** calibrations at Status bar
F11 | F	Switch between "**Presentation view**" and "Standard view"
DEL	**Delete** selected images from "Gallery" or marked drawings (measurement | annotation)
Z	Switch **zoom** between "1:1" mode and "Fit to screen" mode
CTRL** + P	**Print** selected image(s) from "Gallery"
CTRL** + A	**Select all** (all thumbnails from "Gallery")
CTRL** + G	Open | close "**Gallery**"
CTRL** + O	Open "**Storage Options**" to change destination folders for gallery (images, videos)
CTRL** + T	Open | close "**Toolbar**"
CTRL** + D	Open | close "**Treeview**" to change and manage media destination folder fast & easy
G | C*	Activates | deactivates "**Grid**" or "**Crosshair**" view
V*	Activates | deactivates Image comparison "**Split Image view**"
ESC	**Leave** "Presentation view" | **remove** drawings during creation (measurement | annotation)
Arrow up | down	Gallery **thumbnail** up | down
Page up | down	Gallery **page** up | down
Home	**Jump** to "Gallery" **first** page
End	**Jump** to "Gallery" **last** page
Insert | Ins*	to insert user defined layer image while **Z-Stack | EDF** image record is running
SPACE BAR	Activates "**Magnifier**" or "**Hand tool**"
+ | -	to **zoom IN** or **OUT** while "Magnifier" is active

*valid as of version 2.3.0 | **for Mac users: CMD instead

Hint: We all want to boost our productivity, so we recommend printing out or saving this list of keyboard shortcuts to enhance user's daily work.

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User Guide for JENOPTIK GRYPHAX® Micro-Manager driver

The "Micro-Manager driver" for JENOPTIK GRYPHAX® USB 3.0 cameras enables user to operate with Micro-Manager - the open source microscope software solution for control of automated microscopes. The driver delivers essential functionalities of JENOPTIK GRYPHAX® USB 3.0 cameras. Driver is supported under Windows operating systems.

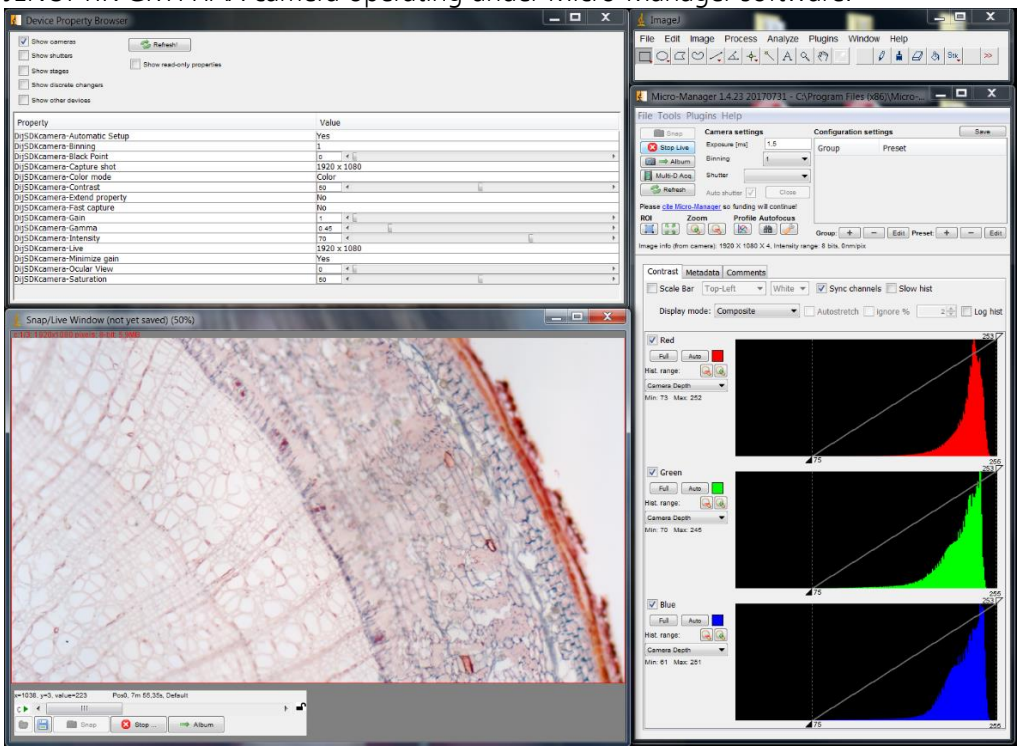
The GRYPHAX Micro-Manager driver 32 bit version is part of JENOPTIK GRYPHAX® software installation as of version 2.0.0 or newer. The Micro-Manager driver 64 bit version is part of GRYPHAX V2.2.0.

34.1 General Preparation:

Depending on the driver and system version, the Micro-Manager software version **2.0.0 Gamma – 32 bit** or **2.0.0 Gamma – 64 bit** has to be installed before start installation of JENOPTIK GRYPHAX Micro-Manager driver. Recommended USB 3.0 interface card (with Renesas chipset) must be installed in advance!

Overview:

JENOPTIK GRYPHAX camera operating under Micro-Manager software:



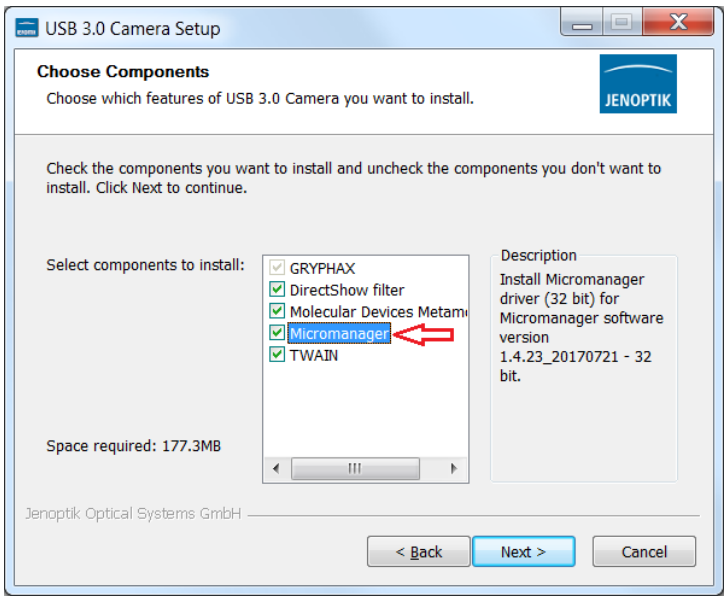
34.2 Installation:

To install the JENOPTIK GRYPHAX Micro-Manager driver, please run the JENOPTIK GRYPHAX® software installation **version 2.0.0.0** (USB 3.0 Camera-v2.x.x.x.exe) or newer.

Latest JENOPTIK GRYPHAX® software can be downloaded from Jenoptik website for free after registration.

DOWNLOAD UPDATE

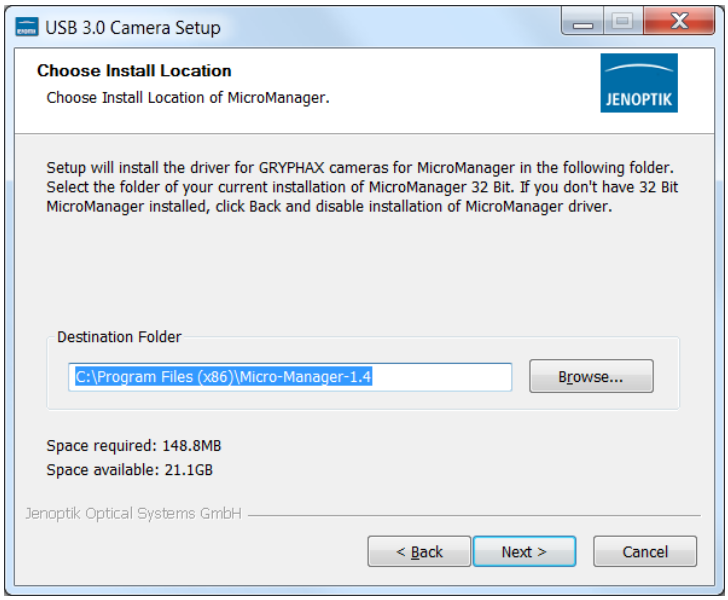
1. Select the Micro-Manager driver from "Choose Components" page and proceed with "Next".



2. Choose the install location of previously installed Micro-manager software.

   Note: The Micro-Manager driver must be installed at root folder of Micro-Manager installation: **"…(x86)\Micro-Manager-2.0\"**
   Or **"…\Program Files\Micro-Manager-2.0\"**

   Click on "**Browse**" button to choose alternative installation location.



3. Follow the installation procedure to complete installation.

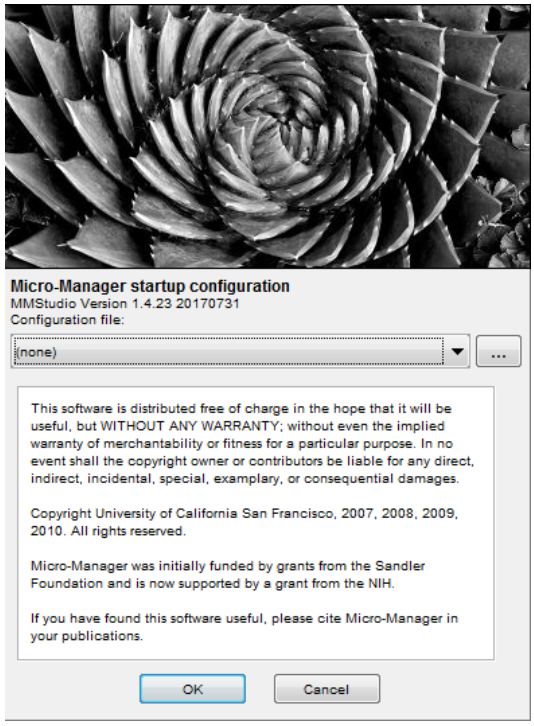
34.3 Hardware configuration:

After successful Micro-Manager driver installation, please plug-in the JENOPTIK GRYPHAX USB 3.0 camera to USB 3.0 port at recommended interface card.

Note: To operate with JENOPTIK GRYPHAX cameras under Micro-Manager software a hardware configuration file is mandatory. Please follow the next steps to configure hardware settings file.

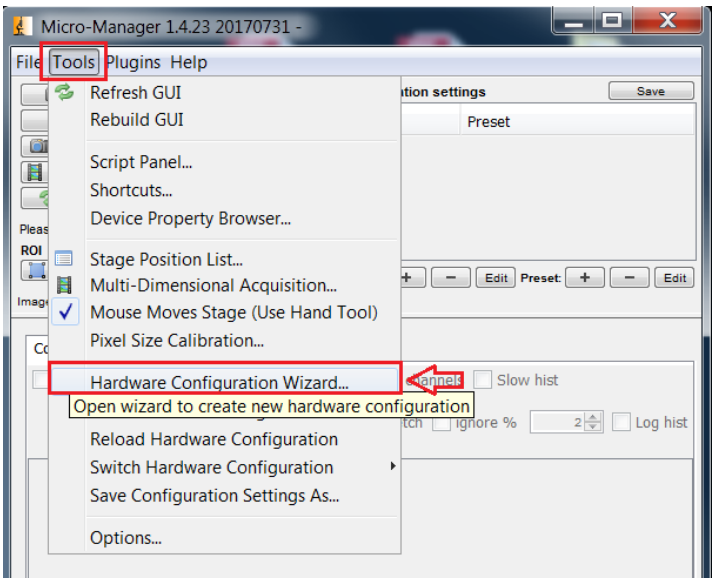
For detailed information, please visit official Micro-Manager support website:
https://micro-manager.org/wiki/Micro-Manager_User%27s_Guide
(Note: This is an external link outside our influence area, which can be removed or invalid)

Start the Micro-Manager software Micro-Manager-1.4 from installation directory without "Micro-Manager startup configuration".

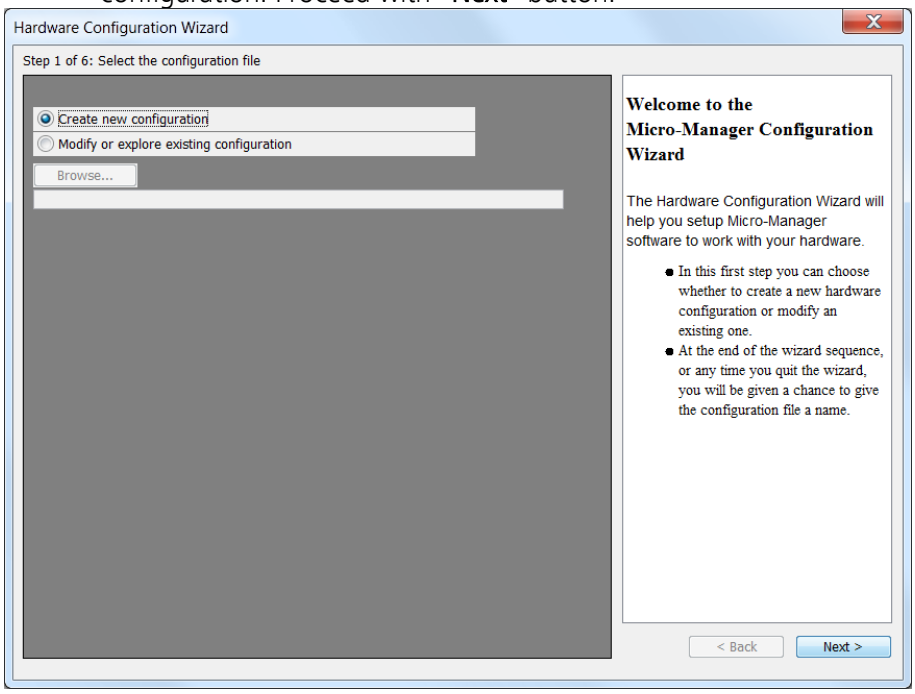


Important Note: Micro-Manager – **Device Interface version = 69** is supported only!

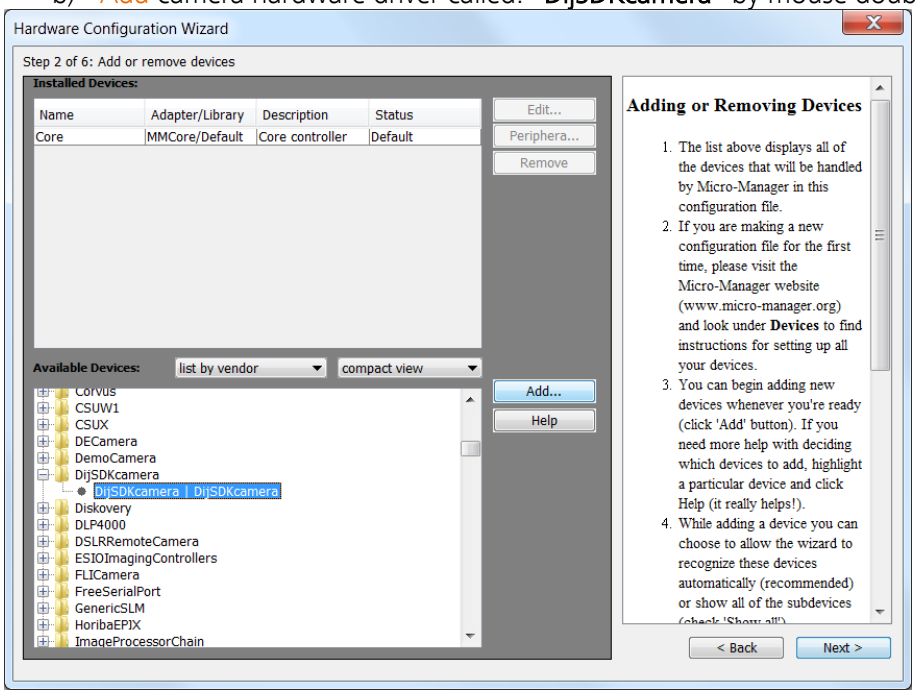
To create a Micro-Manager configuration with JENOPTIK GRYPHAX camera support, please navigate to the title bar of Micro-manager and activate option: "**Hardware Configuration Wizard…**" from menu: "**Tools**".



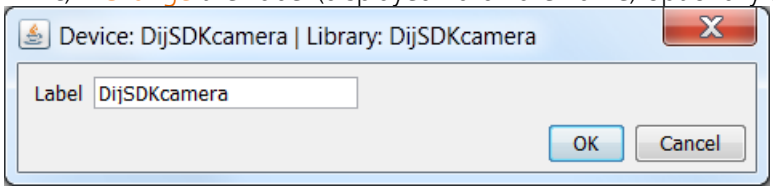
a) Follow up the configuration wizard by modify existing configuration or by create of a new configuration. Proceed with "**Next**" button.



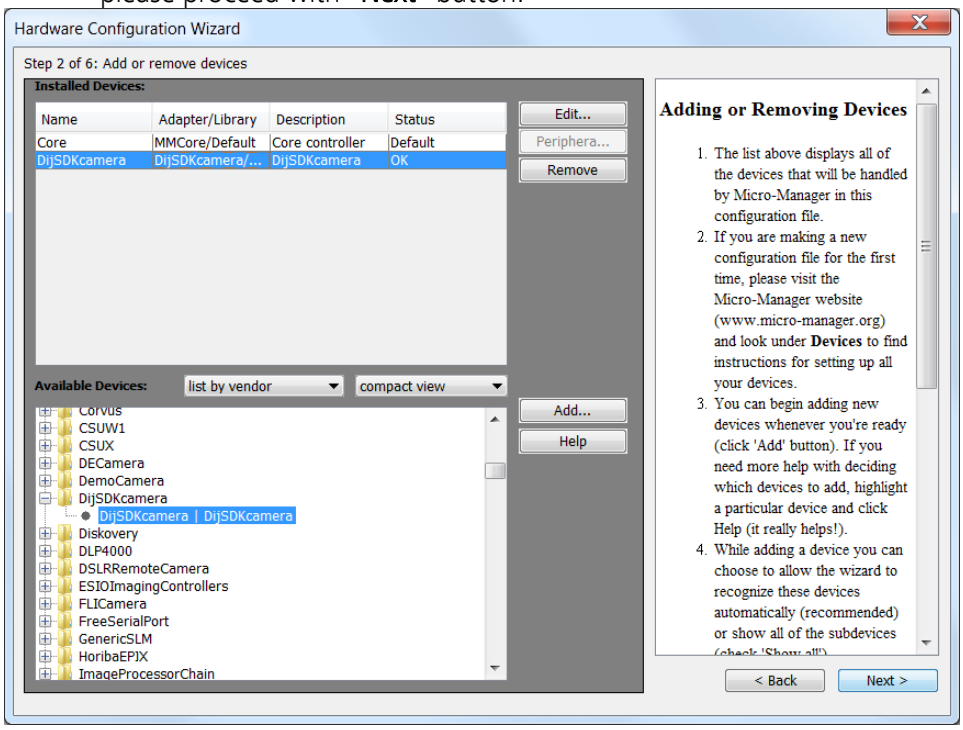
b) Add camera hardware driver called: "**DijSDKcamera**" by mouse double click or "**Add**" button.



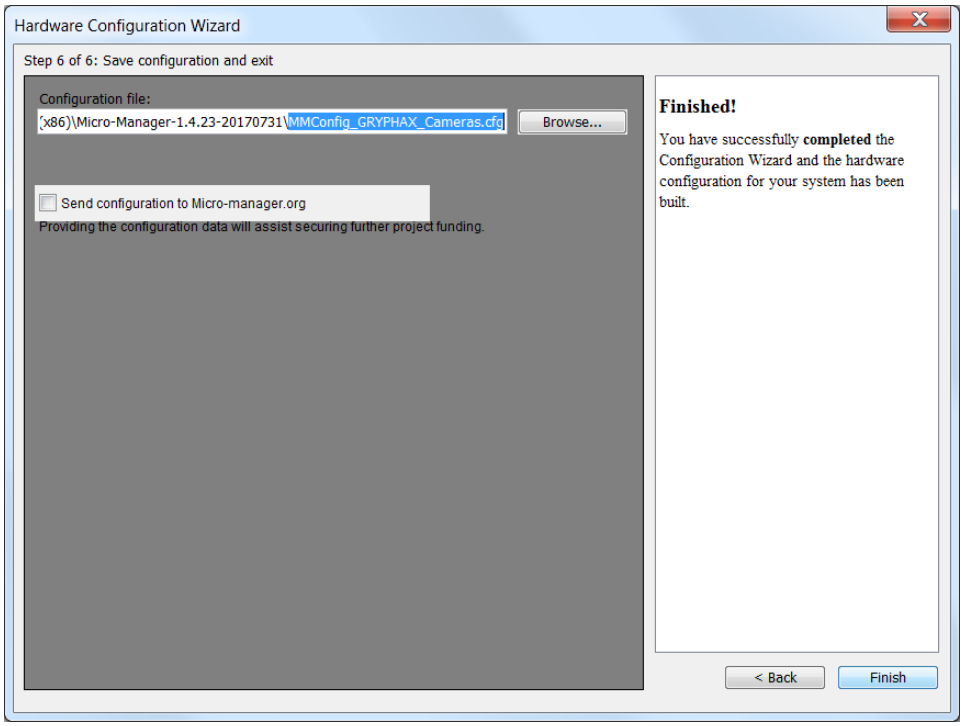
c) Change the Label (displayed hardware name) optionally and confirm by "**OK**" button.



d) After successfully adding the JENOPTIK GRYPHAX camera driver to the list of "**Installed Devices**", please proceed with "**Next**" button.



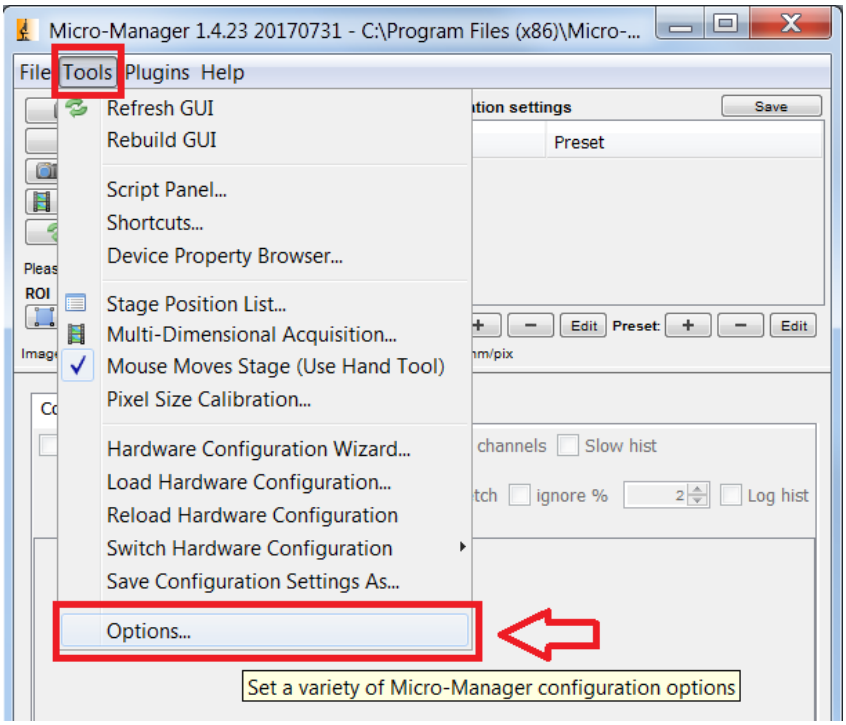
e) Complete the hardware configuration by save of new / changed configuration and press "**Finish**" to exit the wizard.



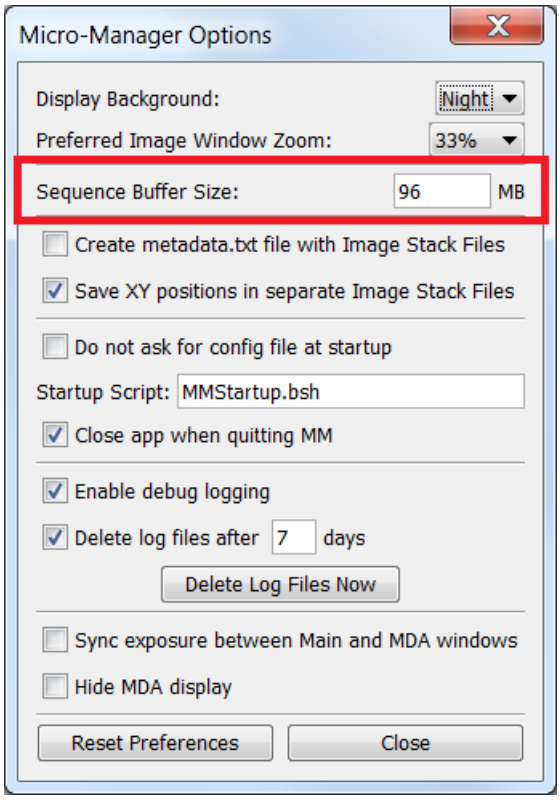
f) Configuration of hardware support file is completed. Now you are prepared to operate with JENOPTIK GRYPHAX USB 3.0 cameras together with Micro-Manager software.

34.4 Configure recommended memory settings for 32-bit version:

To edit memory settings for **Micro-Manager** plug-in, please navigate to the title bar of Micro-manager and open option: "**Options…**" from menu: "**Tools**".



Change the "**Sequence Buffer Size**" between: **96 to 256** MB (recommended size to operate with JENOPTIK GRYPHAX cameras).

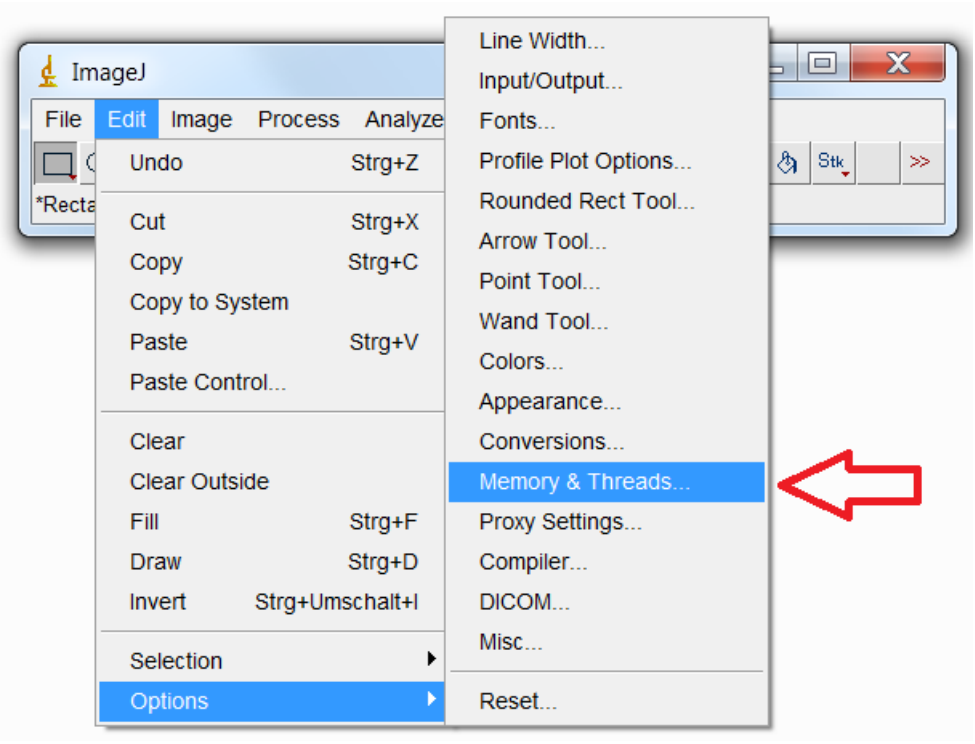


For detailed information, please visit official Micro-Manager support website:

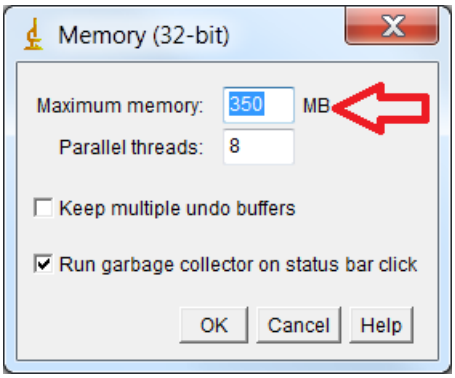
https://micro-manager.org/wiki/Micro-Manager_Configuration_Guide#Memory_Settings
(Note: This is an external link outside our influence area, which can be removed or invalid)

Note: The best working buffer size varies depending on used hardware and software environment!

To edit memory settings for **ImageJ** software, please navigate to the title bar of ImageJ and open option: "**Options**" from menu: "**Edit**".



Change the "**Maximum memory**" size to approx.: **350** MB (recommended size to operate with JENOPTIK GRYPHAX cameras).

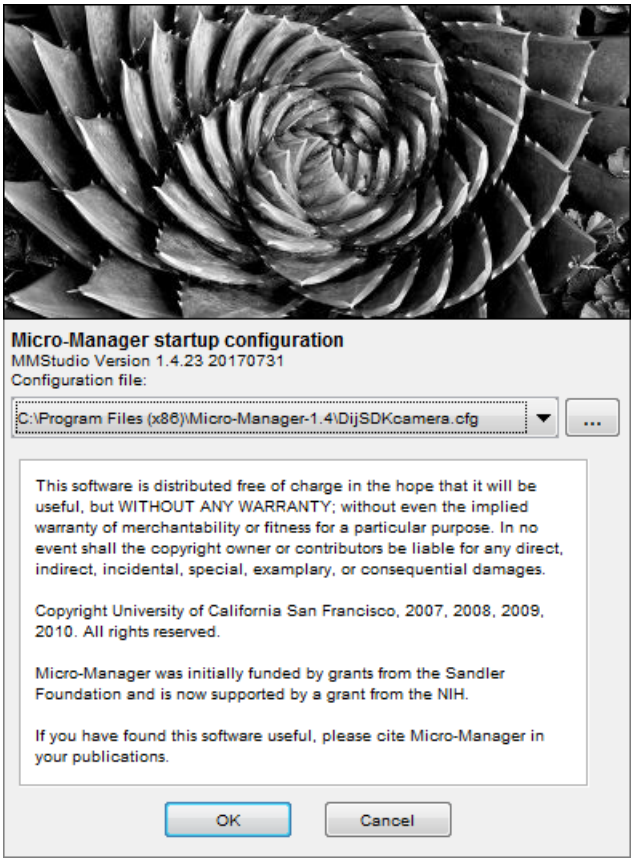


Note: The best working memory size varies depending on used hardware and software environment!

34.5 Start Micro-Manager and select hardware configuration:

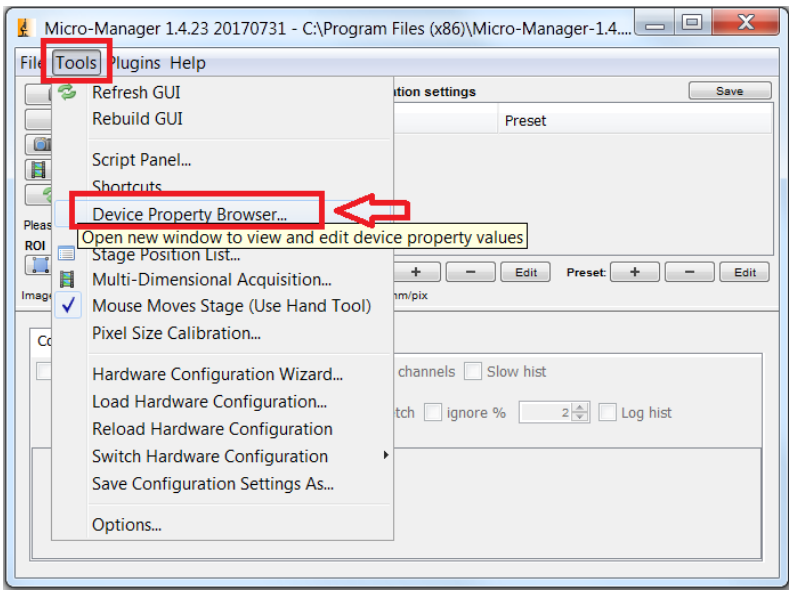
Start Micro-Manager application Micro-Manager-1.4 from your installation directory.

Select hardware configuration with JENOPTIK GRYPHAX USB 3.0 camera support from "Micro-Manager startup configuration dialog" to activate the cameras. Click on **"…"** ... button to load configuration file from PC.



To setup camera functions, please navigate to the title bar of Micro-Manager and open the "**Device Property Browser**" from menu: "**Tools**".

Afterwards, a new window will be open to view and edit camera property values.



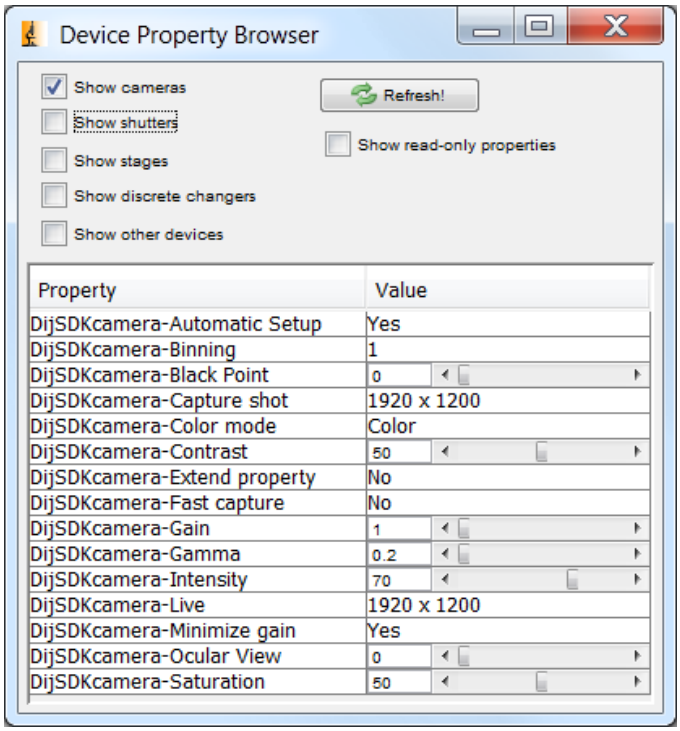
At "**Device Property Browser**" all relevant camera values can be changed.

By option "**Extend property**" you can activate the extended property dialog with more function compared to the "Device Property Browser".

Afterwards, the camera driver windows for camera settings and live preview will appear automatically.

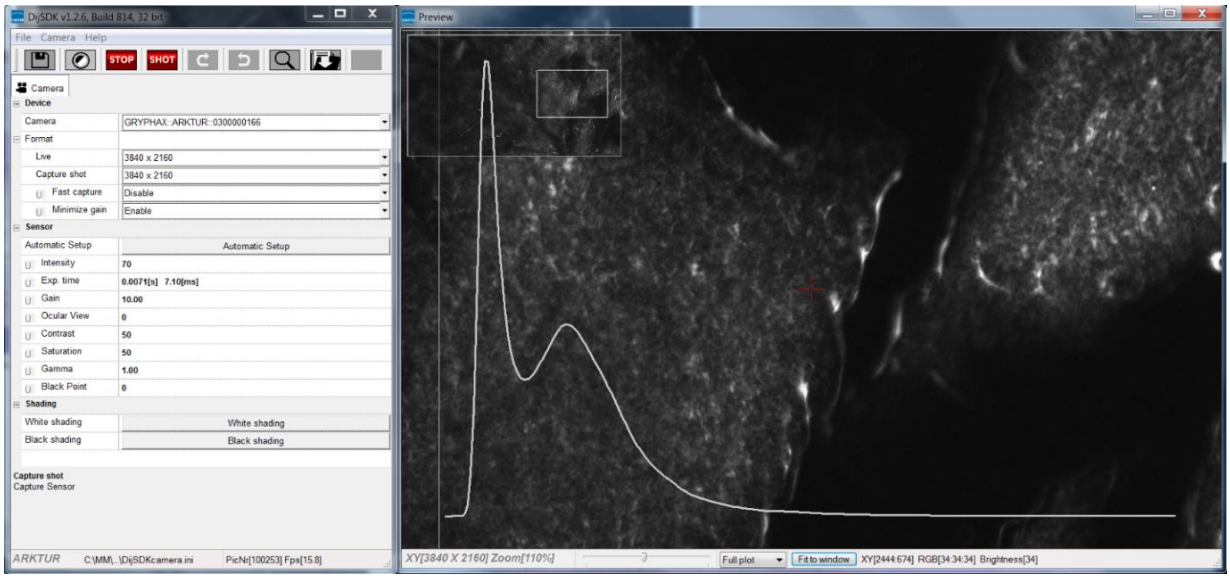
At the driver settings window you can prepare all camera relevant settings to get best results from camera. Additionally, you can observe your settings e.g. **white balance** directly at the live preview window.

For further details, please see next pages.



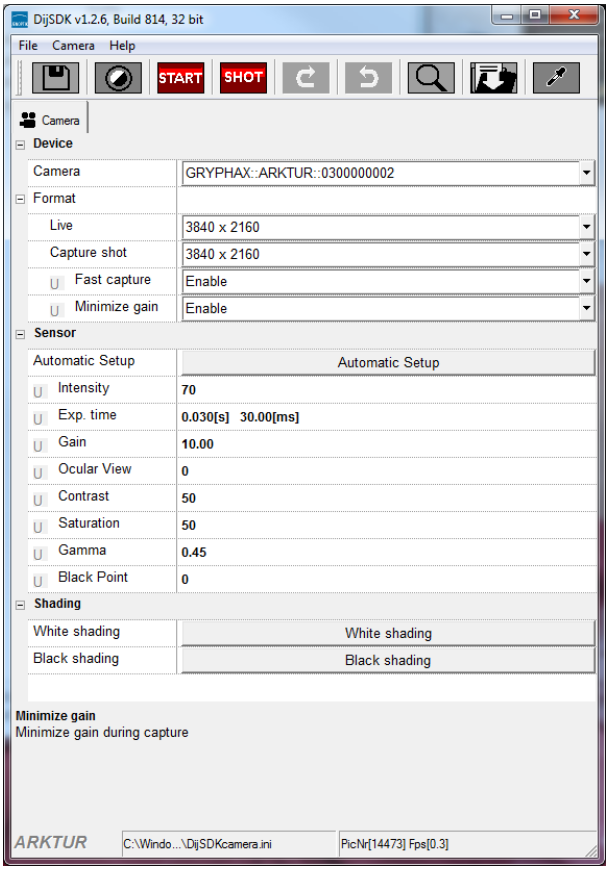
Note: Due to the limitation of Micro-Manager, not all values and parameter of Device Property Browser can be adjusted during live preview or single image capture!

JENOPTIK GRYPHAX camera driver windows for extended camera settings and live preview:



34.6 Overview of settings window:

1. Toolbar – contains most important tools
2. Select active camera
3. Format - change image settings for:
   - Live and Capture shot resolution
   - Fast capture mode
   - Option – Minimize gain during capture
4. Image parameter settings*
5. Create / delete Shadings
6. Information field for help text & status



Note: All settings are saved (under folder: **C:\Users\<user name>\AppData\Roaming\DijSDK\...**) for each camera type and will be reused after open of driver again. Settings are not connected to individual camera serial numbers.

34.7 Toolbar:

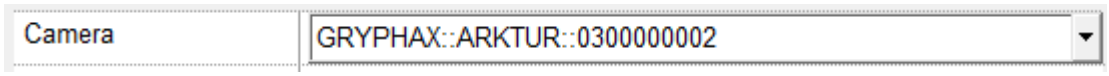
The Toolbar of driver contains the following functions:

-  Save camera settings manually to currently used settings file.
-  Change between color mode and black / white mode for color cameras.*
-  Start / Stop **Live image preview** at the preview window.
-  Shot button to start transfer **single capture shot** image via driver interface.
-  Magnifier tool to activate / deactivate magnifier glass at preview window.
-  Save image option to save last displayed live image from preview window to hard drive.
-  White balance pipette to set manually white balance for color cameras at preview window.*

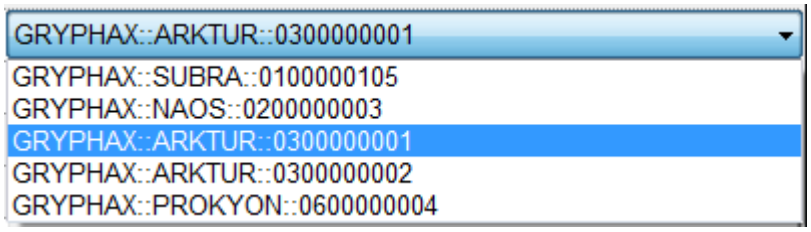
*functions available for color cameras only

Select camera:

To activate or change camera, select the appropriate camera from dropdown list of driver.



After activation of camera from dropdown list, the according settings to the camera type will be loaded from settings file and used.



Note: In case of first camera start, the "Automatic setup" process will be proceed.

Format:

Under format section user can set-up different image resolution for live preview and capture shot.

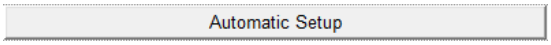
"*Fast capture mode*" reduces processing time and transfer time for image transfer via driver.

By activation of "*Fast capture mode*" the driver will use the selected live resolution for single shot (image transfer) instead of the selected capture shot resolution!

By activation of option "*Minimize gain during capture*" the gain value will be minimized for capturing and adjusting the exposure time accordingly. This option is recommended and will reduce noise level and enhance image quality.

34.8 Camera image parameter:

Important: All *camera image parameter* are saved during close driver for each camera type and will be reused after open of driver again.

The *Automatic Setup* option can be used at any time to 

set all camera image parameter to default values. The applied shading correction will be deactivated. Additionally, the automatic white balance and the color correction to the used light source will be applied and "Auto Exposure control" is enabled.

All *camera image parameter* can be adjusted by scroll slider or by enter of value.

The ***Exposure control*** option contains the following parameter: Intensity value, Exposure time and Gain value.

Intensity	75
Exp. time	0.033[s] 33.00[ms]
Gain	1.00

Set ***Intensity*** level to activate the automatic exposure control function. The selected value corresponds the mean intensity value in percent. Available range from 0 to 100%

Change **exposure time** value or **gain** value to activate manual exposure control.

Ocular View* – to adapt the color impression from the eyepieces (microscope) to the image on screen.

Contrast – to enhance image contrast for live and captured images.

Saturation* – to change color saturation for live and captured images.

Gamma – to change gamma value for live and captured images.

Black Point – to enhance noise level in dark image areas.

Ocular View	0
Contrast	50
Saturation	50
Gamma	0.45
Black Point	0

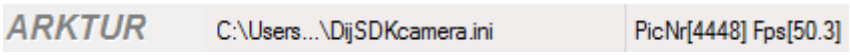
*function available for color cameras only

Reset settings separately:

All ***camera image parameter*** can be reset to default value separately by pressing reset icon  .

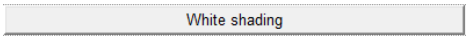
Status bar information:

Status bar displays the connected camera, settings location, frame number and frame rate.



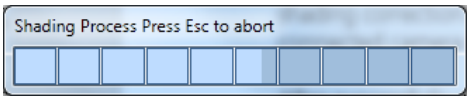
Create / delete white shading:

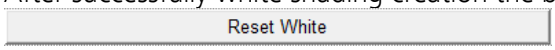
White shading function corrects intensity variation across the image, caused by the microscope or objectives.

Click on the button "**White shading**" 

to create a white shading correction. The driver will automatically create a white shading correction file for the connected camera type.

This will take up to some seconds, the progress indicator will be shown during creation. Press "Esc" will abort process.



After successfully white shading creation the button will change status to "**Reset White**"


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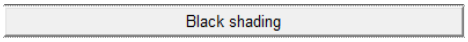
The white shading correction is now available and used. To deactivate the white shading press "**Reset White**" and the white shading correction file will be deleted and cannot be reloaded again.
After reset / delete of shading file, a new shading file has to be created to activate shading again.

The shading files will be saved on: "**C:\Users\<user name>\AppData\Roaming\DijSDK**" and are reused after driver restart and appropriate camera type is connected.

Note: Driver can save just one shading file for each camera type. The file is valid to the individual camera serial number!

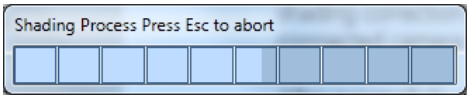
Create / delete black shading:

Black shading function enhance noise level for long time exposed image.

Click on the button "**Black shading**" 

to create a black shading correction. The driver will automatically create a black shading correction file for the connected camera type.

This will take up to some minutes, the progress indicator will be shown during creation. Press "Esc" will abort process.



After successfully black shading creation the button will change status to "**Reset Black**"


.

The black shading correction is now available and used. To deactivate the black shading press "**Reset Black**" and the black shading correction file will be deleted and cannot be reloaded again.
After reset / delete of shading file, a new shading file has to be created to activate shading again.

The shading files will be saved on: "**C:\Users\<user name>\AppData\Roaming\DijSDK**" and are reused after driver restart and appropriate camera type is connected.

Note: Driver can save just one shading file for each camera type. The file is valid to the individual camera serial number!

34.9 Capture / Transfer images:

To transfer single images press the "Shot" button 

on the toolbar. The live preview image will be stopped and a single image will be transferred by driver interface to the application.

Live image will be restarted automatically at preview windows after transfer of single image.

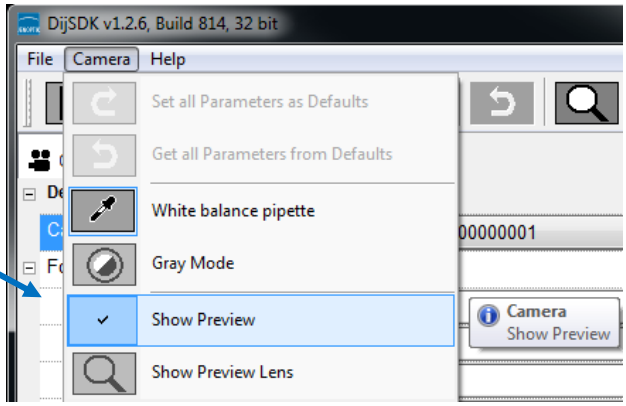
34.10 Start / Stop Live:

To stop or restart live preview at the preview window, press live control button 

at the toolbar.

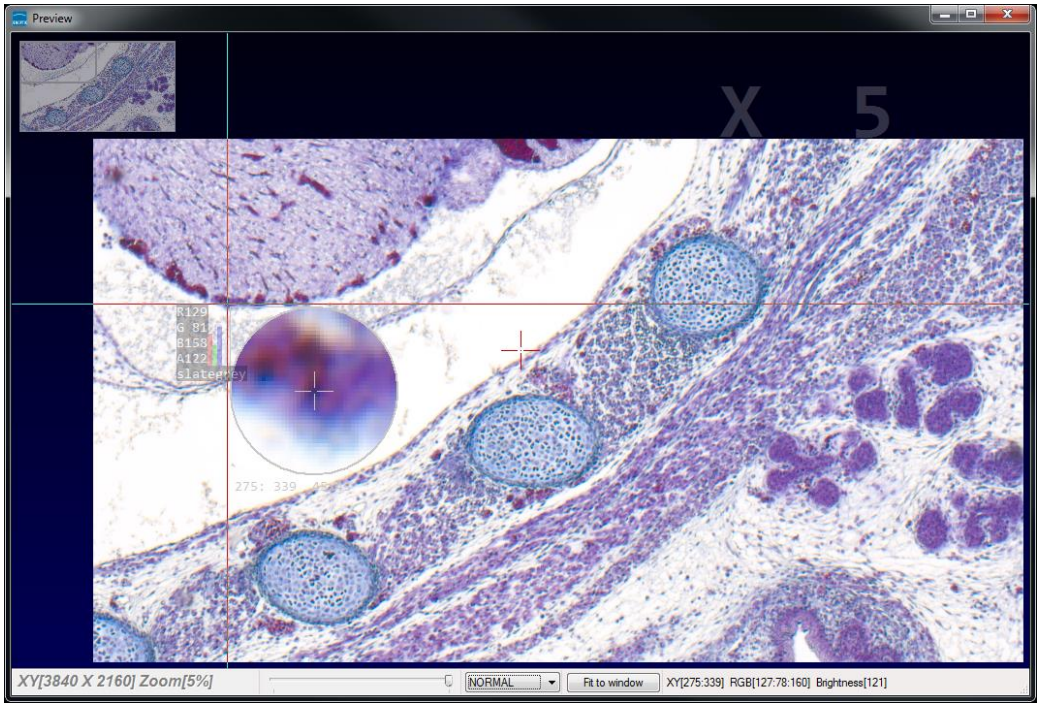
Open / close preview window:

To deactivate or activate the preview window of driver, navigate to the "camera" menu entry and choose "Show Preview".



34.11 Preview window:

The *preview window* displays the live stream preview from the camera as well as the capture shot images.



34.12 Preview window tools and options:

Preview window contains the following tools and information at the toolbar:

Image dimensions (X/Y) of current live preview 

Display of current selected zoom level from preview window 

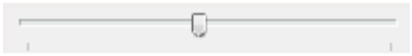
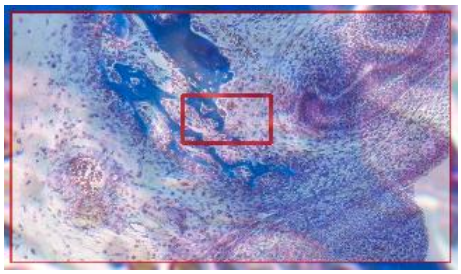
Zoom slider or scroll wheel to change zoom level. Left position zoom out, right position zoom in. 

Image overview as overlay to display whole image in case of 1:1 view or image zoom over live preview.

Note: To change image section, use the rectangle from overview.



Display Mode drop down menu 

to change between different view options:

"**Normal view**" – view image as color or b/w image without histogram

"**Negative view**" – invert image values to get negative image view

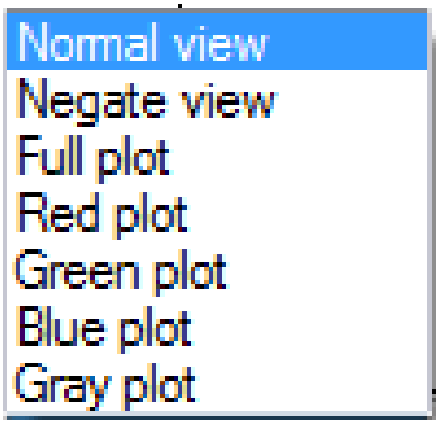
"**Full plot**" – to activate RGB and gray channel of histogram as overlay

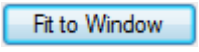
"**Red plot**" – to activate red color channel of histogram as overlay

"**Green plot**" – to activate green color channel of histogram as overlay

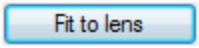
"**Blue plot**" – to activate blue color channel of histogram as overlay

"**Gray plot**" – to activate gray channel of histogram as overlay

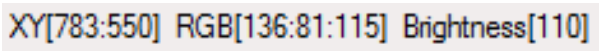


Fit to screen function activated by button 

or by double click on left mouse button into the live preview window.

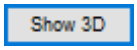
Fit to lens function to change back to 1:1 view and enable zoom slider. 

Display of RGB values and image coordinates of corresponding mouse pointer position.

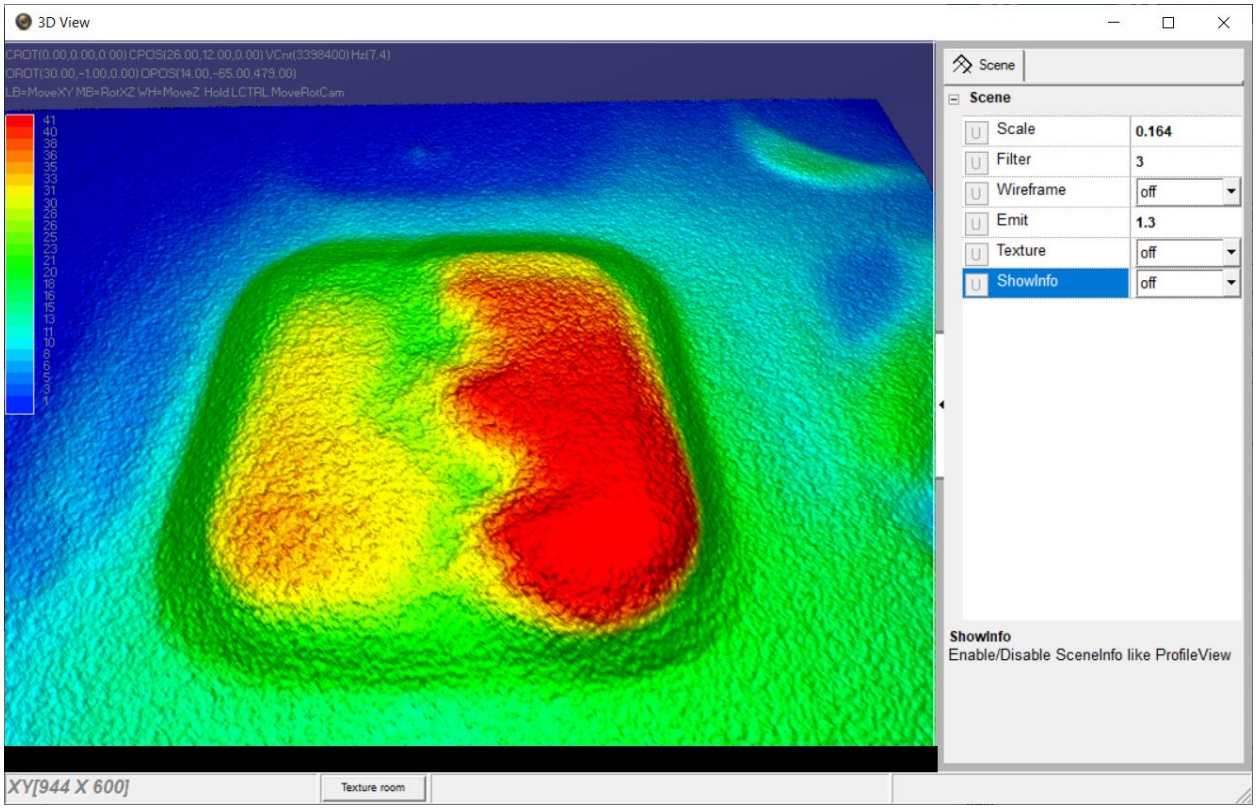


Presentation mode – to change live preview window view between "**full screen**" and "**normal window**" by click on middle mouse button (scroll wheel) into the preview window. Whole live preview will be displayed on the screen.

Experimental pseudo 3D-View* – to display a 2D image as a virtual 3D image.

Press button "**Show 3D**" 

to activate a separate preview window for pseudo 3D live preview.



The window shows a 3D color map image and display options to adjust the scenario.

*(Available as of JENOPTIK GRYPHAX version 2.2 or newer)

Adjust View:

Move the 3D image by mouse operation on preview window.

Zoom in / out by mouse wheel on preview window.

Open scene settings menu on the right-hand site. Click on the arrow and swipe left to open.

Scene settings:

Scale – to set the scaling factor for depth

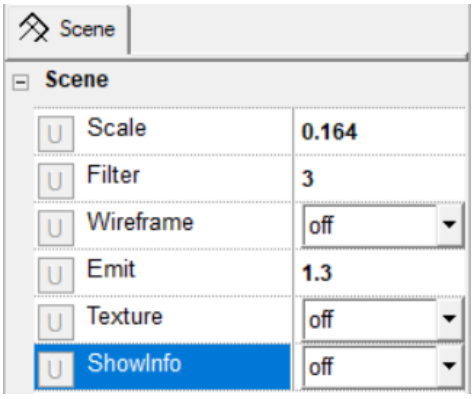
Filter – to change filter settings for details and smoothness

Wireframe – to enable / disable wireframe support of GPU card

Emit – to increase / decrease shining

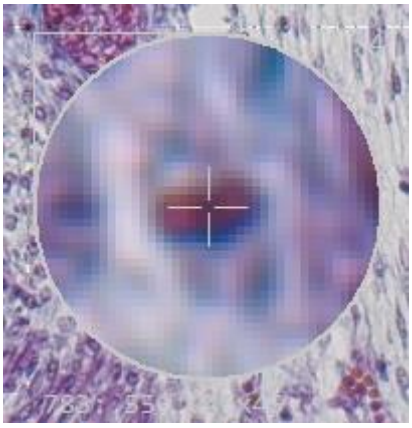
Texture – to turn on / off "JetColorRoom" without textures

ShowInfo – to enable / disable scene information



Magnifier glass activated by Magnifier button  to zoom in 4x times on live preview.

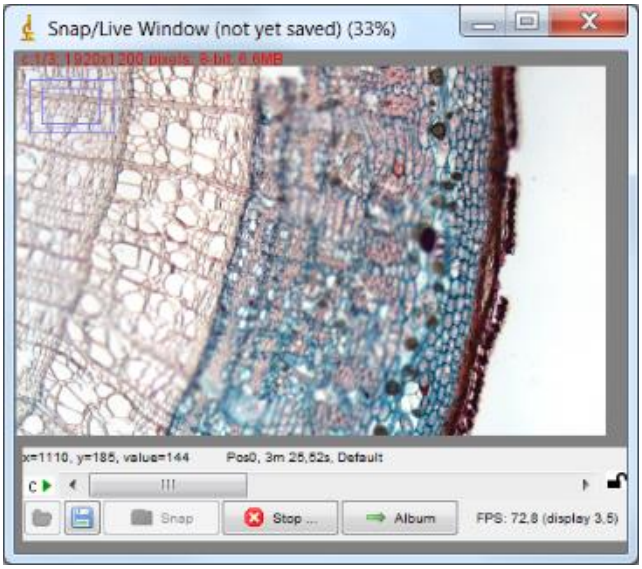
Note: By right-hand mouse click the magnifier appearance changes between "rectangle" and "circle glass".



34.13 Start live preview:

To start live preview from camera press "**Live**" 

button from main window. Micro-Manager will show live preview with pre-selected values from Device Property Browser at separate image window.



34.14 Start single image snap:

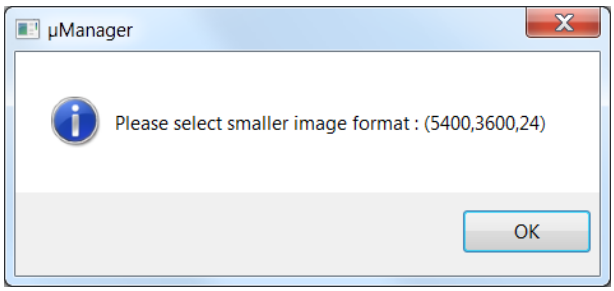
To start single image snap from camera press "**Snap**" 

button from main window. Micro-Manager will capture a single image with pre-selected values from Device Property Browser at separate image window.

Warning message:

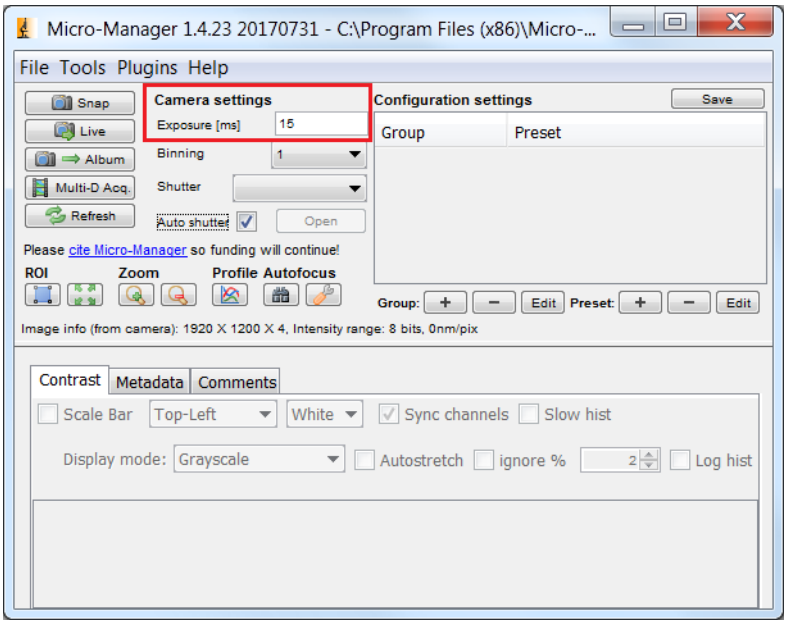
Micro-Manager driver will display the following warning message in case that previously cofigured memory size is insufficient to start live preview or single image capture.

Please change memory settings for Micro-Manager "**Sequence Buffer Size**" or reduce image resolution.



34.15 Change Exposure Time:

To edit exposure time value for live preview and single image snap by option: "**Exposure**" at Camera setting from Micro-Manager main window.



Exposure time value are displayed in "**ms**" milliseconds.

For detailed information, please visit official Micro-Manager support website:

https://micro-manager.org/wiki/Micro-Manager_User%27s_Guide#The_Micro-Manager_Main_Window

(Note: This is an external link outside our influence area, which can be removed or invalid)

34.16 Limitations:

- Micro-Manager software V2.0.0_GAMMA - 32 bit (Device API version 69) support only*.
- Micro-Manager software V2.0.0_GAMMA - 64 bit (Device API version 69) support only*.
- Only JENOPTIK GRYPHAX USB 3.0 camera supported.
- Windows 7 SP1 / 10 support only.
- Camera driver functionalities are limited due to the Micro-Manager limitations.

*(Part of JENOPTIK GRYPHAX version 2.2.0 or newer and DijSDK 2.5.2 or newer)

Versatility –
giving you the freedom to work
with your favorite equipment.

User Guide for JENOPTIK GRYPHAX® MetaMorph driver

The "MetaMorph driver" for JENOPTIK GRYPHAX® USB 3.0 cameras enables user to operate with MetaMorph microscopy automation & image analysis software solutions from Molecular Devices, LLC. The driver delivers essential functionalities of JENOPTIK GRYPHAX® cameras. Driver is supported under Windows operating systems.

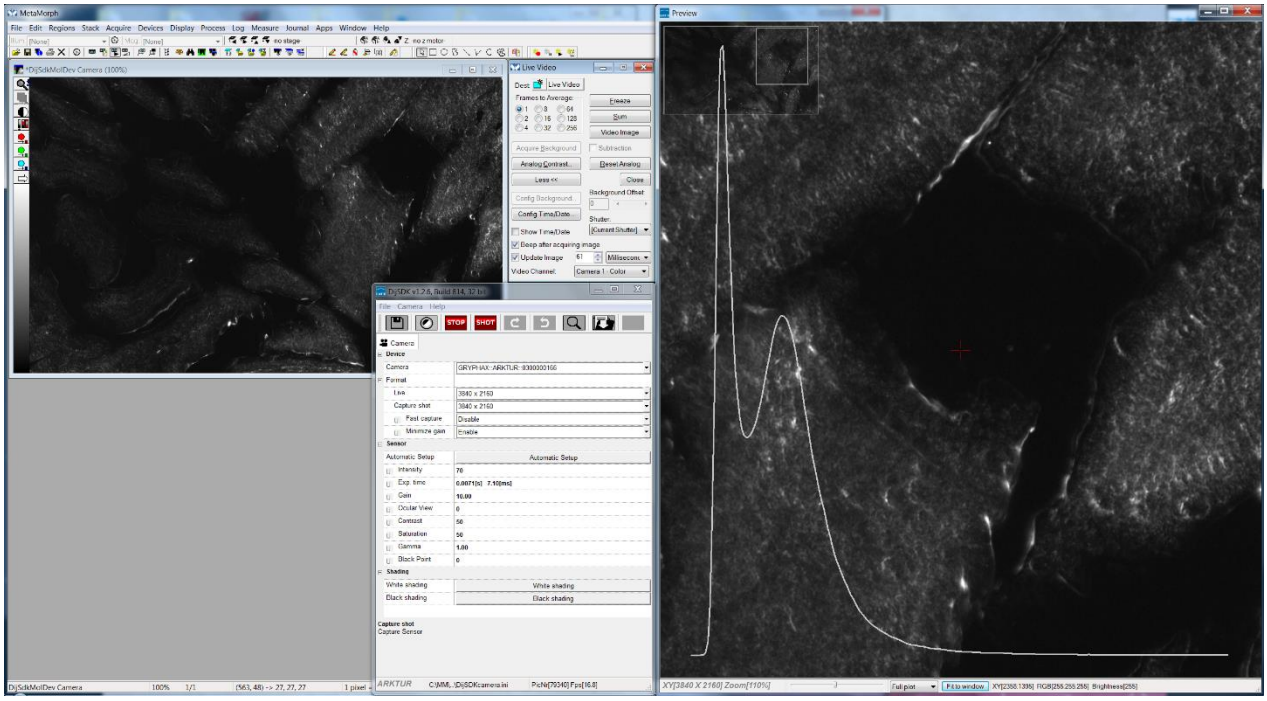
The JENOPTIK GRYPHAX MetaMorph driver is part of JENOPTIK GRYPHAX® software installation (as of version 2.0.0 or newer).

General Preparation:

The MetaMorph software version **7.8.0.0 – 32 bit or 64 bit** has to be installed before installation of JENOPTIK GRYPHAX MetaMorph driver. Recommended USB 3.0 interface card (with Renesas chipset) has to be installed in advance!

Overview:

JENOPTIK GRYPHAX camera operating under MetaMorph driver:



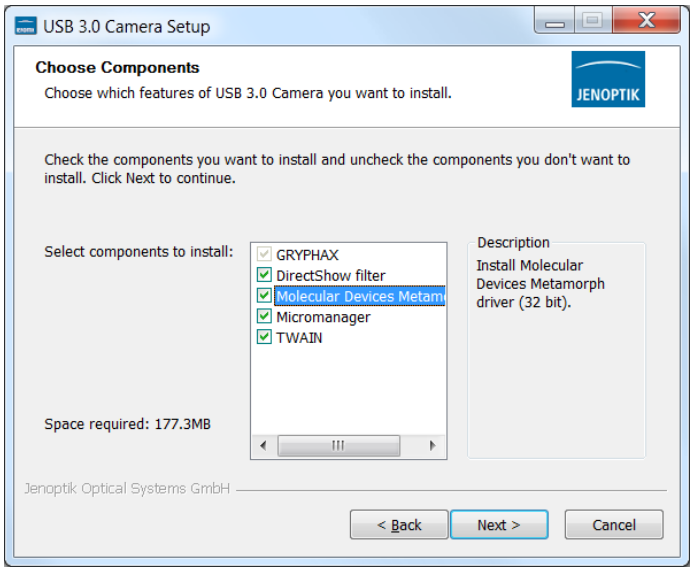
35.1 Installation:

To install the MetaMorph driver, please run the JENOPTIK GRYPHAX® software installation **version 2.0.0.0** (USB 3.0 Camera-v2.x.x.x.exe) or newer.

Latest JENOPTIK GRYPHAX® software can be downloaded from Jenoptik website for free after registration.

DOWNLOAD UPDATE

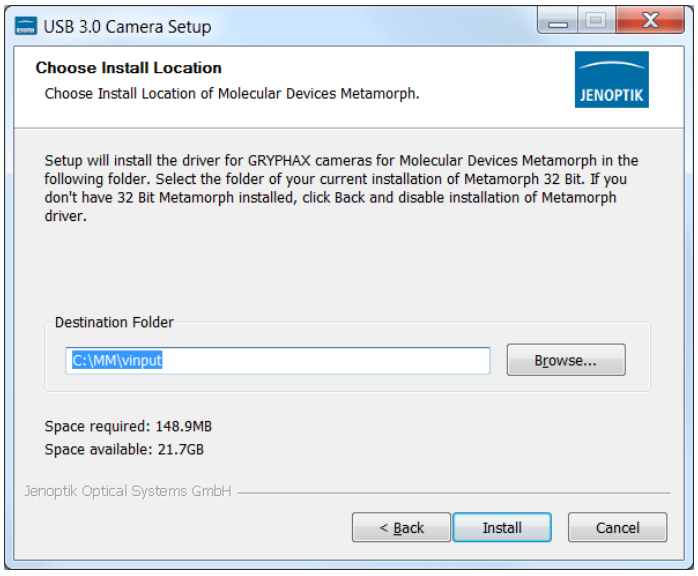
4. Select the MetaMorph driver from "Choose Components" page and proceed with "**Next**".



5. Choose the install location of previously installed MetaMorph software.

   Note: The MetaMorph driver must be installed at video input folder of MetaMorph installation: "…\vinput\"

   Click on "**Browse**" button to choose alternative installation folder.



6. Follow the installation procedure to complete installation.

35.2 Hardware configuration:

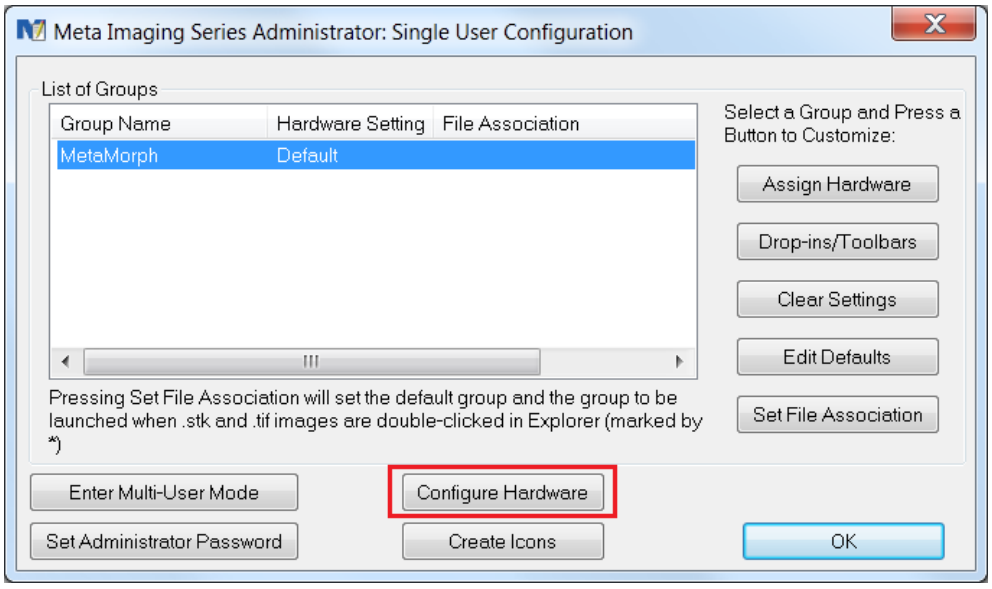
After successful MetaMorph driver installation, it is necessary to configure the hardware configuration of MetaMorph software by using the "**Meta Imaging Series Administrator**" application.

Important note: In case of trouble shooting, please take care that the Microsoft Visual C++ Redistributable for Visual Studio 2017 (x86) and x64 are installed on your computer to execute JENOPTIK GRYPHAX MetaMorph driver.

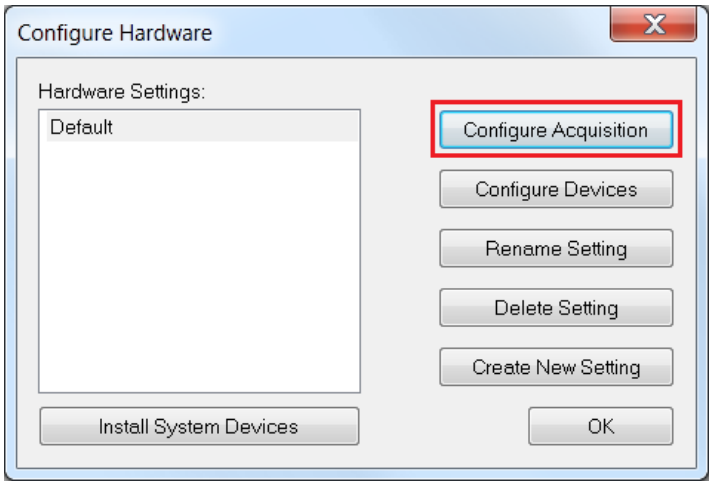
To proceed, please plug-in the JENOPTIK GRYPHAX® USB 3.0 camera to USB 3.0 port at recommended interface card.

a) Start the hardware configuration tool: "Meta Imaging Series Administrator" Meta Imaging Series Administrator from Molecular Devices, LLC.

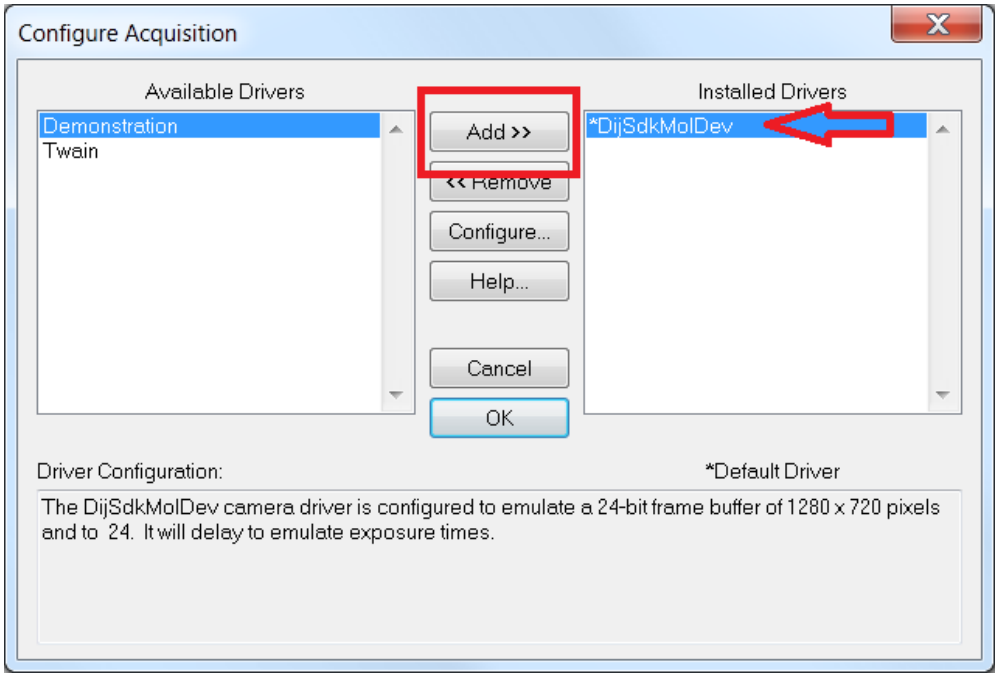
b) Hardware wizard will start "**Single User Configuration**" - click on "**Configure Hardware**" button to access hardware settings page.



c) Click on "**Configure Acquisition**" button to enter list of available acquisition drivers.

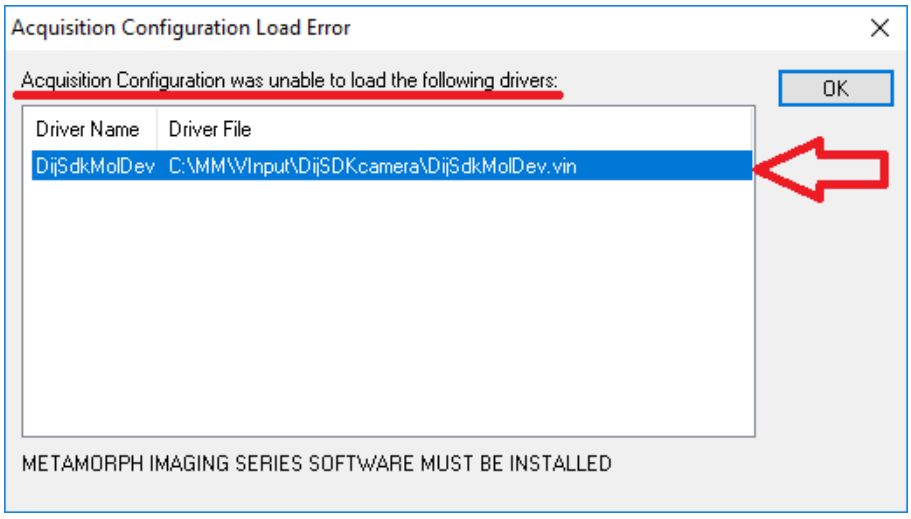


d) Select JENOPTIK GRYPHAX USB3.0 camera driver called: "**DijSdkMolDev**" from available drivers list and press "**Add >>**" button to activate the selected camera driver.

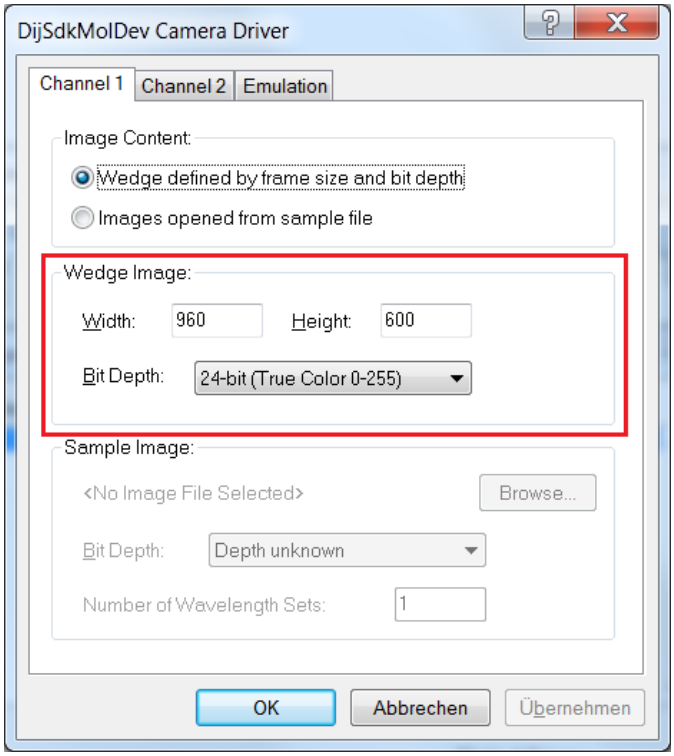


Note: In case that the hardware configuration tool does not list the JENOPTIK GRYPHAX driver called:"**DijSdkMolDev**" or the tool is unable to load, please close the hardware configuration.

Afterwards install the necessary system files: "Microsoft VC2017_x86 redistributables" from JENOPTIK GRYPHAX USB Stick located under: **…\tools\vc_redist.x86.exe** or download from official Microsoft website!



e) Press "**Configure**" button to enter settings page for selected driver to change image properties: width, height and bit depth.

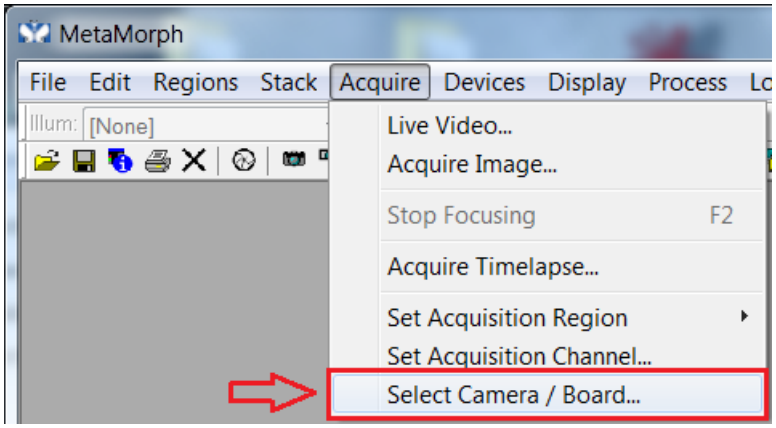


f) Save settings and leave "**Meta Imaging Series Administrator**" tool by pressing "**OK**" buttons. Now you are prepared to operate with JENOPTIK GRYPHAX® USB 3.0 cameras at MetaMorph.

35.3 Start MetaMorph and select driver:

Start MetaMorph application MetaMorph from your installation directory.

Select camera driver under menu: "**Acquire | Select Camera / Board…**" to activate the JENOPTIK GRYPHAX cameras.



Select JENOPTIK camera driver called: "**DijSdkMolDev Camera**" from drop down list and accept with "**OK**".

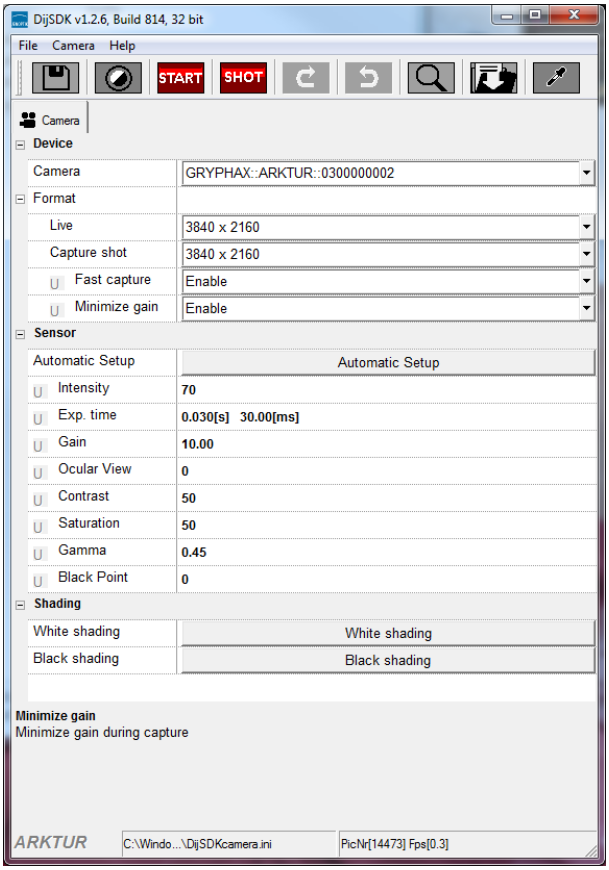
Afterwards, the JENOPTIK GRYPHAX MetaMorph camera driver windows for camera settings and live preview will appear automatically.

At the driver settings windows you can prepare all camera relevant settings to get best results from camera. Additionally, you can observe your settings directly at the live preview window.

For detailed description, please look to the section: "**Advance camera settings**" from document!

35.4 Overview of settings window:

7. Toolbar – contains most important tools
8. Select active camera
9. Format - change image settings for:
   - Live and Capture shot resolution
   - Fast capture mode
   - Option – Minimize gain during capture
10. Image parameter settings*
11. Create / delete Shadings
12. Information field for help text & status



Note: All settings are saved (under folder: **C:\Users\<user name>\AppData\Roaming\DijSDK\...**) for each camera type and will be reused after open of driver again. Settings are not connected to individual camera serial numbers.

35.5 Toolbar:

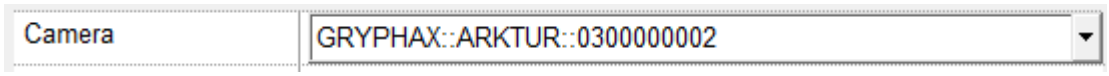
The Toolbar of driver contains the following functions:

-  Save camera settings manually to currently used settings file.
-  Change between color mode and black / white mode for color cameras.*
-  Start / Stop **Live image preview** at the preview window.
-  Shot button to start transfer **single capture shot** image via driver interface.
-  Magnifier tool to activate / deactivate magnifier glass at preview window.
-  Save image option to save last displayed live image from preview window to hard drive.
-  White balance pipette to set manually white balance for color cameras at preview window.*

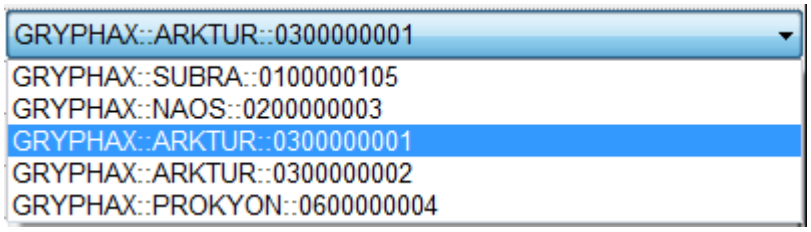
*functions available for color cameras only

Select camera:

To activate or change camera, select the appropriate camera from dropdown list of driver.



After activation of camera from dropdown list, the according settings to the camera type will be loaded from settings file and used.



Note: In case of first camera start, the "Automatic setup" process will be proceed.

Format:

Under format section user can set-up different image resolution for live preview and capture shot.

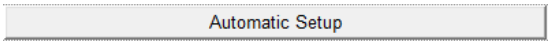
"*Fast capture mode*" reduces processing time and transfer time for image transfer via driver.

By activation of "*Fast capture mode*" the driver will use the selected live resolution for single shot (image transfer) instead of the selected capture shot resolution!

By activation of option "*Minimize gain during capture*" the gain value will be minimized for capturing and adjusting the exposure time accordingly. This option is recommended and will reduce noise level and enhance image quality.

35.6 Camera image parameter:

Important: All *camera image parameter* are saved during close driver for each camera type and will be reused after open of driver again.

The *Automatic Setup* option can be used at any time to 

set all camera image parameter to default values. The applied shading correction will be deactivated. Additionally, the automatic white balance and the color correction to the used light source will be applied and "Auto Exposure control" is enabled.

All *camera image parameter* can be adjusted by scroll slider or by enter of value.

The ***Exposure control*** option contains the following parameter: Intensity value, Exposure time and Gain value.

Intensity	75
Exp. time	0.033[s] 33.00[ms]
Gain	1.00

Set ***Intensity*** level to activate the automatic exposure control function. The selected value corresponds the mean intensity value in percent. Available range from 0 to 100%

Change **exposure time** value or **gain** value to activate manual exposure control.

Ocular View* – to adapt the color impression from the eyepieces (microscope) to the image on screen.

Contrast – to enhance image contrast for live and captured images.

Saturation* – to change color saturation for live and captured images.

Gamma – to change gamma value for live and captured images.

Black Point – to enhance noise level in dark image areas.

Ocular View	0
Contrast	50
Saturation	50
Gamma	0.45
Black Point	0

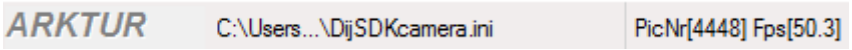
*function available for color cameras only

Reset settings separately:

All ***camera image parameter*** can be reset to default value separately by pressing reset icon U.

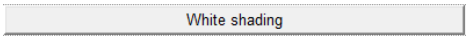
Status bar information:

Status bar displays the connected camera, settings location, frame number and frame rate.



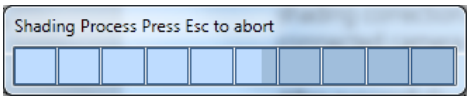
Create / delete white shading:

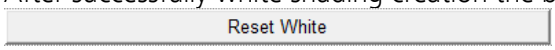
White shading function corrects intensity variation across the image, caused by the microscope or objectives.

Click on the button "**White shading**" 

to create a white shading correction. The driver will automatically create a white shading correction file for the connected camera type.

This will take up to some seconds, the progress indicator will be shown during creation. Press "Esc" will abort process.



After successfully white shading creation the button will change status to "**Reset White**"


.

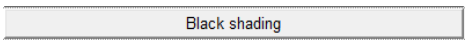
The white shading correction is now available and used. To deactivate the white shading press "**Reset White**" and the white shading correction file will be deleted and cannot be reloaded again.
After reset / delete of shading file, a new shading file has to be created to activate shading again.

The shading files will be saved on: "**C:\Users\<user name>\AppData\Roaming\DijSDK**" and are reused after driver restart and appropriate camera type is connected.

Note: Driver can save just one shading file for each camera type. The file is valid to the individual camera serial number!

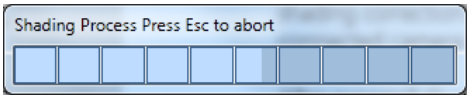
Create / delete black shading:

Black shading function enhance noise level for long time exposed image.

Click on the button "**Black shading**" 

to create a black shading correction. The driver will automatically create a black shading correction file for the connected camera type.

This will take up to some minutes, the progress indicator will be shown during creation. Press "Esc" will abort process.



After successfully black shading creation the button will change status to "**Reset Black**"


.

The black shading correction is now available and used. To deactivate the black shading press "**Reset Black**" and the black shading correction file will be deleted and cannot be reloaded again.
After reset / delete of shading file, a new shading file has to be created to activate shading again.

The shading files will be saved on: "**C:\Users\<user name>\AppData\Roaming\DijSDK**" and are reused after driver restart and appropriate camera type is connected.

Note: Driver can save just one shading file for each camera type. The file is valid to the individual camera serial number!

35.7 Capture / Transfer images:

To transfer single images press the "Shot" button 

on the toolbar. The live preview image will be stopped and a single image will be transferred by driver interface to the application.

Live image will be restarted automatically at preview window after transfer of single image.

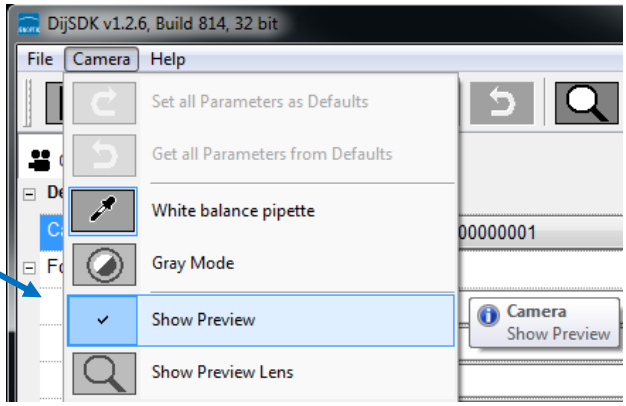
35.8 Start / Stop Live:

To stop or restart live preview at the preview window, press live control button 

at the toolbar.

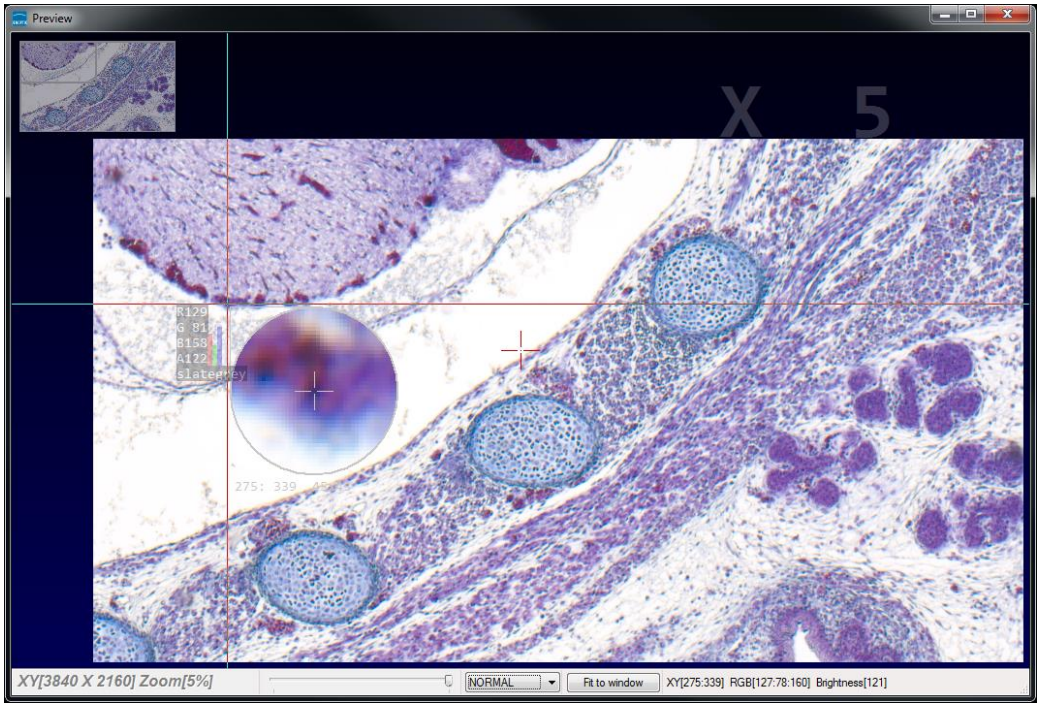
Open / close preview window:

To deactivate or activate the preview window of driver, navigate to the "camera" menu entry and choose "**Show Preview**".



35.9 Preview window:

The *preview window* displays the live stream preview from the camera as well as the capture shot images.



35.10 Preview window tools and options:

Preview window contains the following tools and information at the toolbar:

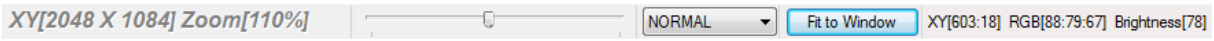


Image dimensions (X/Y) of current live preview 

Display of current selected zoom level from preview window 

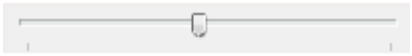
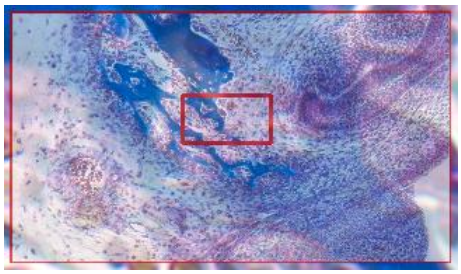
Zoom slider or scroll wheel to change zoom level. Left position zoom out, right position zoom in. 

Image overview as overlay to display whole image in case of 1:1 view or image zoom over live preview.

Note: To change image section, use the rectangle from overview.



Display Mode drop down menu 

to change between different view options:

"**Normal view**" – view image as color or b/w image without histogram

"**Negative view**" – invert image values to get negative image view

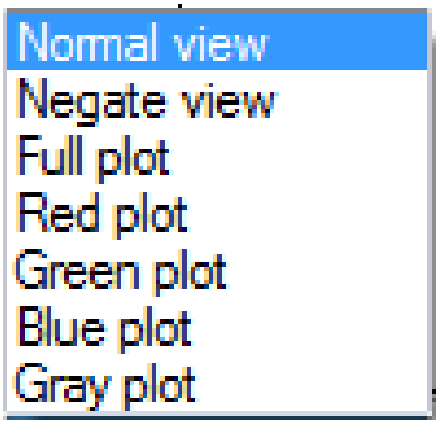
"**Full plot**" – to activate RGB and gray channel of histogram as overlay

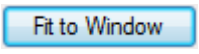
"**Red plot**" – to activate red color channel of histogram as overlay

"**Green plot**" – to activate green color channel of histogram as overlay

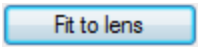
"**Blue plot**" – to activate blue color channel of histogram as overlay

"**Gray plot**" – to activate gray channel of histogram as overlay

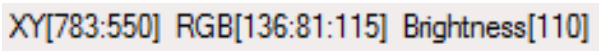


Fit to screen function activated by button 

or by double click on left mouse button into the live preview window.

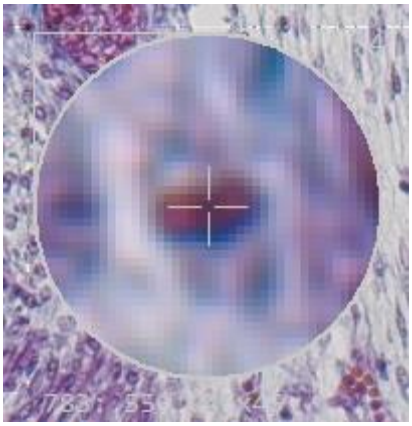
Fit to lens function to change back to 1:1 view and enable zoom slider. 

Display of RGB values and image coordinates of corresponding mouse pointer position.



Presentation mode – to change live preview window view between "**full screen"** and "**normal window"** by click on middle mouse button (scroll wheel) into the preview window. Whole live preview will be displayed on the screen.

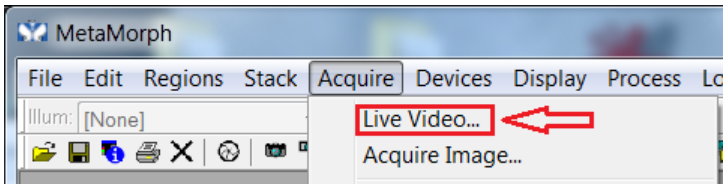
Magnifier glass activated by Magnifier button  to zoom in 4x times on live preview.

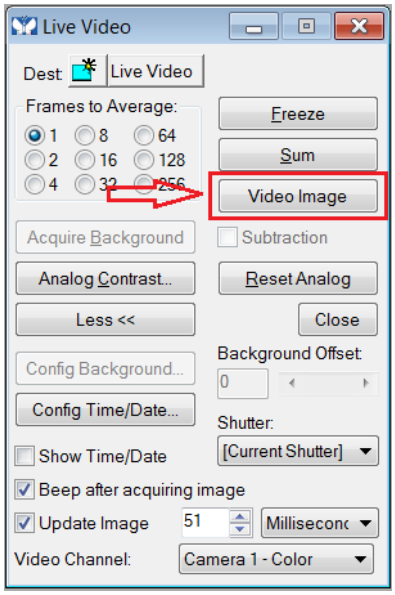


Note: By right-hand mouse click the magnifier appearance changes between "rectangle" and "circle glass".

35.11 Start live preview:

To start live preview from camera, please navigate to the title bar of MetaMorph and activate option: "**Live Video…**" from menu: "**Acquire**".





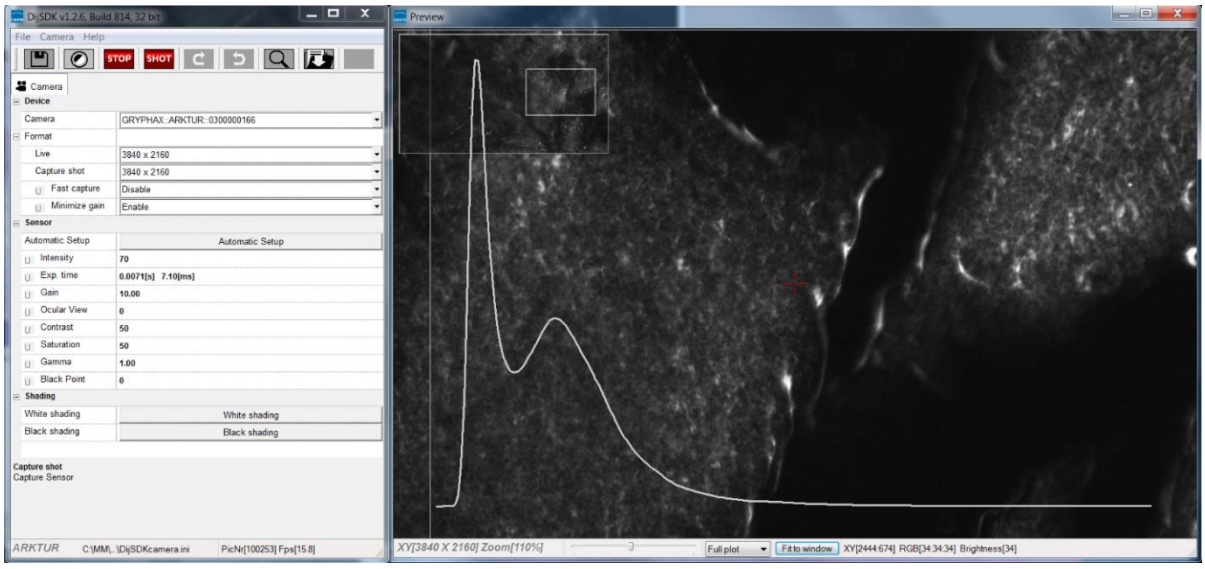
A separate property dialog will appear.

Start video preview by press: "**Video Image**" button. The live preview getting from camera are open up at separate window.

Note: The live preview has to be activated at "**Advance camera settings**" dialog; otherwise, no live preview will be transferred to the MetaMorph software!

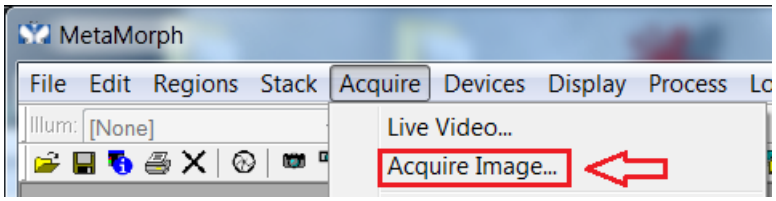
To control the live update rate (frame rate) you need to check the Option "**Update Image**" and set the image update time according you application.

Additionally, the JENOPTIK GRYPHAX MetaMorph camera driver windows for camera settings and live preview will always appear automatically. Preview window of driver can be deactivated. For detailed description, please look to the section: "**Advance camera settings**" from document!

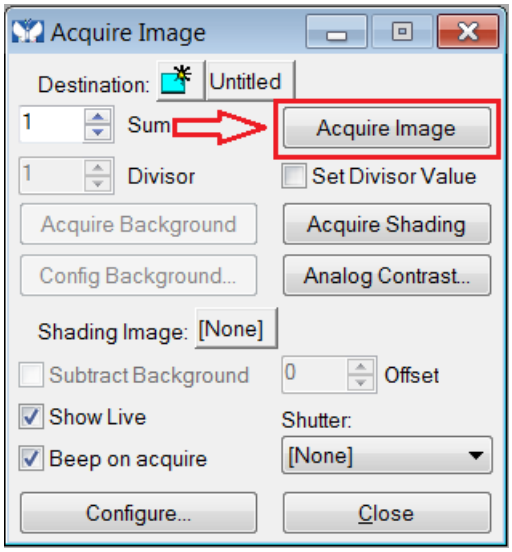


35.12 Capture & Transfer Image:

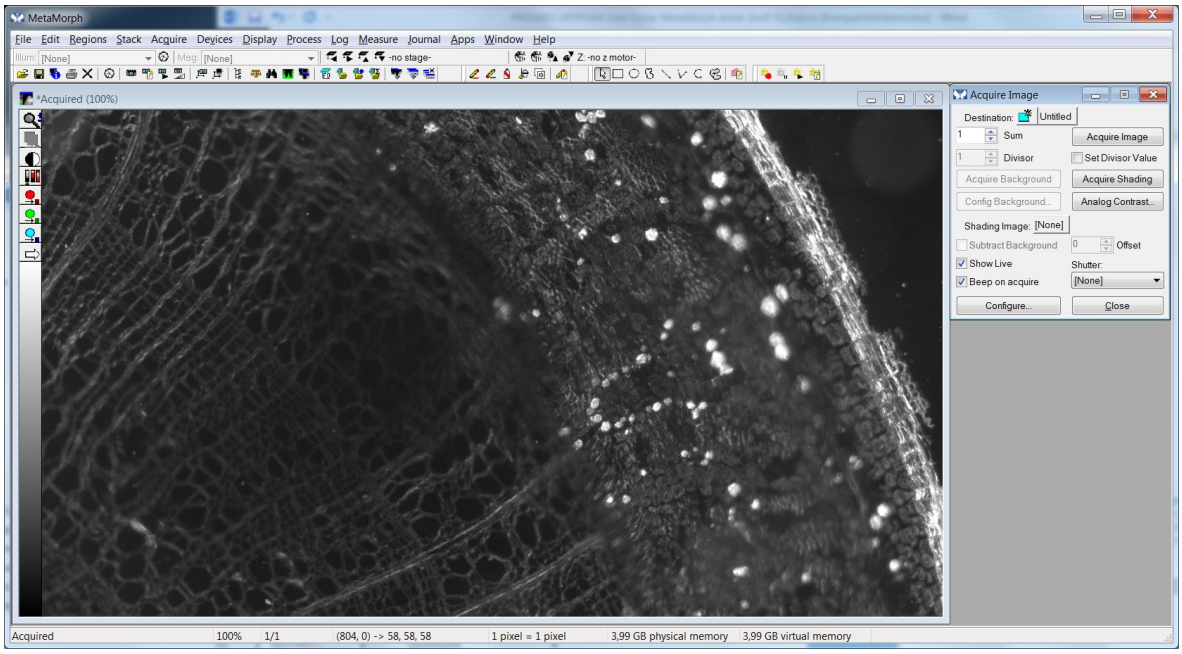
To start image capture from camera, please navigate to the title bar of MetaMorph and activate option: "**Acquire Image…**" from menu: "**Acquire**".



The "**Acquire Image**" dialog will be open. Start image capture by press: "**Acquire Image**" button.



Each acquired image is opened and displayed at separate window.



35.13 Limitations:

- MetaMorph software V7.8.0.0 – 32 bit support only.
- MetaMorph software V7.8.0.0 – 64 bit support only*.
- Only JENOPTIK GRYPHAX USB 3.0 camera supported.
- Windows 7 SP1 / 10 support only.
- Microsoft Visual C++ Redistributable for Visual Studio 2017 necessary to execute MetaMorph driver.

*(Part of JENOPTIK GRYPHAX version 2.2.0 or newer and DijSDK 2.5.2 or newer)

Versatility –
giving you the freedom to work
with your favorite equipment.

User Guide for TWAIN / DirectX interface for JENOPTIK GRYPHAX® USB 3.0 cameras

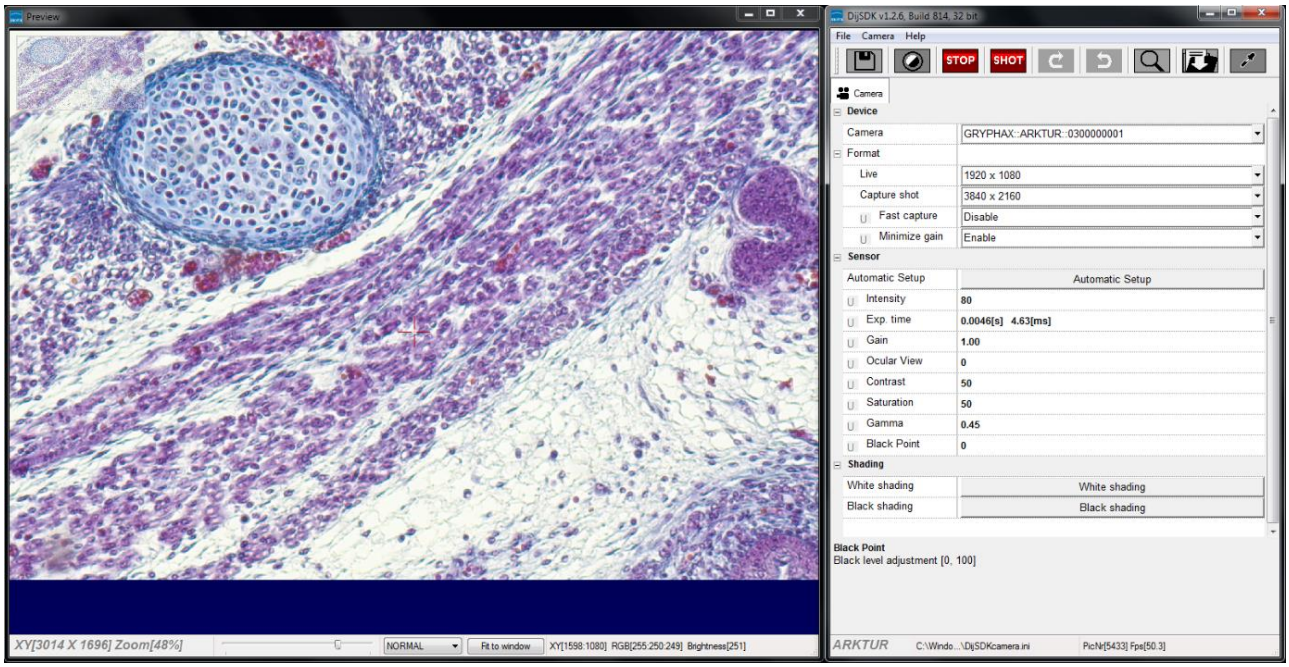
The "TWAIN & DirectX driver" for JENOPTIK GRYPHAX® USB 3.0 cameras enables user to operate with TWAIN and DirectX supported 3rd party software solutions. The driver delivers basic functionalities of JENOPTIK GRYPHAX® cameras. Drivers are supported under Windows operating systems.

General description:

The TWAIN & DirectX driver is part of JENOPTIK GRYPHAX® software installation (as of version 1.1.10 or newer). The driver will be automatically installed and can be used without separate configuration out of the box running a TWAIN or DirectX interface supporting application.

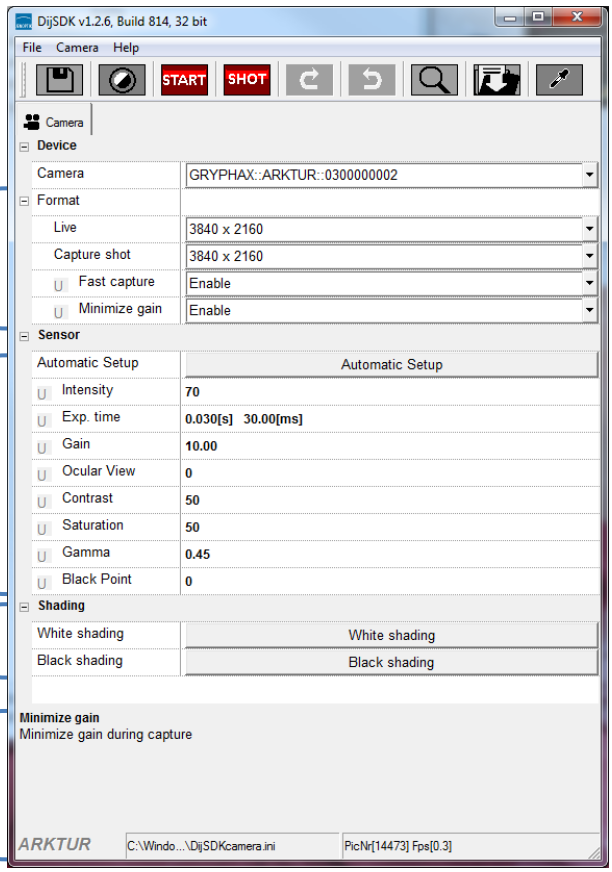
The driver consists of two separate windows. The *preview window* to display the live stream getting from camera and the *settings window*, which contains all essential camera parameters.

The *settings window* is permanently visible, the *preview window* can be deactivated.



36.1 Overview of settings window:

1. Toolbar – contains most important tools
2. Select active camera
3. Format - change image settings for:
   - Live and Capture shot resolution
   - Fast capture mode
   - Option – Minimize gain during capture
4. Image parameter settings*
5. Create / delete Shadings
6. Information field for help text & status



Note: All settings are saved (under folder: **C:\Users\<user name>\AppData\Roaming\DijSDK\...**) for each camera type and will be reused after open of driver again. Settings are not connected to individual camera serial numbers.

36.2 Toolbar:

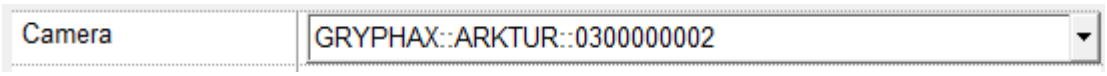
The Toolbar of TWAIN driver contains the following functions:

- Save camera settings manually to currently used settings file.
- Change between color mode and black / white mode for color cameras.*
- START Start / Stop **Live** image preview at the preview window.
- SHOT Shot button to start transfer **single capture shot** image via TWAIN interface.
- Magnifier tool to activate / deactivate magnifier glass at preview window.
- Save image option to save last displayed live image from preview window to hard drive.
- White balance pipette to set manually white balance at preview window.*

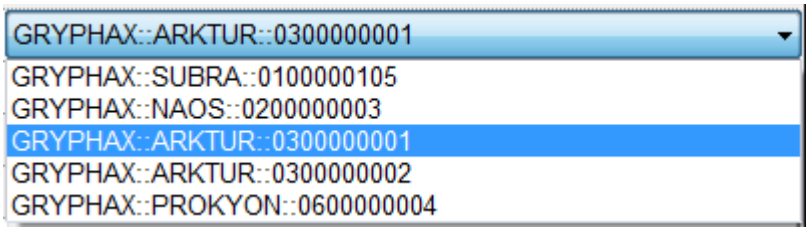
*functions available for color cameras only

Select camera:

To activate or change camera, select the appropriate camera from dropdown list of TWAIN driver.



After activation of camera from dropdown list, the according settings to the camera type will be loaded from settings file and used.



Note: In case of first camera start, the "Automatic setup" process will be proceeded once.

Format:

Under format section user can set-up different image resolution for live preview and capture shot.

"*Fast capture mode*" reduces processing time and transfer time for image transfer via TWAIN.

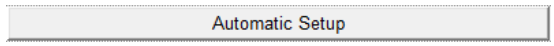
By activation of "*Fast capture mode*" the TWAIN driver will use the selected live resolution for single shot (image transfer) instead of the selected capture shot resolution.

By activation of option "*Minimize gain during capture*" the gain value will be minimized for capturing and adjusting the exposure time accordingly. This option is recommended and will reduce noise level and enhance image quality.

36.3 Camera image parameter:

Important: All *camera image parameter* are saved during close TWAIN driver for each camera type and will be reused after open of TWAIN driver again.

The *Automatic Setup* option can be used at any time to set all camera image parameter to default values. The applied shading correction will be deactivated. Additionally, the automatic white balance and the color correction to the used light source will be applied and "Auto Exposure control" is enabled.



All *camera image parameter* can be adjusted by scroll slider or by enter of value.

The ***Exposure control*** option contains the following parameter: Intensity value, Exposure time and Gain value.

Intensity	75
Exp. time	0.033[s] 33.00[ms]
Gain	1.00

Set ***Intensity*** level to activate the automatic exposure control function. The selected value corresponds the mean intensity value in percent. Available range from 0 to 100%

Change **exposure time** value or **gain** value to activate manual exposure control.

Ocular View – to adapt the color impression from the eyepieces (microscope) to the image on screen.

Contrast – to enhance image contrast for live and captured images.

Saturation – to change color saturation for live and captured images.

Gamma – to change gamma value for live and captured images.

Black Point – to enhance noise level in dark image areas.

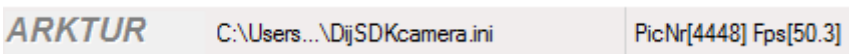
Ocular View	0
Contrast	50
Saturation	50
Gamma	0.45
Black Point	0

Reset settings separately:

All *camera image parameter* can be reset to default value separately by pressing reset icon  .

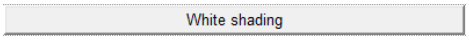
Status bar information:

Status bar displays the connected camera, settings location, frame number and frame rate.



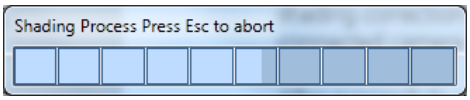
Create / delete white shading:

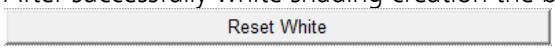
White shading function corrects intensity variation across the image, caused by the microscope or objectives.

Click on the button “White shading” 

to create a white shading correction. The TWAIN driver will automatically create a white shading correction file for the connected camera type.

This will take up to some seconds; the progress indicator will be shown during creation. Press “Esc” will abort process.



After successfully white shading creation the button will change status to “Reset White” 

.

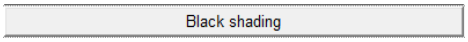
The white shading correction is now available and used. To deactivate the white shading press “Reset White” and the white shading correction file will be deleted and cannot be reloaded again.
After reset / delete of shading file, a new shading file has to be created to activate shading again.

The shading files will be saved on: “C:\Users\<user name>\AppData\Roaming\DijSDK\” and are reused after driver restart and appropriate camera type is connected.

Note: Shading files are connected to the camera type, not to the individual serial number!

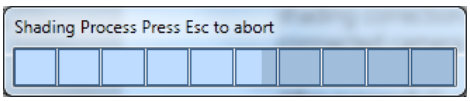
Create / delete black shading:

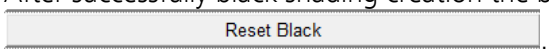
Black shading function enhance noise level for long time exposed image.

Click on the button “Black shading” 

to create a black shading correction. The TWAIN driver will automatically create a black shading correction file for the connected camera type.

This will take up to some minutes; the progress indicator will be shown during creation. Press “Esc” will abort process.



After successfully black shading creation the button will change status to “Reset Black” 

.

The black shading correction is now available and used. To deactivate the black shading press “Reset Black” and the black shading correction file will be deleted and cannot be reloaded again.
After reset / delete of shading file, a new shading file has to be created to activate shading again.

The shading files will be saved on: “C:\Users\<user name>\AppData\Roaming\DijSDK\” and are reused after driver restart and appropriate camera type is connected.

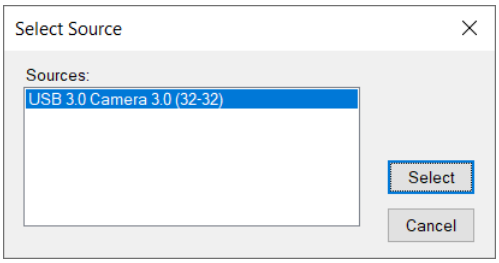
Note: Shading files are connected to the camera type, not to the individual serial number!

36.4 Select TWAIN source:

Select TWAIN source (JENOPTIK GRYPHAX TWAIN driver; called: “USB 3.0 camera”) at TWAIN host application e.g. IrfanView, or any TWAIN supported 3rd party software solutions.

Navigate to the appropriate section and choose the driver from list.

Accept and leave dialog by “Select” button.



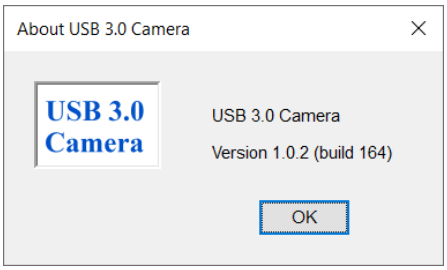
36.5 Capture / Transfer images:

To transfer images by TWAIN interface press the “Shot” button SHOT on the toolbar. The live preview image will be stopped and a single image will be transferred by TWAIN interface to the application.

Live image will be restarted automatically at preview windows after transfer of image via TWAIN.

36.6 About dialog:

Open “About” dialog by context menu “Help” section About to display installed version of driver.

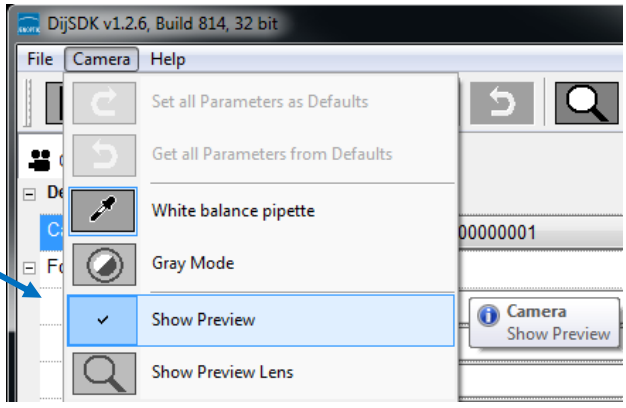


36.7 Start / Stop Live:

To stop or restart live preview at the preview window, press live control button STOP at the toolbar.

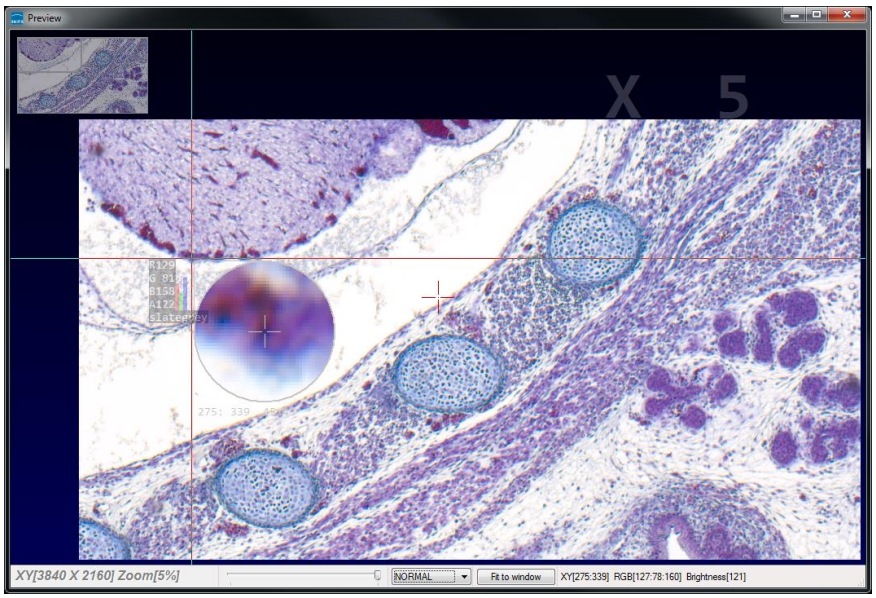
Open / close preview window:

To deactivate or activate the preview window of driver, navigate to the “camera” menu entry and choose “Show Preview”.



36.8 Preview window:

The *preview window* displays the live stream preview from the camera as well as the capture shot images.



36.9 Preview window tools and options:

Preview window contains the following tools and information at the toolbar:

Image dimensions (X/Y) of current live preview 

Display of current selected zoom level from preview window 

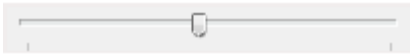
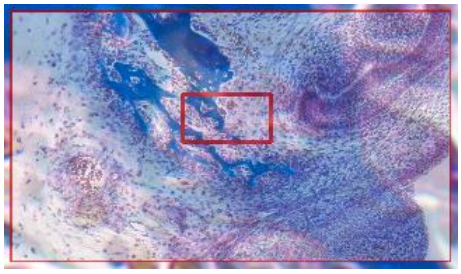
Zoom slider or scroll wheel to change zoom level. Left position zoom out, right position zoom in. 

Image overview as overlay to display whole image in case of 1:1 view or image zoom over live preview.

Note: To change image section, use the rectangle from overview.



Display Mode drop down menu 

to change between different view options:

"**Normal view**" – view image as color or b/w image without histogram

"**Negative view**" – invert image values to get negative image view

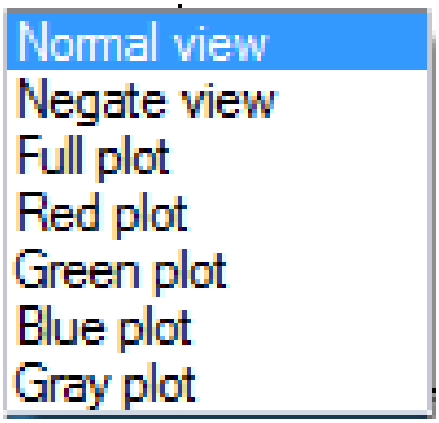
"**Full plot**" – to activate RGB and gray channel of histogram as overlay

"**Red plot**" – to activate red color channel of histogram as overlay

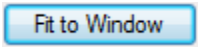
"**Green plot**" – to activate green color channel of histogram as overlay

"**Blue plot**" – to activate blue color channel of histogram as overlay

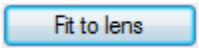
"**Gray plot**" – to activate gray channel of histogram as overlay



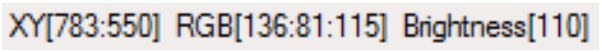
Fit to screen function activated by button or by left-hand mouse double click into the preview window.



Fit to lens function to change back to 1:1 view and enable zoom slider.



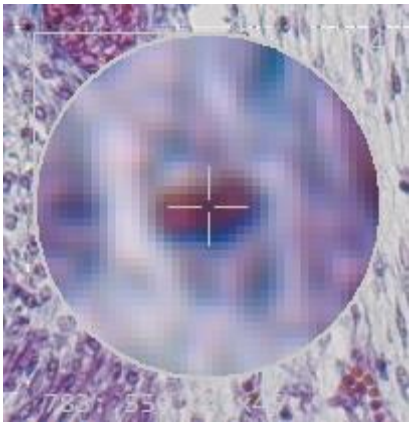
Display of RGB values and image coordinates of corresponding mouse pointer position.



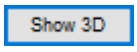
Presentation mode – to change between **full screen** and **normal window** by middle double click of mouse on preview window. Whole live preview will be displayed on the screen.

Magnifier glass activated by Magnifier button  to zoom in 4x times on live preview.

Note: By right-hand mouse click the magnifier changes between rectangle and circle glass.

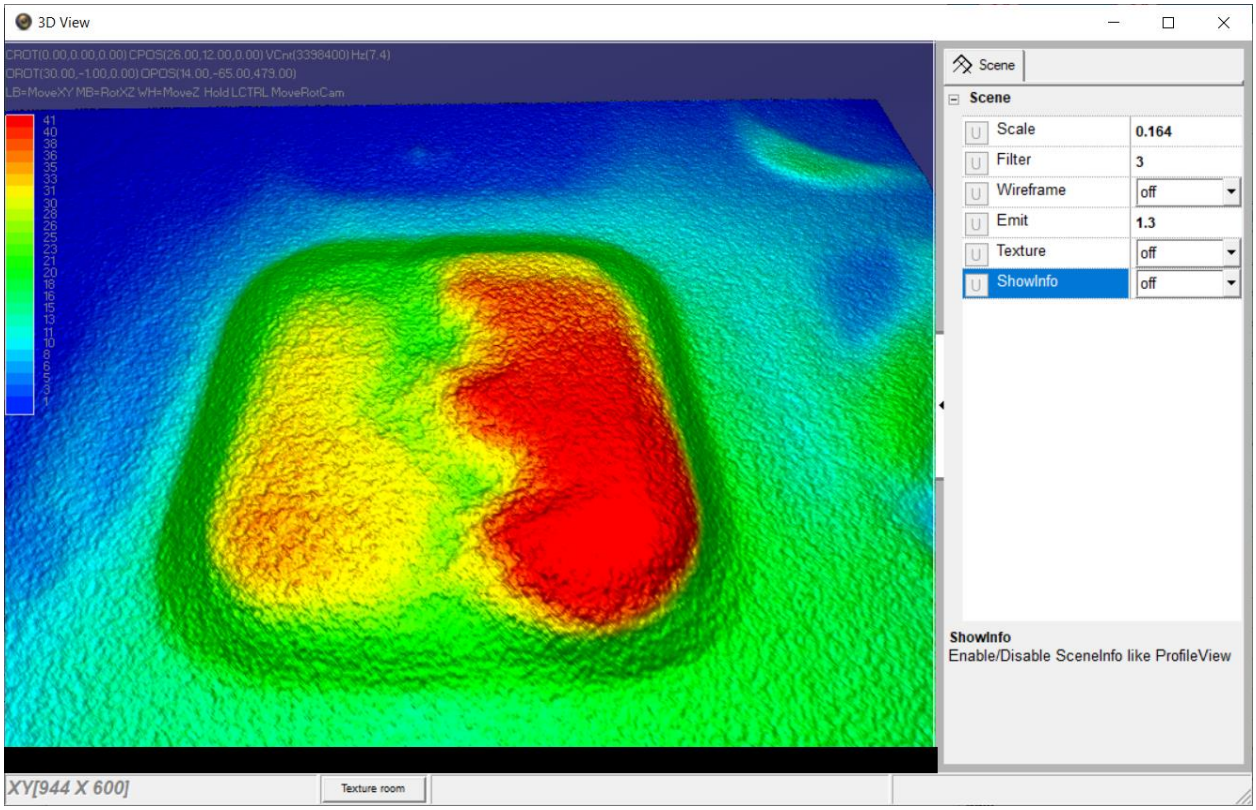


Experimental pseudo 3D-View* – to display a 2D image as a virtual 3D image.

Press button "**Show 3D**" 

to activate a separate preview window for pseudo 3D live preview.

The window shows a 3D color map image and display options to adjust the scenario.



*(Available as of JENOPTIK GRYPHAX version 2.2 or newer)

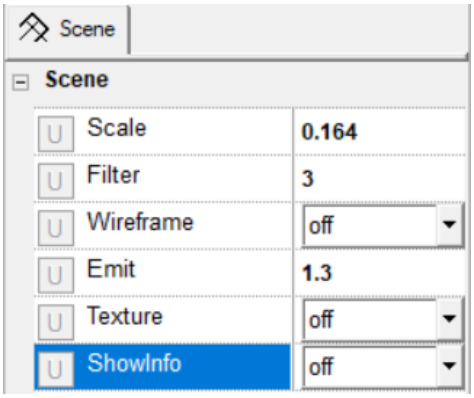
Adjust View:

Move the 3D image by mouse operation on preview window.
Zoom in / out by mouse wheel on preview window.

Open scene settings menu on the right-hand site. Click on the arrow and swipe left to open.

Scene settings:

Scale – to set the scaling factor for depth
Filter – to change filter settings for details and smoothness
Wireframe – to enable / disable wireframe support of GPU card
Emit – to increase / decrease shining
Texture – to turn on / off "JetColorRoom" without textures
ShowInfo – to enable / disable scene information



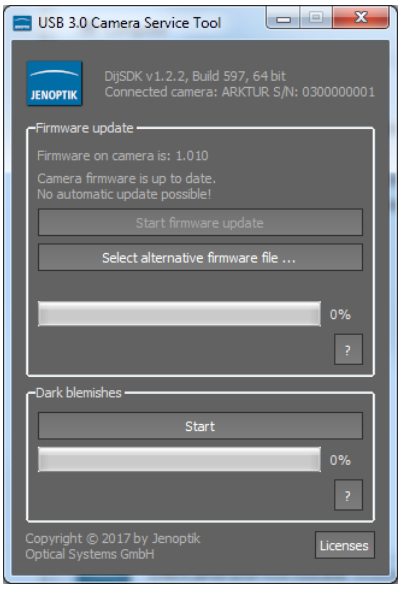
Limitations:

- Performance and functionalities are limited due to used Microsoft TWAIN & DirectX interfaces.
- Only JENOPTIK GRYPHAX USB 3.0 cameras are support.
- Multi-camera support is not available.
- Windows OS 7 SP1 / 10 support only.

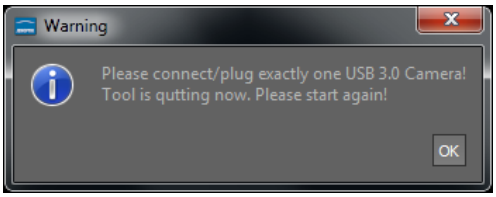
USB 3.0 Camera Service Tool for JENOPTIK GRYPHAX® cameras

The "*USB 3.0 Camera Service Tool*" enables user to check the installed camera firmware version and to update the firmware version, if necessary. This service tool is part of the JENOPTIK GRYPHAX® software installation 1.1.6 or later.

Additionally, the option "*Dark blemishes*" search for defective/ hot pixel is available, to eliminate such pixel defects of the camera sensor.



Note: To operate with the *USB 3.0 Camera Service Tool*, the camera driver has to be installed previously. Please connect only one camera to the computer and start the service tool. Otherwise, *USB 3.0 Camera Service Tool* will be display an error message:



To start "*USB 3.0 Camera Service Tool*", please navigate to **start menu** entry under:

Jenoptik/GRYPHAX 2.X.X

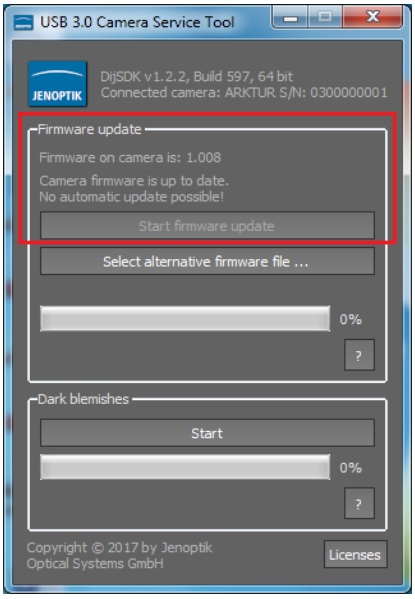
and double-click to:

37.1 Firmware update

2.1. After start of *USB 3.0 Camera Service Tool* the software will check the camera's firmware status and verifies it with the firmware status from *USB 3.0 Camera service tool*. There are **three different update options** in regard to the camera firmware:

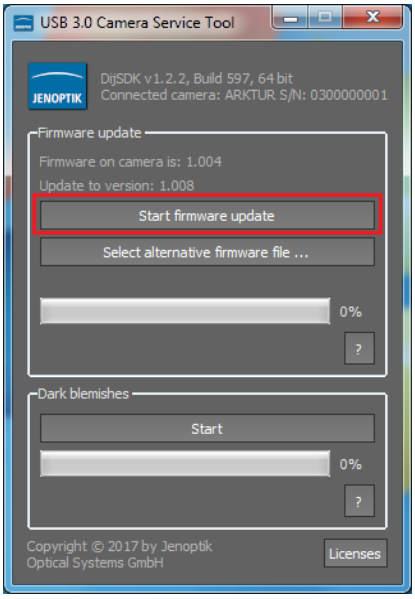
No automatic firmware update possible or necessary:

In case of accordance of the firmware version, no automatic firmware update is possible.
You now may close the *USB 3.0 camera service tool* by close button.



Automatic firmware update (by inbuilt firmware version):

In case that the camera firmware is outdated, please start firmware update process by option "*Start firmware update*":



Manual update by selecting alternative firmware file:

To upgrade or downgrade an alternative camera firmware version you may use option

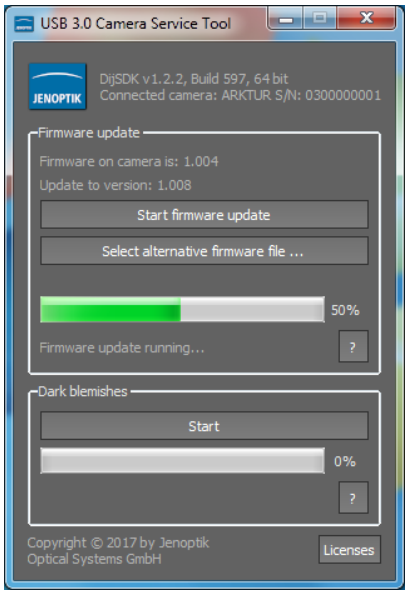
"*Select alternative firmware file…*"

from disk. The firmware version of camera and file will be displayed at service tool. Now you can start update by option

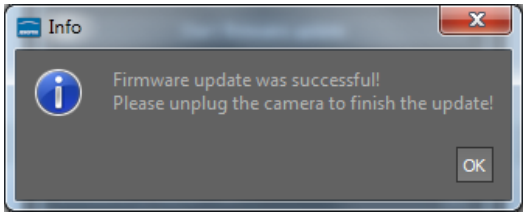
"*Start firmware update*"

Note: An alternative firmware file will be provided by Jenoptik only!

2.2. After start of USB 3.0 Camera Service Tool the software will check the camera. After start firmware update process, the software is displaying the current update status by progress bar.



2.3. After a successful firmware update the *USB 3.0 camera service tool* will restart the camera and close software automatically.

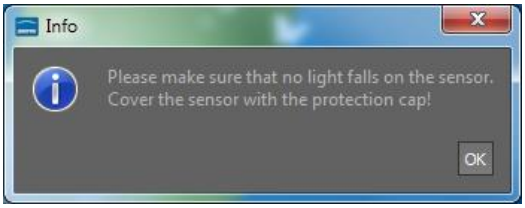


Note: The firmware update procedure can be take several seconds depending on connected camera type. Please do not interrupt the process. This can be affect the camera.

37.2 Dark blemish search

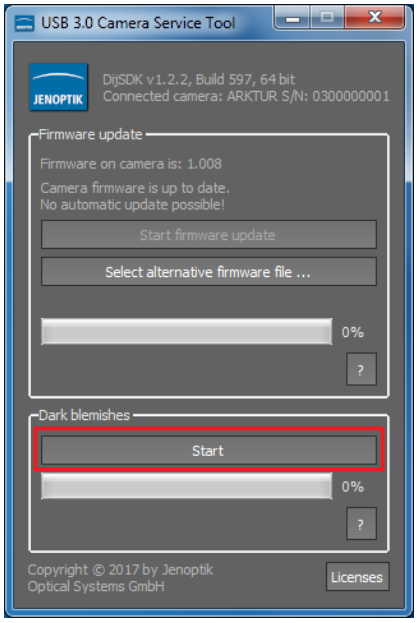
In case that the camera is displaying white pixel defects at dark images, please proceed the *Dark blemish* search to eliminate such "hot pixels". The software will detect defective pixels and add these pixels to a camera-internal list of defective pixels. So the application software will correct this automatically.

3.1. To start a dark blemish search procedure the sensor must be covered by using the protection cap!

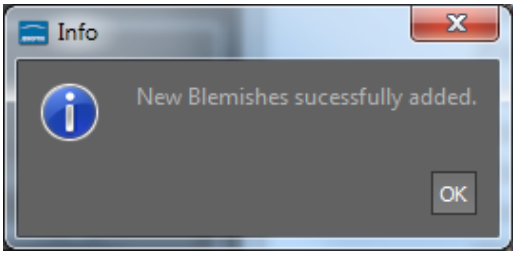


3.2. Start the dark blemish search by pressing "Start". The service tool will record several images to detect defective pixel(s) from camera sensor. This can take several seconds depending on the camera type used.

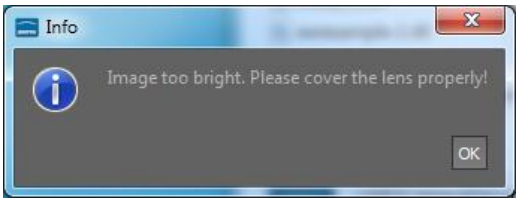
Note: During dark blemish search, please do not remove the cap from sensor, otherwise the software cannot detect the defective pixels and the search process will be aborted!



3.3. After successful dark blemish search, the service tool will add the new detected hot pixels to the list of defective pixel.



3.4. If error "*Image too bright*" occurs, please check, if the camera sensor is completely covered by the protection cap.



Important Note: Make sure that no light falls onto the sensor!

3.5. In case of error, make sure that the camera firmware is up to date and the sensor is covered completely by protection cap. Restart the service tool and try to search for dark blemish pixel again.

3.6. In the unlikely case that the error persists, please check for newer software version online! Or contact your local distributor for further support.

Versatility –
giving you the freedom to work with your favorite equipment.

User Guide for Camera server tool "GryphaxServer.exe" of JENOPTIK GRYPHAX® software

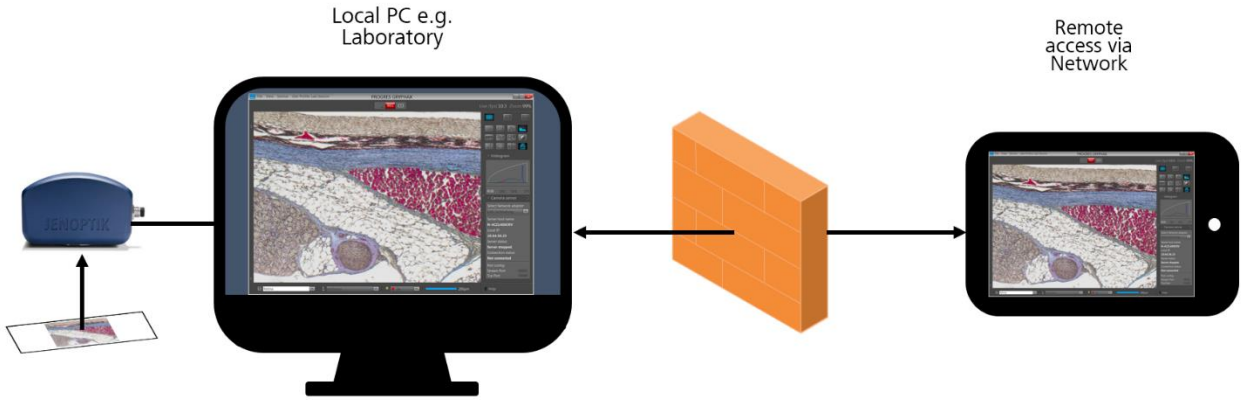
General description:

The GRYPHAX Server tool enables users to share images from locally connected GRYPHAX cameras via network connections into a client PC.

By using the GRYPHAX software* on the same network, users have the ability to watch streaming live images from the different networked cameras and have remote control of the shared network cameras where users can control the software features and settings on the networked cameras. The GRYPHAX software stores all media files of captured images directly on client PC.

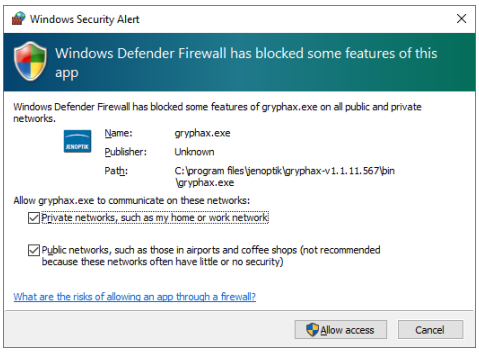
Overview:

Camera server tool running on host PC | remote control at client PC:



Preparations general:

To use the GRYPHAX-Server tool user must **allow network access** for JENOPTIK GRYPHAX application and the GRYPHAX-Server application to communicate over network without blocking by firewall protection of operation system on both computer (host-PC and client-PC)!



In case of network connection issues, please contact your IT-department for further assistance!

*(Available as of GRYPHAX V.2.3.0 and newer)

Location:

The GRYPHAX-Server tool is located at the GRYPHAX installation folder* on Hard drive. Default location is: **C:\Program Files\Jenoptik\GRYPHAX-V2.3.0.xxx\bin\GryphaxServer.exe**. Also, a **desktop short cut** of GryphaxServer.exe is created during installation.

Preparations:

To operate with the GRYPHAX-Server tool you have to select the network adapter you want to use from your PC. Your server computer may have more than one network interface. So, you will have to tell GRYPHAX-Server tool which one you want to use.

Server computer (host-PC):

1. On a server computer decide which network interface you will be using (WiFi, Ethernet).

2. Open Windows console program by press ⊞ Windows-logo-key + "c + m + d" keys – a new console window will appear. Run "**ipconfig.exe**" from the console to find out what is the "IPv4 address" at the chosen interface. As example, if you want use Wi-Fi:

```
Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . : lan
   IPv6 Address. . . . . . . . . . . : 2a02:a[redacted]
   Link-local IPv6 Address . . . . . : fe80::ed[redacted]
   IPv4 Address. . . . . . . . . . . : 192.168.0.229
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : fe80::1a[redacted]
                                       192.168.0.1
```

So, you will use in our example IPv4 address: **192.168.0.229** to connect the camera via WiFi.

3.a. Run the Gryphax server providing the IPv4 address via **command line** like the shown example: **"GryphaxServer.exe 192.168.0.229"**

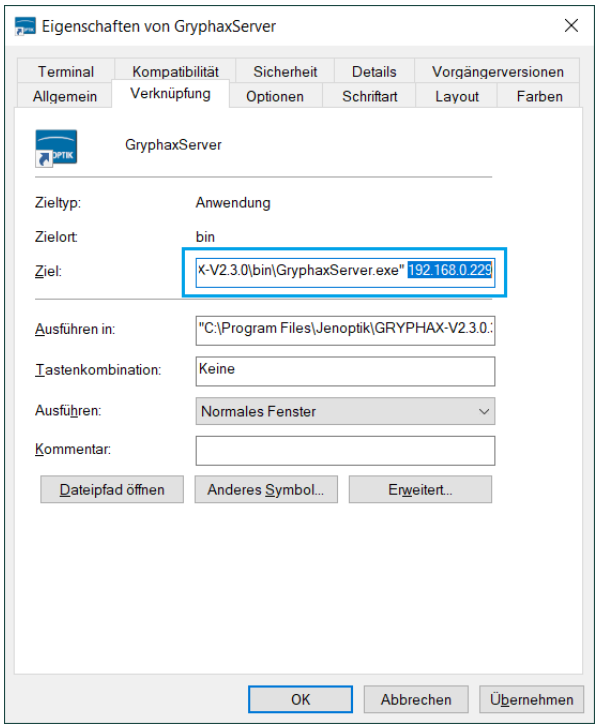
```
\bin>GryphaxServer.exe 192.168.0.229
```

3.b. Or alternatively use the **shortcut GryphaxServer.exe** from "Desktop" with the attribute for IP address.

Open properties of created Gryphax-Server shortcut.

Go to "**target**" and add the IPv4 address from your network with a space in between. As example: **"…\GryphaxServer.exe" ␣ 192.168.0.229**

Save the changes and leave dialog by "**OK**".



Afterwards, run the desktop shortcut for GryphaxServer.exe by double-click via mouse – a console window will appear to show status of GRYPHAX-Server tool and camera status as follows:

Gryphax-Server tool is successfully started and wait for client connection (opened cmd line):

```
C:\Program Files\Jenoptik\GRYPHAX-V2.3.0.[redacted]\bin>GryphaxServer.exe 192.168.0.229
11:32:35:548

****************** Session started: Di, 5-11-2024 11:32:35 ******************
```

Connection to client pc is established and camera is found:

```
---------------------- Client connected ----------------------


Camera KAPELLA found
```

Note: No additional GUI (Graphical User Interface) will be opened. The GRYPHAX sever tool only provides the GRYPHAX camera as a network shared camera!

Fallback option:

If the IP address is not specified by users, then the server tool will advertise on the IP address of the first network adapter found at the host PC. In case there are more than one adapter (e.g. Ethernet and WiFi), there is no guaranteed order, so the used network can be a random one.

Important Note: In case of connection issues, take care that the GRYPHAX server tool is running with administrator permissions on host PC.

Status of GRYPHAX server and network camera:

On the console window, the status of camera and connection as well as any logging data will be shown in real time. If the GRYPHAX server tool is running on console window a client pc can connect and disconnect to the shared network camera. After disconnecting – the GRYPHAX server is awaiting a re-connect from a client PC. Any status change will be shown on console.

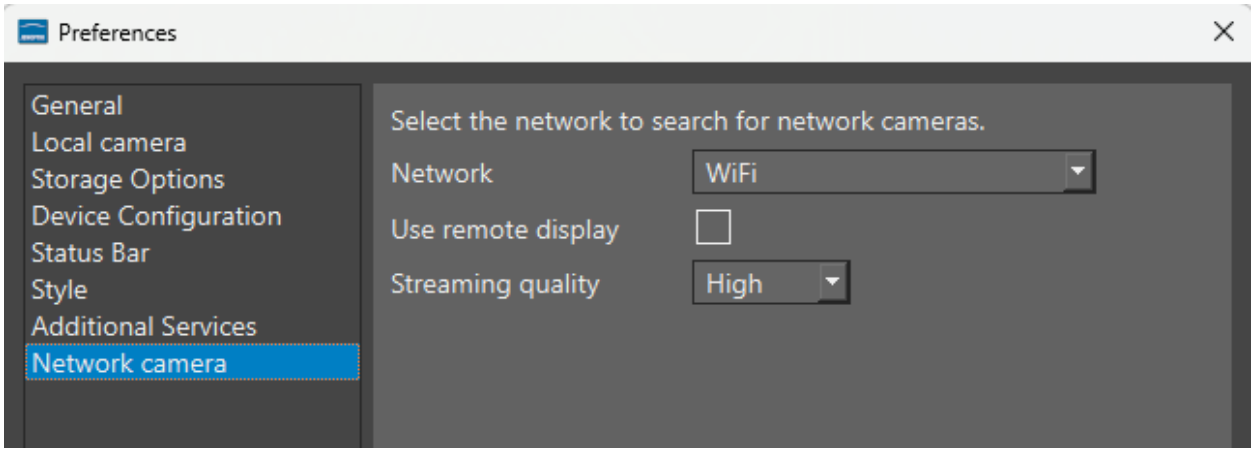
Client PC disconnect from network camera (from host-pc) GRYPHAX server tool waiting for re-connect:

```
---------------------- Client disconnected ----------------------
---------------------- Client connected ----------------------
```

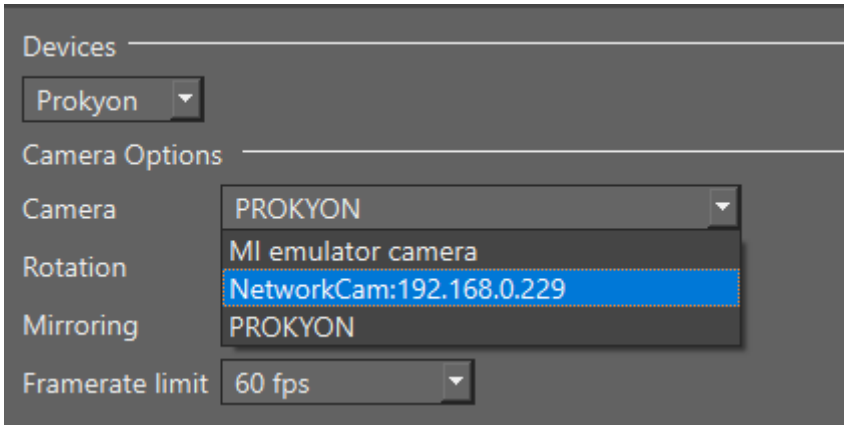
Note: Make sure, that there is only one GRYPHAX camera connected to the host computer and no other application is connected to the camera at the same time! Otherwise, the GRYPHAX server tool will be closed automatically, and no network camera will be provided.

To connect with server camera on client computer:

4. Open GRYPHAX application V2.3.0 (on client computer) select the same network adapter as the one for the host computer at Preferences. e.g.: WiFi under **Preferences | Network camera** section:



5. At **Preferences | Device Configuration** section you see the network camera if available:



On the Camera drop-down list under Devices, you will find all cameras whether available locally or remotely. Multiple cameras from different host computer will be listed on drop down menu.

The remotely connected cameras are shown as: "**NetworkCam:xxx.xxx.x.xxx**" with attached IPv4 address for clear identification.

Troubleshooting:

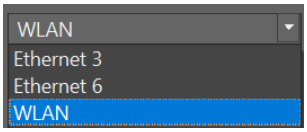
In case no network camera is listed on device list – double check the settings for network adapter to search for network cameras at **Preferences | Network camera** section. Also check your network status of operating system.

In case of network connection issues, please contact your IT-department for further assistance!

Important Note: Take care that the GRYPHAX server tool is running with administrator permissions on host PC.

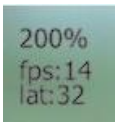
Parameters in detail:

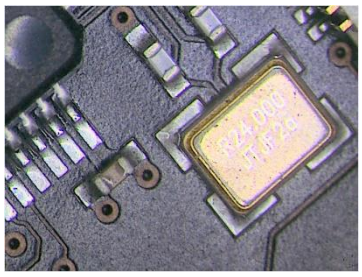
- Choose **Network** to search for network cameras: All available network adapters are displayed to search for GRXPHAX server cameras.



- Activate checkmark to **use remote display** (monitor) on host-PC. To **display the camera live preview** on monitor of host-PC for setup camera or review the camera stream.

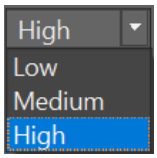
The preview shows some additional parameter from camera as follows:
  - **Zoom factor** on monitor – it can be changed by mouse wheel
  - **Frame rate** as fps
  - **Image latency** as numbers





Active remote display (on host-pc)

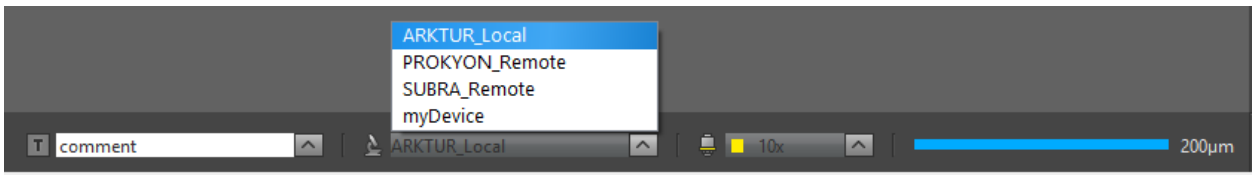
- Choose **Streaming quality** for live preview compression in 3 steps:
  - Low
  - Medium
  - High



Note: Depending on the network connection quality and preview frame rate, select the streaming quality option from list.

Fast camera switching for optimize workflows:

Create device configurations for remote cameras to change quickly between locally connected cameras and network "remote" cameras directly at status bar.



Operation with server camera on client PC:

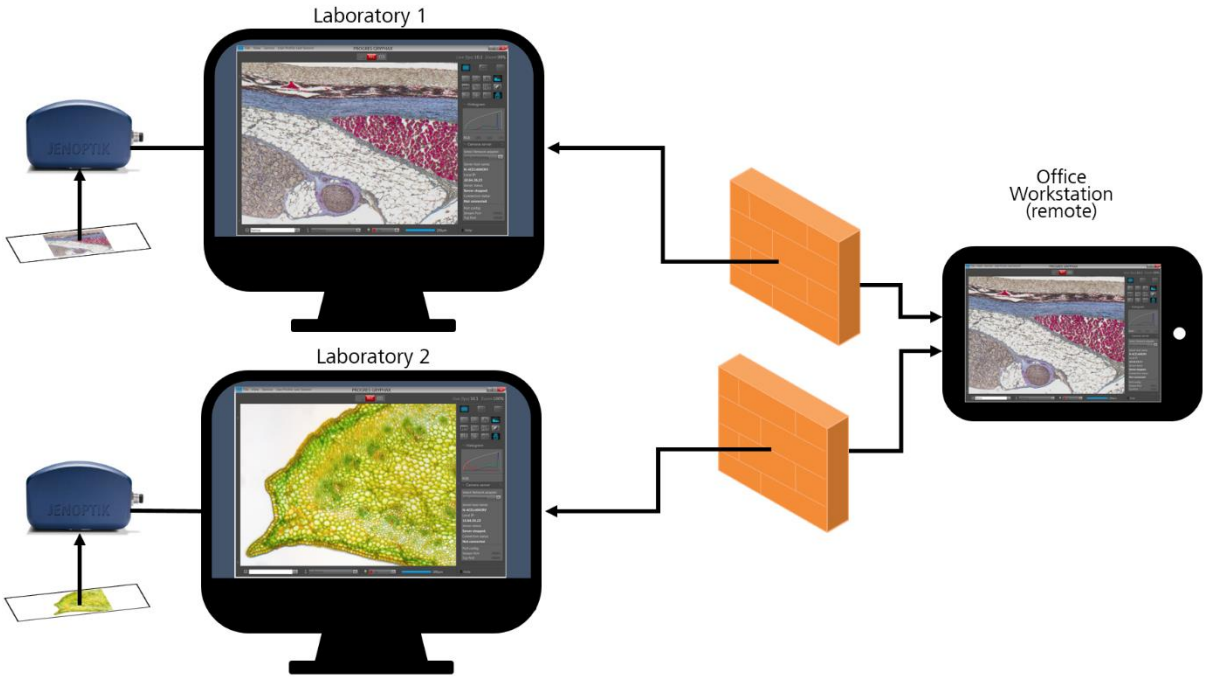
After establishing of server camera connection, most camera settings and enhancements are remote controlled by client PC. User can utilize most functions and tools of local JENOPTIK GRYPHAX software.

The recorded media files (images, videos, etc.) will be always saved on client PC and are displayed on client Gallery as well.

Important Note: To connect with network camera, each computer has to be at the same network environment, otherwise no camera connection would be established!

Example for multi-remote-camera use:

Different laboratory can enable GRYPHAX server tools on their computer to share the locally connected cameras via network environment. Office workstations are able to remote control the camera and observe the experiments. Office workstation (client PC) can change between different network cameras.



Limitations:

a) The Camera server tool will be inactive at client PC during active GRYPHAX-Server camera connection.
b) Only one client-PC can connect to a server camera from host PC at same time!
c) Slow-Motion video record is not possible with network cameras.
d) Multi-Fluorescence tool not available.

39. Service & Support

1st level support

For questions about JENOPTIK GRYPHAX® microscope cameras and software, your local expert dealer from whom you have purchased the JENOPTIK GRYPHAX® camera is the first contact partner. He is trained in using the camera and can give you information about accessories that are suitable for special microscopy applications.

Manufacturer service and support

Furthermore, our local technical expert support in Jena can be contacted:
gryphax@jenoptik.com

40. Return address & software updates

Return address in case of service incidents

JENOPTIK Optical Systems GmbH
Customer Care Service
Attn.: Mr. Felix Baatzsch
Pruessingstrasse 41
07745 Jena
Germany

In the unlikely case, that a camera needs to be returned for inspection or repair, please request an RMA number from po.di@jenoptik.com in advance!

We kindly ask that you fill out the questionnaire from next page and send this together with the camera.

Moreover, please ensure you adhere to all relevant custom regulations and that you include a pro forma invoice with a reasonable value for the camera.

Contact:

Ms. Bettina Fuchs:
+49 3641 65-3377
po.di@jenoptik.com

The manufacturer data of each product is encoded into the product´s serial number. Contact the support team to obtain the manufacture date of your specific product.

JENOPTIK SERVICE & SUPPORT Questionnaire

In order to enhance our fast service & support, we kindly ask that you fill out the mandatory fields marked with an * and return the document to gryphax@jenoptik.com

Date		RMA-Number*	
Reseller Name*			
Customer Name*			
Address*			
E-mail*			
Phone*			
Camera*			
Model name*			
Serial number*			
Firmware version*			
Software*			
Software name*	GRYPHAX		
Software version*			
Software settings*			
Resolution* Exposure time* Gain*			
System configuration*			
Operating system*			
Architecture* (32 bit or 64 bit)			
Existing hardware* (Interface cards etc.)			
Microscope:			
Brand			
Adapter			
Objectives			
Accurate description of the issue*			

Camera registration and software updates

Users can register at our website:
https://www.jenoptik.com/progres-gryphax-software

Registered users are entitled to access the download area of our JENOPTIK GRYPHAX® website where software updates and enhancements are provided regularly and free of charge.

Further information

More information about digital imaging products from JENOPTIK Optical Systems is available on our website: www.jenoptik.com/gryphax

Technical information

The technical specifications of your JENOPTIK GRYPHAX® camera are found on the JENOPTIK GRYPHAX USB stick in the folder "Data sheets". Further technical information such as application reports, data sheets and Frequently Asked Questions are available on our web site: www.jenoptik.com/gryphax

41. Abbreviations and Acronyms

Abbreviation	Description	Abbreviation	Description
ROI	Region Of Interest	REC	Record
CMOS	Complementary metal-oxide-semiconductor	PC	Personal computer
GUI	Graphical User Interface	OS	Operating system
USB	Universal Serial Bus	ms / µs	Milliseconds / Microseconds
PCI(e)	PCI express	FX	Effects
EDF	Extended Depth of Field / Multi-Focus (images)	CMYK	Color space - Cyan, Magenta, Yellow, Black
cmd	Command (key)	ctrl	Control (key)
CPU	Central Processing Unit	GPU	Graphics Processing Unit
RAM	Random-Access Memory	EMVA 1288	European Machine Vision Association (electronic measurement standard)
DPI	Dots per inch	FPS	Frames per seconds
RGB	RGB color space	WB	White balance
CE	EC EU declaration of conformity	KC	Korean declaration of conformity
AEC	Automatic Exposure Control	XYZ	Axis of motorized stage

42. Safety & Operating Instruction for JENOPTIK GRYPHAX® Microscope Cameras

Intended Use

JENOPTIK GRYPHAX® cameras are intended for the use on a microscope.
They can be adapted via c-mount adaption to the microscope and via USB3.0-cable to a computer or laptop.

Take care to use only the USB3.0 cables and interface cards included with your camera or explicitly recommended by Jenoptik.

Power Supply

For JENOPTIK GRYPHAX cameras, power supply and data communication are carried out using the USB3.0 cable. Additional power supply connections are **not necessary**.

Contents

1. JENOPTIK GRYPHAX® microscope camera
2. JENOPTIK GRYPHAX® software - available:
   - on USB-memory card – item 5,
   - to download at www.jenoptik.com/gryphax
   - on request by e-mail to gryphax@jenoptik.com
3. USB3.0 cable
4. Safety and Operating Instructions & Quick Start Guide
5. USB memory card containing user video tutorials & JENOPTIK GRYPHAX® software & manuals

Trigger Operation

Some JENOPTIK GRYPHAX cameras support trigger out operation. After image capture, the camera delivers a signal to the device (Trigger Out) to signal the completion of the function. Trigger Out does not require any additional power supply. Connect the cable shield with the casing of the external device. Only use shielded cables! Order number for JENOPTIK GRYPHAX trigger plug: 109370

Conformity to CE / WEEE / ROHS / China RoHS / Korean KC

JENOPTIK GRYPHAX® microscope cameras comply with:

- CE in accordance with EMC Directive 2014/30/EU
- WEEE
- ROHS
- China RoHS
- KC in accordance of Clause 3, Article 58-2 of Radio Waves Act for the following cameras / spare parts:

ALTAIR TR-E2101-013
ARKTUR TR-E2101-004
AVOIR TR-E2101-006
BETRIA TR-E2101-005
USB Memory drive TR-E2101-012
KAPELLA TR-E2101-007
NAOS TR-E2101-014
POLARIS TR-E2101-024
PROKYON TR-E2101-003
USB Drive card TR-E2101-011
RIGEL TR-E2101-010
SUBRA TR-E2101-008
WEGA TR-E2101-009

Type Label

Note: Please observe the information on the type label when installing the camera.
The following information are printed on the type label: (e.g. JENOPTIK GRYPHAX® SUBRA)

1. Camera type:
2. Serial number (written and in code format):
3. Manufacturer's website:
4. CE mark / WEEE mark / Voltage / Power:
5. Country of origin:

Cleaning and Maintenance

Cleaning the camera casing: If the camera casing is only slightly soiled, clean it with a soft, slightly moistened piece of cloth. Make sure that no water enters the camera and risks becoming in contact with any internal components.
Do not use any aggressive substances or solvents to clean your camera.

Cleaning the filter glass: Cleaning the filter glass by yourself is not recommended. If the filter glass is severely soiled, please contact your expert dealer or the manufacturer for assistance.

Disclaimer

Exemption from warranty: Jenoptik shall be exempt from warranty during the warranty period in the event that the safety regulations are not observed.

Exemption from statutory liability for accidents: Jenoptik shall be released from statutory liability for accidents that occur in the event of non-observance of the safety instructions by any operating person.

Safety & Operating Instructions

JENOPTIK GRYPHAX cameras are intended for the use on a microscope and for operation and control with JENOPTIK GRYPHAX microscopic imaging software. The JENOPTIK GRYPHAX microscope camera is an optical and fine mechanical device. Please handle it with due care.

JENOPTIK GRYPHAX cameras should be used in clean and dry locations.

Every JENOPTIK GRYPHAX camera has been thoroughly tested and has left the factory in perfect operating condition.

For your own safety and to keep the camera in good operating condition, please follow all safety and operating instructions in this document and observe all advice and labels on the unit and on any accessory.

Expansions and alterations: The camera must be operated in compliance with these safety instructions. Do not attempt to carry out any expansions, adjustments, alterations, or repairs by yourself. Repairs and maintenance work may be carried out only by authorized service personnel.

Electric installations: The electric installations of the room where the system is set up must be in compliance with the IEC requirements.

Voltage supply: 5V (USB) / Consumption: Variable according to camera type. Please refer to your camera's technical data sheet.
Unplug the USB cable to disconnect the camera from the power supply.
Use only cables included with your camera or explicitly recommended by Jenoptik.
• Make sure that the cables are installed so that they do not obstruct persons and do not cause a tripping risk.
• Protect cables against mechanical impact or damage.
Note: Observe the information on the type label when installing the camera.

Caution, fire hazard! To prevent a risk of fire, do not operate or store the camera nearby easily inflammable materials or gases.

Caution, risk of injury! Operating the camera under the following circumstances risks injury:
• The camera is visibly damaged
• The camera has been stored under adverse conditions over a long period of time
• The camera has been transported under adverse conditions

If any of these circumstances apply, switch off the camera and ensure that it cannot be operated unintentionally. Please contact your expert dealer or the manufacturer's technical support team for assistance.

Caution, risk of damage by unsuitable environment conditions! Do not expose the camera to extreme environment conditions. Avoid extremely high or low temperatures, and keep the camera away from high humidity, liquids, chemical gases, dust or high electro-magnetic fields.

Caution, risk of injury or damage by water! If water (or other liquids) enters the camera, there is a risk of electric shock. Your camera can also be damaged or no longer usable. If water has entered the camera, switch it off and contact your expert dealer or the manufacturer for assistance.

Caution, risk of damage by static charge! Static charge can damage or destroy the electronic components of your camera. Before connecting the camera to a computer or a microscope, make sure that it is free of electrostatic charge. Ground yourself by touching the metallic housing or the reverse side of your computer or microscope, which both have to be grounded via a power socket.

Caution, risk of malfunction by insufficient ventilation! Some JENOPTIK GRYPHAX cameras are equipped with louvers on the rear side. Ensure that the cameras are sufficiently ventilated and that the louvers are not covered.

Caution, risk of damage and malfunction by overheating! Avoid leaving your camera in direct sunlight and do not operate the camera near heat sources (e.g., radiators or stoves). Overheating can affect the image quality.

Advice for handling the IR filter glass: Protect the integrated IR filter glass against mechanic impact such as scratching or shock and against soiling. Avoid fingerprints on the glass and do not touch the C-mount cover of the camera.

Caution, risk of damage and image errors by mechanic impact! Protect the camera against impact, especially during operation. Mechanic impact can affect image quality.

Operating temperature:	+10 °C ... +35 °C
Relative humidity:	5 % ... 80 %, non-condensing
Storage and transportation temperature:	-20 °C ... +70 °C

Advice for transportation and storage: Protect the camera against impact. Store and transport the camera in a dry and cool place, e.g., in its case or the packaging in which it was delivered. Please use the supplied C-mount cover during transportation and storage.

Disposal

The camera must be disposed of in compliance with the environmental protection guidelines in force. Contact your expert dealer in case of any questions.

Trade-In

Refine your workstation. Trade in your old Jenoptik microscope camera or eligible device for credit toward your next purchase. No matter the model or condition, we'll recycle it for free and turn it into something good for you and good for the planet.

The sign **Caution** warns against possible health dangers at risk if the advice is not observed.

The sign **Attention** warns against possible damage to the instrument.

The sign **Information** highlights important information for the operation of your camera.

This symbol highlights that special guidelines have to be followed when disposing of this product.

Learn more about JENOPTIK GRYPHAX® software and the easy workflows and tools.

Watch our video tutorials. VIDEO TUTORIALS

HELPFUL? We appreciate your feedback. FEEDBACK

We are looking forward to hearing from you and remain sincerely,

Your JENOPTIK GRYPHAX® Team