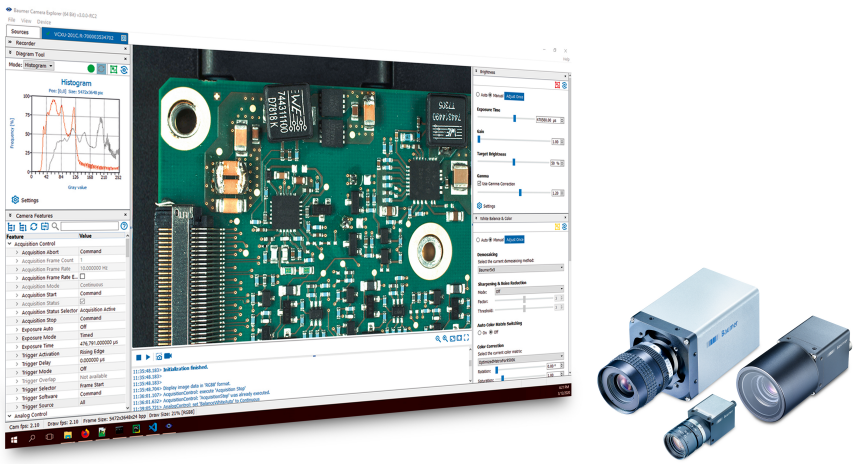
Baumer
Passion for Sensors



Operating Manual

Digital Cameras Industry

Baumer Camera Explorer

EN-US

V3.3 | 08/31/2022 | 11099434

Table of Contents

1 General Information

The Baumer Camera Explorer is the perfect evaluation and configuration tool for GenICam cameras with GigE, Dual-GigE and USB interfaces and allows you to get to know the extensive functionality of our innovative cameras.

The tool provides you with an easy to use graphical user interface to test your specific camera features and allows different camera models to be used simultaneously.

Target group for this User´s Guide

This User's Guide is aimed at experienced users, which want to integrate camera(s) into a vision system.

Classification of the safety instructions

In the User´s Guide, the safety instructions are classified as follows:

NOTICE

Gives helpful notes on operation or other general recommendations.

Copyright

2 Support

In the event of any questions, or for troubleshooting, please contact our support team.

Worldwide

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3 System Requirements

The Baumer Camera Explorer can run on any current x86, x86_64, ARMhf and aarch64 platform. The Baumer Camera Explorer is available for Windows® 7, Windows® 10 and Linux®.

To run the Camera Explorer on Linux® please make sure that at least libstdc++.so.6.0.21 is available on the system, because it is build with gcc v5.5.0.

If you plan to work with multiple cameras or very high frame-rates simultaneously the required performance will rise. We recommend an Intel® Core i7 or similar performance class system.

Download latest software for your system: www.baumer.com/vision/software

4 Installation

4.1 Windows

There are separate downloads available depending on your installed Operating System.

Please use the download named x86_64 for 64-bit versions of Windows® and the download marked with x86 for 32-bit versions of Windows®

4.1.1 Installation using the Installer

The msi-installer provides an simple way to install the Baumer Camera Explorer.

NOTICE

Please be aware that you will need Windows® administrator privileges to use the installer.

NOTICE

All C++ application require the “Microsoft Universal CRT” package to be installed on your system. If your Windows® system is not updated as recommended by Microsoft you might not be able to start the Baumer Camera Explorer. The following error message will appear:

For your convenience, we provide the “Windows® Universal CRT” package with the installer.

Interactive Installation

1. Start the *Baumer Camera Explorer Windows.msi* for your system.

   → Baumer Camera Explorer Setup appears.

   NOTICE! Start the Setup with the command-line parameter “-h” to get an overview about the options.

2. Follow the installation process and select the components to install.

   NOTICE! The Filter Driver helps to reduce system load when using GigE cameras and can be installed optionally.

4.1.2 Installation using the zip-file

We also provide the Baumer Camera Explorer as a zip-file to download. This download can just be copied to a location of your choice and unpacked. It will run from this location, even from a USB-Stick. Other than the Baumer Camera Explorer you will also find additional files in the unpacked folder.

- Baumer USB-driver (required for all Baumer USB cameras) see the folder `\drivers\USB\` (administrator privileges are required to install the driver).
- Baumer Filter Driver (optional for all Baumer GigE cameras, better performance with multi-camera and 10GigE) see the folder `\drivers\GigE\` (administrator privileges are required to install the driver).
- Windows® Universal CRT (only required if your Windows® system is not updated regularly) see the file `\ucrtredist_x64.zip` (unpack the content of the file directly into the folder where you unpacked the Baumer Camera Explorer).

4.2 Linux

4.2.1 Installation using the package manager

The Baumer Camera Explorer is provided as a deb-file for download. This download can be installed using the Debian package manager. While installing the package a new rule will be added to the USB-system required to work with USB cameras. No special drivers are required for GigE cameras.

Install the downloaded packet

```
apt-get install xxx.deb
```

4.2.2 Installation using the tar.gz-file

We also provide the Baumer Camera Explorer as a tar.gz-file to download. This download can just be copied to a location of your choice and unpacked. It will run from this location, even from a USB-Stick.

Inside the package you will find a USB-rules file this needs to be installed into the right location if USB cameras will be used.

Only for USB-Cameras, the provided udev file needs to be copied into the udev rules folder (e.g. `/etc/udev/rules.d/`)

5 Program Start

If the Installer was not used, you have to start the Camera Explorer in the respective unpacking folder.

Windows (if installed via Installer)

Open the Baumer Camera Explorer via *Start → All Programs → Camera Explorer*

Linux (if installed via the Packet Manager)

Open the Baumer Camera Explorer via *Show Applications → Input in search field “Camera Explorer” → Camera Explorer*

NOTICE

There are several command-line parameters. To get an overview, start with -h (bexplorer.exe -h).

6 Connect a camera

Please refer to the technical documentation of your camera for connecting a camera to your system.

NOTICE

Observe the safety instructions in the respective technical documentation of the camera.

7 Using the Camera Explorer

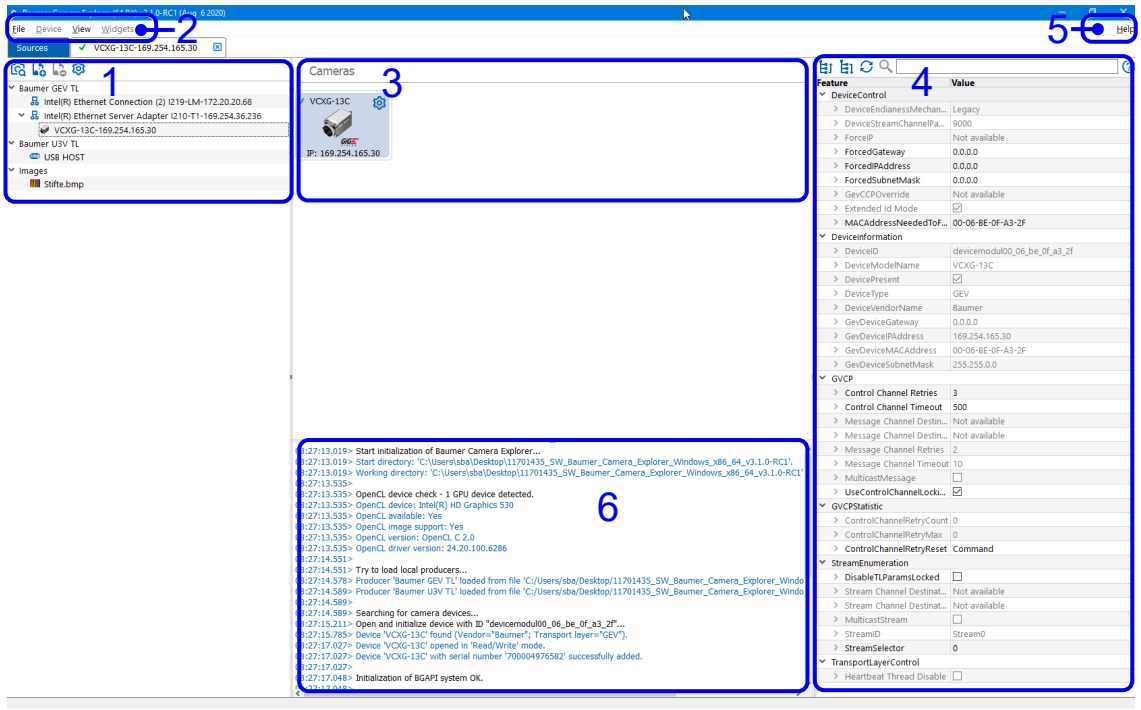
The Baumer Camera Explorer has a flexible, customizable user interface. The user can decide which of the functional modules (widgets) should be displayed.

Widgets are arranged via a simple drag and drop into the left and right panes. Widgets can be closed (hidden from the interface) and reopened if required again via the view menu.

7.1 Start Screen

The Camera Explorer can have the following start conditions:

- if no camera is connected, the last snapshot is displayed
- if one camera is connected, a live image is displayed immediately
- if several cameras were connected during the last session, they will be displayed with their availability marked / If the option *Open camera view automatically* in the Camera settings Dialog(- on camera) is activated, the respective camera(s) view will open automatically
- On the Start Screen, you will find a user interface that is separated into several areas, which are described in greater detail within the following paragraphs.



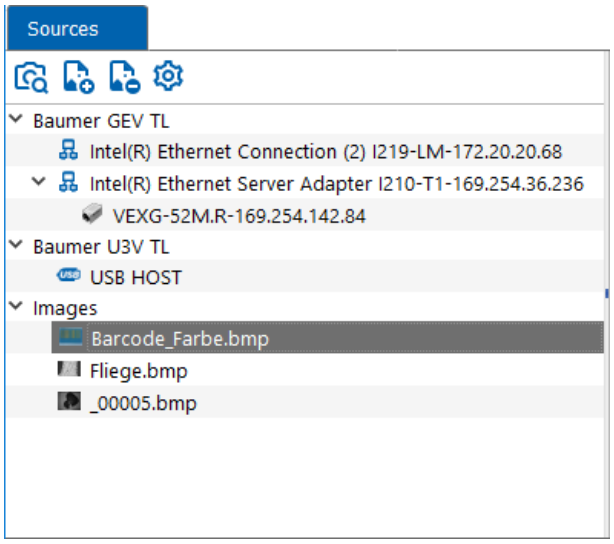
1	Source Tree	2	Main Menu
3	Cameras / Images	4	Features and Properties
5	Help	6	Message View

7.1.1 Source Tree

In this area, all existing sources, cameras and images are displayed in a tree list.

The cameras are displayed in a tree structure starting with the producer followed by the available hardware adapter(s) and the connected camera(s).

You can open the selected camera or image by double clicking. This area can be expanded and collapsed by pushing and pulling the little blue marker. After selecting a camera from the list by double clicking, a new camera tab with the Camera View will be opened.

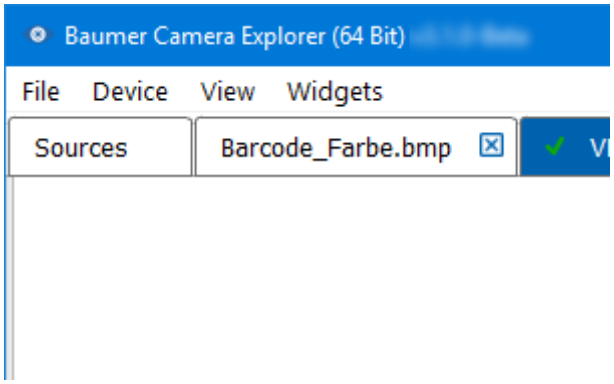


This area shows the following icons with functions as described below:

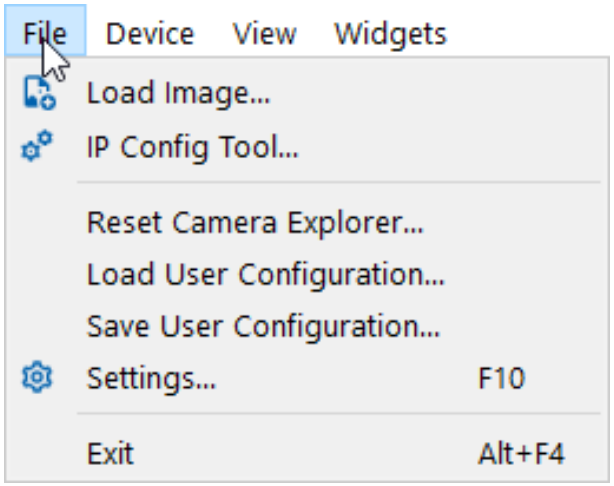
Icon	Description
	Start search for available cameras or update list. All available cameras recognized are listened under the respective interface.
	Load image from a folder.
	Remove image. Selected images are removed only from the GUI and remain in their storage location.
	Open program settings dialog.
	Expanded and collapsed the area. At a certain point, the area closes completely.

7.1.2 Main Menu

Several program options can be adjusted here.



7.1.2.1 File

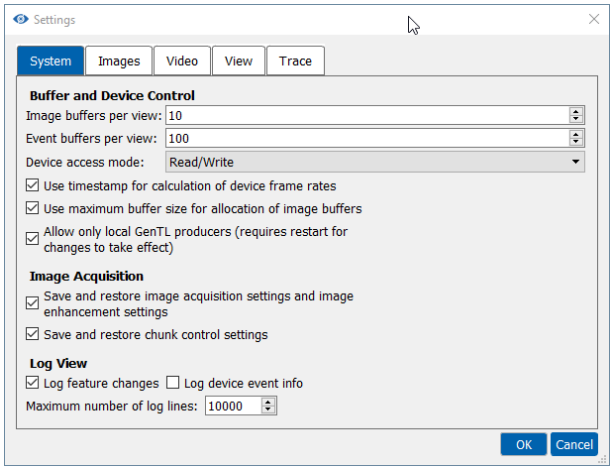


Function	Description
Load image...	Load images from folder.
IP Config Tool...	The IP Config Tool is used to configure the network settings of GigE cameras. It can be used to connect cameras even if they are not configured correctly for your Ethernet adapter using "Force IP" The IP Config Tool will open as a separate program.
Reset Camera Explorer...	Reset the Camera Explorer to default. **NOTICE! All changes to the user interface and customized settings will be lost.**
Load User Configuration...	Load a previously saved user configuration. The user configuration contains all settings of the Camera Explorer. The current layout is also saved.
Save User Configuration...	Save user configuration. The user configuration contains all settings of the Camera Explorer. The current layout is also saved.
Settings... [F10]	With this function or [F10] you open the dialog window for program configurations. Several program options can be adjusted here.
Exit [Alt + F4]	Close the Camera Explorer.

7.1.2.1.1 Settings

All global settings of the Camera Explorer are adjusted here.

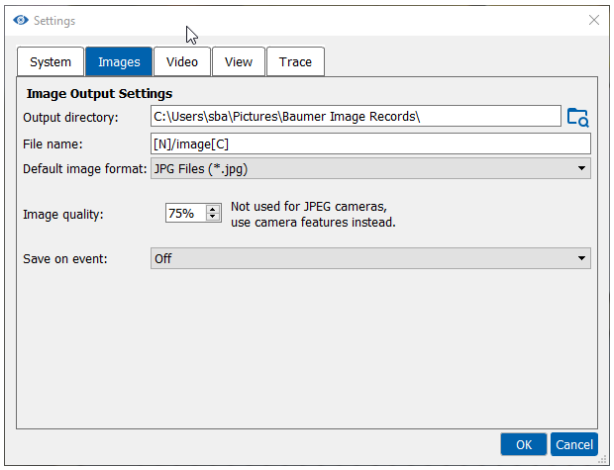
System



Function	Description
Buffer an Device Control	
Image buffers per view	Set the number of image buffers (2-500). **NOTICE! Advanced Option, change only when specifically required!** More image buffers can prevent image loss but requires a larger memory capacity. Only set the required buffer number (1 buffer = 1 image). The system does not check whether there is sufficient memory available.
Event buffers per view	Set the number of event buffer. **NOTICE! Advanced Option, change only when specifically required!**
Device access mode	Set the access mode used to connected cameras. Read/Write: full access Read Only: access to read the features only Exclusive: camera locked for other applications
Use timestamp for calculation of device frame rates	Uses the image time stamps provided by the camera to calculate the frame rate. This is more accurate than timing via the PC. Whether this feature is supported depends on the connected camera.
Use maximum buffer size for allocation of image buffers	Disable this option to save system memory or to allocate image buffers as much as possible. Enable this option to prevent display errors when the size of the allocated image buffers will become smaller than the current payloadsize.
Allow only local GenTL producers (requires restart for changes to take effect)	Disable this option to allow the Camera Explorer to use other (3rd party) producers found on the system.

Function	Description
Image Acquisition	
Save and restore image acquisition settings and image enhancement settings	If this option is activated, the Camera Explorer will save and restore the camera related feature settings of the dock widgets for all connected camera devices.
Save and restore chunk control settings	If this option is activated, the Camera Explorer will save the Chunk Control Settings of the camera. Activating this option may lead to issues if the camera is used with some 3rd Party Software products.
Log view	
Log feature changes	Write a log message for each feature modification.
Log device event info	When you activate this feature, all events activated by the respective camera as part of the Event Control feature are logged.
Maximum number of log lines:	Here, you can set the maximum number of log lines. If the maximum is reached, the older log lines will be deleted. 0 = unlimited log lines

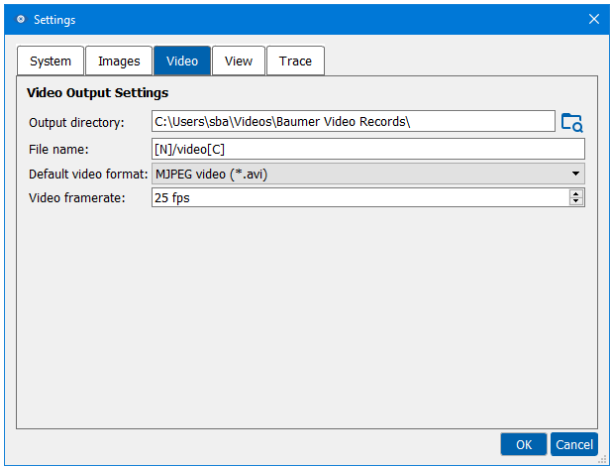
Images



Function	Description
Image Output Settings	
Output directory	Change the directory where image files are stored.
File name	File name template for saving of image files. Additional subdirectories can be added by using of “/” or “\”. Entering an empty string will restore the default template. Invalid characters will be replaced by “_”. **Possible placeholders** **[C]** – image counter of the current device **[N]** – name of the current device **[U]** – user device name of the current device **[Y][M][D]** – Year, Month, Day

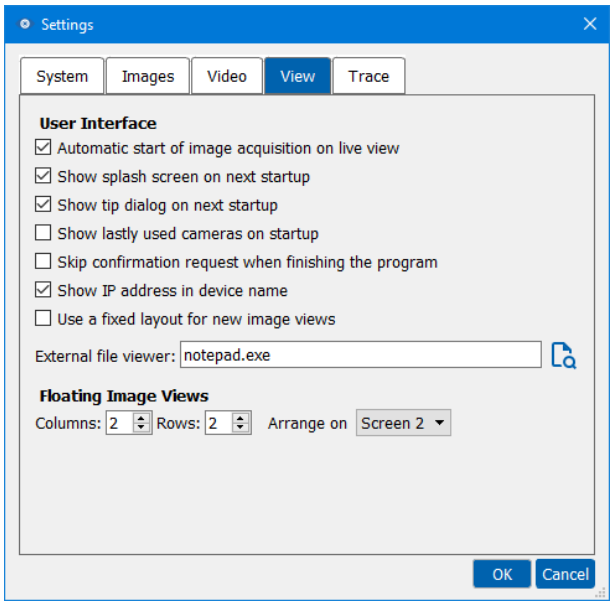
Function	Description
	[h][m][s][z] – Hour, Minute, Second, Millisecond
Default image format	Select image format for all image saving functions.
Image quality	Set the image quality from 1 to 100 %. **NOTICE! Not used for JPEG cameras. Use camera features instead.**
Save on event	Select the camera event which will trigger saving of the current image to the current image folder. Select “Off” to disable this feature.

Video



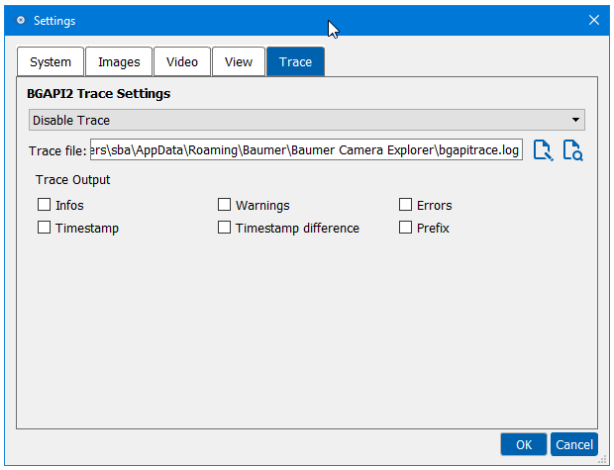
Function	Description
Video Output Settings	
Output directory	Set the directory for saving of video files.
File name	File name template for saving of video files Additional subdirectories can be added by using of “/” or “\”. Entering an empty string will restore the default template. Invalid characters will be replaced by “_”. **Possible placeholders** **[C]** – image counter of the current device **[N]** – name of the current device **[U]** – user name of the current device **[Y][M][D]** – Year, Month, Day **[h][m][s][z]** – Hour, Minute, Second, Millisecond
Default video format	Select video format for all video saving functions.
Video framerate	Set the framerate for creation of video files.

View



Function	Description
User Interface	
Automatic start of image acquisition on live view	Enable automatic start of image acquisition on program start.
Show splash screen on next startup	Select when to start the software and whether the splash screen is enabled. If you turn off the view of the splash screen, you will see the initialization in the System Status window instead.
Show tip dialog on next startup	If you activate this, the Tip of the day... is shown on the next startup [Shift]+[F1].
Skip confirmation request when finishing the program	Disable the query when closing the Camera Explorer.
Show IP address in device name	Shows the IP address of the camera at the end of the name.
Use a fixed layout for new image views	If activated the internal standard layout or a user defined layout will be set for new image views. A user defined layout can be created via menu *View* → *Save Layout*.
External file viewer	Set a viewer for the camera's XML file or the trace file.
Floating Image Views	
Columns	Set the number of columns for arranging the floating image views.
Rows	Try to use this number of rows for arranging the floating image views.
Arrange on	Select the destination screen for arranging the image views.

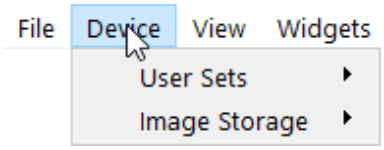
Trace



The Trace function allows you to monitor program execution. The following options are available.

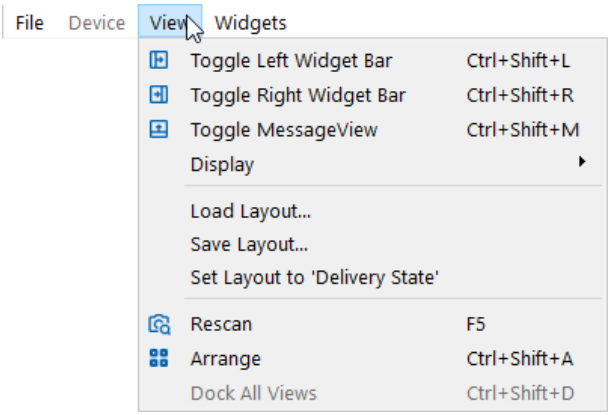
Function	Description
BGAPI2 Trace Settings	
Disable Trace	No trace storing.
Trace to Debugger	Trace will be transferred to external debugger.
Trace to File	Trace is stored in the specified file.
	Show the trace file with the currently selected file viewer.
	Select the trace file.
Trace Output	
Infos	Logging of general information. This selection creates a high volume of data. Activate only when necessary.
Warnings	Logging of warnings.
Errors	Logging of errors.
Timestamp	Logs the timestamp of every event.
Timestamp difference	Logs the interval from the last traced event to the current one.
Prefix	Shows the source (.dll) of the log entry.

7.1.2.2 Device



Function	Description
User Sets	Reset... Reset all camera settings to the default user set.
	Load... Load a a previously saved user set from the PC.
	Save...Saves the current camera settings to a user set on the PC.
Image Storage	Save to camera... Save current image permanently to camera.
	Load from camera... Show permanently stored image from camera.

7.1.2.3 View



Function	Description
Toggle Left Widget Bar [Ctrl]+[Shift]+[L]	Open / Closes the left Widget Bar.
Toggle Right Widget Bar [Ctrl] + [Shift] + [R]	Open / Closes the right Widget Bar.
Toggle Message View [Ctrl] + [Shift] + [M]	Open / Closes the Message View.
Display	Rotate 90 ° Clockwise Rotate 90 ° Counter Clockwise Flip Horizontal Flip Vertical
Load Layout...	Load a previously saved layout from a file.
Save Layout…	Saves the current layout to a file.
Set Layout to ‘Delivery State’	Reset the layout to the delivery default.
Rescan [F5]	Search / Update for available cameras. The available cameras are listened under the respective interface.
Arrange [Ctrl+Shift+A]	Open all cameras and tabs (images) in separate windows. This button is only available if the Open camera view automatically function is activated for at least one camera, or if tabs are opened. Settings for Arrange windows: Program settings → View / Floating Image Views
Dock All Views	Docks all cameras and tabs (images) in the Camera Explorer. This feature is only available if the Arrange function was used previously.

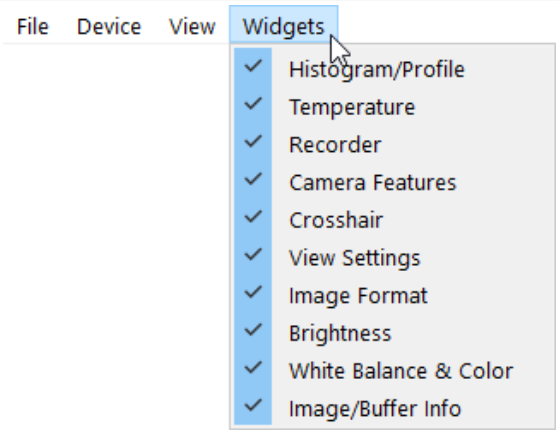
7.1.2.4 Widgets

The Baumer Camera Explorer has a flexible, customizable user interface. The user can decide which of the functional modules (Widgets) should be displayed. Widgets are arranged via a simple drag and drop into the left and right panes. Widgets can be closed (hidden from the interface) and reopened if required again via the Widget menu.

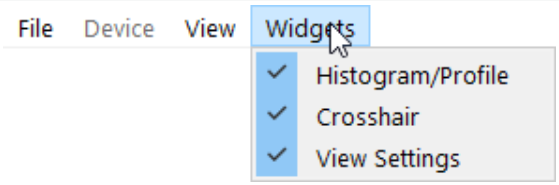
NOTICE

The available widgets differ depending on the view (Camera View / Image View) and the features of the connected camera.

Widgets - Camera View (example)



Widgets - Image View



Function	Description
Histogram/Profile	The histogram and profile diagrams is an essential tool for everybody working with images.
Temperature	This widget offers you the possibility to comfortably monitor the temperature of the camera.
Recorder (Camera view only)	This widget allows to record image-series and videos.
Camera Features (Camera View only)	With this widget you can view and change camera features and can be used to configure and store the camera features as required by your application.
Crosshair	Show the options for a crosshair in the image.
View Settings	Widget for view settings like rotate, Display format and Rendering options.
Image Format (Camera View only)	Change the cameras pixel format and region of interest easily.
Brightness (Camera View only)	Here is the central point to configure all related settings of your camera. Use it to understand how different settings relate to each other and influence the image quality.
White Balance & Color	The white balance and color settings combines all settings which influence the color accuracy of your camera.
Image/Buffer Info (Camera View only)	On the widget, you can access additional information about the image and data transfer.

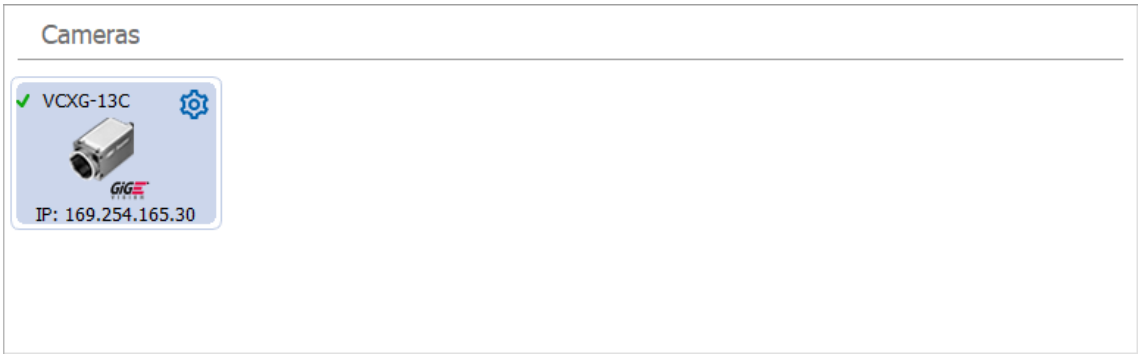
Widgets [▶ 32]

7.1.3 Cameras / Images

The recognized cameras or open images are displayed here.

Cameras

In this area, the connected cameras are displayed with their model name, a status icon and the serial number. Start the Camera View by double clicking on the icon.



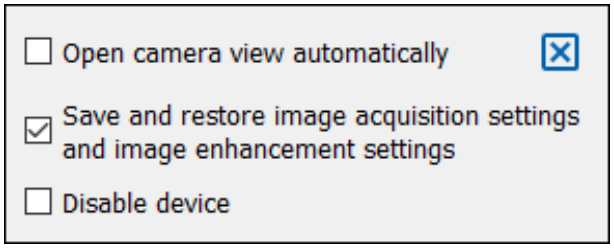
Meanings of the status icons shown as part of the camera icon.

Icon	Description
	Full access to the camera is available.
	Camera accessibility is limited. Features are shown but cannot be changed.
	Camera is not accessible.
	Device disabled. Other programs can use the camera instead.
	Camera is in the wrong subnet. Double-click opens the IP Config Tool to adjust the cameras network settings.

Camera settings Dialog

To the right of the available cameras, there is the option button.

Icon	Description
	Click this button to open the options for the respective camera.



Function	Description
Open camera view automatically	If this function activated, the respective Camera View(s) will be opened automatically when the Camera Explorer is next started. If only one camera is connected, a live image is displayed immediately, regardless of this option.
Save and restore image acquisition settings and image enhancement settings	If this option is activated, the Camera Explorer will save the previous settings for the Image Acquisition Tab and the Image Enhancement Tab available in the Basic Mode profile. You can activate this function in the Program Settings. Program Settings → System (Save and restore image acquisition settings and image enhancement settings)
Disable device	Disable this device for further use. This ensures other programs can use the camera without interference from the Camera Explorer.

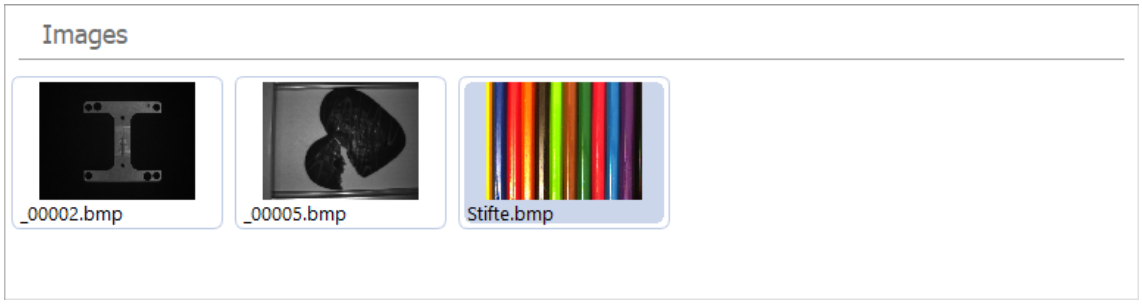
Images

The captured snapshots and the loaded images are displayed here. Their storage location will be shown as a tooltip. You can open an image in the Image View by double clicking it.

Remove the selected image with [Del].

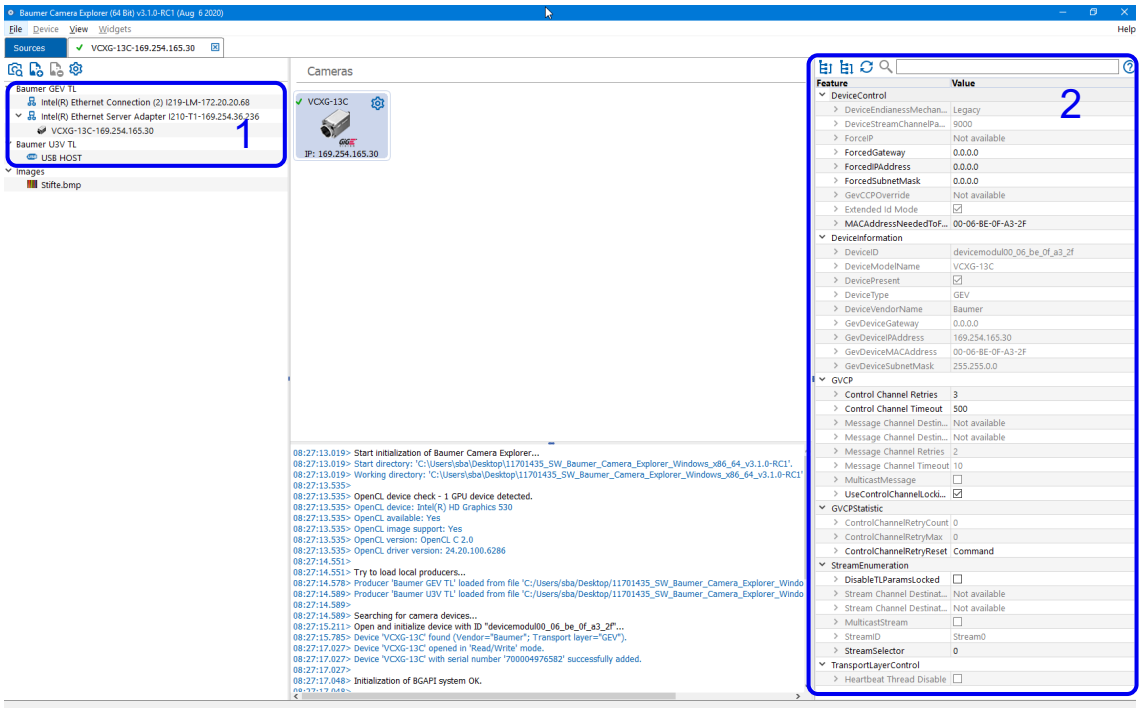
NOTICE

Selected images are removed only from the GUI and remain in their storage location.



7.1.4 Features and Properties

Depending on the selected object (systems, interfaces or cameras) in the source tree, the available properties are shown here. You can view and in some cases change values as required.



1	Source Tree	2	Features and Properties

(1) Source Tree

The Source Tree lists the available cameras in relation to their respective interfaces (e.g. network adapters) and the producers or systems (e.g. Baumer GEV TL).

NOTICE

You can show the IP address of the interfaces and devices.
Settings → View → Show IP address in device name

(2) Features and Properties

The features are displayed within their respective category.

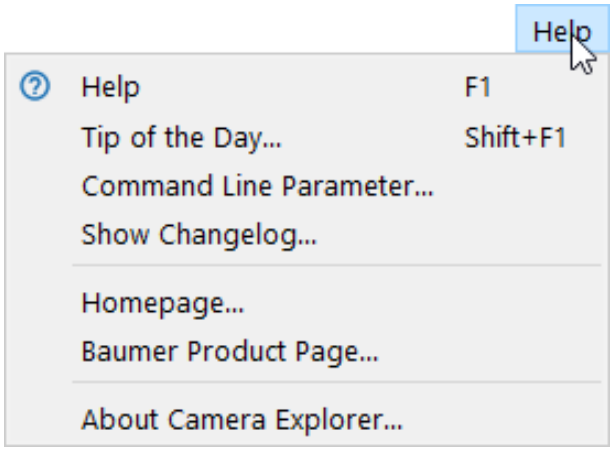
This area shows the following icons with functions as described below:

Icon	Description
	Collapse all feature control categories.
	Expand all feature control categories.
	Refresh all feature values [F5]. Toggle the feature names with pressed [CTRL]-Key.

Icon	Description
	Filtering features by name, value or category. Filtering is not case sensitive. Several OR linked search strings can be entered separated by spaces. Searching is done in feature name or display names by default. A prefix can be used to search in feature values or in feature categories. Possible prefixes are: : - search in feature values (e.g. ":Off") # - search in feature category names (e.g. "#User")
	Display Help for selected feature.

7.1.5 Help

You can open the help file within the program.

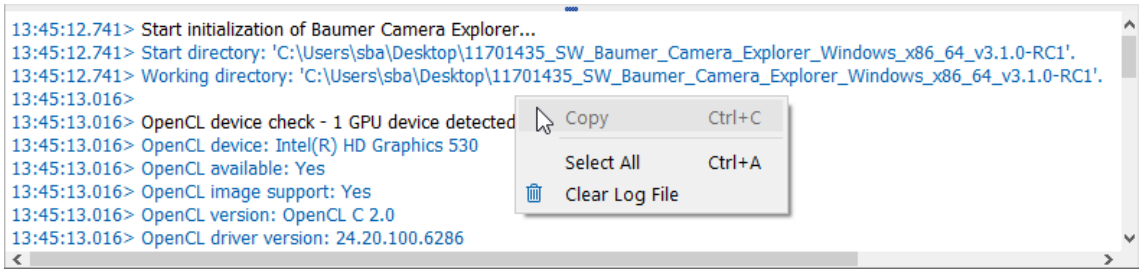


Function	Description
Help	Open the help file [F1].
Tip of the Day…	Open the Tip of the day [Shift]+[F1].
Command Line Parameter…	Here you get an overview of the available command line parameters when starting the Camera Explorer.
Show Changelog…	Opens the version history of Camera Explorer in an .md file.
Homepage…	Open the Baumer Camera Explorer homepage.
Baumer Product Page…	Open the homepage about the innovative Baumer products.
About Camera Explorer…	Shows the program version and further information.

7.1.6 Message View

In this area, the program activities are shown in chronological order.

Right-click in this area to display different options.



For example, you can access information about:

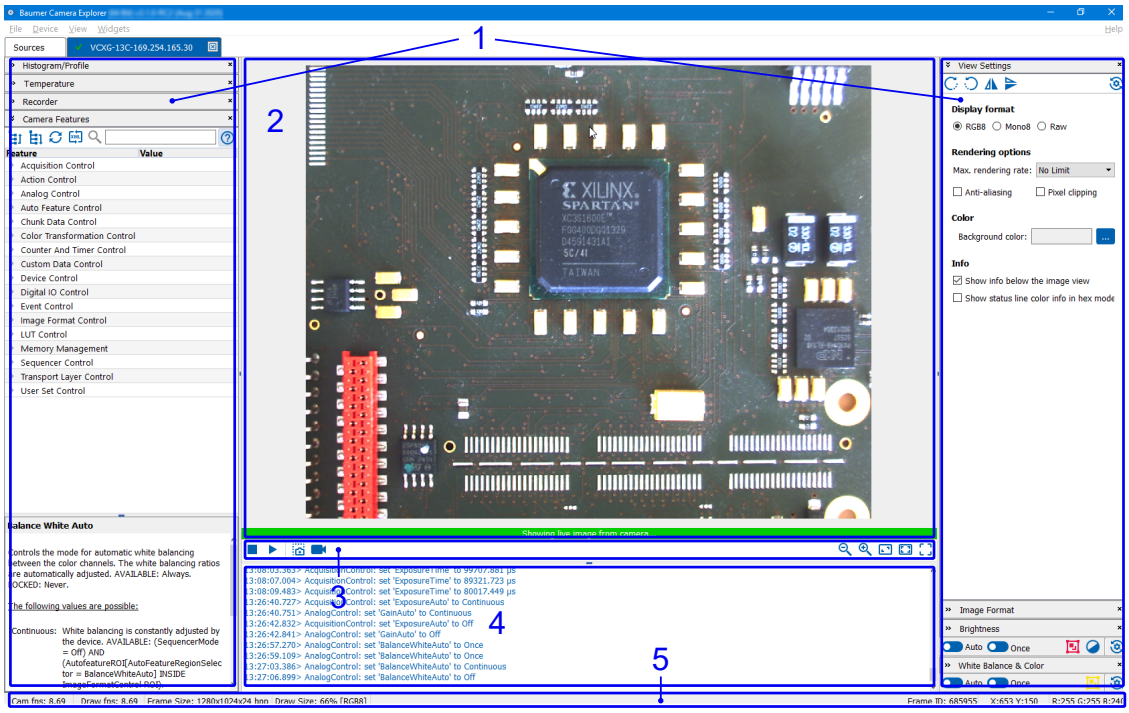
- starting procedure
- recognized cameras
- occurred errors
- used producers

NOTICE

Settings for the Log View can be adjusted in Settings → System

7.2 Camera View

Each opened camera will be shown in a separate tab (camera views). The camera views are separated into different areas.



1	Widgets	2	Live Image (with status bar)
3	Play / Record Bar	4	Message View
5	Status Line		

(1) Widgets

Widgets can be arranged as required via a simple drag and drop into the left and right panes. The arrangements as well as the settings in a Widget are saved and restored if the same camera is reconnected / opened again. They can be collapsed and expanded using the double arrow button top left. Widgets can be closed (hidden from the interface) and reopened if required again via the view menu.

NOTICE

The available widgets differ depending on the features of the connected camera.

Widgets [▶ 32]

(2) Live Image View

This view shows live images from the camera. The status bar below informs about the current content of the camera / image view.

green: live image from camera

gray: camera stopped, last available image shown OR displaying images from recording OR display image from file

red: currently recording from camera

(3) Play / Record Bar

The following functions are available in this Tool Bar.

Icon	Description
	Stop image acquisition [F11].
	Start image acquisition [F12].
	Take a snapshot of the current image [F9].
	Start image recording. **NOTICE! The settings are controlled in the Recorder widget.**
	Zoom out [Ctrl] + [mouse wheel].
	Zoom in [Ctrl] + [mouse wheel].
	Toogle Fit in view mode [F2].
	Toogle maximized mode [F3].
	Activates full screen mode [F8]. **NOTICE! In full screen mode, you can zoom into/out of the image with [Ctrl] + [mouse wheel].**

After / during recording

Icon	Description
	Restart image recording.
	Stop image recording.
	Show previous recorded image.
	Start replay.
	Show next recorded image.
	Save captured images to video file.

(4) Message View

In this area, the program activities are shown in chronological order.

Message View [▸ 25]

(5) Status Line

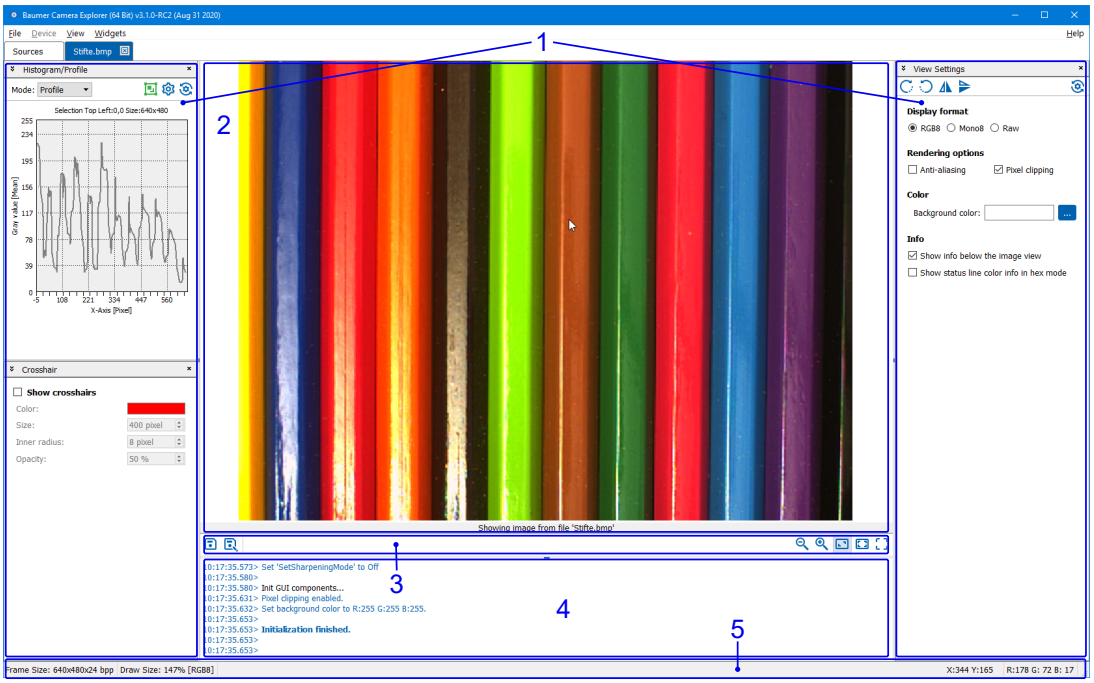
The Status Line at the bottom of the Camera View tab gives some information about the currently displayed image.

1	Camera Frame Rate	2	Camera Explorer Frame Rate
3	Frame Size	4	Draw Size [View Mode]
5	Frame ID	6	Coordinates
7	RGB values		

No.	Description
1	Camera Frame Rate Current frame rate of the camera (frames per second [fps]).
2	Camera Explorer Display Frame Rate Current display / recording frame rate of the Camera Explorer (frames per second [fps]).
3	Frame Size Current resolution (Region of Interest) of the image.
4	Draw Size [View Mode] Current zoom level of the displayed image.
5	Frame ID Frame ID (from camera) of the current displayed image. The mouse pointer must be over the image.
6	Coordinates Position of mouse cursor within the image.
7	RGB values The **R**ed **G**reen **B**lue values for the current mouse position. **NOTICE! The display format can be changed. View Settings → Info → Show status line color info in hex mode.**

7.3 Image View

Each image will open in a separate tab. The image view are separated into different areas. The content of the areas is described below.



1	Widgets	2	Image View
3	Tool Bar	4	Message View
5	Status Line		

(1) Widgets

Widgets can be arranged as required via a simple drag and drop into the left and right panes. The arrangements as well as the settings in a Widget are saved and restored if the same camera is reconnected / opened again. They can be collapsed and expanded using the double arrow button top left. Widgets can be closed (hidden from the interface) and reopened if required again via the view menu.

Widgets [▶ 32]

(2) Image View

Displays the selected image.

(3) Tool Bar

The following functions are available in the Tool Bar.

Icon	Description
	Save current image to file.
	Save current image to new file.
	Zoom out.
	Zoom in.
	Toogle Fit in view mode [F2].
	Toogle maximized mode [F3].
	Activates full screen mode [F8]. **NOTICE! In full screen mode, you can zoom into/out of the image with [Ctrl] + [mouse wheel].**

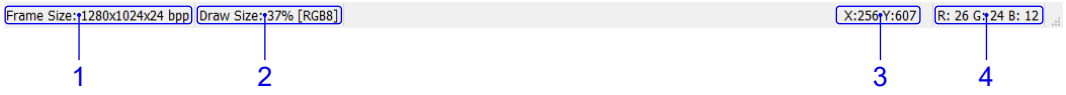
(4) Message View

In this area, the program activities are shown in chronological order.

Message View [▶ 25]

(5) Status Line

The Status Line at the bottom of the Camera View tab gives some information about the currently displayed image.



1	Frame Size	2	Draw Size [View Mode]
3	Coordinates	4	RGB values

No.	Description
1	Frame Size Current resolution of the image.
2	Draw Size [View Mode] Current zoom level of the displayed image.
3	Coordinates Position of mouse cursor within the image.
4	RGB values The **R**ed **G**reen **B**lue values for the current mouse position. **NOTICE! The display format can be changed. View Settings → Info → Show status line color info in hex mode.**

7.4 Widgets

Widgets can be arranged as required via a simple drag and drop into the left and right panes. After a double click on the header, the widget can be positioned freely.

The arrangements as well as the settings in a Widget are saved and restored if the same camera is reconnected / opened again. They can be collapsed and expanded using the double arrow button top left.

Widgets can be closed (hidden from the interface) and reopened if required again via the view menu.

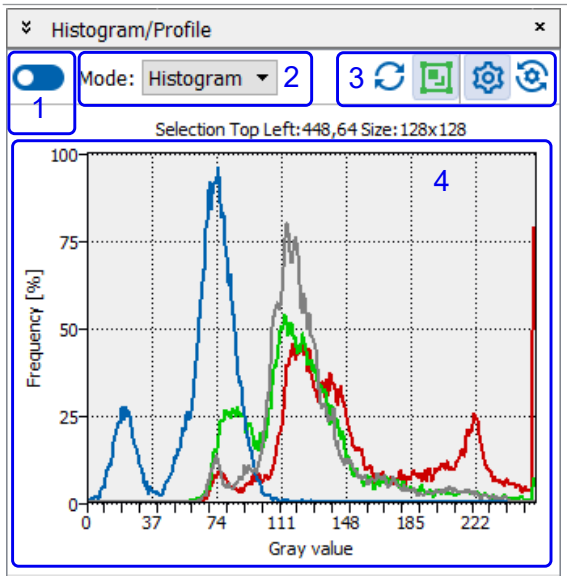
NOTICE

The available widgets differ and adjustable values depending on the view (Camera View / Image View) and the connected camera.

7.4.1 Histogram/Profile

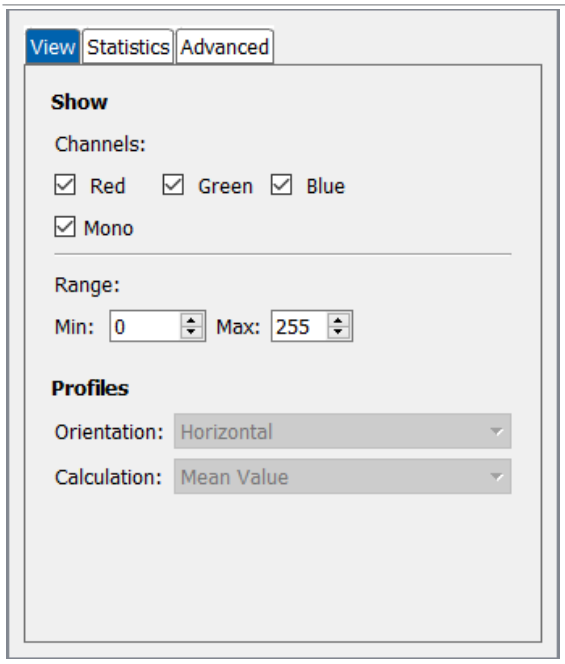
The histogram and profile widget is an essential tool for everybody working with images. You can analyze the profile and the histogram of live images, captured images and selected areas in images.

Main Window



1		Start or stop live diagram (Camera View only)
2		Select the current diagram mode Histogram: Frequency distribution for the selected channels. Profile: Evaluation of the image profile.
3		Refresh with data from current image
		Select an area to control the histogram / profile
		Open or close the diagram settings
		Reset diagram settings
4		Diagram

Settings (View)



Show

Red: Red components of image.

Green: Green components of image.

Blue: Blue components of image.

Mono: Mono components of image.

Range: Set the values for the axes of the diagram here.

Profiles

Orientation:

Horizontal: The entire image / marked area is analyzed horizontally.

Verical: The entire image / marked area is analyzed vertically.

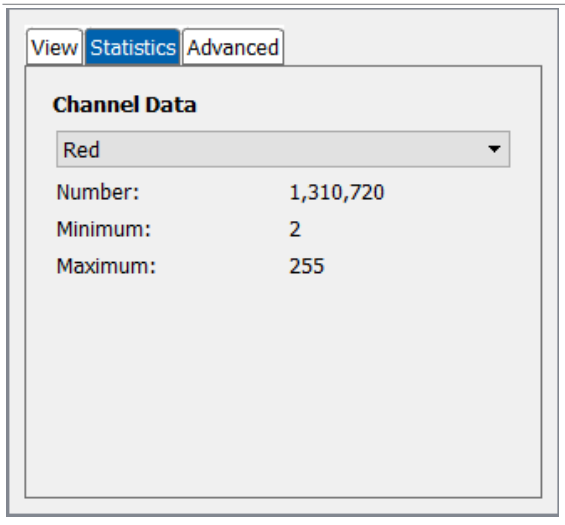
Calculation

Mean Value: The entire image / marked area is analyzed in the selected orientation.

Center Line: The image / marked area is analyzed centrally in the selected orientation.

NOTICE! The orientation is marked with a yellow line in the image / marked area, if you selected this under Advanced → Show center line.

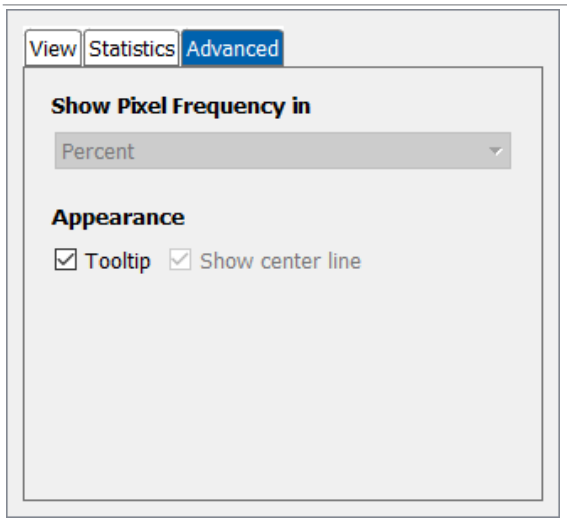
Settings (Statistics)



Channel Data

Here for each selected channel (Red, Green, Blue, Brightness) values are displayed.

Settings (Advanced)



Show Pixel Frequency in

Show histogram with absolute frequency values or with percentages values.

Appearance

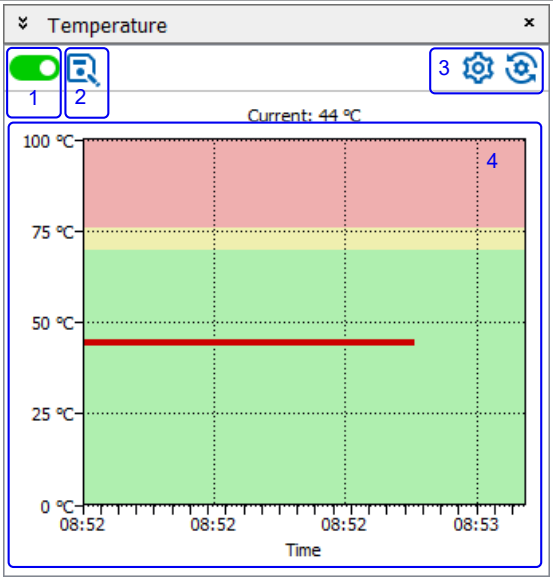
Tooltip: Show tooltip info inside the diagram area.

Show Center line: Show center line for profiles when calculated with “Center Line” option.

7.4.2 Temperature (Camera View only)

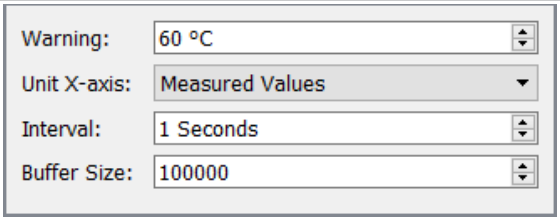
This widget offers you the possibility to comfortably monitor the temperature of the camera.

Main Window



1		Start or stop live diagram (camera view only)
2		Save current temperature data to .csv file.
3		Open or close the temperature settings.
		Reset temperature diagram and recorded data.
4		Graphically displayed temperature curve.

Settings



Warning: Set the temperature warning threshold. The green area in the diagram is directly adapted to your input.

Unit X-axis: Select the labeling of the x-axis.

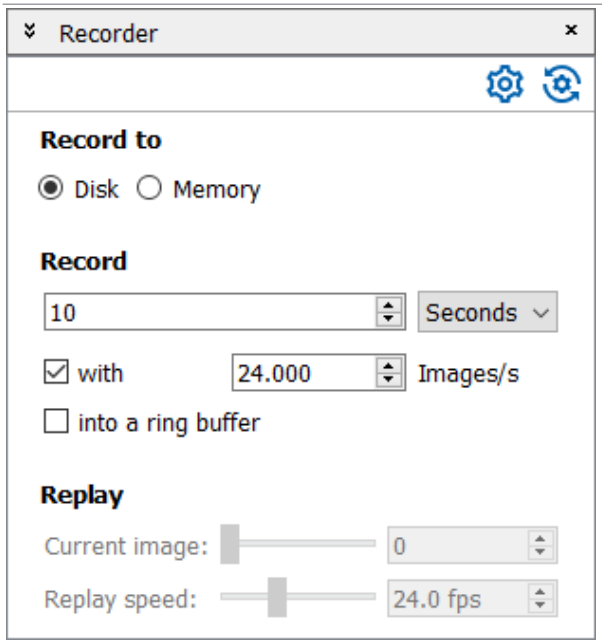
Interval: Set the measuring intervals in seconds.

Buffer Size: Number of buffers used internally to store measured values.

7.4.3 Recorder (Camera view only)

This widget allows to record image-series and videos.

Main Window



Open or close the recorder settings.

Reset all recorder settings to default values.

Record to

Disk: Save images do disk with current image format settings.

Memory: Save the user defined number of images to memory:

Record

Set the number of images or the duration in seconds for next recording.

with: Set the camera frame rate for saving. Disable the checkbox to use the current frame rate.

into a ring buffer: Save images continuously in a ring buffer to the PC.

The size of the ring buffer depends on the defined number of images or the number of seconds to be recorded.

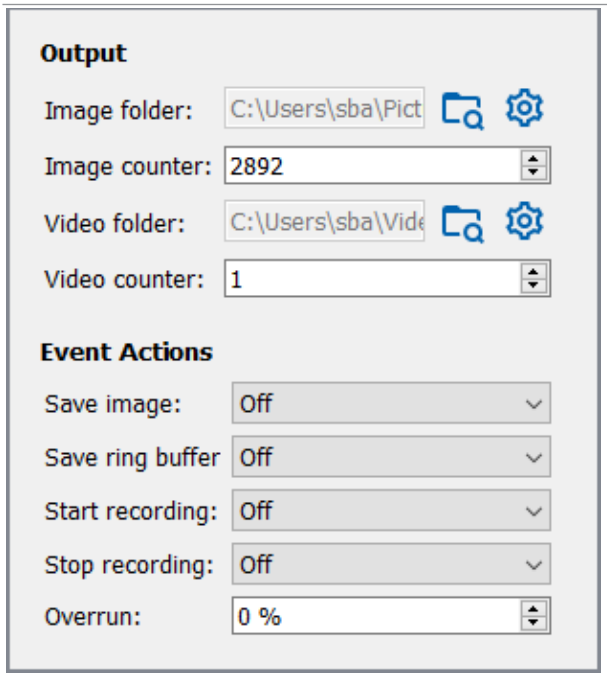
Replay

NOTICE! The functions are grayed out as long as no images have been recorded.

Current image: Select the current image.

Replay speed: Select the current image replay rate.

Settings



Output

Image folder: Current output directory for saving of images

Image counter: Start counter used in file names for saving of images.

To use this counter the place holder **[C]** must be used in the file name setting.

Video folder: Current output directory for saving of videos.

Video counter: Start counter used in file names for saving of videos.

To use this counter the place holder **[C]** must be used in the file name setting.

Open current output directory

Configure output settings

Event Actions

Here it is possible to control the image recording via the Digital-IO of the camera.

Select “Off” to disable the respective event action.

NOTICE! The number of available Digital-IOs depends on the connected camera.

Save image: Select the camera event (Line) which will save the current image do disk.

NOTICE! This event will not work if image recorder is running.

Save ring buffer: Select the camera event (Line) which will save all captured images to disk.

Start recording: Select the camera event (Line) which will start the image recorder.

Stop recording: Select the camera event (Line) which will stop recording.

Overrun: Set the number of images to record after the “Stop recording” event action in percent of size of the ring buffer.

7.4.4 Camera Features (Camera view only)

With this widget you can view and change camera features and can be used to configure and store the camera features as required by your application.

Hover your mouse cursor over the feature value to display brief information in the form of a tool tip. On the tab Help you get information about the respective marked feature. To make changes, click on the value and, depending on the type of feature, element opens. Changes can also be made via the keyboard. Some features correlate with each other and will be immediately updated. To change some features some cameras may need to be stopped (Stop - [F11], Start - [F12]).

NOTICE

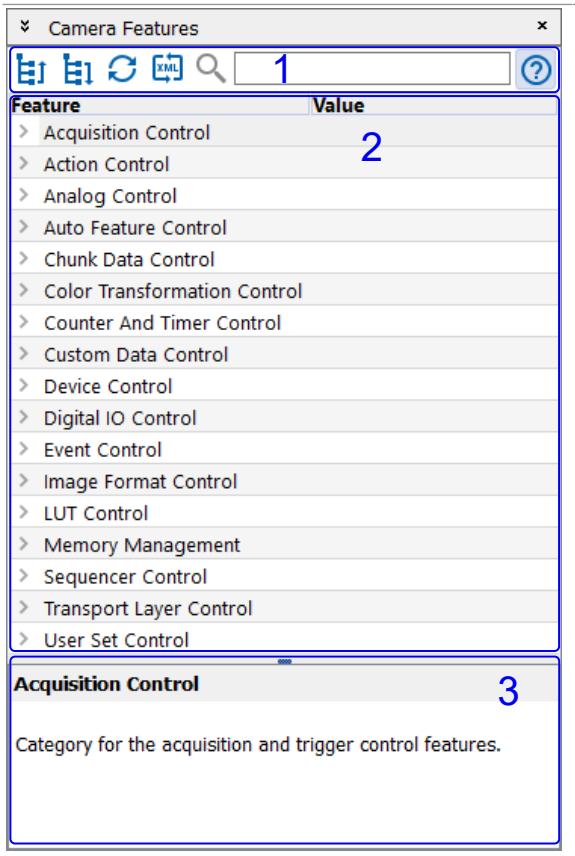
Camera Features

a) The available categories and features depend on the connected camera.

b) Features might be locked depending on other features. The help-window might hold a hint why a feature is locked.

c) Many widgets offer consolidated access to features grouped into logical functionalities. Those widgets will change values in the feature tree and visa-versa.

d) Please refer to your camera User´s Guide to learn more about how to work with camera features, learn about specific features of your camera and how to persist feature settings in the camera.



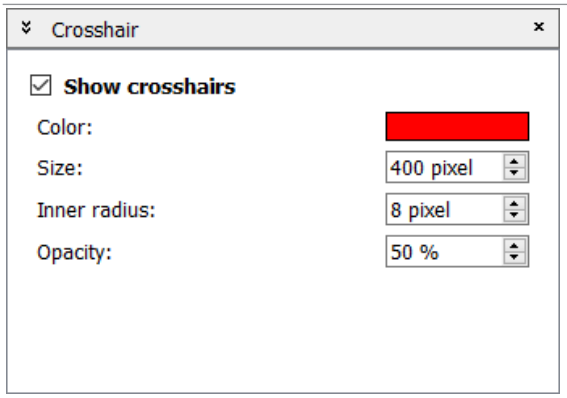
1

	Collapse all.
	Expand all.
	Refresh all feature values. Toggle the feature names with pressed CTRL-Key.
	Show the XML configuration file for the current device. **NOTICE! You can set your own external file viewer to show the camera configuration files. Settings → View / External file viewer**
	Filtering features by name, value or category. Filtering is case sensitive. Several OR linked search strings can be entered separated by spaces. Searching is done in feature name or display names by default. A prefix can be used to search in feature values or in feature categories. Possible prefixes are:

		: - search in feature values (e.g. ":Off") # - search in feature category names (e.g. "#User")
		Display help for selected feature (3)
2	This is the Feature control area.	
3	Help for selected camera feature.	

7.4.5 Crosshair

Show the options for a crosshair in the image. The crosshair position in the image can be adjusted.



Show crosshairs	Activate this option if you want to position a crosshair in the image.

Color: Select the color of the crosshairs.

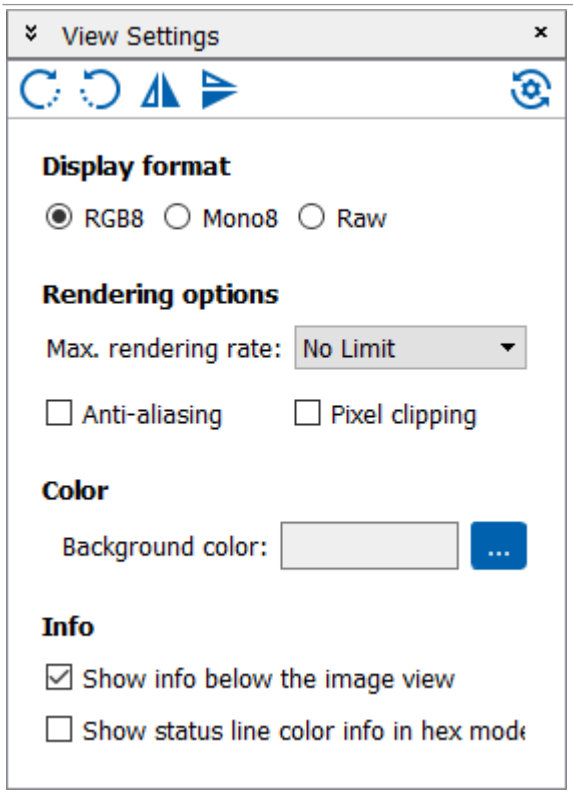
Size: Set the size of the crosshairs.

Inner radius: Set the radius of the circle in the middle of the crosshairs.

Opacity: Set the opacity of the crosshairs.

7.4.6 View Settings

Widget for view settings like rotate, flip, display format, rendering options and background color.



Rotate image 90° Clockwise.

Rotate image by 90° Counter Clockwise.

Flip image horizontal.

Flip image vertical.

Reset all view settings to default values.

Display format

Set the converting of the image data and choose between RGB8, Mono8 or Raw [F6].

Rendering options

Max. rendering rate: Set the maximum rendering rate. This setting only affects the display of images in Camera Explorer.

Anti-aliasing: Use anti-aliasing transformation for showing of images.

Pixel clipping: Marks black image areas with blue color and white image areas with red color to highlight areas of the image with unusable content.

Color

Background color: Here you can see the current background color and set another one.

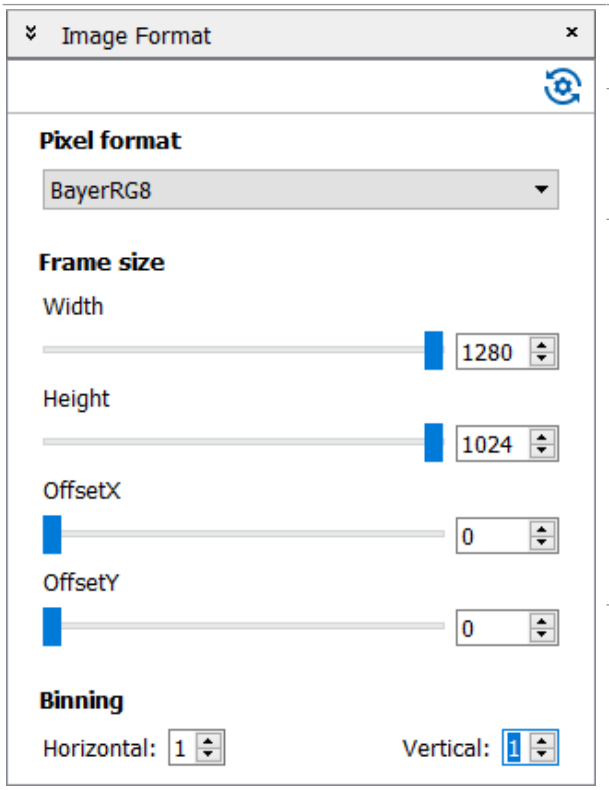
Info

Show info below the image view

Show status line color info in hex mode

7.4.7 Image Format (Camera view only)

Change the cameras pixel format, region of interest (ROI) and Binning easily.



Reset all image format settings to default values

Pixel format

Select one of the available pixel formats here.

Frame size

Width: Select the width of the frame in the image.

Height: Select the height of the frame in the image.

OffsetX: Set the horizontal offset from the origin to the region of interest.

OffsetY: Set the vertical offset from the origin to the region of interest.

Binning

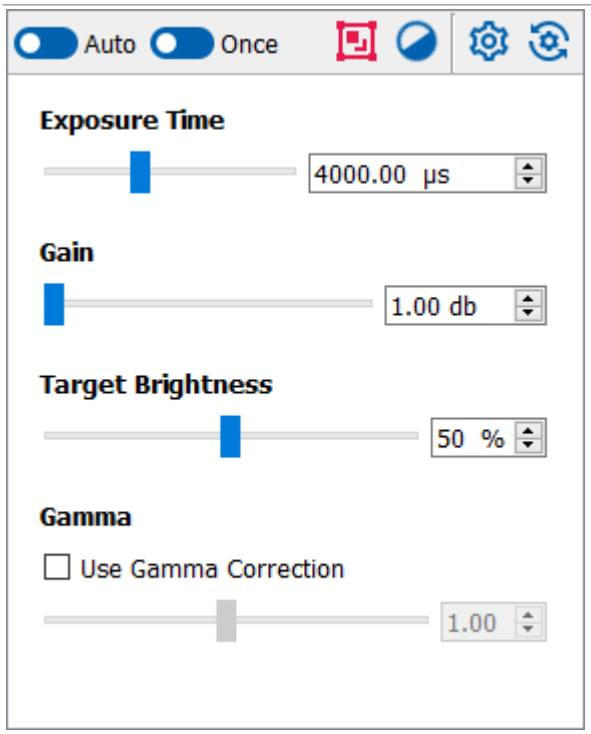
Horizontal: Number of horizontal pixel to combine together.

Vertical: Number of vertical pixel to combine together.

7.4.8 Brightness (Camera view only)

Various auto features are available to affect the automatic adjustment of image brightness. Here is the central point to configure all related settings of your camera. Use it to understand how different settings relate to each other and influence the image quality.

Main Window



Auto	Toggle automatic mode for continuous operations of features.
Once	Start single adjustment.
	Select an area to control the auto brightness.
	Marks black images areas with blue color and white image areas with red color.
	Open or close the brightness settings.
	Reset all brightness settings to default values.

Exposure Time

Set the exposure time when `ExposureMode = timed` and `ExposureAuto = off`.

Gain

Control the selected gain as an absolute physical value.

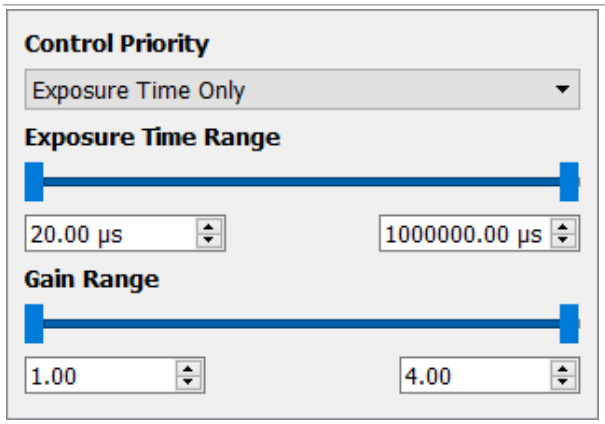
Target Brightness

Set the nominal value for brightness in percent of full scale. It will be adjust with consider the setting in BrightnessAutoPriority.

Gamma

Use Gamma Correction: When using Gamma Correction LUT feature will be activated.

Settings



Control Priority

Select the control priority for auto brightness.

Exposure Time -> Gain

Gain -> Exposure Time

Exposure Time Only

Gain Only

Exposure Time Range

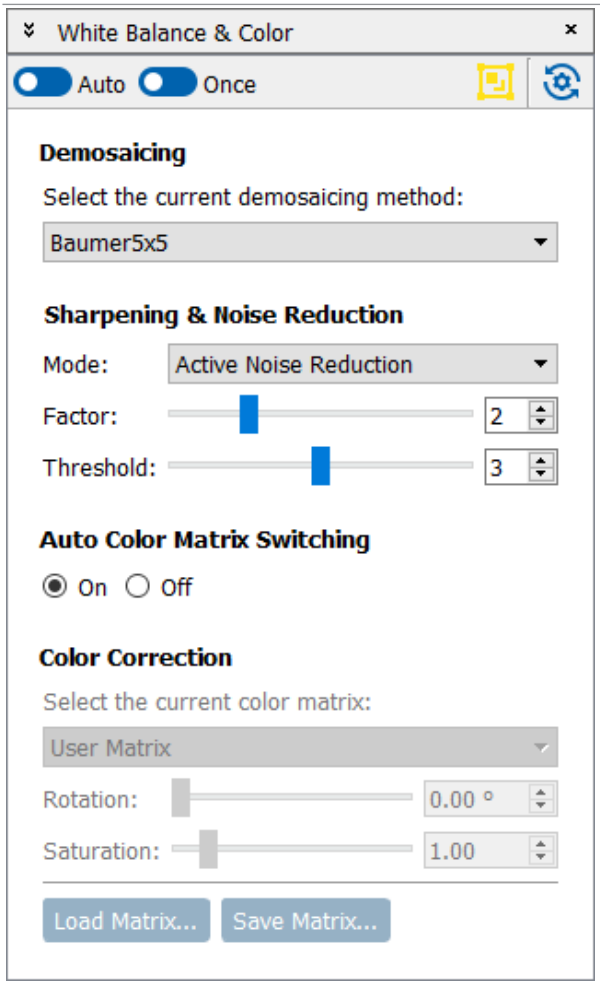
Here you can set a range for the possible exposure time.

Gain Range

Here you can set a range for the possible gain.

7.4.9 White Balance & Color

The white balance and color settings combines all settings which influence the color accuracy of your camera. Use it to check and tune the color calibration of the camera.



Auto	Toggle automatic mode for continuous operations of features.
Once	Start single adjustment.
	Select an area to control the auto white balance.
	Reset all white balance and color settings to default values.

Demosaicing

Select the current demosaicing method to convert the received image data from the camera sensor.

Sharpening & Noise Reduction

Here you have different options to influence the sharpness and the noise of the images.

NOTICE! Sharpening is only available if the demosaicing method is set to Baumer 5x5 and if the current pixel format is supported.

Mode: Select the sharpening mode which will be used by the image transformation.

Factor: Here you can adjust the level of sharpening.

Threshold: Here you can adjust the sensitivity threshold for sharpening.

Auto Color Matrix Switching

Activate or deactivate the Auto Color Matrix Switching.

Color Correction

NOTICE! Deactivate Auto Color Matrix Switching to make settings here.

Rotation: Set color rotation for merging with current color matrix.

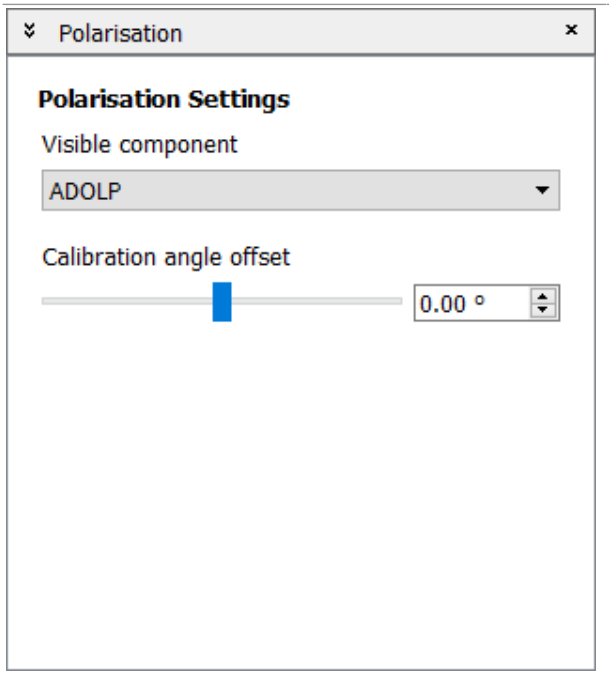
Saturation: Set color saturation rotation for merging with current color matrix.

Load Matrix…: Load color transformation file and gain values from the PC.

Save Matrix…: Save current color matrix and gain values to file on the PC.

7.4.10 Polarisation (Camera view only)

The Camera Explorer can be utilized to view the different formats like AOP and DOLP which are calculated from the image of polarized camera.



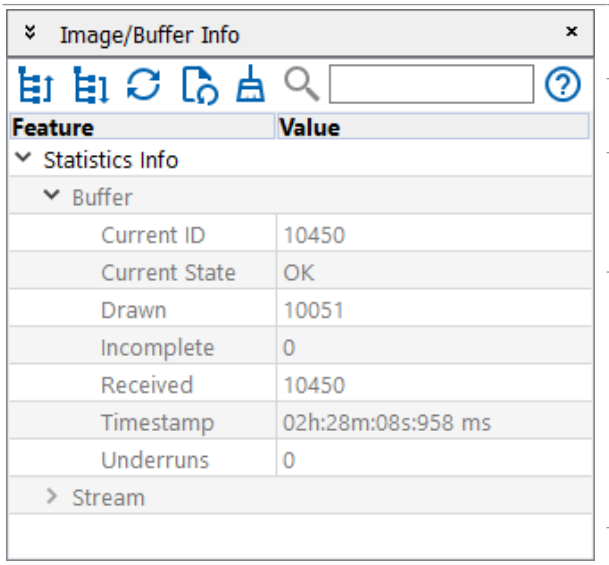
Polarisation Setting

Visible component :Select the polarization part of the image data for showing in image view.

Calibration angle offset: Select the offset of the calibration angle.

7.4.11 Image/Buffer info (Camera View only)

On the widget, you can access additional information about the image and data transfer.



	Collapse all
	Expand all
	Refresh all feature values. Toggle the feature names with pressed CTRL-Key.
	Reset the stream statistics of the current device and some buffer related counters. **NOTICE! Some counters can only be reseted by restarting the image acquisition.**
	Clear the Info view.
	Filtering features by name, value or category. Filtering is case sensitive. Several OR linked search strings can be entered separated by spaces. Searching is done in feature name or display names by default. A prefix can be used to search in feature values or in feature categories. Possible prefixes are: : - search in feature values (e.g. ":Off") # - search in feature category names (e.g. "#User")
	Show help for selected camera feature.

7.5 Shortcuts

Below you can see the shortcuts available in Camera Explorer. Use them to operate Camera Explorer more quickly.

Setting	Shortcut
Help	[F1]
Tip of the day	[Shift] + [F1]
Image view fit to window	[F2]
Toggle maximized mode	[F3]
Exit	[Alt] + [F4]
Search / Update camera devices	[F5]
Disable / enable the converting of the image data	[F6]
Start image recording	[F7]
Full screen	[F8]
Snapshot of current image	[F9]
Program Settings…	[F10]
Stop image acquisition	[F11]
Start image acquisition	[F12]
Remove selected image	[Del]
Select all images	[Ctrl] + [A]
Manual image enlargement	[Ctrl] + [mouse wheel]
Scroll in zoomed image	[Alt] + [mouse] / [Shift] + [mouse]
Open / Closes Left Widget Bar	[Ctrl] + [Shift] + [L]
Open / Closes Right Widget Bar	[Ctrl] + [Shift] + [R]
Open / Closes Message View	[Ctrl] + [Shift] + [M]
Arrange	[Ctrl] + [Shift] + [A]
Dock All Views	[Ctrl] + [Shift] + [D]

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