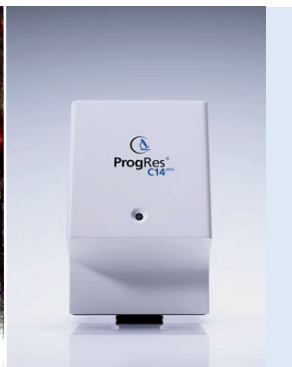
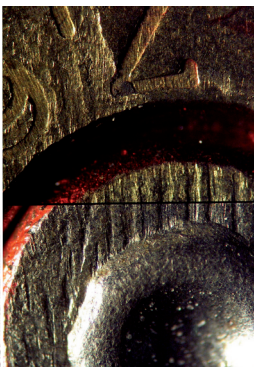
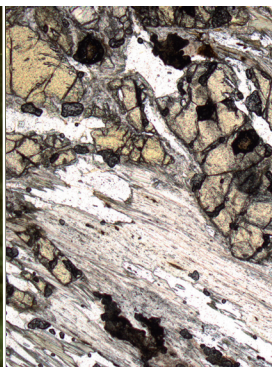
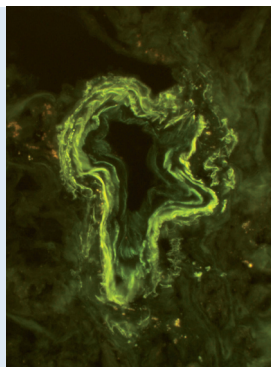




ProgRes® CapturePro 2.8.8



Dear user,

Please read the instructions in this manual carefully before starting to operate the ProgRes® camera and the software ProgRes® CapturePro. 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
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We reserve the right to make improvements and changes to the device and this manual at any time without prior notice.

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 non-compliance with the information contained herein, or in any further applicable document!

Property rights:

ProgRes® is a Jenoptik trademark registered for the European Union and the United States of America. All other brand names, trade marks 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 ProgRes® CapturePro application software.

Contents:

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

Further applicable documents:

- "ProgRes® microscope cameras - instruction manual manual"
- Technical data sheet

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 ProgRes®-camera can be found on the installation CD and on our web site:

<http://www.jenoptik.com/en-digital-cameras-for-microscopy>.

Conventions used in this manual

Signs and symbols

- Enumeration
-  Advice / Important / Important advice
- Reference (to a text passage or image)

Warning symbols



The sign **caution** warns against possible health dangers which can be caused if the advice is not observed.



The sign **attention** warns against possible damages 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.

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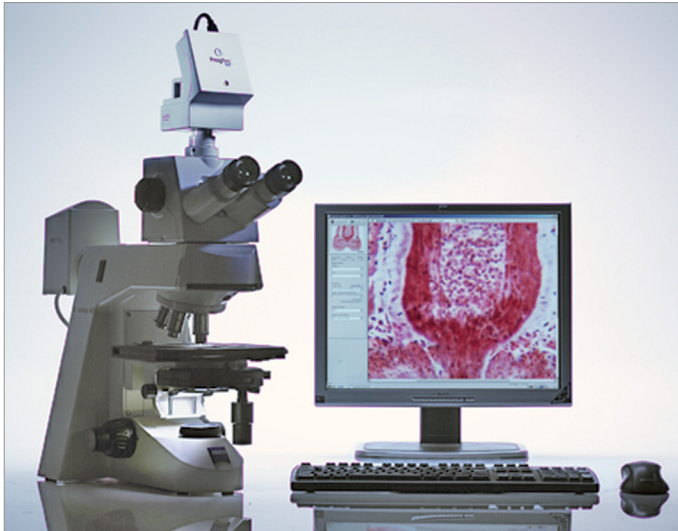
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2 General information



Microscope workstation with ProgRes® camera

The following manual describes the operation of all ProgRes® microscope cameras with the ProgRes® CapturePro application software. ProgRes® CapturePro is compatible with all ProgRes® microscope cameras. You will be expressly informed in this manual of any differences in operating different ProgRes® cameras.

2.1 Illustrations in this manual

The illustrations in this manual are created with ProgRes® CapturePro 2.8 on MS Windows XP. The look of the images on your computer may be different from the illustrations in this manual depending on your operating system.

2.2 Feedback: approval, criticism, suggestions

ProgRes® CapturePro is being improved constantly. We welcome your feedback to meet your needs even better in future releases. Please let us know what you like about ProgRes® cameras and the ProgRes® CapturePro software, what you dislike and also what you find missing. We will try to consider your suggestions in future product releases.



Please address your feedback to:
progres.os@jenoptik.com

We wish you every success with your ProgRes® microscope camera!

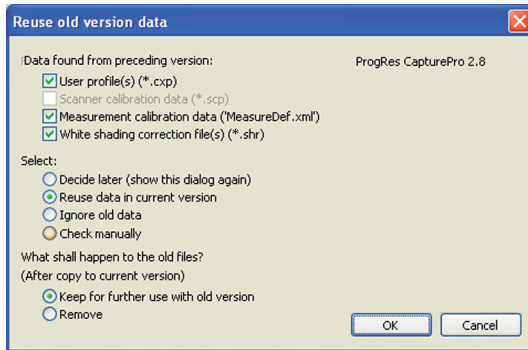
JENOPTIK Optical Systems

3 Starting the software

3.1 Preparations

Install the camera and the software and connect the camera to your computer by means of the IEEE-1394 Firewire or the USB-cable. Observe the advice in the operating manual. Double-click on the start icon on your desktop or select ProgRes® CapturePro in the start menu. The software will detect the connected ProgRes® camera automatically when started, and the specific camera data will be loaded (e.g. camera type, serial number, live image and image Capture modes).

3.2 Reusing data from earlier versions



Reuse of old version data

When an earlier version of ProgRes® CapturePro is already installed on the computer, a dialog will appear when the new version is started. Here you can select what shall happen to the data that were created with this earlier version.

Select data

In the upper area select the type of data that will be changed.

Starting the software

Select


Select what shall happen to the old data:


Decide later	Nothing will happen to the old data for the moment, but this dialog will be displayed again when the software is restarted until you will make a selection.
Reuse data in the current version	The selected earlier version files will be integrated into the new version and will be available for software operation.
Ignore old data	The earlier version data are ignored. They will not be available when operating the new version.
Check manually	No action will be carried out. The files can be copied manually to the new version folders if necessary.

What shall happen to the old files?

Select what shall happen to the old data after carrying out the selected action:

- When “Keep for further use with older version” is marked, the data are kept with the older version of ProgRes® CapturePro.
- When “Remove” is marked, the data will be removed from the older version.

 **Note:** This dialog appears only if an earlier version of ProgRes® CapturePro is already installed on your computer.

 **Important note:** To display this dialog again, even if you have already made a selection, click the button “Options” in the register tab “Tools” and mark the respective checkbox.

3.3 Files and directories

The data of the ProgRes® CapturePro software are saved in the following files and directories:

File	Path
Application software ProgRes® CapturePro	C: \ Programs \ Jenoptik \ ProgRes \ ProgRes Capture Pro 2.8.8
Current application data (current preference file)	C: \ Documents and Settings \ <current user> \ Application Data \ Jenoptik \ mylast.cxp
Common application data (saved preference file)	C: \ Documents and Settings \ <current user> \ Application Data \ Jenoptik \ <name>.cxp
Images	C: \ Documents and Settings \ All Users \ Application Data \ My documents \ my pictures \ <name>
Shading reference files	C: \ Documents and Settings \ Applica- tion Data \ Jenoptik \ Capture 2.8.8 \ <name>.shr.

The folder “Jenoptik” and the camera driver “FireCamJ221” are created automatically when the software is installed; a separate driver installation is not necessary. The camera can be connected to your computer after the installation. The driver is found in the device manager under “Image editing devices”. All new cameras will be installed automatically.



Important note: Cameras installed with the new software version will not be detected with earlier versions of ProgRes® CapturePro which may still run on the same computer.

Starting the software

3.4 Working with the TWAIN plug-in

With the TWAIN-PlugIn you can export images captured with ProgRes® CapturePro to other image processing applications (e.g. Microsoft Word or Adobe Photoshop).

Open the desired image processing software and select “ProgRes® CapturePro” as TWAIN source (e.g. Adobe Photoshop: File – Import – ProgRes® CapturePro). The operation of the application software and the TWAIN-plugin are identical to the greatest possible extent. Differences occur mainly in image saving (--> Register tab “Settings”).

3.5 Image window

After starting the software, the live microscope image will be transferred and displayed in the software. Activate the gallery function to display the captured images of a folder in a gallery under the image display window. If you would like to display an image of the gallery in the main software window, simply double-click on the respective image in the gallery.

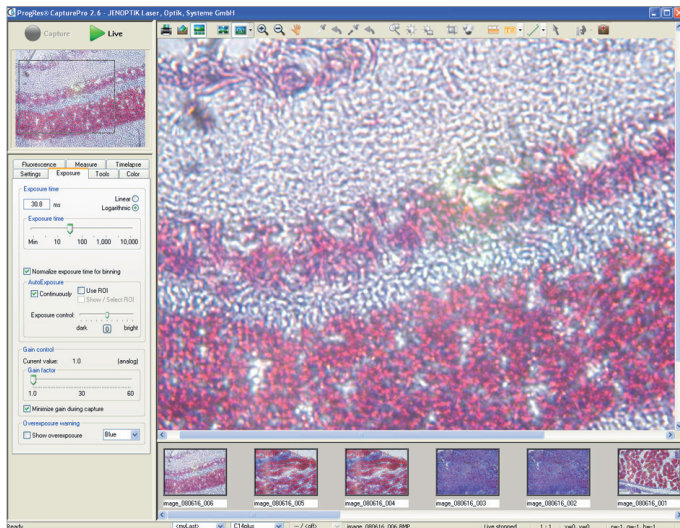




Image window with gallery

If the Stretch mode (adapt image size to window) is activated, the aspect ratio is automatically matched to the aspect ratio of the displayed image. This means that you will always see the complete image. In 1:1- or Zoom mode, scrollbars are displayed at the image borders and enable navigation in images that are larger than the display area. The displayed image section appears in a preview window above the register tabs, which facilitates the navigation in the windows.

The status bar under the image displays image information and enables the selection of the connected camera, the shading reference file and the user profile.

4 Hot keys

For the easy software operation, the following hot keys can be used:

F2	Capture
F3	Live
F4	<p>Snapshot</p> <p>An image is captured directly in the Live mode, and will be saved in the Live mode resolution. In this way, the delay between image display and image capture (capture delay) can be avoided.</p>
F11	<p>Activate Full screen mode.</p> <p>Areas of the software user interface can be shown or hidden. In this way, the display area of the microscope image can be enlarged or reduced.</p> <p> Important note: If not all operating elements are displayed due to a low screen resolution, the display of the elements can be activated by clicking F11.</p>
CTRL+DEL	Delete the selected (marked) form (context menu "Measure").
CTRL+SHIFT+DEL	Delete all forms (context menu "Measure").
CTRL+B	Set selected (marked) form to the background.
CTRL+F	Set selected (marked) form to the foreground.
CTRL+S	Merge overlay into the image.
+ / -	<p>Pressing the keys "+" and "-" the image can zoomed in or out in the Live and the Capture mode.</p> <p> Note: This function is not available in the Stretch mode.</p>

5 Structure of the software user interface

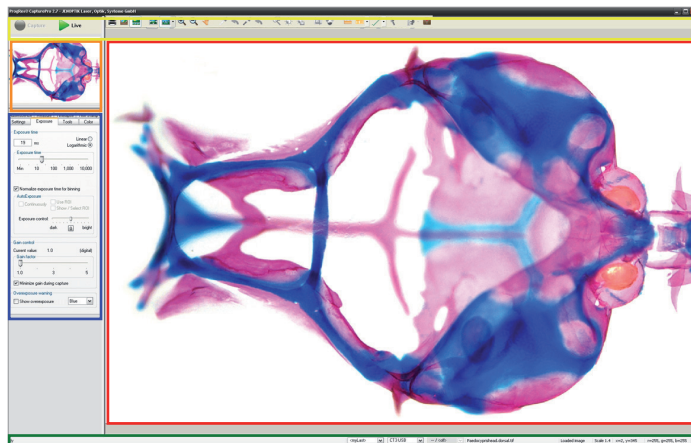


Image window (Capture mode)

Image window (red frame):

The live image or captured image is displayed in the selected resolution.

Icon bar (yellow frame):

The icons provide access to image settings and image processing functions for live and captured images.

Operating panel (blue frame):

In the operating panel you can select several register tabs that enable image capturing, processing and modification functions (e.g. color settings). Also, fluorescence image capture can be carried out.

Status bar (green frame):

In the status bar, the calibration settings, the used camera, the image, the frame rate, the image scale and the cursor coordinates are displayed and can be selected.

Preview window (orange frame):

The preview window is only visible in Capture, Freeze and Gallery mode. If the size of microscope image exceeds the borders of the image display, the actual displayed area is marked with a rectangle in

the preview image. To change the image section of the main display, click this rectangle, hold the mousebutton down and move the rectangle to the desired position.

6 The functions of icon bar













The intuitive buttons in the icon bar provide access to image processing functions, and to the settings for live and captured images.
















Icon bar in the image window



Note: If there are not all elements of the icon bar displayed due to a low screen resolution, press the key F11.

	Capture: Capture image
	Live / Freeze: Start or stop live image display.
	Print Image: Print or export up to 6 images in PDF-format directly from the application software.
	Load Image: Load a saved image.
	Gallery: Show or hide image gallery.
	Stretch to Window: Fit displayed image to the size of the window.
	True Pixel Size: Display image in 1:1-scale or select scale from the drop-down listbox.
	Zoom In / Zoom Out: Zoom image in or out.
	Hand-Tool: Shift the displayed image section.
	White Balance: Set white balance in the live image.
	Auto White Balance: Set automatic white balance in the live image.
	Reset White Balance: Reset created white balance.

The functions of the icon bar

	Black Balance: Create black balance in the live image.
	Reset Black Balance: Reset created black balance.
	Focus: Set focus in the live image.
	Auto Exposure: The exposure time in the live image is adjusted automatically once.
	ROI for Auto Exposure: Select an image area. Based on this area, Auto Exposure for the entire image will be calculated once.
	Select Crop: Select image region for live and captured image.
	Switch to B/W resp. RGB mode: Display image in Color mode or in Black / White mode.
	Scale: Show measurement scale.
	Annotation: Insert text or pointer annotation into the image.
	Measure: Insert measurement shape into the image.
	Select Shape(s): Mark and select overlay element (annotation or measurement shape).
	Select Camera: Select camera and display serial number.
	Help: Display program information and manual.

6.1 Capture

Before capturing an image for the first time you are prompted to select a folder where the images will be saved.



With a click on “Capture” an image will be captured in the sensor resolution selected in the register tab “Settings”.

Before capturing the image, we recommend you to set the exposure time. This can be done either automatically with the “AutoExposure”-function or manually in the “Exposure”-register tab. Additionally, it is recommended to carry out a white balance. A captured image will be displayed in the image window immediately. To return to the live image, click the button “Live”.



Note: The captured image is always displayed in “Stretch” mode.

To zoom in or out an image, click the button “1:1” in the image menu bar. If the displayed image is larger than the image display area, a preview image will appear above of the register tabs.



Important note: When ProgRes® CapturePro TWAIN is used, all captured images will be transferred directly to the selected image processing program. You can only save the images from this program, but not directly from ProgRes® CapturePro TWAIN.

Snapshot

Pressing the F4-key an image will be captured directly from the Live mode and will be saved in live image resolution. In this way, the capture delay between the image display and the image capture can be avoided.

6.2 Live mode



Click “Live” to activate the live image transfer. The live image will be displayed in the resolution selected under “Settings”. When an image is captured, the live image transfer will be stopped.

6.3 Freeze mode



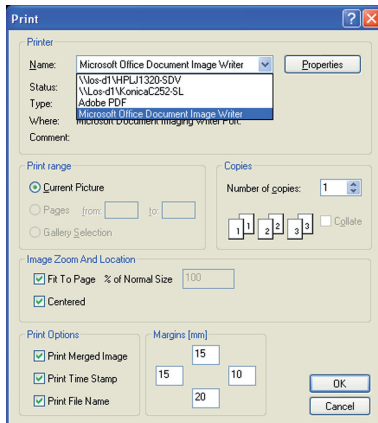
Click "Freeze" to stop the live image transfer.

When the live image is "frozen", you can load and display images saved in a folder. Click the button "Load image" in the image menu bar or select the image under "Images captured in current session" in the register tab "Settings".

6.4 Print image



Click the button "Print" to open the print window. Up to 6 images can be printed or exported as PDF-files. In the print window the settings can be selected.



Print window

Printer

Select the standard settings for printing or PDF-export. Click the button "Properties" to select further printer settings.

Print range

In the area "Print range", the picture, several pages or a gallery can be selected to be printed.

Image zoom and position

In the area "% of normal size", the zoom can be selected. When the checkbox "Fit to page" is marked, this zoom will be set as fixed, and the image size will be adjusted to the display. When the checkbox "Centered" is marked, the image will be displayed in the center.

Print options

By marking the checkboxes, you can select whether you would like to print a merged image, the time stamp or the file name.

The functions of the icon bar

Margins

Set the margins of the printed image.

Print one or several images

You can select whether you would like to print one or several images in one step. When one image is selected, only the currently selected image will be printed.

If you would like to print several images on one site, select the images in the gallery and select the printer. Click the button "Properties" to open the advanced printer settings. In the advanced printer settings, select the printer properties and select "2 or more pages per sheet".

The available printer settings may vary depending on the printer or PDF-export program you use.

6.5 Load image



Load and display a saved image in the display window of ProgRes® CapturePro. You can only display images that have been captured with a ProgRes® camera.

6.6 Gallery



Display the images in the selected folder as thumbnails in a gallery under the image display window. When you click this button again, the gallery will be hidden.

The folder for the images to be saved is selected in the register tab "Settings" (see chapter 7.1 "Register tab `Settings`"). When the folder is changed, the gallery will be updated automatically. If the folder is empty, the message "No images stored in the target folder" will be displayed.

To display an image, mark it in the gallery. If the displayed image is larger than the image window, a preview image is displayed above of the register tabs. The currently displayed image section is marked with a frame. Additionally, scrollbars appear enabling navigation in the image display.

The functions of the icon bar

When you switch to the Live mode, the image which was last loaded from the gallery stays selected. The gallery will also be displayed in Full screen mode which can be activated by pressing F11.

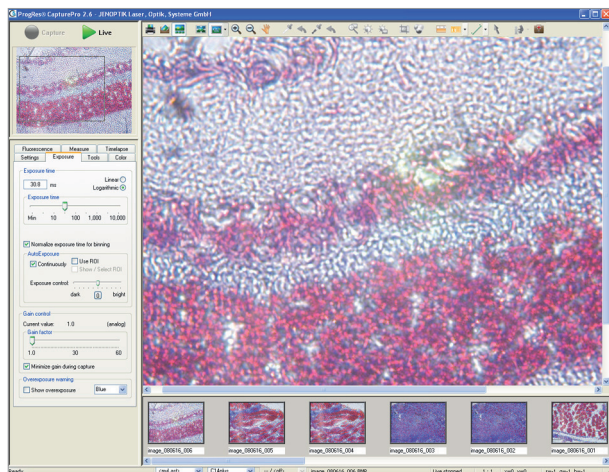


Image window with gallery



Important note: The gallery functions are different in Fluorescence mode. Therefore, all image galleries that are currently open will be automatically closed after the “Start”-button in the Fluorescence mode is clicked.

If the image gallery stays open during image capture, it will be automatically updated. If the number of captured images exceeds the size of the gallery window, scrollbars will show. Images in the image gallery can be deleted and renamed in the following ways:


6.6.1 Deleting images from a gallery

Right-click the image you wish to delete from the image gallery. The button “Delete” will show. You will need to accept the prompt “Do you really want to delete?” with “OK”.

6.6.2 Renaming images in a gallery

Left-click on the text under the image in the gallery. 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 using another function. You will need to accept the change of the name " by clicking "OK".


 **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 a more easy workflow with ProgRes® CapturePro, 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.

6.7 Stretch to window



The "Stretch-to-window"- button fits the displayed image to the size of the image window. The preset image resolution will be kept.

Captured images are displayed in Stretch mode. If you would like to zoom an image, click the "1:1"-button in the image menu bar first to deactivate the Stretch mode. If the image is now larger than the display window, a preview image will show over the register tabs. You can now adjust the size of the image with the respective tools.

 **Note:** When the "Stretch-to-window"-function is used, the live image frame rate will slow down considerably.

6.8 Adjust image size

Several tools are available to adjust the image size according to your needs. These functions can be used in the live image or in a captured image.

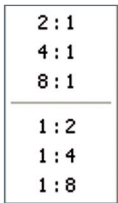
The functions of the icon bar

6.8.1 True pixel size



The "1:1"-tool sets a zoom-factor of 100 %. In 1:1-scale, one pixel in the image corresponds to one pixel on the screen.

If the displayed image is larger than the image window, scroll bars appear at the lower and the right border of the image and enable navigation.



To set another scale, click the arrow button next to the button "1:1" and open a drop-down menu. The activated scale will be checked. With a click on the button "1:1", the original scale can be restored.

6.8.2 Zoom In / Zoom Out



The "Zoom"-tools are used to zoom in (+) or zoom out (-) the displayed image.

The image can be zoomed in or out in the Live and the Capture mode.



Note: The "Zoom"-tools cannot be used in Stretch mode.

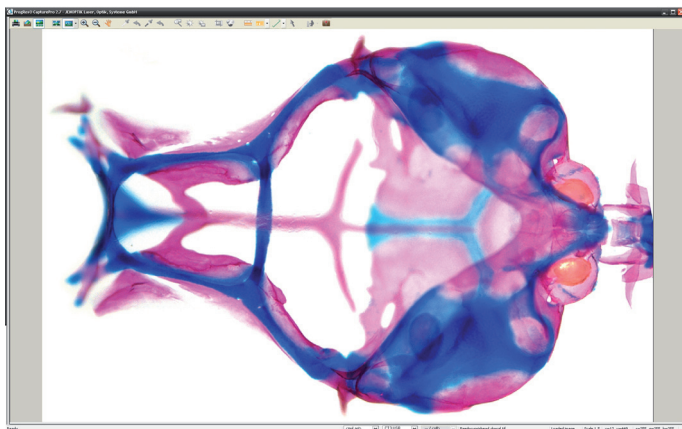
6.8.3 Hand Tool



The "Hand"-tool can be used to navigate in a zoomed image. Click onto a place in the image, hold the mouse-key down and pull the image in the desired direction. .

Full screen mode

Pressing the key F11, the microscope image will be displayed in Full screen mode.



Full screen display without gallery

In Full screen mode the operating panel and the focus window are hidden. When the Gallery mode is active, the full screen image will be displayed with the gallery. Clicking F11 again, the software interface is reset to the standard display.

6.9 White Balance

By applying a white balance, a neutral rendering of the image can be achieved. The neutral areas in the image will be adapted accordingly.



To carry out a white balance, select the white pipette in the image menu bar. Click onto a position in the image which has a neutral color in original, i.e. which shows a colorless grey tint and is not overexposed.

Reset white balance



In case that an unsuitable location was selected by accident, the whitebalance can be reset by clicking on the respective button.

When working in transmitted light, it is recommended to carry out the white balance without a specimen directly onto the light source. If a

The functions of the icon bar

reflected light microscope is used, please use a sheet of white paper to carry out the white balance.

Background information for setting a suitable white balance:

Ideally, the highest RGB-value of the selected position is approximately 230. The maximum RGB-value of 255 is not suitable for a white balance. The RGB-values of the cursor position are displayed in the status bar in the lower right corner of the image window.



Important note: To avoid over-exposure when carrying out a white balance, please apply the function „AutoExposure“ once if you are not using continuous AutoExposure (→ chapter 7.2 “Register tab ‘Exposure’”).

6.10 Auto White Balance



Clicking this button, the white balance will be carried out automatically once by application software. As unsuitable or overexposed locations will not be included in the calculation of the white balance, optimum color results are achieved with the automatic white balance.

The automatic white balance is carried out once, i.e. if the color temperature in the image changes - for example after adjusting the light intensity - the automatic white balance has to be applied again.

To achieve optimum results with the automatic white balance, please activate the checkbox “Continuously” in the register card “Exposure”. You can also adjust the AutoExposure with the “Exposure”-slider in in the register tab.

Reset automatic white balance

Reset the automatic white balance by clicking the blue arrow.

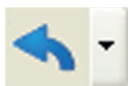
Calibrate automatic whitebalance

The automatic white balance has to be calibrated in the following events:

- When using the camera resp. the automatic white balance for the first time: in this case, the camera will be started

automatically.

- When changing the light source or the microscope: in this case, you have to start the calibration manually.
- If the camera has not been in use for a longer time, or if the image shows false colors: in this case, you have to start the calibration manually.



Click on the arrow next to the function "Reset White-balance". The button "Auto White Balance Calibration" appears.

Auto White Balance Calibration

Click this button to calibrate the automatic white balance. Follow the advice in the dialog windows. The following worksteps have to be carried out:

1. Remove the slide from the microscope. Click [OK].
2. Set the light intensity of the microscope to 100 %.
Click [OK].
3. Then set the light intensity of the microscope to 30 %.
Click [OK].

The calibration is carried out automatically. You will be informed if the calibration was successful, and the calibrated automatic white balance will immediately be applied to the image. In the event that the automatic white balance is not applied, click the button "AutoWhitebalance".

If the calibration was not successful, the user will be informed, and the calibration has to be carried out again.

6.11 Black Balance

With a black black balance, the areas in the slide are set which are to be displayed in black.

The functions of the icon bar



With a black balance, the user can select which image areas will be displayed in black (RGB values=0).

In case that you have selected an unsuitable reference area by accident, click "Reset Black balance".

The pipette is active in Color mode, in Black-and-white mode and in Fluorescence mode.



Important note: In the Fluorescence mode, the black adjustment will be automatically reset after every single capture.

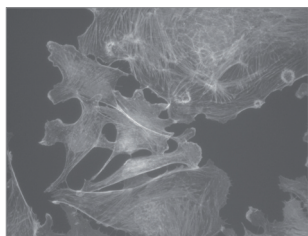


Image without black adjustment

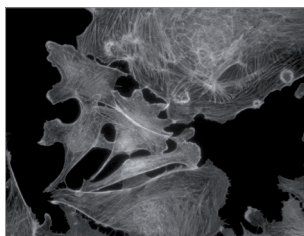


Image with black adjustment

6.12 Focus



The focusing aid helps you to clearly focus your specimen by indicating the focus. The focus adjustment is carried out at your microscope.

With a click on the focusing aid the current live image will be "frozen".



Note: The Live mode has to be active for enabling the Focus mode.

The functions of the icon bar

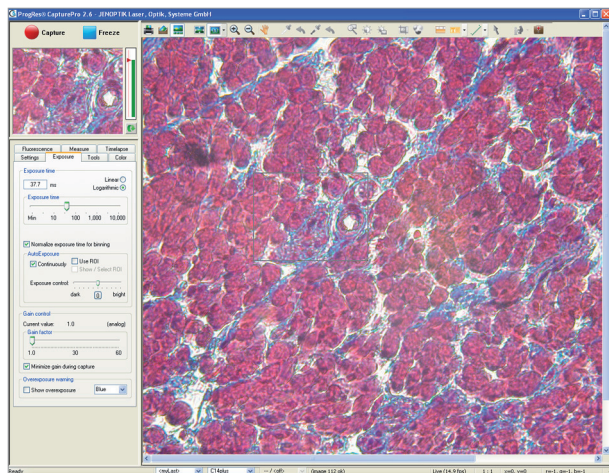


Image with focus window and focus bar

In the Focus mode, the live transfer for the main image is stopped. In the image window, a frame is displayed. The position of the frame can be changed using the mouse.

A focus window opens above the register tabs. In this focus window, the image section (200 x 200 pixels, full pixel resolution) enveloped by the focusing frame is displayed in Live mode.



The green bar next to the preview window indicates the contrast and the sharpness of the focus: the higher the green bar, the higher is the contrast and the sharpness in the image section, and the more clearly-focussed appears the image. If the available sharpness level is exceeded, the green bar falls.

The red drag indicator shows the deviation of the focus from the maximum sharpness level. When the focus in the image is reduced, the drag indicator remains in the position of the previous sharpness level.

When the green button is pressed, the focus that was updated in the preview image will be applied to the entire image.

When the “Focus”-symbol in the icon bar is clicked again, the Focus mode is left and the Live mode is activated.

6.13 Auto Exposure



With the button “Auto Exposure”, the automatic exposure can be set for the entire image.

This function is also available in the register tab “Exposure” by clicking the button “Auto Exposure”. In both cases the exposure time is calculated integrally over the entire image area and will be set with an overexposure of 5 %.

If the exposure time is longer than 150 ms, the gain will be automatically increased. This means that a fast live image is always available, which is especially required when working with specimen in low light applications.



Important note: As the noise in the image will be amplified when the gain is increased, we recommend to activate the “Minimize Gain during Capture”-function in the register tab “Exposure” to capture optimum images. With this function, the gain will be recalculated into exposure time during image capture, and the background noise in the captured image is reduced.

6.14 ROI for Auto Exposure



With a “Region-of-Interest” (ROI)-frame, automatic exposure can be applied to a selected area of the image. The “Region-of-Interest” -frame can be activated by clicking the button or can be selected in the register tab “Exposure”.

In both cases, the cursor will change after the button was clicked, and you can now use it to envelope the ROI-frame while keeping the left mouse button pressed. The frame size and frame position can be freely selected.

The functions of the icon bar

When the mouse button is released, the exposure time within the ROI is automatically measured and adapted to the entire image. Similar to setting the automatic exposure for the entire image, the gain will be increased and set with an overexposure of 5 % if the exposure time exceeds 150 ms.

6.15 Select crop



With a click on the button “Crop”, a particular section in the live image can be displayed. Use the mouse to draw a rectangle for selecting the image section.

When the mouse button is released, only the selected image section will be displayed in the image window. A frozen overview image is simultaneously displayed in the preview area above the register tab showing a frame of the image section. This frame can be moved to change the image section displayed in the main window.

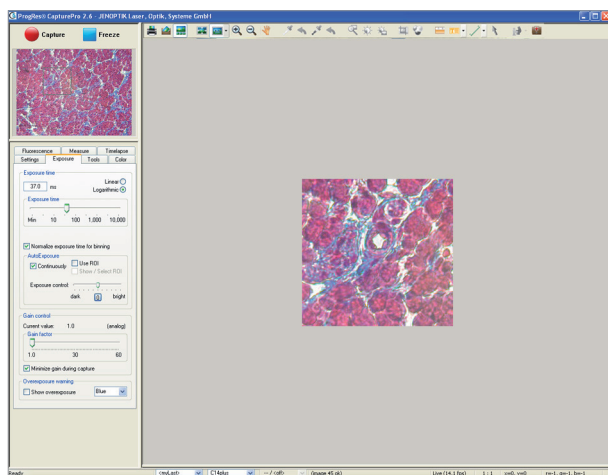


Image display with crop

With a further click on this button the usual live image display is reactivated. If the button “Crop” is clicked again, the last selected frame is displayed in the preview image. If you would like to display this crop, left-click into this frame. With “Capture” the image section

is captured and saved in the selected resolution, and displayed in the image window in "Stretch" mode. To deactivate this function and to activate another function change to the Live mode.

6.16 Switch to Black-and-white or RGB mode



Click this button to display the RGB-image in grayscale. This function will only be active if a ProgRes® color camera is used. The function is available in Live mode and Capture mode.

When Black-and-white mode is activated, the button will enable the activation of the RGB-color mode.



Note: In the Fluorescence mode, the color camera will be switched automatically to the Black-and-white mode.

6.17 Overlay elements

An overlay can be created for referencing distances and for marking areas in the image. The overlay can contain the following elements:

- Scale bar
- Annotations
- Measurement forms

Overlay elements can be shown or hidden by clicking the corresponding button.

The overlay is saved in an XML-file when an image is captured (unless a merged image is saved) and therefore can be changed in a loaded image.



Note: Overlay elements are deleted by right-clicking onto the respective element and using the function "Delete" or "Delete all" in the context menu.

The functions of the icon bar

6.17.1 Scale



By clicking the scale bar symbol, a scale bar can be shown or hidden in the live image. If the scale bar is displayed for the first time, it will be displayed in standard style in the lower right corner of the image.

Inserting a scale bar

Click on the scale bar icon. The scale bar appears in the lower right corner of the image. To place the scale bar in the image, click the button “Select”, then click on the scale bar and hold down the mouse button while drawing the scale bar to the desired position.

The length of the scale bar is rounded and displayed in the actual unit. For correct referencing of distances in the image by the scale bar, a calibration has to be carried out before (→ chapter 7.5.1 “Calibrations”).

Set scale bar settings

Ruler parameters

Length unit:

10

µm

Subdivisions:

5

Do not update:

☒ Frame

☐ Measure value

☒ Bar length

☒ Show length


The settings of the scale bar can be selected in the dialog “Ruler parameters” in the register tab “Measure” (→ chapter 7.5 “Register tab ‘Measure’”).

Set parameters for scale bar object

The available settings are listed in the following table:

Length unit	Enter the length of the scale bar in the actual unit. The settings will be applied when “Enter” is clicked.
Subdivisions	Enter the number of subdivisions of the bar.
Do not update	
Measure value	Set the measurement number fixed. If the calibration or the magnification scale is changed (for example when another lens is used), the length of the measurement scale will change, but not the measurement number.

Bar length	Set the bar length as fixed. If another calibration or another magnification scale is used, the bar length of the measurement scale will not be changed.
Show frame	When this option is activated, the scale will be displayed with a frame.
Show length	If this option is activated, the bar will be labelled with its length and the actual measurement unit.

 **Background information:** There is always only one scale bar in the overlay of an image. The scale bar is always part of the overlay, therefore it will be shown and hidden together with the overlay. If there is no overlay in the image yet, the overlay - and hence the XML-file - will be created once the scale bar is inserted.

As part of the overlay, the scale bar cannot be deleted anymore. The scale bar can be hidden by clicking the scale bar icon, but it will be saved in the overlay file (XML-file) in any case.

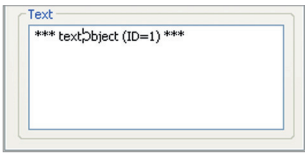
6.17.2 Annotations



A text annotation or a pointer can be inserted in the image. Select the annotation from the drop-down list. An unlimited number of annotations can be inserted into the image.

Insert annotations

Inserting a text annotation



Select "Text" in the drop-down-list and click on any position in the image. A text box will show in the register tab "Measure" in which you can type in the text.

Insert text annotation

The text annotation in the image will be updated immediately. The text

The functions of the icon bar

annotation can be modified retroactively. Select the annotation and type in the text. The modified text annotation will show in the image immediately.

Inserting a pointer

Select "Pointer" in the drop-down list if you would like to highlight objects in the image with an arrow pointer. Draw a line of the desired length.

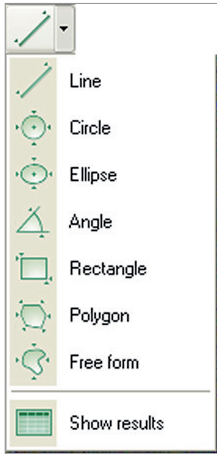


Mark the checkboxes in the register tab to select whether the pointer will have one or two arrows.

Insert pointer

You can modify the pointer annotation later by selecting it (use the "Select"-function) and using the functions in the register tab "Measure".

6.17.3 Measurement forms



Insert measurement form

A measurement form can be inserted in the image to reference or highlight certain image areas. Click on the arrow button next to the icon “Measure”, and select a form element from the drop-down list.

Insert the measurement form in the image by mouseclick. When the mouse button is released, the measurement result will be displayed next to the measurement form.

By clicking and pulling the mouse the measurement in the image can be carried out. When the mouse button is released, the measurement result is displayed directly next to the measurement shape.

Several measurement shapes can be placed in the image.

Form element	Creation of the form element
Line	Click the left mousebutton, hold it down while drawing the line. Once the mousebutton is released, the line will be finished.
Circle	Click the left mousebutton, hold it down while drawing the circle diameter. Once you release the mousebutton, the circle diameter will be finished and the circle will be inserted.
Ellipse	<p>An ellipse is created by three clicks with the left mouse button:</p> <ul style="list-style-type: none">• The first click sets the initial point of the first axis.• The second click sets the end point of the first axis.• Then draw the mouse cursor to set the semi-axis perpendicular to the first axis. With a mouseclick this axis is set fix. <p>The contour and the major axis of an ellipsis will always be displayed in the image.</p>

Angle	<p>An angle is created with three clicks:</p> <ul style="list-style-type: none">• The first click sets the free end of the basis leg.• The second click sets the apex.• The third click sets the free end of the second leg. <p>The description will show next to the basis leg. The inner angle (ANI) will be identified by an arc.</p>
Rectangle	<p>Click the left mousebutton and hold it down while drawing the diagonal of the rectangle. When releasing the mousebutton, the rectangle will be finished.</p>
Polygon	<p>Click one after another on all positions where a corner point of the polygon is to be placed. All corner points are set with a left mouseclick except from the last one which will be set with a right mouse click.</p>
Free-Form	<p>A free-form is created "in one traction" by pressing the left mouse button and drawing the desired contour with the mouse cursor. When the drawn contour is not closed, it will be closed automatically with a straight line.</p>

Floating point numbers

When you switch to another (larger or smaller) measurement unit, floating point numbers can be used to indicate the size of the measurement form. The number behind the "E" ("Exponent") indicates the number of digits by which the decimal point will be shifted left (negative number) or right (positive number).

6.17.4 Creating and selecting overlay elements

Overlay elements can be selected / created by using the functions in the suitable context menu. Open this context menu and right-click into the image (do not click on the element).

The functions of the icon bar

The context menu offers the following options:

Select	Select an annotation or a form element: simply click on the element. The Select mode can also be activated by using the menu item "Selection" in the icon bar.
New markup	Create a new annotation. The annotation is created using the respective functions.
New measure	Create a new form element.
Done	The Select mode is left. Clicking into the image will not trigger any function.



Note: The context menu will always show the functions that are available for the currently selected overlay element. The functions that are not available are displayed in grey.



Important note: Before creating or selecting an overlay element, the respective element has to be activated in the icon bar by clicking the button.

Single selection

Set the mouse cursor on the contour of the overlay element. The visible axis at a circle and an ellipse, and the arc of an angle are also parts of the contour (but not the description). When the mouse cursor appears as a hand, the element can be selected by a left click.

Multiple selection, first method

Hold the mouse button down while drawing a rectangle around the elements to be selected. As soon as the mouse button is released, the elements will be marked.

Multiple selection, second method

Click the requested form elements one after another while pressing the CTRL-button. If you would like to modify your selection, simply click the element again (keep CTRL pressed).

The selected elements are marked with a dotted line.

Changing position of overlay elements


The position of selected annotations and form elements can be modified. A single form element is moved by clicking onto the contour and pulling the object to the desired position.

Multiple selected elements can be moved simultaneously. Select the elements (click on the contour of one element in the selection), and pull the selection to the desired position. The relative position of the objects towards each other will not be changed.

6.17.5 Edit overlay elements

The functions for selecting and editing an element can be selected in a context menu. The context menu can be opened with a right-click on the contour of the element.

The drawing style of all overlay elements can be adjusted using the functions in the register tab "Measure" (→ chapter 7.5 "Register tab 'Measure'").

 **Note:** The functions which are available for the currently activated overlay element will be available in the context menu. The functions that are not available are displayed in grey.

Editing annotations

Annotation	Changes
Text annotation	Click on a corner point of the text box and hold the mouse button down while adjusting the size of the text box.
	The text of the annotation can be modified in the register tab "Measure".

The functions of the icon bar

Pointer	<p>Click on the start or end point of the pointer and hold the mouse button down while adjusting the pointer size.</p> <p>The arrows can be modified using the functions in the register tab "Measure".</p>
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Editing shape elements

The shape or size of the element can be edited by clicking a dot on the contour line and adjusting the form while holding the mouse button down. The selected point is modified, all other points remain in their position.



Note: A free form cannot be edited retroactively.

Functions of the context menu

After selecting a shape element or an annotation, the context menu can be opened by right-click on the selected form. In the context menu, further options for editing the overlay are available:

Menu item	Action
Delete	The selected form elements are deleted except from the scale bar.
Delete all	All form elements are deleted except from the scale bar.
In the background	The selected form elements (including the scale bar) are set to the background.
In the foreground	The selected form elements (including the scale bar) are set to the foreground.
Save overlay	The overlay is saved as a separate XML-file, → chapter 7.3.4.5 "Saving the overlay" for further information.

For a polygon object, the following items are additionally available in the context menu:

Menu item	Action
Duplicate point	Add a point which will be set at the same position like the selected point. The position of the point can be changed by left-clicking and holding the mouse button down while moving the cursor.

Delete point	The selected point will be deleted.
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6.17.6 Show measurement results

With “Show / Hide Results” the complete parameter set of the measurement in a measurement window can be shown or hidden.

The position of the window can be changed, and the size can be changed by clicking on the frame. The window contains a table with the measurement values for all form elements of the overlay (except from the scale bar). The column width of the table can be adjusted: click on the column lines and move them to the desired position.

Copy table to clipboard

Right-click on the dialog box and select the function “Copy to clipboard” from the context menu. The entire table content can be copied to the clipboard.

Delete shapes in the table

Shapes can also be selected and deleted in the table. The image display will be updated accordingly.

Measurement results									
ID	Type	Param. 1	Value 1	Param. 2	Value 2	Param. 3	Value 3	Param. 4	Value 4
1	Line	DST	84.6936						
2	Ellipse	MAJ	44.9138	MIN	22.4987	ANX	-43.6468	AR	3174.58
3	Polygon	WD	136	HI	92	PRM	336.475	AR	7311.5
4	Free Form	WD	153	HI	141	PRM	457.664	AR	14464

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Show measurement results in a table

1	In the first column, the graphic symbol and the current number of the form element are shown. The numbers are assigned to the form element in the order in which the elements were inserted in the image. When elements are deleted, the gaps will be automatically closed, and the enumeration of the elements will be updated accordingly.
---	--

The functions of the icon bar

2	The second column displays the type of the shape element.
3	The third column shows the label of the first measurement value ("Param. 1").
4	The fourth column displays the measurement value ("Value 1") corresponding to parameter 1. Linear measurement values are displayed in their actual length unit, planes in square of their actual length unit and angles in the angle unit.
5 - 10	Columns 5 to 10 display further pairs of measurement parameters and measurement values depending on the element type.

The short labels denote the following measurement parameters:

Type of form element	Measurement value	
	Short label	Designation
Line	DST	Length of line
Circle	RDS	Radius
	CUM	Circumference
	AR	Area
Ellipse	MAJ	Length of semi major axis
	MIN	Length of semi minor axis
	ANX	Denotes the angle of the semi major axis referring to the horizontal line. The algebraic sign corresponds to the mathematical orientation.
	AR	Area
Angle	ANI	Denotes the inner angle. This is the smaller angle leading from basic leg to the second leg. The sign corresponds to the mathematical orientation. The drawn arc shows this angle.
	ANE	Denotes the outer angle. This is the larger angle leading from basic leg to the second leg. The sign corresponds to the mathematical orientation. The following applies: ANI - ANE = $\pm 360^\circ$.

Rectangle	WD	Width
	HI	Height
	AR	Area
Polygon, Free Form	WD	Denotes width of the surrounding rectangle.
	HI	Denotes height of the surrounding rectangle.
	CUM	Circumference
	AR	Denotes pseudo-area. This value corresponds to the area if the contour line does not intersect, as in this case, it would not be a useful measure (sum of the areas with different algebraic signs).

6.18 Select



Click the button „Select“ to select overlay elements in the image. Selected items can be moved, deleted or edited. The edit functions are available from the context menu (→ chapter 6.17.5 “Edit overlay elements”) and in the register tab “Measure” (→ chapter 7.5 “Register tab ‘Measure’”).

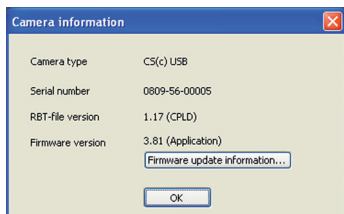
6.19 Camera selection



A dialog window opens and displays the camera type, the serial number and the firmware version. With a click on the arrow button, a drop-down menu opens displaying the cameras connected to your computer.

✓ C14plus - 2905-20-0052

The type and the serial number of the currently active ProgRes® camera are displayed in this field. If more than one camera is connected, you can select and activate another camera in the drop-down list. Up to 5 cameras can be connected simultaneously.



In the window “Camera information”, camera type, serial number and firmware version are displayed. With a click on the button “Firmware update information”, a firmware update can be carried out.

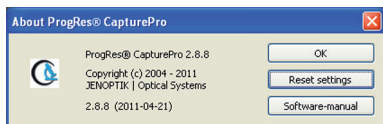
Camera information

A dialog window opens where the query has to be confirmed with a click on “OK”.

6.20 Help



The firmware version number is displayed, which you will need to quote in the event that service is required. The following dialog window will be displayed when the button is clicked.



About ProgRes® CapturePro

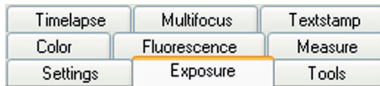
With a click on “Reset settings”, all camera settings will be reset to the factory settings.

With a click on “Manual”, the manual of the ProgRes® CapturePro software will be displayed. If you use this function for the first time, you may need to select the suitable application software to display the document.


7 Register tabs

In the register tabs, adjustments of image resolution, color and exposure time can be carried out, and image saving functions can be selected. Furthermore, fluorescence images can be captured, and settings for the time-controlled image capturing can be set. Multifocus images can be captured to achieve an image that is clearly focused in all areas.

Click the respective tab at the top of the panel to get access to the functions.



Register tabs

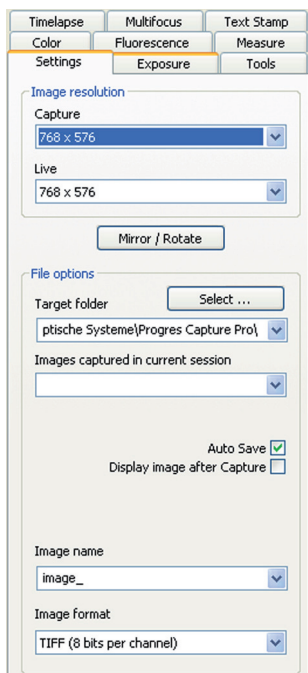
 **Note:** The following register tabs can be optionally hidden to achieve a clearer image structure:

- Measure
- Fluorescence
- Timelapse
- Color
- Textstamp
- Multifocus

Click the button “Options” in the register tab “Tools”, and mark the respective register tabs in the checkboxes (→ chapter 7.7 “Register tab ‘Tools’”).

7.1 Register tab “Settings”

Here you can select the resolution for the live image and the captured image as well as the saving location and the saving format for the captured images.



Register tab “Settings”

When you start the software for the first time, the standard settings will be active per default. These settings can vary depending on the type of the ProgRes® camera you have connected to your computer

When the software is operated for the first time, the directory “My files / My images” is created per default as storage location for the captured images. Clicking the button “Select folder”, a dialog window opens where the storage location for the captured images can be selected.

When the software is closed, the last used settings will always be saved and automatically loaded when the software is restarted.

7.1.1 Image resolution

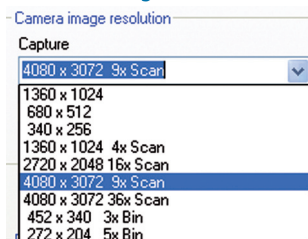


Image resolution in Capture mode

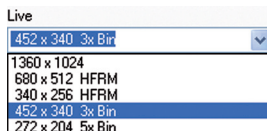


Image resolution in Live mode

Image resolution modes:

HFRM – High-frame readout mode

A faster live image transfer can be achieved.

HQ - High quality mode

The best Jenoptik color interpolation and algorithms are used.



Note: Due to the higher necessary processing power, a longer image capture time may be necessary.

Scan – Scanning mode

When capturing images in microscanning mode (4x-shot, 9x-shot, 16x-shot, 36x-shot), the sensor moves between the individual images by fractions of a micrometer. In 4x-shot, this movement amounts to exactly one pixel width, in 16x-and 36x-shot, the CCD sensor is moved by only one half or one third of a pixel width. The camera software then compiles a high-resolution image from these scans. Gaps that may occur between pixels in this way will be closed (→ 7.7.3.2 „Scanner calibration“).

Progressive - Progressive mode

In progressive mode, captured fields will be calculated directly in the sensor. This mode is available with the cameras ProgRes® C3, ProgRes® C5, ProgRes® C7 und ProgRes® *SpeedXT core 3*, *SpeedXT core 5*, and is suitable for capturing moving objects.



Note: In progressive mode, the occurrence of interlace effects can be avoided. Interlace effects are fields that may appear when moving images are captured with interline sensors.

Shut - Shutter mode

After the exposure of the image, the shutter is closed for sensor readout. In this way, the best possible image quality will be achieved. This mode is especially suitable for capturing moving images, and is only available for the ProgRes® C7 camera.

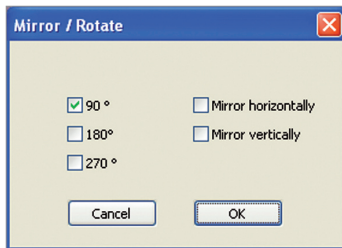
Bin – Binning mode

In binning mode, several pixels are combined to one pixel (3x3 pixel in 3x-binning mode, 5x5 pixel in 5x-binning mode etc.). This results in increased light intensity and image recording speed.

SXGA, XGA, SVGA, QXGA, UXGA,

Denote the graphic standards supported by ProgRes® cameras. Details about resolution modes and graphic standards of each ProgRes® camera type can be found in the technical specifications of your camera.

7.1.2 Mirror / Rotate



Images can be mirrored or rotated in steps of 90°. Rotation and mirror can be selected at the same time, however the rotation will always be carried out first. The selected options are applied to live images.

Mirror and rotate and image

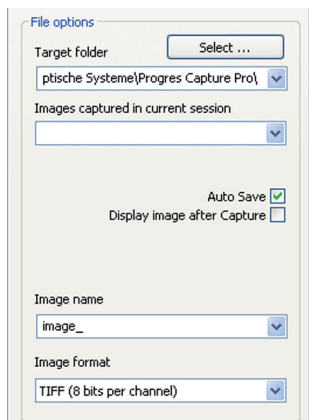
Loaded and frozen images cannot be rotated / mirrored.



Note: The image orientation cannot be changed Crop and Focus mode.

7.1.3 Image saving

7.1.3.1 ProgRes® CapturePro application



Select file and folder

Select the file name and saving location for the images.

Per default, the target folder “My Documents” is selected. Using the button “Select folder”, another saving location can be selected.

In the dropdown listbox “Target folder”, the previously used folders are displayed. From there you can select a folder for image saving.

Register tab „Settings” - file options

Images captured in current session

In the dropdown listbox “Images captured in current session”, the images that you have captured since you have started the software are displayed.

Auto Save

By marking the checkbox “Auto Save” the captured images will be saved automatically and without any query in the selected target folder. The name you have inserted in the field “Image name” will be used and a current number will be added. If you have not selected an image name you will be prompted to select this name when the first image is captured.

Display image after Capture

When this function is activated, the captured image will be displayed immediately after capture. Click the button “Live” to return to the Live mode. If this function is not activated, the image will be saved and the live image display will be continued.

Image name

Type in the image name. If you do not use an image name, a dialog box will appear each time an image is captured, prompting you to type in the name and to select the saving location of the image. In the drop-down listbox under "Image name", all names that were already used will be displayed.



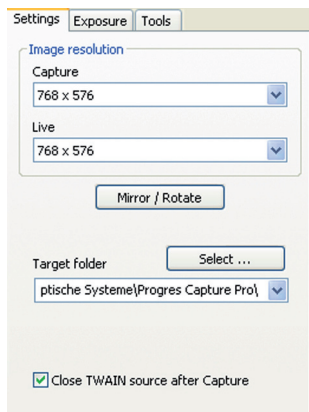
Note: Please do not use any blank space when typing in the image name root, otherwise an error message can appear when other functions are carried out.

Image format

In the area "Image format", the file format can be selected for the saved images. The following file formats are available:

- BMP - 8 bits per color channel
- TIFF - 8 bits per color channel
- TIFF - 16 bits per color channel
- JPEG - high quality / medium quality / low quality

7.1.3.2 ProgRes® Capture TWAIN



With ProgRes® Capture TWAIN, the captured image will be automatically transferred to the selected TWAIN application (e.g. Adobe Photoshop or MS WORD). Please open the suitable software application (e.g. Adobe Photoshop or MS WORD) and select ProgRes® CapturePro as a TWAIN source for the images. The storage location is selected with "Select...".

Saving TWAIN

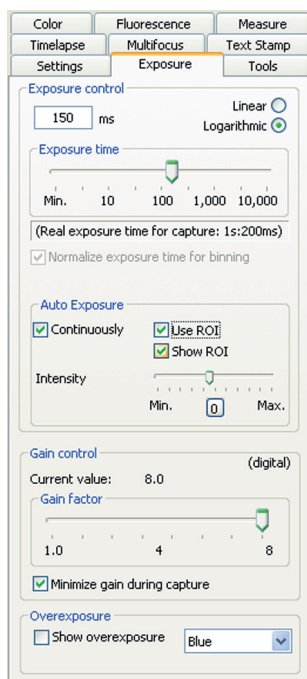
If the option "Close TWAIN source after Capture" is marked, ProgRes®

Register tabs - Exposure

Capture TWAIN will be automatically closed after the image capture, and you can immediately start to edit the image using the suitable image processing software.

 **Note:** Some software applications support the capture of multiple images without restarting ProgRes® Capture TWAIN.

7.2 Register tab “Exposure”



Register tab “Exposure”

In the register tab “Exposure” the exposure settings can be set. When the software is closed, the current settings are always saved, and will be automatically loaded when the software is restarted.

7.2.1 Exposure time

The exposure time can either be set manually by typing it into the input box (in milliseconds) or by using the slider control. The scaling of the slider can be changed from “logarithmic” (recommended setting) to “linear”. The slider can be moved using the mouse or the “page up / page down”-keys.



Note: The exposure time set by the user will be implemented by the software internally by means so-called "ticks", which are very short time units of some microseconds. Therefore, not every set exposure time value can be implemented exactly. The display in the window "Exposure time" shows the exposure time that will be actually used by the software, which in some cases can deviate from the exposure value that was originally set by the user.

Overlapping readout

For the ProgRes® CF- and MF-cameras and for the ProgRes® C14^{plus}, fast and stable frame rates will be achieved for exposure times up to 80 ms by the overlapping of readout and exposure.

Maximum exposure time

For maximum exposure time of a camera, exposure and gain have to be set to the maximum. The actual exposure time of the captured image will be displayed.

Normalize exposure time for binning

The function "Normalize exposure time for binning is used" when the binning mode is activated for the live image. In Binning mode the light intensity is enhanced and the image becomes brighter. With "Normalize exposure time for binning" the exposure time will be reduced while achieving the same image brightness as in the normal live image. The slider control will show the modified, reduced exposure time.

When the different modes for live image and captured image (→ chapter 7.1.1 "Image resolution") are selected, the exposure time which is actually applied to the captured images („Real exposure time for Capture") will be displayed under the slider control bar "Exposure time".



Note: All automatic settings will be reset if the manual exposure time feature is used. The gain now can also be adjusted manually.

The maximum values of the exposure time differ depending on the ProgRes® camera type. Please refer to the technical data sheet of your camera.

7.2.2 Auto Exposure – Continuous exposure time adjustment

The checkbox "Continuously" is marked marked per default. The exposure of the image is adjusted continuously. Exposure time will be calculated for the complete image area and will be set with an overexposure of 5 %. With a click on the button "Auto Exposure" in the menu bar, the exposure time will be adjusted automatically (→ chapter 6.13 "Automatic exposure").

If the checkbox "Use ROI" is activated, exposure of the entire image will be adjusted, based on the exposure of the selected image area ("Region of Interest"). If the checkbox "Show ROI" is marked, the ROI will be displayed in the image. The same function is available with a click on the button "ROI for AutoExposure" in the image menu bar (→ chapter 6.14 "ROI for AutoExposure").

The slider "Exposure control" enables the manual adjustment of the bright and dark values in the image, i.e. the image will become generally "brighter" or "darker". In this way, the value for optimum exposure will be increased or reduced.

An overexposure of max. 5 % is set per default. If the exposure is increased by manual exposure control, the proportion of overexposed areas in the image can be increased.

7.2.3 Gain

When working under low light conditions (e.g. in dark field or fluorescence applications), the image signal can be amplified by increasing the "Gain" which allows for a reduction of the exposure time in order to achieve a maximum live image frame rate.

When the exposure time is higher than 150 ms, gain will be increased automatically. In this way, there will be always a fast live image available, which is especially important for low-light applications.



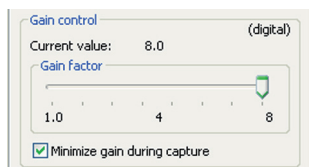
Note: As the increase of the gain will lead to simultaneous increase of the noise in the image, we recommend using the function "Minimize gain during capture". When this function is applied, the gain will be converted into exposure time, and the

Register tab "Exposure"

background noise in the captured image will be reduced.

Analog Gain

By using analog gain already before the ADC in the camera, the image signal will be amplified, but the background noise will be minimized at the same time. In ranges > 8 the signal will be additionally digitally enhanced.



All ProgRes® cameras support digital and analogue gain. Analog gain will be applied directly in the camera, and will be applied in ranges from 1 ... 8. .

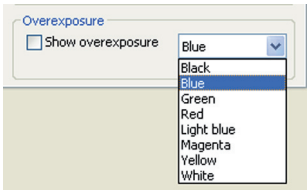
Register tab "Exposure" - gain

Camera type	Analog. Gain	Gain (max)
ProgRes® SpeedXT <i>core 3</i>	1x ... 5 x	18
ProgRes® SpeedXT <i>core 5</i>	1x ... 5 x	18
ProgRes® C3	1x ... 12x	
ProgRes® C5	1x ... 16x	
ProgRes® C7	1x ... 16x	16 (implemented via analogue gain)
ProgRes® CT3	1x ... 20x	3
ProgRes® C14 ^{plus}	1x ... 8x	60
ProgRes® MF	1x ... 8x	18
ProgRes® MF ^{cool}	1x ... 8x	30
ProgRes® MF ^{scan}	1x ... 8x	30
ProgRes® CF	1x ... 8x	18
ProgRes® CF ^{cool}	1x ... 8x	30
ProgRes® CF ^{scan}	1x ... 8x	30
ProgRes® CS USB	1x ... 5x	8
ProgRes® MS USB	1x ... 5x	8
ProgRes® CF USB	1x ... 14 x	8
ProgRes® MF USB	1x ... 14 x	8
ProgRes® CT1 C USB	1x ... 5x	8
ProgRes® CT1 M USB	1x ... 5	8
ProgRes® CT3 USB	1x ... 4x	8

Register tab "Exposure"


ProgRes® CT5 C USB	1x ... 5	8
ProgRes® CT5 M USB	1x ... 5	8

7.2.4 Show Overexposure



You can activate the highlighting of overexposed areas by marking the checkbox "Show overexposure". In the drop-down menu, select the color used for highlighting the overexposed areas.

Register tab "Exposure" - Overexposure warning

 **Important note:** Optimum exposure is achieved in the image if only a few areas in the image are highlighted.

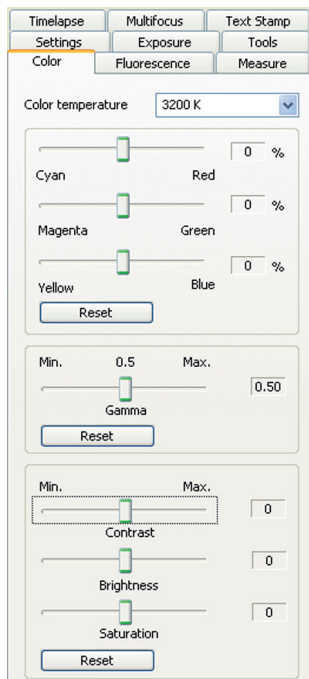
7.3 Register tab "Color"

True color representation of specimen is influenced by a number of factors.

Functions available in the "Color"-register tab can be used to match the image display to the colors and contrasts in the specimen.

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

Any changes of the color, gamma, contrast, brightness and saturation settings are saved as preferences and will be available next time the software is started.



The following changes are set with the slider controls:

- Color correction
- Color balance
- Gamma
- Contrast
- Brightness
- Saturation

If you are not satisfied with the results, you can reset the values to the factory settings by clicking the "Reset"-button.

Register tab "Color"



Note: To use the function in the "Color"-register tab efficiently, some experience may be necessary. We therefore recommend

beginners to apply a white balance on a neutral area in the image, and to leave the slider controls at the factory settings. The color settings achieved with a white balance will be very natural.

7.3.1 Color correction

Select the matrix for the color correction. With this matrix, the colors in the final image can be adjusted to the light conditions in the live image. In the drop-down list, the color temperatures 2700 K, 3200 K and 5000 K can be selected.



Note: This function is only available for ProgRes® USB-cameras.

7.3.2 Color 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 icon bar.

7.3.3 Gamma

The gamma slider control enables the conversion of camera pixel values into the pixel values displayed in the image. A low gamma value results in a darker image with higher contrast, a high gamma value results in a brighter, low contrast image. The gamma settings do not influence the dynamic range of your image.



Note: Gamma adjustment does not reduce the dynamic range of the image. Please note that the preset gamma value is 0.5, which results in a well-balanced, contrasting color reproduction. For linear reproduction of the image data, please select a gamma value of 0.33.

7.3.4 Contrast, brightness, saturation

Use the slider controls to adjust contrast, brightness and saturation in the displayed image according to your needs.

7.4 Register tab “Timelapse”

The screenshot shows the 'Timelapse' register tab with the following settings:

- Start:** 'Delay' button is active. 'Delay time' is set to 000 h : 00 min : 10 s. 'Create log file' checkbox is unchecked.
- Time control:** 'Fixed interval (Capture resolution)' is selected. 'Total image count' is 10. 'Total time' is 000 h : 00 min : 50 s : 000 ms. 'Interval' is 000 h : 00 min : 05 s : 000 ms.
- Save images:** 'As video' is selected. 'Video frame rate for replay' is 'User selection' at 2 imgs/s. 'Max. image count' is 1000.

Some applications require the time-controlled capture of image sequences. The necessary settings for these applications can be set with the functions in the register tab “Timelapse”. Time interval and number of images can be selected.

All time settings in this register tab 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.

Register tab “Timelapse”

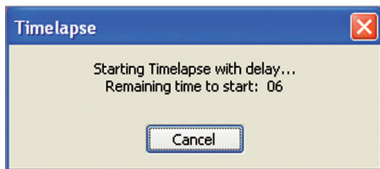
7.4.1 Start

Immediately

Clicking “Immediately”, the time-controlled image capture as it is set in the area „Time Control“ will be started without any delay. A sequence of 10 images is preset.

Delay

To set the delayed start of the image capture, the desired delay time has to be inserted in the respective fields. A delay time of 10 seconds is preset per default.



After clicking “Delay”, the countdown to the image capture is started.

Countdown to the start time of capture

If the option “Create log file” is activated, the protocol file “ActualTiming.txt” will be saved in the target folder during image capture. Here, all captured sequences will be saved, and the date and time of capture will be added to each single image or AVI-file.



Important note: We recommend to create a new folder in the register tab “Settings” for capturing image sequences, and to close the gallery during the capture process.

7.4.2 Time control

Images are captured either as fast as possible or in a preset time interval.

As fast as possible

When images are captured as fast as possible, either the total number of images to be captured (“Total image count”) or the total time for capturing the image sequence can be set. Either option has to be set as fixed in the register tab.



Note: When the function “As fast as possible” is selected, the images will be saved directly during the transfer from the camera to the monitor. With this saving procedure, high frame rates can be achieved, however the saving intervals will not be constant.

Fixed interval

For capturing images in an interval, additional values can be entered in the area “Interval”. Activate “Fixed interval” and set one option (total time, total image number or interval time) as fixed. If another value is changed, the respective value will be adjusted automatically to the settings.

Time control

☒ Fixed interval (Capture resolution)
☐ As fast as possible (Live resolution)

Total image count: 10

Total time: 000 : 00 : 50 : 000
h min s ms

Interval: 000 : 00 : 05 : 000
h min s ms

fixed ☒

You would like to capture 10 images in total – this value is fixed. Now you can change either the total capture time for these 10 images, or you can set an interval time. With a 5 seconds interval between 2 captures, the total time is automatically adjusted to 50 seconds.

Register tab “Timelapse” - record a fixed number of images

Time control

☒ Fixed interval (Capture resolution)
☐ As fast as possible (Live resolution)

Total image count: 10

Total time: 000 : 00 : 50 : 000
h min s ms

Interval: 000 : 00 : 05 : 000
h min s ms

fixed ☒

If 50 seconds are set as fixed, either the total number of images to be captured during this time can be changed– and the interval time is adjusted automatically - or the interval time can be set. The total number of images will then be updated accordingly.

Register tab “Timelapse” - record images in fixed interval

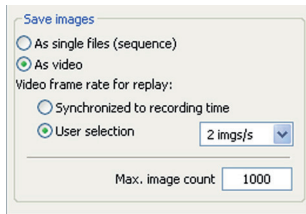


Note: When time-controlled image saving is selected, constant frame rates will be achieved. Live mode will be stopped, the image resolution will be adjusted and the image will be saved in the preset directory. Because of these intermediate steps, it might happen that the actual frame rates are slower than the set frame rates, depending on the performance of your system.

[Information on working with a USB-camera,](#)

When “Display image after Capture” is deactivated and the set time interval is > 3sec., the live image will be updated after each capture.

7.4.3 Save images



In this area of the register tab, the format for saving and replaying images and the number of the recorded images can be set.

Mark the checkboxes to save the images as single files or as video sequences.

Register tab "Timelapse"- Save recorded images

As single files

Each image will be saved as a separate file in the selected directory. Single images can be saved as BMP-, TIFF- or JPG-files. Directory and image format are set in the register tab "Settings" (→ chapter 7.1 "Register tab `Settings`").

As video

The images will be saved as a video sequence in AVI-format in the directory selected in the register tab "Settings". The following settings are available for the replay of the video sequence:

Synchronized to recording time


The frame rate is synchronized to the settings defined in the area "Time control". This means that the frame rate of the video replay corresponds to the recording frame rate. This function is useful for shorter image capture intervals.

User selection

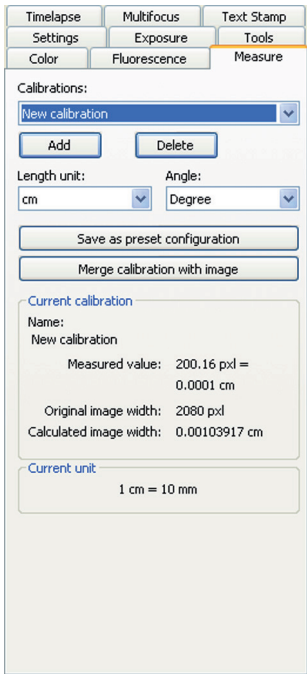
In the drop-down menu, the user can select the replay frame rate for the video sequence. This function is suitable for longer intervals between the captured images.



Important note: In Capture modes with high image resolutions, images cannot be recorded as video sequences. In these cases, the message "Image resolution too large" appears. Select another (smaller) image resolution.

 **Note:** Make sure to set the suitable replay rate, especially if a very long recording time was set under “Time control”.

7.5 Register tab “Measure”



In the register tab “Measure” the following settings can be selected:

- Set calibrations for referencing measurement units and distances in the image
- Editing the overlay
- Selecting units for the shape elements.

The options in the register card change depending on the settings which are currently carried out.

Register tab “Measure”

7.5.1 Calibrations

With a user-defined calibration, distances in an image can be clearly referenced; in this way, the measurement results will not be related to the set camera resolution.

When an image is captured and saved with an overlay, the overlay including the calibration data will always be saved in a separate XML-file containing the image specific calibration set. When a saved image

with an overlay is displayed (e.g by loading it from the gallery or from a directory), the image specific calibration set will be loaded, and will appear in the lower area in the register tab "Measure". The available calibration sets are available in the dropdown-listbox "Calibrations".

7.5.1.1 Standard calibration

The available calibrations appear in the drop-down-list "Calibrations" in the upper area of the register tab. The standard calibration "In Pixels" is always listed first. This means that the pixel measure is related to the object details. Zoom factor 1 will be applied to the image, this factor is the pixel value in the displayed image.

The main difference of the standard calibration to "real" calibrations is that the measurement values depend from the set camera resolution. The pixel calibration is not a constant unit. As it would not be useful to relate the standard calibration to "real" units and dimensions, the list "Units" will be blocked when the standard calibration is active.

7.5.1.2 Creating a user-defined calibration



Note: A calibration standard is necessary for creating a user-defined calibration. If you need a suitable calibration standard please do not hesitate to contact your expert dealer who will be glad to help you.

Preparations

To create a new calibration, place the calibration standard under the microscope. Please note that applications in transmitted light and reflected light require different calibration scales.

Create the calibration

Click the button "Add" and set the calibration by drawing a line at the required position in the image. In the lower area of the register tab "Measure" the tools for carrying out a calibration will be displayed.

Register tab "Measure"-calibrations


In the drop-down menu, the names of the available calibrations appear. The calibrations can be selected.

Type the name of the calibration in the field "Name". Calibration names can have up to 37 characters.

In the area "General style", set the line and font color, the line width and the font width.

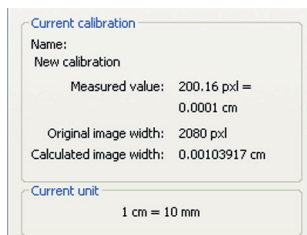
In the field "Distance", enter the distance of the calibration line. In the drop-down menu, the unit of the calibration line can be selected.

If the calibration line is to be corrected, click the button "Correction". If you are pleased with the calibration, click "OK".

 **Note:** The unit for the measurement forms can be selected in the drop-down menu "Length". The unit of the actual calibration set selected under "Units" will not have any influence on these settings.

Calibration

The calibration name will appear in the drop-down list in the window "Calibrations", from where it can be selected to be applied.



Display of the calibration parameters

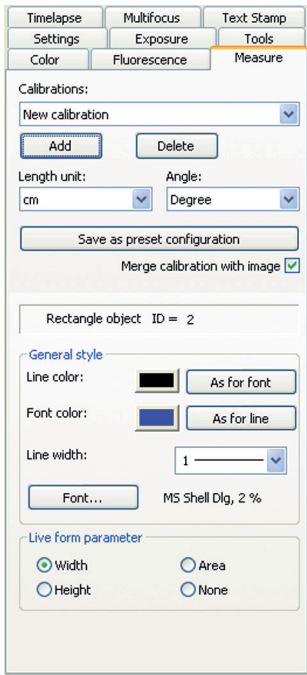
In the lower area of the register tab in the area “Current calibration”, the parameters of the current calibration will be displayed.

All settings are saved and will be available next time the software is started.

The following parameters are displayed:

- Name of the calibration
- Length of the calibration line (pixel and unit)
- Width of the original image
- Calculated image width in the actual unit, obtained from the calibration line
- Current unit and length in millimeters

7.5.2 Overlay: units, drawing style, form parameter



Register tab “Measure” - Drawing style and form parameters

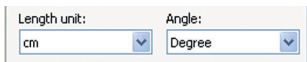
In the register tab “Measure”, the overlay (scale bar, annotation, measurement shapes) can be edited which has been created using the functions in the icon bar (→ chapter 6.17 “Overlay elements”).

In the upper area, the units can be selected.

In the area “General style”, the style of the overlay can be set. The same settings are available for all overlay elements.

In the area “Live form parameter”, the special features of the respective overlay will show and can be edited.

7.5.2.1 Set units for the overlay



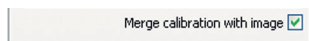
Select unit

Select the unit for the display of the overlay. You can choose between a length unit and an angle unit. The available units will be displayed in the drop-down-menu.

7.5.2.2 Merging overlay with the image

Live mode:

In Live mode, the image is captured by clicking the button "Capture" in the icon bar.



To save the image with the overlay in Live mode, mark the checkbox "Merge calibration with image" .

Saved merged image

Freeze mode:

If the Freeze mode is active or an image is loaded, the overlay can be merged with the image by clicking the button "Merge calibration with image".



When the button is clicked, the image will be saved simultaneously.

Saved merged image



Note: If the overlay is merged into the image, it will be part in the image file, and will not be saved as a separate XML-file. Therefore it cannot be edited retroactively in a loaded image.

Background information on capturing an image with overlay

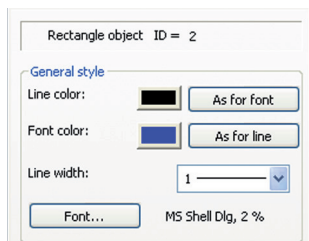
When capturing an image in "Live" or "Freeze" mode, the settings selected in the register tab "Settings" will be applied.

When an image is loaded and is to be captured again (e.g. with a changed overlay), the file name of the loaded image will be used. This file name contains the file format selected in the register tab "Setting" as an extension. The following corrections will be applied:

- When 16-Bit-TIFF was selected, 8-Bit-TIFF will be applied if the internal image has only 8 Bit color depth in the RGB-fields.
- The actual saving format results from the extension inserted by the user. If there is a contradiction to the selection, an 8-Bit TIFF-file is created when TIF is inserted, an a medium quality JPEG-file will be created if "JPG" is inserted.

7.5.2.3 Adjustment of the drawing style

Unless there is an active calibration in the register tab “Measure”, the options for adjusting the drawing style of the overlay will be available.



The ID of the selected object will be displayed. If several objects are selected simultaneously, “Multiple selection” will be displayed.

By clicking the respective buttons, line width, line color, font and font color can be adjusted.

Register tab “Measure” - general style

To change the properties of a selected overlay element (font color, line color, line width, font), click the control button. You will be prompted to select the respective property in a dialog box.

The selected font will be displayed next to the button “Font”. Click this button to show a dialog box where you can adjust the font type and the font size. The absolute font height will be quoted in 1/1000 of the image height to relate the font size to the image size. This value (integer number) has to be entered into the appropriate field of the dialog window.

If multiple shape elements are selected the properties will be applied to all elements of the selection. In the field of the object ID, “multiple object selection” will appear. Unless the same drawing style is applied to all selected elements, the control buttons “Font color” and “Line color” will show “???”.

7.5.2.4 Live form parameter



Setting of the live form parameter

Here the display of the parameters of the respective overlay element can be selected. The selection of the parameter will be updated immediately in the live image.

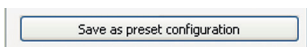
The selected live form parameter will be displayed next to the form element in the image display. If "None" is selected, only the counting number of the form element will be shown.

If multiple form elements are selected, the button "Clear live parameter" will appear in the area "Live form parameter". Only the counting number will be assigned to the elements.



Note: The options in the area "Live form parameter" will change according to the selected element.

7.5.2.5 Save calibration as preset configuration



Setting of the live form parameter

The configuration consists of the calibration set and the drawing style.

General configuration and image-specific configuration

In Live and Freeze mode the last used calibration set is saved when the program is closed, and will be loaded when the program is restarted.

If a loaded or captured image is displayed, the calibration set is image-specific. When changing to the live image the general calibration set will be active again.

With the function "Save as preset configuration" the image-specific calibration set can be saved as a general calibration set, and can be selected and used. When the program is closed and restarted, this calibration set can be selected in the dropdown-listbox in the register card "Measure".

The button "Preset configuration" will be displayed in grey when the current configuration is saved as a preset configuration. When selecting

a new configuration in the drop-down menu, the button will be active again.

The file with the calibration data are stored under

C:\Documents and Settings\User\Application data\Venoptik\
ProgRes CapturePro

and can be accessed and modified by all users of the computer.

In critical situations, the user will be prompted to save the current configuration.

7.5.3 Overlay description

7.5.3.1 Structure of the overlay

The image specific overlay description is an XML-file in which the following information are saved:

Section	Content
<forms>	Description of each single form element, including the scale bar (if available)
<config>	Image specific calibration set

When automatic image saving is active, the overlay description will be saved together with the image file in the same folder. The overlay description has the file extension "*.xml".

The XML-file starts with a comment block explaining the externally usable parts of the XML-hierarchy. Every form element will be denoted by a line section which looks as the following:

```
<form type="designator"> ... </form>
```

The "designator" denotes the type of the form element ("line", "circle" etc.). Besides the internal data this section contains a sub-section with measurement units and values of this shape element:

```
<info> ... </info>
```

For each measurement unit there is a sub-section in `<info>` denoting the measurement unit by an abbreviation and including the measurement value:

```
<DST>1.234</DST>
```

In this example, a line length of 1.234 is denoted in the current unit. The current unit and calibration are described in the comment block.

The advanced user can also evaluate the subsections

```
<calibration> ... </calibration>
```

```
<unit> ... </unit>
```

of the main section

```
<config> ... </config>
```

Some components of these sections are self-explanatory; others are only intended for internal use. The current unit and the current calibration can be identified by the subsection `<select/>`.

7.5.3.2 Saving the overlay as an XML-file

Automatic

The overlay description will be saved automatically and without any file prompt in the preset folder when the image is captured. If no overlay exists in the image, the XML-file might be possibly deleted.

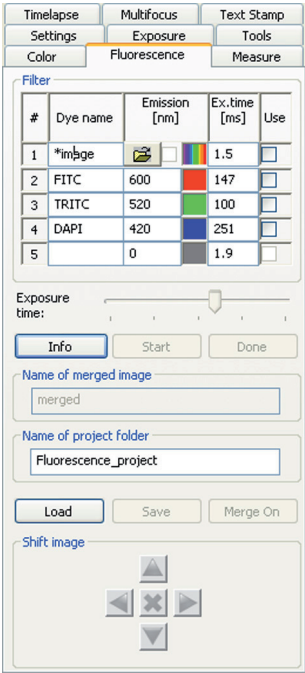
On request

When an overlay is withdrawn from the user's access, for example by loading a new image, a dialog window appears prompting the user to save the image. If the overlay is in a loaded and captured image, the dialog shows the file name of the image and the type of procedure (saving or deleting) which will be carried out. In other cases, the user has to type in the file name. Confirming the prompt, the overlay will be saved, otherwise the changes will be deleted.

Manual

The context menu for the selected form elements contains the command “Save overlay”, which will be mainly used for saving the actual overlay as an XML-file. Alternatively, the key combination CTRL+S can be used – you do not need to mark the form. This option will be locked if the overlay is in a captured image, as in this case the XML-file was already created.

7.6 Register tab “Fluorescence”




The functions in the “Fluorescence”-register tab support the capture of single or multi-color fluorescence images.

All necessary settings and adjustments for fluorescence image capture can be set in this register tab.


When the software is closed, the last used settings are always saved and will be automatically loaded when the program is restarted.

Clicking the button “Info”, short instructions for using the Fluorescence mode will be displayed.

Register tab “Fluorescence”







 **Note:** The Fluorescence mode is available for both monochrome and color ProgRes® cameras. Color cameras will be automatically set to the monochrome mode when this function is activated. In Fluorescence mode, the scanning modes of ProgRes® scanning cameras will not be available.

7.6.1 Preparations

 **Important note:** Please set the resolution for captured images in the register tab “Settings” before starting the Fluorescence mode.

Each time a new fluorescence project is started, a new subfolder will be created, and the date and time of its creation will be added in its file name. In the field “Project name”, you can type in a name which will be automatically added to the file names of the fluorescence projects.

Enter the fluorescence filters / fluorochromes

Filter					
#	Dye name	Emission [nm]		Ex.time [ms]	Use
1	*image			1.5	<input type="checkbox"/>
2	FITC	600		147	<input type="checkbox"/>
3	TRITC	520		100	<input type="checkbox"/>
4	DAPI	420		251	<input type="checkbox"/>
5		0		1.9	<input type="checkbox"/>

Before starting fluorescence image capture, you need to fill out the table “Filters”. Select a field in the column “Dye” by mousedown and type in the name of the filter cube or fluorochrome which you will use.

Enter fluorescence filters

 **Note:** Please make sure not to use any special characters.

Enter wavelength

After entering the fluorochromes, enter the corresponding wavelength of the dye in the fields of the “Emission”-column. The wavelengths will be displayed in nm.

When selecting another field in the table, the color that corresponds to the wavelength will appear automatically in the boxes right of the “Emission”-column.

Enter exposure time

In the column “Exposure time (ms)”, the exposure time can be manually inserted before or after the start of the fluorescence image capture. The exposure time can also be set using the slider bar under the filter-table.

Set exposure time in the register card “Fluorescence”

In the register tab “Fluorescence”, the exposure time can be set indivi-

dually for each filter. The exposure time can also be set with the slider bar, the exposure time in the table will be updated automatically.

Register card "Exposure"

If the exposure time has been inserted in the column "Exp. time" in the register tab "Fluorescence", this exposure time will be used. The function "Auto-Exposure - Continuously" is activated in the register tab "Settings" will be deactivated per default in this case, but can be reactivated by the user for each fluorochrome.

Auto Exposure - ROI

The use of the function "Auto Exposure - ROI" also has to be activated in the register tab "Exposure". Select a suitable area in the image and set the ROI for Auto Exposure using the icon bar.

When an exposure time > 150 ms is set, gain will be increased automatically and a fast live image is available. In this way, you will be able to readjust the image focus or to change the position of your slide preparation.

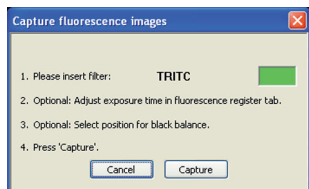
Activate filter

With a checkmark in the column "Use", the use of a filter for the subsequent image capture will be activated. The corresponding monochrome image will then be dyed automatically in the respective color. If the checkbox is not marked, the respective filter will be skipped in the capture session. At least one filter / fluorochrome must be selected to start the capture session. The "Start"-field will become active automatically after selecting the column.

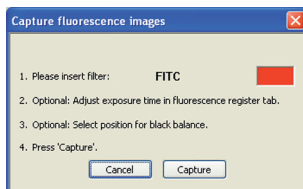
7.6.2 Start fluorescence image capture

Click "Start" in the register tab "Fluorescence". The Live mode will become active. In the image, the dialog box "Capture fluorescence scenes" will appear. Insert the required filter in the respective boxes. Optionally, exposure time can be corrected and black shading correction can be carried out, which will be described in the following chapters.

You will be guided through the fluorescence capture. Follow the advice in the dialog boxes. With “Capture”, the image is captured and saved. The procedure will be repeated for each filter.



Capture image with fluorescence filter



Capture image with fluorescence filter

7.6.3 Black adjustment

We recommend to carry out a black adjustment after setting the exposure time. Use the suitable button in the icon bar. If you are not pleased with the results you can reset the black balance using the button in the icon bar.



Note: To keep the structures of your sample in the image visible, a dark grey location in the image instead of an entirely black location should be selected as a reference for the black adjustment.

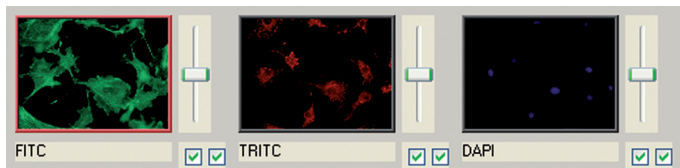
7.6.4 Capturing fluorescence images

If you are pleased with the image settings, click “Capture” in the dialog window. After image capture, the black adjustment will be reset automatically. The captured image will appear briefly in the image display; then the Live image will be active again.

A dialog window appears prompting the user to set and apply the next fluorescence filter. This procedure will be repeated until all filters in the table will be used. The images will be saved in the selected folders and will be displayed in a gallery. They can be edited directly after capture, or after loading the fluorescence project as an *.flp-file.

When all fluorescence images are captured, a gallery will open. The fluorescence gallery can also be opened by clicking “Load” in the icon bar and by selecting the suitable folder. The name of the filter or fluorochrome used for capturing the image will be automatically

assigned to the respective image.



Fluorescence images of different filters in a gallery

In the preview image, the displayed image area is marked with a red frame. The frame can be moved and in this way the displayed image area can be changed.

7.6.5 Merging and pixel shifting

The single images of a fluorescence project captured with each filter can be merged to one image. To adjust minor displacements which can occur between the single captures and to achieve a precise merged image these captures can be shifted.

Merging fluorescence images

The image that is currently displayed in the main window is marked with a red frame in the gallery. The intensity of the filter can be modified for each capture by using the slide bar right of the gallery image.

To display the selected image in grayscale, deactivate the left checkbox under the slider control. With a checkmark in the right checkbox, the image will be selected and included in the merged image. Images that are not marked will not be included in the merged image.

Click "Merge On" to display the selected images will as a merged image.

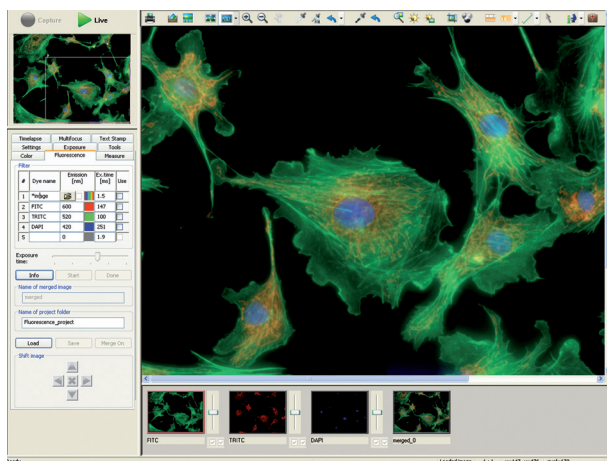


Note: Only colored images can be merged. Ensure that the image is not activated for the display in black-and-white mode.



Important note: At least two single images have to be available for merging. If only one image is available, the "Merge On"-button is displayed in grey.

Register tabs - Fluorescence



Merged fluorescence image

Activate or deactivate merged image

Click "Merge On" to display the merged image in the main window. The button now changes to "Merge Off". When "Merge Off" is clicked, the last single image will be displayed.

Add merged images

An unlimited number of merged images can be added to the gallery, and in this way to the fluorescence project. To close the fluorescence project, click the button "Done". All images will be removed automatically from the gallery, the "Start"-button will become active and a new fluorescence project can be started.

Pixelshifting

You can shift the single images of the fluorescence project. In this way, any possible displacement of the individual images can be corrected.



Mark the image you would like to shift in the gallery. Click the arrow button to shift the image in the desired direction until you are pleased with the results.

Register tab "Fluorescence" - Area
"Shift image"

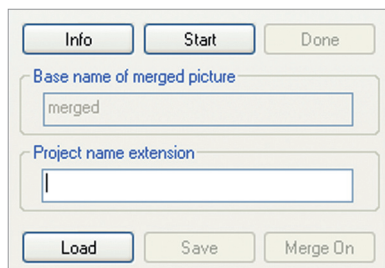
To reset the pixel shifting, click the cross-button in the centre.



Note: Only the image currently marked in the gallery can be shifted. If the next image is marked, the shifting of the previous image is kept. To reset the shifting of a recently edited image, mark the image again and click the „Reset“-button (the "x" in the middle of the panel).

7.6.6 Saving fluorescence images


Saving merged images



When you are pleased with the merged image, you can save it by clicking on the button "Save". The merged image will be displayed in the gallery, and "merge" and a current number will be assigned to it.

Register tab "Fluorescence" - Image saving

In the field "Base name for merged picture", a freely selectable name for the merged image can be inserted.






 **Note:** The names of the fluorescence images in the gallery cannot be changed retroactively. Insert the name for the merged image before clicking the button “Save”.

Saving images in color- and in Black-and-white mode

Each fluorescence image captured with a color filter can be saved in color and in in Black-and-white mode. Simply remove the checkmark in the box next to the thumbnail of the respective filter.

Merging fluorescence and brightfield images

A brightfield image can be used as a reference, and can be merged with the fluorescence images. The capture of one brightfield reference image can be activated in the table by inserting an asterisk (*; optionally you can also insert a name) into the column “Dye name”, and by pressing the tab key.

Filter					
#	Dye name	Emission [nm]	Ex.time [ms]	Use	
1	*image	 <input type="checkbox"/>	1.5	<input type="checkbox"/>	
2	FITC	600 	147	<input type="checkbox"/>	
3	TRITC	520 	100	<input type="checkbox"/>	
4	DAPI	420 	251	<input type="checkbox"/>	
5		0 	1.9	<input type="checkbox"/>	

In the column “Emission”, the symbol “Open file” and a checkbox will appear. Click on the folder symbol to load a saved brightfield image as a reference image.

Merging of a fluorescence with a brightfield image

When the checkbox behind the folder symbol is marked, the use of this brightfield image as a reference image will be activated, and the brightfield image will be skipped in the fluorescence image capture.

If the checkbox behind the folder is not marked, but the checkbox in the column “Use” is marked, the brightfield image will be included in the fluorescence routine. It is recommended to remove the color filters and to use the standard illumination when capturing the brightfield image.

Start the fluorescence capture as described. When the process is finished, the brightfield image and the fluorescence images appear in the gallery and can be saved in a merged image.

7.6.7 Load fluorescence projects and images

Loading fluorescence projects

Fluorescence projects can be loaded by clicking the button "Load" in the register card "Fluorescence" using the function "Load image" in the icon bar. Select the folder and click the file "info.flp". All captures of the project will be displayed.

Loading single images

Using the icon bar, also single images can be loaded. If you select the file "info.flp" the entire project will be displayed.



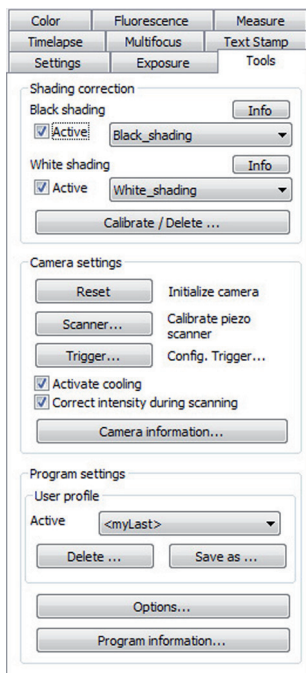
Important note: If the gallery of a fluorescence project is deactivated by clicking the respective button in the icon bar, the fluorescence project will be finished. It can be loaded by clicking the button "Load", but not by clicking the "Gallery"-button.

To a loaded fluorescence project, no further images can be added.



Note: When the file "info.flp" was opened with the explorer, all recording parameters for the fluorescence project are available, e.g. the filters used, their wavelength, numbers and names of all images etc.

7.7 Register tab “Tools”

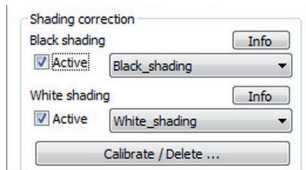


Register tab “Tools”

In the register tab “Tools” you can find the functions for creating a black or white shading correction, for scanner calibration, trigger configuration, for saving and loading user profiles and for program configuration.

When you exit the program, the active settings are always saved, and will be automatically loaded when the software is restarted.

7.7.1 Black shading correction



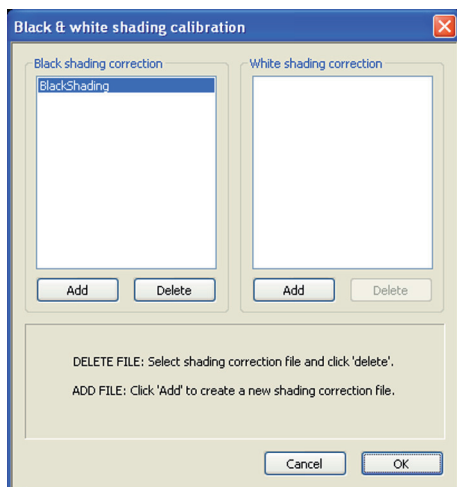
With a black shading correction, the sensor noise at exposure times > 1 sec can be reduced by subtracting a black reference image from the captured image.

Register tab “Tools” - background and shading correction

In this way, deviations among different pixels during long time exposure will be compensated. Clicking button “Info” further information can be obtained.

7.7.1.1 Creating a black shading correction

Ensure that no light is falling on the CCD sensor. It may be necessary to remove the camera from the microscope and to put the CCD cap on, or to place the camera on the lens on an even base. Click the button "Calibrate / Delete" in the register tab "Tools". A window will appear in which the functions for creating a shading correction are available.



Window "Configuration of background and shading correction"

Click the button "Add" under the window "Black shading correction". Please follow the advice in the dialog box and confirm your settings with "OK".

The creation of the black shading correction can take a few seconds. You will be prompted to type the name of the correction in the dialog box.

The name of the black shading correction will appear in the window "Black shading correction". After closing the dialogue with "OK" the black shading correction can be loaded in the register tab "Tools" from the respective dropdown listbox.

7.7.1.2 Applying a black shading correction

Mark the checkbox “Active” in the register tab “Tools”. The black shading correction will be automatically applied to the newly captured images until the black shading correction is deactivated by removing the checkmark from the box or by selecting another black shading correction.



Note: A background correction will not be applied to images in Binning mode.

7.7.2 White shading correction

With a white shading correction, irregularities in the image area can be compensated that are caused by boundary light falloff in the optical system (vignetting) or by inhomogeneous lighting.

For a white shading correction, a black shading correction has to be available (please refer to the preceding section). Click the button “Info” for further information.

The white shading correction will replace a white balance, i.e. if a white shading correction is currently applied to the image, the white balance-button will be displayed in grey. The reference for the white balance in this case will be derived from the shading reference image.

7.7.2.1 Creating a white shading correction

Remove the slide preparation from the light path. Ensure that the displayed image is not overexposed in any area. Check the exposure in the live image by means of the over exposure indication in the register tab “Exposure”.

Click “Calibrate / Delete”. In the dialog box, click the button “Add” under the window “White shading correction”. Follow the advice in the dialog box and confirm the settings with “OK”.

The camera now captures an image using the preset exposure time. If the button “Create” appears in grey, a background correction has to be carried out first as described above.

The creation of a white shading correction can take a few seconds. You will be prompted to insert the name of the white shading correction in the dialog box. Click "OK". The name of the white shading correction will appear in the window "White shading correction" and can be loaded in the register tab "Tools".

7.7.2.2 Applying a white shading correction

To apply a white shading correction, select the shading correction in the dropdown-listbox and mark the checkbox "Active". If the checkbox "Active" is grey, no white shading correction is available, and has to be created as described in the preceding chapter.

Several white shading corrections can be created with one camera. The white shading corrections appear in the dropdown listbox in the status bar of the image and in the register card "Extras", and can be selected from there.

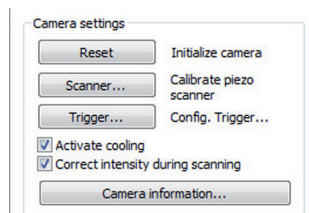


Important note: The white shading correction will be automatically deactivated when a new black shading correction is created. The white shading correction has to be created again, and any shading corrections that were created before will not be available any longer.



Note: The shading correction cannot be applied to images in Binning mode.

7.7.3 Camera settings



Register tab "Tools" - camera settings

In this section of the register tab "Tools", the basic settings for your ProgRes® camera can be changed. The settings are described in the following section.

Reset	The camera is initialized - use this function only if problems occur.
Calibrate	The piezo scanner for the ProgRes® C14 ^{plus} , ProgRes® MF ^{scan} and ProgRes® CF ^{scan} cameras is calibrated
Trigger	Enables the configuration of the trigger mode for triggerable ProgRes® cameras (ProgRes® C14 ^{plus} , ProgRes® CF, ProgRes® CF ^{cool} , ProgRes® CF ^{scan} , ProgRes® MF, ProgRes® MF ^{cool} , ProgRes® MF ^{scan} , ProgRes® C7 and all ProgRes® USB-cameras except from ProgRes® SpeedXT core 3 and ProgRes® SpeedXT core 5).
Activate cooling	The cooling function (peltier element and fan) for the ProgRes® C14 ^{plus} , ProgRes® CF ^{scan} , ProgRes® MF ^{cool} , ProgRes® CF ^{cool} and ProgRes® MF ^{scan} cameras can be activated.
Intensity correction	Intensity variations during microscanning (ProgRes® C14 ^{plus} and ProgRes® CF ^{scan} cameras) can be compensated
Camera information	Information about the serial and the version numbers for the internal camera software is displayed.

7.7.3.1 Initializing the camera

If problems occur (e.g. a frozen live image), it might help to initialize the camera and to re-read the EPROM. The same effect can be achieved by unplugging and replugging the FireWire- or USB-cable. All user profiles will be kept.

7.7.3.2 Scanner calibration

The calibration of the piezo-driven scanner is necessary for microscanning with ProgRes® C14^{plus}, ProgRes® MF^{scan} and ProgRes® CF^{scan} cameras. During scanner calibration, the piezo-electric elements which move the sensor during microscanning will be adjusted.

By calibrating the scanner, optimum image quality can be achieved. All cameras were calibrated in the factory, however, the calibration should be checked from time to time in order to achieve the best image quality.

How does scanning work?

When capturing images in microscanning mode (4x shot, 9x shot, 16x shot, 36x shot), the sensor is moved between individual images

by fractions of a micrometer. From these captures, the final image is calculated. In 4x-shot mode, this movement amounts to exactly one pixel width, in 16x- and 36x-shot mode, the CCD sensor is moved by only one half or one third of a pixel width. The camera software then compiles a high-resolution image from these individual captures. The very precise shifting between individual images is a prerequisite for microscanning.

The scanner displacement is controlled by a mechanical system using piezo-actuators, so-called “scanners”. These actuators consist of piezo-electric crystals that deform slightly when exposed to electric current. This slight deformation is sufficient to achieve the microscopically small displacement necessary for scanning. The degree of deformation at a particular voltage is specific for each element, and is also influenced by external environmental factors such as temperature and humidity.

As the displacement must be very precise and reproducible, the scanners have to be calibrated from time to time.

When should scanner calibration be carried out?

The scanner was calibrated in the factory, and the camera can be used immediately. This factory calibration will be permanently saved in the camera EPROM. We recommend to use this calibration.

If the camera is used under normal conditions, and if the environmental conditions do not change considerably, it is usually sufficient to check the calibration once a month.

Recalibration is recommended if

- The environmental conditions such as temperature and humidity have changed considerably since the last calibration.
- The camera has not been used for a long time
- The image quality has deteriorated in microscanning mode



Note: Deterioration of image quality that might indicate incorrect scanner calibration can be recognized most easily by looking at horizontal or vertical smooth edges at a high resolution (> 200%) - the best areas for checking image quality are transitions between black and white. If these edges appear jagged, the scanner calibration might be incorrect.

How does the scanner calibration work?

Use a pattern with sharply contrasting light-dark transitions in the section that is used for measurement and calibration. Calibration patterns are included in the delivery of ProgRes® C14^{plus}, ProgRes® CF^{scan} and ProgRes® MF^{scan}.

The camera first captures a high-resolution image of this pattern in microscanning mode. Based on the pattern, the displacement of the individual scans is derived. The voltage values of the piezo-actuators are calculated based on the collected data, and are corrected if necessary. If the values exceed certain limits, a new high resolution image will be captured in a further iteration stage, and the calculation will be repeated under consideration of the values derived in the last step. This process will be repeated until the scanner is successfully calibrated.

Setting up the calibration pattern

A microscope slide with two different grids is included in the delivery of your camera for calibration. If a scanner with a C-mount lens is calibrated, a special calibration pattern is necessary and can be obtained from the manufacturer. This calibration pattern is available in the appendix of this manual.

First, the calibration pattern has to be set up. The following criteria are important:

Position

The surface of the calibration pattern has to be parallel to the capture surface, i.e. perpendicular to the optical axis. This is always the case when using a microscope during calibration. The orientation of the pattern is not important, which means that the chequerboard pattern does not need to be parallel to the sides of the window.

Sample

Several rows of black and white squares must be included in the image section that will be used as a basis for the calibration. If necessary, the magnification, the focal depth of the lens or the distance to the pattern have to be changed.

Exposure

The pattern must be generously exposed, but it must not be overexposed. Optimum exposure is achieved with "AutoExposure".

Sharpness

The calibration pattern should be captured slightly out of focus for a successful scanner calibration. Check the sharpness using the live image focusing aid.

Once the pattern is set up, the calibration can be started.

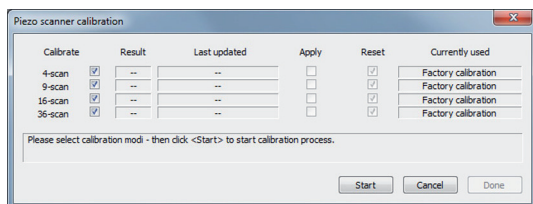


Note: Please make sure that the camera and the pattern are safely positioned and will not be subject to any agitation.

Carrying out the calibration

Click "Calibration" in the register tab "Tools". The dialog "Piezo scanner calibration" opens. The scanning modes to be calibrated can be selected in the dialog box "Calibrate piezo scanner". The preset calibration options vary depending on the connected camera type.

If the calibration pattern is set up correctly as described above, click the "Start"-button in the dialog to start the calibration.



Calibration of the piezo scanner

Select the suitable scanning mode (4x-shot, 9x-shot, 16x-shot or 36x-shot) by marking the checkbox under "Calibrate". Click "Start" again to begin with the calibration. When the calibration is complete, "OK" will be displayed in the "Result"-field. Also, the date and time of the calibration will be updated.

When "Apply" is checked, the new calibration will be used in the corresponding microscanning mode. When "Reset" is checked, the calibration is reset and the original calibration data will become active.

The calibrations currently used for microscanning will be shown in the “Currently used” column in the dialog window.

7.7.3.3 Trigger operation

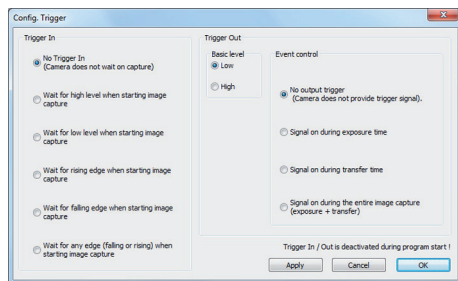
When the trigger is used, an external signal (Trigger In) will be transferred to the camera. The camera reacts to this signal by capturing an image. When the image capture is complete, a confirmation signal will be emitted from the camera (Trigger Out).

To use the trigger function, the camera must be connected with a special cable to the processor which will accept (Trigger Out) or transmit the trigger signal (Trigger In). The plug connection is described in detail at the end of this chapter.



Note: Trigger is only available with the cameras ProgRes® C14^{plus}, ProgRes® CF, ProgRes® CF^{cool}, ProgRes® CF^{scan}, ProgRes® MF, ProgRes® MF^{cool}, ProgRes® MF^{scan}, ProgRes® C7 and all ProgRes® USB-cameras except from ProgRes® *SpeedXT* ^{core} 3 and ProgRes® *SpeedXT* ^{core} 5.

To use the trigger function (camera control system), click the “Trigger” button in the register tab “Tools”. The dialog box “Trigger configuration” will be displayed.




Trigger configuration

The modes “Trigger In” and “Trigger Out” can be used individually or together. All trigger modes will be deactivated when the program is restarted. If the trigger is used for scanning image capture, the program

will wait for the trigger signal only for the first of the $N \times N$ images.



Note: If the trigger is activated (input or output), the “Capture”-button will also be active when the image is frozen. If the trigger is deactivated, the “Capture”-button returns to its initial condition, i.e. “Capture” is only active if the camera is set to the live mode.

Button	Button assignment
Freeze	The live image transfer is stopped. This is important as every scanned image is waiting for the corresponding trigger signal when the input trigger is activated.
Apply	The selected trigger configuration is activated using this radio button.  Note: “Freeze” may have to be clicked before activating the input trigger.
Exit	Exit the dialog without changing the trigger configuration.
OK	Exit the dialog when the currently selected trigger configuration is activated.

Trigger In

The following technical parameters must be met:

Voltage / Current

IEEE-1394: 2.4 V...14 V / 20 mA

USB: 2.4 V... 6 V

- Minimum pulse length: 10 μ s
- Start integration delay: approx. 200 μ s

- No input trigger (per default, the input trigger is deactivated).
- Wait for “high level” to start acquisition.
- Wait for “low level” to start acquisition.
- Wait for “rising edge” to start acquisition.
- Wait for “falling edge” to start acquisition.
- Wait for “any edge” (falling or rising) to start acquisition.

Mark the respective option to activate the trigger. The image capture

will be prepared, the camera will wait for the trigger signal as described above. When the signal is received there will be a delay of approx. 200 µs before the integration time starts.

Trigger Out

Trigger Out is used to signal the flash trigger condition.

Voltage / current:

IEEE-1394: 0.6 V (low) ... 5 V (high), max. 20 mA

USB: Open collector, pull up resistor = 1 kOhm
Vcc = 3.3 V

Signal Level

The selected signal level is used for signalling. A different level will be active each time.

Mode

- No output trigger (output trigger is deactivated as standard setting).
- Signal during exposure time.
- Signal during transfer time.
- Signal during complete acquisition (exposure + transfer time).

The output trigger can be activated with a click on the respective option. When the trigger event starts, the output signal changes to the selected signal level and remains there until the event will be complete. Then the output signal returns to its original level.

Plug

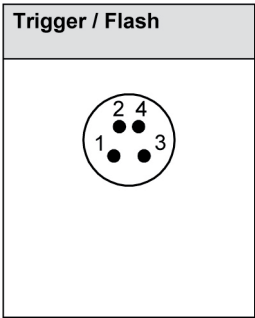
Next to the USB- or FireWire connector there is a round plug with 4 connections at the camera casing, which is used to provide the trigger signal (trigger out) or to accept it (trigger in).

Plugs required:

Franz Binder GmbH & Co. Elektrische Bauteile KG

www.binder-connector.de

Type. No.: Cable coupling type 768 99 3362 0004



Connection assignment (plug)

- 1 Trigger In⁺
- 2 Trigger In⁻
- 3 GND (Ground)
- 4 Trigger Out

Level

		IEEE-1394- Camera	USB-Camera
Trigger In			
	LOW	< 0.5 V	< 0.6 V
	HIGH	2.4 V ... 14 V	2.4 V ... 6 V
	Permitted max. Voltage	14 V	6 V
Trigger Out			
	LOW	0.6 V	0.4 V
	HIGH	3.8 ... 5 V	Open collector, pull up resistor = 1 kOhm Vcc = 3.3 V

Further information

- Only screened cables may be used.
- The cable screen must be connected to the application device housing or must be grounded.

LED-control

The control of the LED is used for the trigger. The trigger signal for the LED is LEDGN.

The following states are indicated by the LED:

ProgRes® C3, ProgRes® C5, ProgRes® C7, ProgRes® CF-series, ProgRes® MF-series

State	LEDRT	LEDGN	LED-color
IDLE	0	1	Green
Integration	Z	0	Red
Readout	Z	1	Orange

The control is carried out completely in the FPGA.

ProgRes® CT3

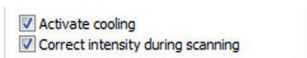
State	LEDRT	LEDGN	LED-color
IDLE	0	1	Green
Readout	Z	1	Orange

ProgRes® USB-cameras:

SpeedXT^{core3}, **SpeedXT^{core5}**, ProgRes® CT3, ProgRes® CT1, ProgRes® CT5, ProgRes® ProgRes® CS, ProgRes® MS, ProgRes® MF USB, ProgRes® CF USB:

Red	The camera was not recognized by the operating system.
Green	The camera is recognized by the system and can be operated.

7.7.3.4 Activate cooling



Register tab “Tools” - Activate cooling

Mark the checkbox to activate the cooling (peltier element and fan). This option is available with cooled cameras only.

Cooling is available for the cameras ProgRes® C14^{plus}, ProgRes® CF^{scan}, ProgRes® MF^{scan}, ProgRes® CF^{cool} and ProgRes® MF^{cool}, and will be

deactivated when the software is first started to reduce the camera power consumption.

7.7.3.5 Intensity correction

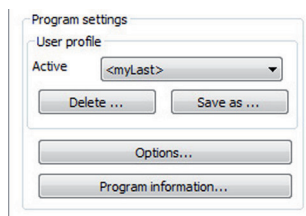
By means of intensity correction the image quality in scanning modes can be optimized under unstable lighting conditions. A compensation factor will be calculated in case that there are deviations in lighting intensity when using microscanning modes. Extra processing time will be needed to calculate the correction. For this reason, intensity correction will be switched off per default. Mark the checkbox "Intensity correction" to activate the function.

7.7.3.6 Camera information

Clicking this button, the following information about the connected camera will show:

- Camera type
- Serial number
- Firmware version

7.7.4 Program settings



Register tab "Tools" - Program settings

In this section of the register tab "Tools", different language versions can be selected, user profiles can be set, the software can be reset to the factory settings and helpful information can be found in the event that service is necessary.

7.7.4.1 User profiles (preference files)

The currently active settings can be saved in a user profile (preference files). These user profiles can be loaded and applied. Two types of preference files exist ProgRes® CapturePro:

Mylast.cxp - current preferences

In "mylast.cxp", the current settings of the software are saved. These

settings will be available when the software is restarted. The name of the file cannot be changed. The file is saved under

C \ Documents and Settings \ <current user> \ Application
Data \ Jenoptik\ mylast.cxp

These data are only available to the current user. "Mylast.cxp" will be active automatically if the user does not select another preference file. The file "mylast.cxp" will be continuously updated, in this way, specific settings have to be saved in a separate file.

<name>.cxp - preferences saved by the user

Specific settings can be saved in a preference file by clicking the button "Save as...". The preference file is saved with a freely selectable name under the following path:

C \ Documents and Settings \ <current user> \ Application
Data \ Jenoptik\ <name>.cxp

These data will be available to all users. The preference file can be loaded by selecting it from the drop-down list.

Applying a preference file

When the software is started, there will be always the last-used preference file applied. This means that if a preference file had been saved before the software was closed, this preference file will be used instead of "mylast.cxp".

Once a preference file is saved, it will be protected and cannot be changed anymore. When a loaded preference file is changed, these changes are saved in "mylast.cxp". To make these changes permanently available they have to be changed in a separate file.

The name of the currently active preference file will show automatically in the field "loaded".

Saving preference files

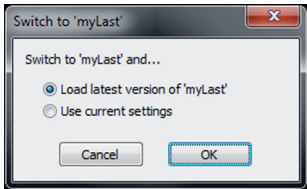
Click "Save as...". A window opens where the file name can be inserted. The file is saved as "<name>.cxp" in the respective directory.

The name of the saved preference file will appear in the drop-down list from where you can load it.

Loading preference files

You can switch from one user profile to another while the application is running. Select the file from the drop-down list. A loaded preference file ("`<name>.cxp`") will be applied immediately.

When you switch from a saved preference file ("`<name>.cxp`") to "`mylast.cxp`", a dialog opens.



You can either activate the previous settings from "`mylast.cxp`" or you can copy the current settings to "`mylast.cxp`". Select the function you would like to use and click "`OK`".

Switch to "`mylast`".

Deleting user profiles

To delete a preference file, click "`Delete`" in the register tab "`Tools`". A dialog opens where the user profile can be selected.



Select the user profile to be deleted in the dropdown listbox. After selecting the profile to be deleted you will be prompted to confirm the deletion in a dialog box. By clicking "`Done`", the dialog "`Delete user profiles`" is closed.

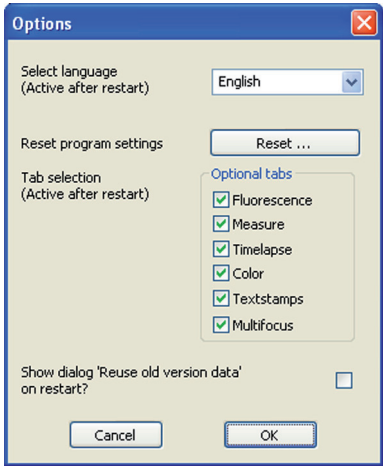
Dialog "`Delete user profile`"

The following settings are not part of the user profile and will not be available at the restart of the software:

Items not included in the user profile	Function saved in the user profile
Start program in the Freeze mode	The program is always started in Live mode.

Items not included in the user profile	Function saved in the user profile
Black adjustment	The black adjustment is always reset.
Trigger settings	The trigger will always be switched off when the program is restarted.
Start in Crop mode	The image will always be displayed 1:1 when the program is started.
Display of last used register tab	The tab "Exposure" is always displayed when the program is restarted.
Display gallery	The gallery has to be activated by a click on the gallery button.
Display of the last used Zoom mode	The image is always displayed in 1:1 scale when the program is started.
AutoExposure	The ROI for AutoExposure is always reset when the program is started.
Focus window	The focus window is always deactivated when the software is started.

7.7.4.2 Options



Clicking the button "Options", the dialog "Options" will be opened where the language and the displayed register tabs can be selected.

Register tab "Tools" - Options

Software operation - Register tab "Tools"



Note: The settings in this tab will be active when restarting the software.

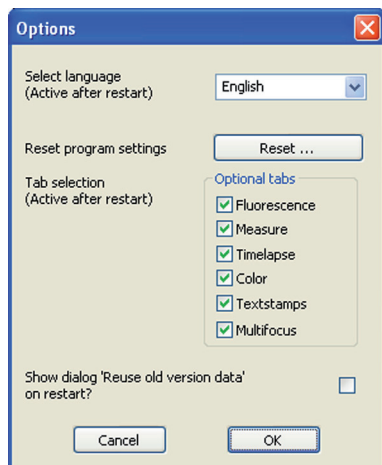
Select Language

Select the language for the application software in the dropdown listbox. Far eastern languages have to be installed on the computer under "System settings" before being available.

The following languages are available:

- English
- German
- French
- Spanish
- Italian
- Simplified Chinese
- Traditional Chinese
- Japanese

Reset program settings



With "Reset", the dialog window "Reset program settings" will be opened. Here you can reset all user settings and restore the factory settings.

Either single components or the entire program settings can be reset.

Register tab "Tools": Options - Reset program settings

Tab selection

Mark the checkbox to select the register tabs that will be available next time the software is started. The register tab "Text stamp" is deactivated per default.

Show dialog "Reuse old version data"

When this checkbox is marked, a dialog will be shown at the program start prompting you to confirm the reuse of the older version data of ProgRes® CapturePro.

Background information:

If a new version of ProgRes® CapturePro is started for the first time on a computer on which an older version was installed before, and on which the data of this older version are still available, the dialog "Reuse old version data" will be displayed automatically. Usually, the dialog does not appear anymore after the selections were made. If the checkbox is activated in the dialog "Options", the dialog "Reuse old version data" will be displayed next time the software is started. You can also use this option if you would like to change a selection you have already made.



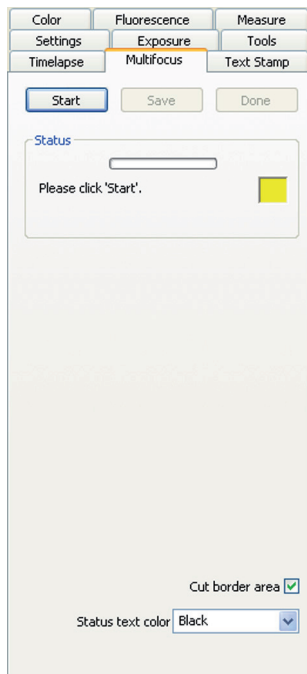
Note: If ProgRes® CapturePro 2.8.8 is the first version of ProgRes® CapturePro installed on the computer, no old data will be available and the dialog will not appear.

7.7.4.3 Program information

The following information will be displayed:

- Software version
- Camera driver
- Log file

7.8 Register tab “Multifocus”



Register tab “Multifocus”

Using “Multifocus”, multiple captures of one image are carried out, each of which will be focused in a different area. These captures will be calculated to achieve one image that will be clearly focused in all areas.

The multifocus session is started and the images are saved using the buttons “Start”, “Capture” and “Save”. Clicking “Done” the session is concluded.

The box indicates the status of the multifocus capture. When the box is green, the software is ready for capture. When the box is yellow, click “Start”.

In the border areas of a multifocus image, undesired effects can occur, which can be prevented by marking the checkbox “Cut border areas”. In the drop-down list “Status text color”, the color for the status text in the multifocus image can be selected. The status text will not be saved with the images.

Capture multifocus images

Click the button “Start” in the register tab “Multifocus”. Set the image focus to the desired plane and click “Capture” in the icon bar.

In the split screen, the captured image will be displayed in the right area and will be labelled by “Capture” in the status display. In the left area of the split screen, the live image is displayed. Change the image focus and click “Capture” again. Now the captured images will be

Register tabs - Multifocus

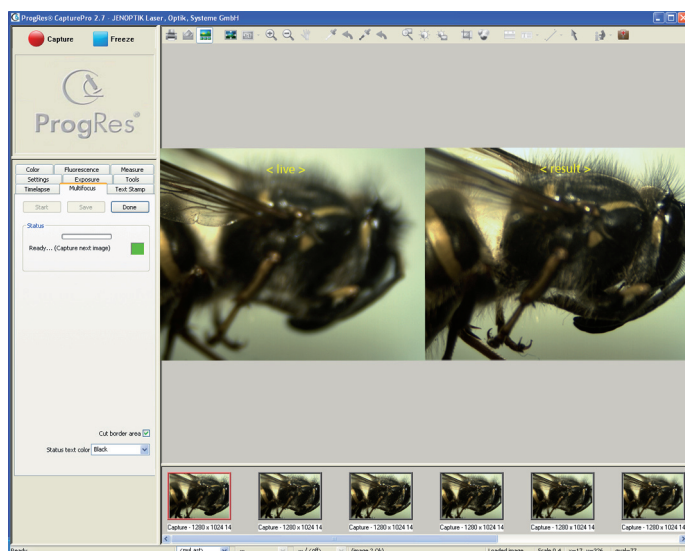
calculated to one image in the right window of the split screen, and will be labelled by "Result".



Note: Not all image resolutions are available for multifocus image capture. After clicking "Capture" in the Multifocus mode, the user is requested to set the correct resolution in the register tab "Settings".



Important note: Multifocus images cannot be captured in TIFF 16 bit-format.



Multifocus image display

The captured images are displayed in the gallery, however they will not be saved automatically. To save a single image, the button "Save" has to be clicked in the register tab "Multifocus".

To achieve optimum results, observe the following advice for capturing multifocus images:

- Capture the image sequence "in one direction", i.e. start with the nearest focus and successively change the focal plane to

the areas that are further away (or vice versa).

- Make sure to set the focusing steps as small as possible to achieve optimum results.

The focusing function (focus bar) in the icon bar is active, in this way the focus of image details can be checked.

Cut border area

When images with a different focus are combined to a multifocus image, it may happen that the border areas of the multifocus image will not be completely merged, and undesired effects can occur. Especially if single images are shifted laterally against each other, edges, displacements and other undesired artefacts can occur.

With “Cut border areas”, the user can decide whether these areas will be removed from the final multifocus image automatically.

Saving multifocus images

Throughout the multifocus session, the button “Save” is active. Clicking this button, intermediate steps of the multifocus session can be saved. The images will be saved in the folder that was selected in the register tab “Settings” or in the Gallery mode. The names are assigned to the images in the usual way.

When you are pleased with your multifocus image, click “Done” to complete the multifocus session. Save the multifocus image which is displayed in the right area of the software interface by clicking “Save”.



Important note: Save the multifocus image in the right area of the software interface. If you leave the Multifocus mode without saving the image, the multifocus image will be deleted.

The resolution of the result image is smaller than the resolution set in the register tab “Settings” if the border area is cut off.

7.9 Register tab “Text stamp”

Text stamps can be inserted and saved with the microscope image. In this way, the workflow of image capture and processing can be traced, and teamwork can be facilitated. The text stamp (e.g. the initials of the person working with the image) is entered in the register tab, and displayed in the microscope image by marking the respective checkbox.

Color		Fluorescence		Measure	
Settings		Exposure		Tools	
Timelapse		Multifocus		Text Stamp	
<input checked="" type="checkbox"/>	KS		TL		
<input checked="" type="checkbox"/>	DK		TR		
<input checked="" type="checkbox"/>	NH		BL		
<input checked="" type="checkbox"/>	LE		BR		
<input type="checkbox"/>			TL		
<input type="checkbox"/>			TL		
<input type="checkbox"/>			TL		
<input type="checkbox"/>			TL		
<input type="checkbox"/>			TL		
<input type="checkbox"/>			TL		
<input checked="" type="checkbox"/>	Show and burn text stamps				
Save overlay with image ...					
Font color...		<div></div>			
Arial, 24pt.		Font...			

Register tab “Text Stamp”

Insert text stamp

Type the text stamp in the input boxes in the register tab. Use a suitable length. Up to 10 text stamps can be inserted into this register tab.

In the drop-down list, the location of the text stamp can be selected. The following locations can be selected:

- TL - Top Left
- TR - Top Right
- BL - Bottom Left
- BR - Bottom Right

Show or hide text stamp

Mark the checkbox in front of the text stamp to activate the display in the image. With “Show all text stamps”, all text stamps entered in the register tab will be displayed.

Register tabs - Text stamp

“Show and burn with image” - Saving overlay in Live mode

When working in Live mode, the activated text stamps will be merged into the image, and will be saved together with the image.

In live mode, images are saved by clicking the button “Capture” in the icon bar.

“Save overlay with image” - Saving the overlay with a loaded image

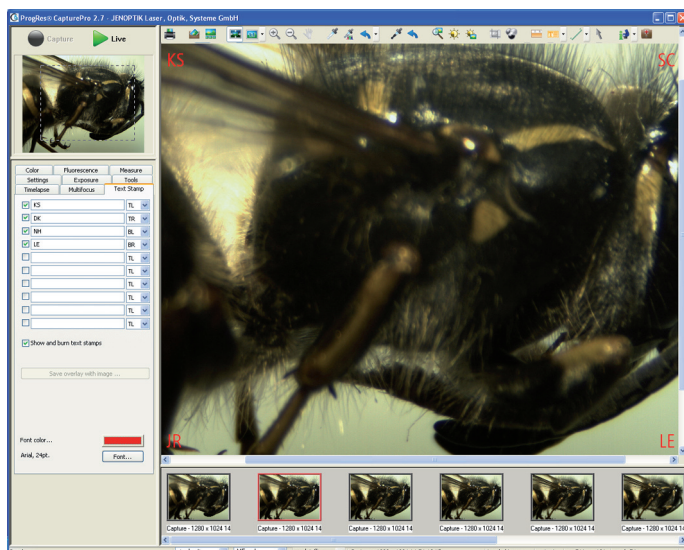
This button is active when working with a loaded image. If text stamps are activated, they can be saved with this loaded image by clicking this button.



Note: When an overlay is saved with an image, it cannot be removed anymore.

Set font and font color

The font and font color of the text stamps can be selected by clicking the respective buttons.



Microscope image with text stamps

8 Status bar

The following parameters are displayed in the status bar. The items are listed in the order they appear in the software user interface from the left to the right side.

 Software status

 User profile

Displays the currently active user profile. In the drop-down menu, saved user profiles can be selected. Preferences are saved in a user profile using the function "Save as" in the register tab "Tools".

 Connected cameras

Displays the currently connected camera. In the drop-down list, all cameras that are currently connected will be displayed. The function is also available in the icon bar, → chapter 6.19 "Camera selection".

 Shading file

Displays the available shading files. The available shading files can be selected in the drop-down list. A shading file is created using the functions in the register tab "Tools", → chapter 7.7 „Register tab "Tools".

 Frame number

 Image mode

Displays the image mode and the frame rate (frames per second). When the Freeze- or the Capture mode is active, "Live stopped" will show; when a loaded image is displayed, "Loaded image" will show.

 Image scaling

The image size can be adjusted, → chapter 6.8 "Adjust image size".

Status bar

x=0, y=0

Coordinates

Displays the coordinates of the cursor.

r=-1, g=-1, b=-1

RGB-values

Displays the RGB-values of the image pixel where the cursor is currently placed.

9 Service and support

For questions about ProgRes® microscope cameras, your local expert dealer from whom you have purchased the ProgRes® camera is the first contact partner. He is trained in using the camera and can also give you information about accessories that are suitable for special microscopy applications.

9.1 Manufacturer service and support

Furthermore, our local technical expert support in Jena can be contacted:

Daniel.Kaiser@jenoptik.com

9.2 Return address in case of service incidents

JENOPTIK I Optical Systems

Business Unit Digital Imaging

Wareneingang

Pruessingstraße 41

D-07745 Jena

Germany

9.3 Camera registration and software updates

Users can register at our web site www.jenoptik.com/progres. The user name and password can be freely selected. Registered users are entitled to access the download area of our ProgRes® web site where software updates and bug fixes are provided regularly and free of charge. Registered users will be automatically notified when new software updates are available.

9.4 Further information

More information about digital imaging products from JENOPTIK Optical Systems is available on our website:

www.jenoptik.com/progres

10 Technical information

The technical specifications of your ProgRes® camera are found on the installation CD in the folder “Data sheets”.

Further technical information such as application reports, data sheets and Frequently Asked Questions are available on our web site:

<http://www.jenoptik.com/en-digital-cameras-for-microscopy>

10.1 Order numbers

Camera type	Order number
ProgRes® CT3	014102-001-26
ProgRes® C3	014102-004-26
ProgRes® C3 with cooling	014102-005-26
ProgRes® C5	014102-008-26
ProgRes® C5 with cooling	014102-009-26
ProgRes® C7	014102-015-26
ProgRes® CF system	017953-656-26
ProgRes® CF ^{cool}	017953-654-26
ProgRes® CF ^{scan}	017953-653-26
ProgRes® C14 ^{plus}	017953-650-26
ProgRes® MF system	017953-657-26
ProgRes® MF clear glass	017953-649-26
ProgRes® MF ^{cool}	017953-651-26
ProgRes® MF ^{scan}	017953-655-26
ProgRes® MF USB	014102-037-26
ProgRes® CF USB	014102-038-26
ProgRes® SpeedXT <i>core 3</i>	014102-022-26
ProgRes® SpeedXT <i>core 5</i>	014102-025-26

Order numbers of the ProgRes® CMOS cameras

Camera type	Order number
ProgRes® CT3 USB	014102-032-26
ProgRes® CT5 USB M	014102-033-26
ProgRes® CT5 USB C	014102-034-26

10.2 Scope of delivery

- ProgRes® camera with C-Mount protective cap for sensor
- Thread sleeve 3/8" to 1/4" photo thread
- ProgRes® FireWire-cable / USB-cable
- Stand Alone Software & TWAIN driver for WINDOWS PC
- Stand Alone Software for MAC
- Operating manual on CD
- Instruction Manual printed
- ProgRes Quick-Start-Guide printed
- Case
- Additionally with ProgRes® CFscan, ProgRes® MFscan and ProgRes® C14plus:
 - Calibration slide
 - Cleaning brush

10.3 System requirements

PC:

- Operating system: Microsoft Win XP, Vista or Windows 7, 32 or 64 Bit
- 3 GHz CPU, 1 GB RAM, 256 MB graphics card,
- USB 2.0, USB 3.0 conform
- IEEE1394 Firewire
- Multicore CPU recommended
- Screen resolution: 1280 x 1024

Mac:

- Apple Macintosh OS X 10.4 or higher

- 3 GHz CPU, 1 GB RAM, 256 MB graphics card recommended
- IEEE1394 Firewire (OHCI Standard)

Recommended FireWire boards:

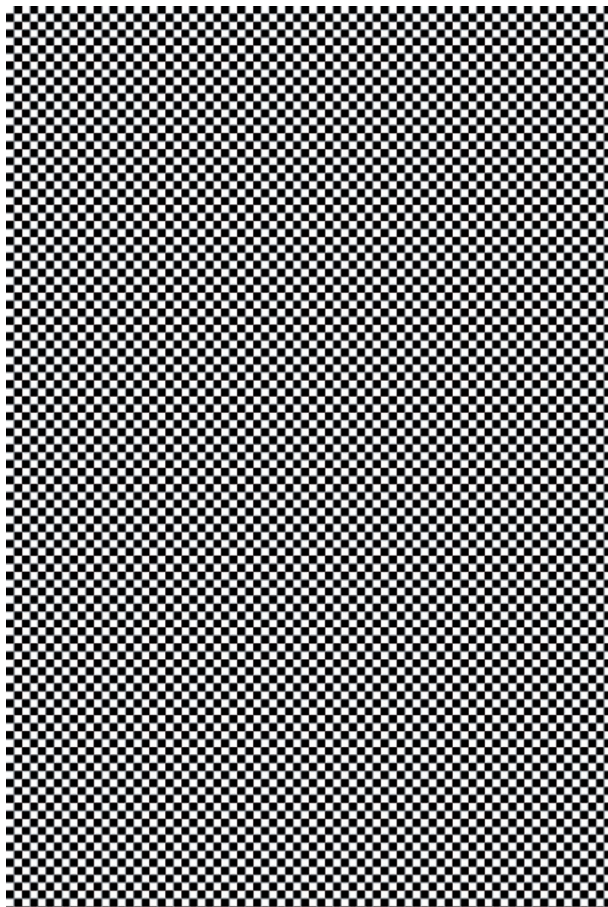
For notebook operation:

- PCMCIA: Unibrain Firecard 1394 Cardbus Adapter (power supply is necessary 12V 1A)
- Fire Wire Repeater: Unibrain Fire Repeater (power supply is necessary)

For desktop operation:

- Adaptec Fireconnect 4300 Dawicontrol
- IEEE 1394 FireWire PCI Card Maxtor
- 1394 PCI Adapter Card Unibrain
- OHCI FireWire PCI Adapter Western Digital
- OHCI FireWire PCI Adapter Texas Instruments

11 Appendix: Calibration pattern



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