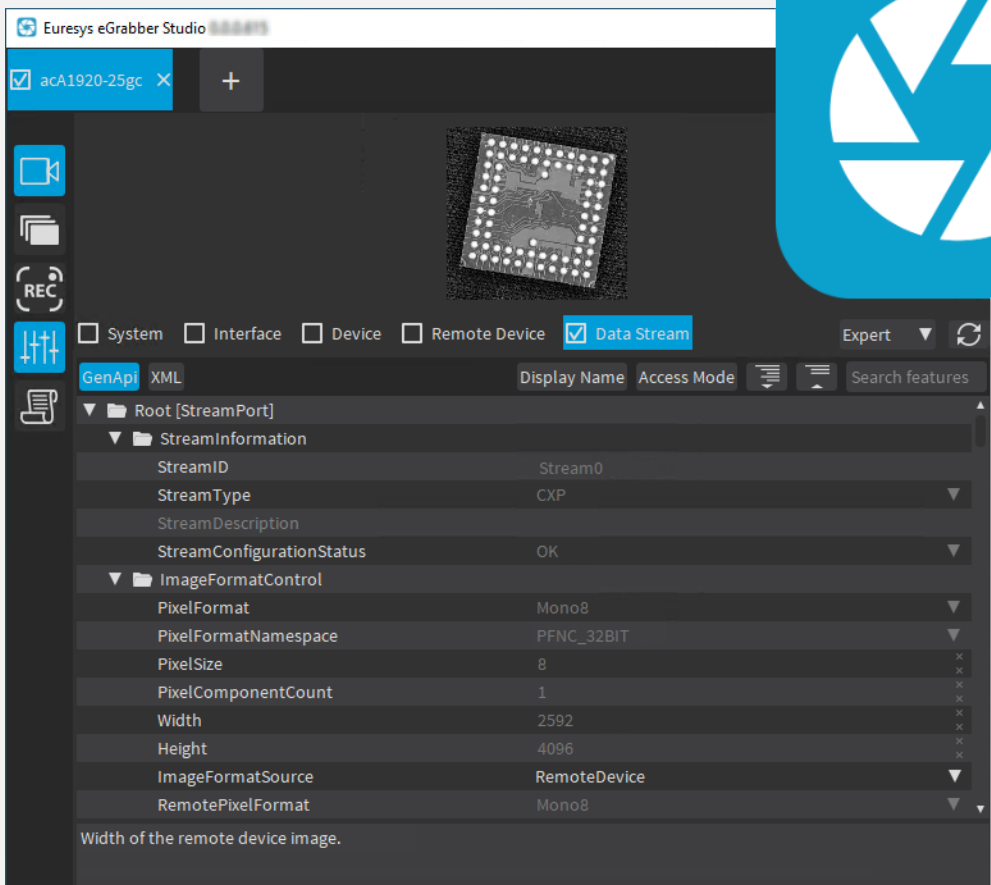


eGrabber

Using eGrabber Studio



This documentation is provided with **eGrabber 24.04.0** (doc build 2187).
www.euresys.com

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1. Starting with eGrabber Studio

1.1. About eGrabber Studio

Description

The **eGrabber Studio** application is the evaluation and demonstration application of the **eGrabber** library.

It is compatible with **Camera Link** cameras (with **Grablink Duo**), **CoaXPRESS** cameras (with the **Coaxlink series** cards) and **GigE Vision** cameras (with the optional **eGrabber Gigelink** library) .

It is available for **Windows** , **Linux** and **macOS** operating systems.

See also: "Supported Operating Systems" in the eGrabber Release Notes

Main Features

- Testing the image acquisition with **Coaxlink and Grablink Duo frame grabbers**.
- Configuring the **GenApi** features of your camera and frame grabber.
- Managing the embedded firmware of **Coaxlink and Grablink Duo frame grabbers**.
- Controlling your camera and the camera registers manually or using scripts.
- Saving the buffered images into files after acquisition.
- Saving images, while being acquired, to proprietary raw-format files (available with the optional **eGrabber Recorder** library). The images can later be exported to MKV files or a collection of TIFF images.

1.2. Open eGrabber Studio

eGrabber Studio is included in the **eGrabber** package and is consequently automatically installed with the frame grabber driver.

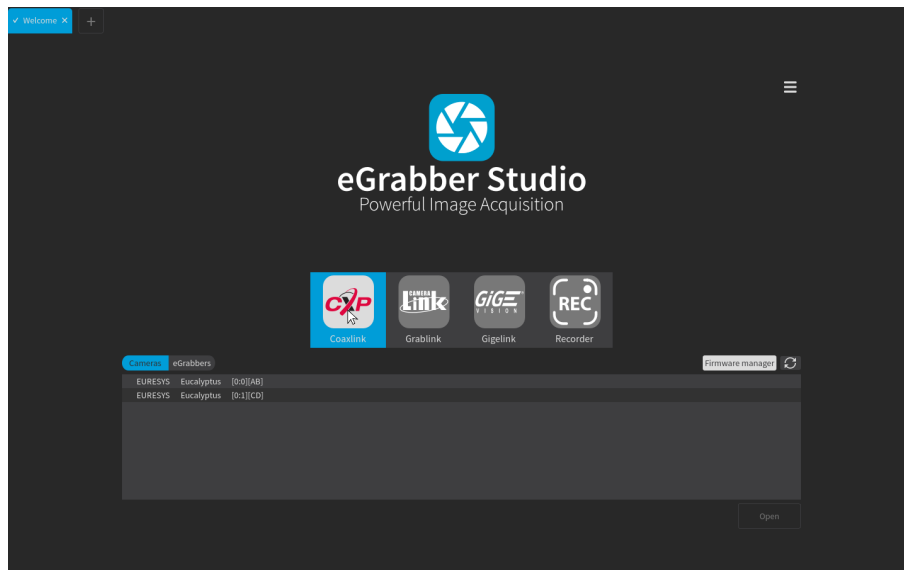
- On **Windows** operating systems, **eGrabber Studio** is installed by default in C:\Program Files\Euresys\eGrabber\studio and available via the Windows Start menu.
- On **Linux** operating systems, **eGrabber Studio** is installed by default in /opt/euresys/egrabber/studio
- On **macOS** operating systems, **eGrabber Studio** is installed by default in /usr/local/opt/euresys/egrabber/studio.

1.3. Welcome Screen

Introduction

When you have opened **eGrabber Studio**, you can connect to the source you want to work with from the [Welcome screen](#).

This section details the information available in the Welcome screen. See also "[Connect to a Source](#)" on page 11.



Sources area

The [Sources](#) area displays the icons of the sources you can connect to when the **eGrabber** package is installed:

- For [Coaxlink](#) sources, you need to set up the connection of the camera and the **Coaxlink** frame grabber, as well as install the desired firmware variant to interact with the connected camera. See [Coaxlink software setup](#).
- For [Gigalink](#) sources, you need to set up the connection with the camera, as well as install and activate the **Gigalink** license to interact with the connected camera.

Otherwise, the application displays the warning message "*No License*" at the bottom of the window. See [Gigalink Getting Started manual](#).

- For [Grablink](#) sources, you need to set up the connection of the camera and the **Grablink** frame grabber to interact with the connected camera.
- For [Recorder](#) containers, you need to install the **eGrabber Recorder** library and activate the **eGrabber Recorder** license.

Otherwise, the application displays the warning message *No license* at the bottom of the window, and opens a tooltip when you click the **Recorder** icon.

Cameras view vs. eGrabbers view

When you have selected a **Coaxlink** or **Gigalink** source, you can display the available sources in the **Cameras** view or in the **eGrabbers** view.

Differences between Cameras view and eGrabbers view

These views allow you to open the same eGrabbers, but present them from a different perspective. This makes a slight difference when using a multi-bank camera, as shown in the table below:

	Cameras view	eGrabbers view
One-bank camera	<ul style="list-style-type: none"> • Selecting a stream opens the stream of the single eGrabber (1 bank = 1 eGrabber). • The open eGrabber contains the full image. 	
Multi-bank camera	<ul style="list-style-type: none"> • Selecting a camera opens <i>all streams of the eGrabbers in multi-bank mode</i> (several eGrabbers). See "Using Multi-Bank Cameras" on page 56 • The open eGrabber contains <i>the full image</i>. 	<ul style="list-style-type: none"> • Selecting a stream opens <i>the stream of one of the eGrabbers</i> (1 bank = 1 eGrabber). • The open eGrabber contains <i>one part of the image</i>.

Cameras view

The **Cameras** view lists the discovered cameras of the selected source. For each camera, the underlying GenTL components are specified.

This view gathers all interfaces and devices: it lets you easily connect to a multi-bank camera and get directly a full image in the **Output** pane.

With a **Coaxlink** source, the following information is displayed (from left to right) :

- Manufacturer of the CoaXPress camera
- Model of the camera
- Interface index + device index (first box brackets)
- Host connectors connected to the camera (second box brackets)

When a camera is made up of several interfaces and/or devices, each set of interface, device and connectors is separated by a comma.



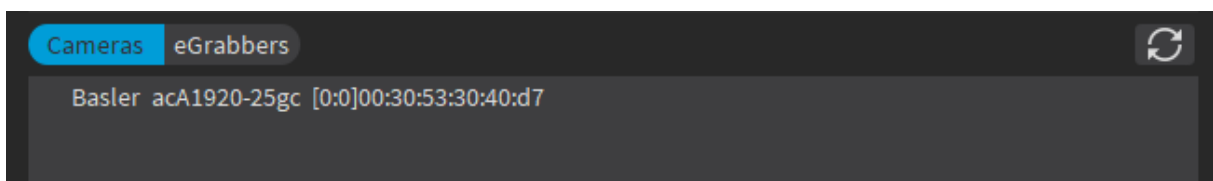
Welcome screen - Cameras view with CoaXPress camera

**NOTE**

- If the firmware on the frame grabber is too old, an error message appears in the **eGrabbers** view to let you update it.
- If a fan error is detected, a warning message appears in the **Cameras** and **eGrabbers** views.

With a **Gigelink** source, the following information is displayed (from left to right):

- Manufacturer of the GigE Vision camera
- Model of the camera
- Interface index + device index (box brackets)
- MAC address of the camera



Welcome screen - Cameras view with GigE Vision camera

**NOTE**

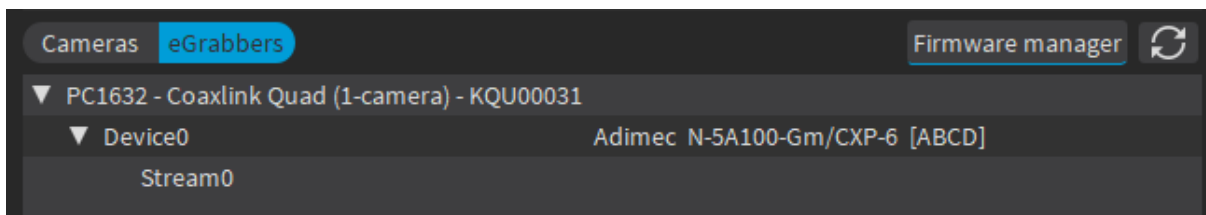
If the **Gigelink** license is not valid, the license status is displayed in the **eGrabbers** view.

eGrabbers view

The **eGrabbers** view lists the discovered eGrabbers of the selected source. The GenTL components of each discovered eGrabber are presented in a tree view: interface (frame grabber), device (camera) and stream.

The following table describes the information displayed for a **Coaxlink** source:

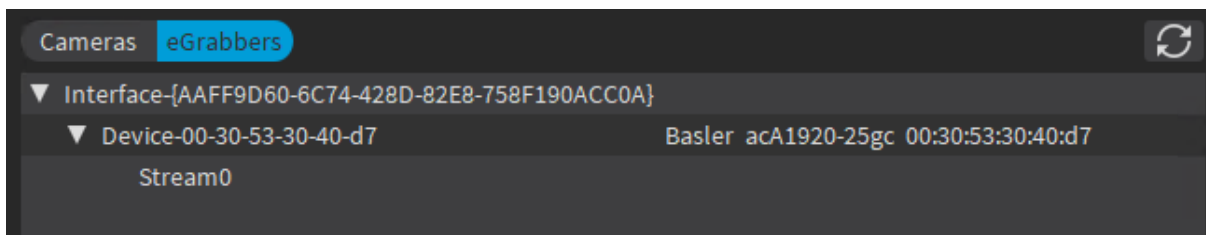
Levels	Displayed information (from left to right)
1 - Interface	<ul style="list-style-type: none"> • Product reference and model name of the connected Coaxlink board • Serial number of the board used
2 - Device	<ul style="list-style-type: none"> • Name of the device • Manufacturer of the remote device • Model of the remote device • Host connectors connected to the remote device
3 - Stream	<ul style="list-style-type: none"> • Name of the stream



Welcome screen - eGrabbers view with Coaxlink frame grabber

The following table describes the information displayed for a **Gigelink** source:

Levels	Displayed information (from left to right)
1 - Interface	<ul style="list-style-type: none"> Name of the Gigelink interface (based on the UID of the network interface connected to the Gigelink device)
2 - Device	<ul style="list-style-type: none"> Name of the device Manufacturer of the remote device Model of the remote device MAC address of the remote device
3 - Stream	<ul style="list-style-type: none"> Name of the stream



Welcome screen - eGrabbers view with Gigelink library

Recent area

When you have selected a recorder container in the **Sources** area, the **Recent** area shows the discovered recorder containers with the information detailed below.

Recent	Size (MiB)	Record count
C:/Users/labo/Desktop/Recorder2	3979	161
C:/James/RecorderContainer	3579	905

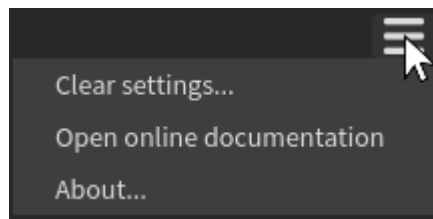
Welcome screen - Recent area

With a recorder container, the following information is displayed (from left to right):

- Path to the container
- Container size in MiB
- Count of recorded frames

Menu button

The Menu button, in the top-right hand corner, includes the following menu items:



Menu option	Description
Clear Settings	<ul style="list-style-type: none">• When you work in eGrabber Studio, all your actions are automatically saved as user settings for the next sessions (selected source type, source name, user level, default file names, selected options in Buffer and Recorder panes, etc.).• To reset all settings to the default values, click Clear settings and confirm the setting reinitialization in the dialog box.
Open online documentation	Open the latest public edition of the eGrabber Studio online documentation.
About	Provides more information about the eGrabber Studio version and the Qt and third-party licenses.

Possible error messages

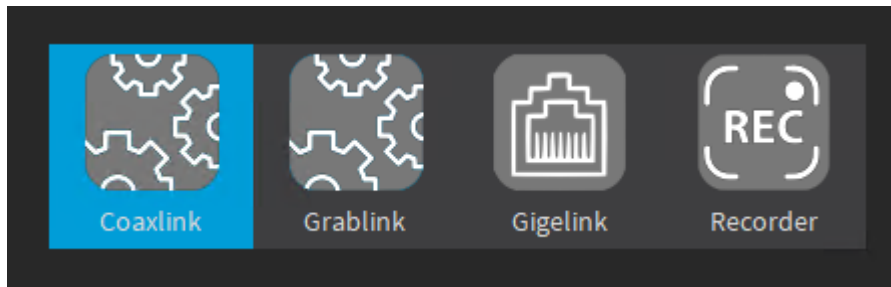
The following error messages appear on the [Welcome screen](#) when an issue prevents you from opening the selected source:

Error message	What to do?
<ul style="list-style-type: none"> No available source 	<p>Make sure that you have properly set up your device before using eGrabber Studio.</p> <p>For Coaxlink sources, refer to the <i>Getting Started</i> section in the <i>Coaxlink series mini-site</i> of the eGrabber online documentation.</p> <p>For Gigelink sources, refer to the <i>Getting Started</i> section in the <i>eGrabber Gigelink mini-site</i> of the eGrabber online documentation.</p>
<ul style="list-style-type: none"> Firmware too old 	Click Firmware Manager to start the Firmware Manager tool and upgrade your firmware.
<ul style="list-style-type: none"> Firmware too recent 	Click Firmware Manager to start the Firmware Manager tool and downgrade your firmware.
<ul style="list-style-type: none"> Firmware in recovery mode 	The firmware recovery switch is in recovery position. Refer to the <i>Hardware Manual</i> section in the <i>Coaxlink series mini-site</i> of the eGrabber online documentation.
<ul style="list-style-type: none"> PCIe gen 1 not supported 	Connect the frame grabber to a PCIe slot of a more recent generation on the motherboard.
<ul style="list-style-type: none"> Fan speed not OK 	Check if the fan is blocked or is not working properly. In the latter case, contact the Support team.
<ul style="list-style-type: none"> eGrabber Gigelink library license not found 	Contact our Sales department to purchase a license for the eGrabber Gigelink library.
<ul style="list-style-type: none"> eGrabber Recorder library license not found 	Contact our Sales department to purchase a license for the eGrabber Recorder library.

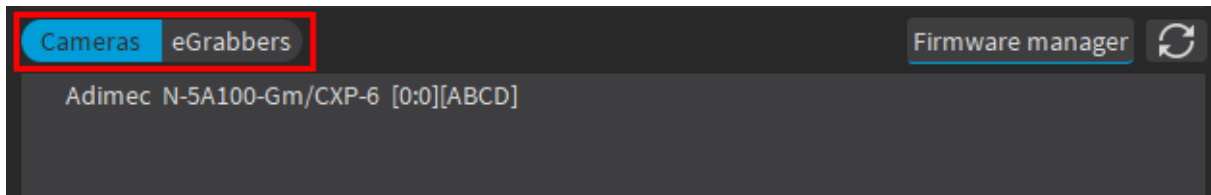
1.4. Connect to a Source

Open an eGrabber source

1. In the Welcome screen, in the **Sources** area, select an **eGrabber source**¹ that you want to connect to:




2. In the bottom area, select the eGrabbers view or Cameras view.



3. When working with **Coaxlink series** frame grabbers, click **Firmware manager** to check if a firmware is available and install it (recommended).

When the current firmware for the **Coaxlink series** frame grabber is too old, a warning is displayed: install the latest firmware update to be able to connect to the **Coaxlink series** source.

4. In the selected view, identify the requested eGrabber or camera.

If your camera or eGrabber has recently been connected and is not visible yet, try refreshing the list by clicking .

For a detailed description of the displayed information, see "[Welcome Screen](#)" on page 5.

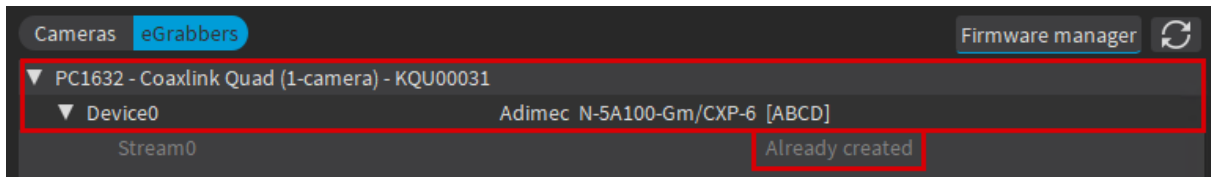
5. Select the desired item and click **Open**, or double-click the item, to open it.

The selected item opens in the **eGrabber Studio** main window. See also "[Overview of the Main Window](#)" on page 13.

¹Corresponds to the GenTL producer in GenICam (for example coaxlink.cti)

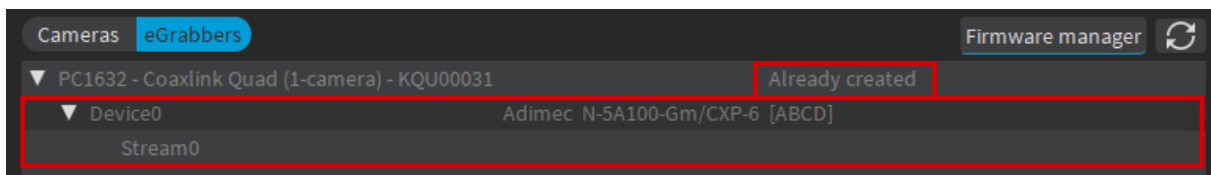
Concurrent accesses

If a stream or a device is already open in a tab, you can open its parent elements in another tab. Other tabs are dynamically refreshed.



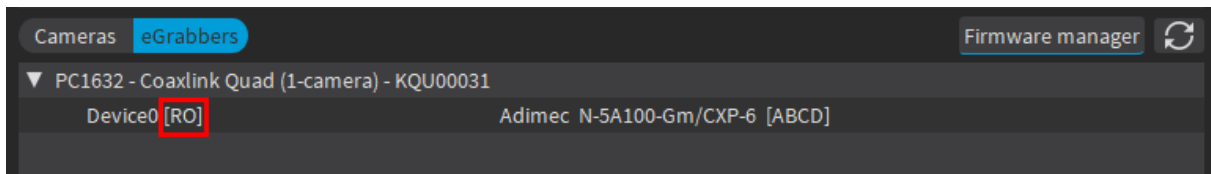
Welcome screen - Stream already created

If an interface or device is already open in a tab, you are not able to open its child elements in another tab.



Welcome screen - Interface already created

If an interface, device or stream is already open in another application, it is displayed and accessible in read-only mode (RO) in **eGrabber Studio**.



Welcome screen - Device accessible in read-only mode

Open a recorder container

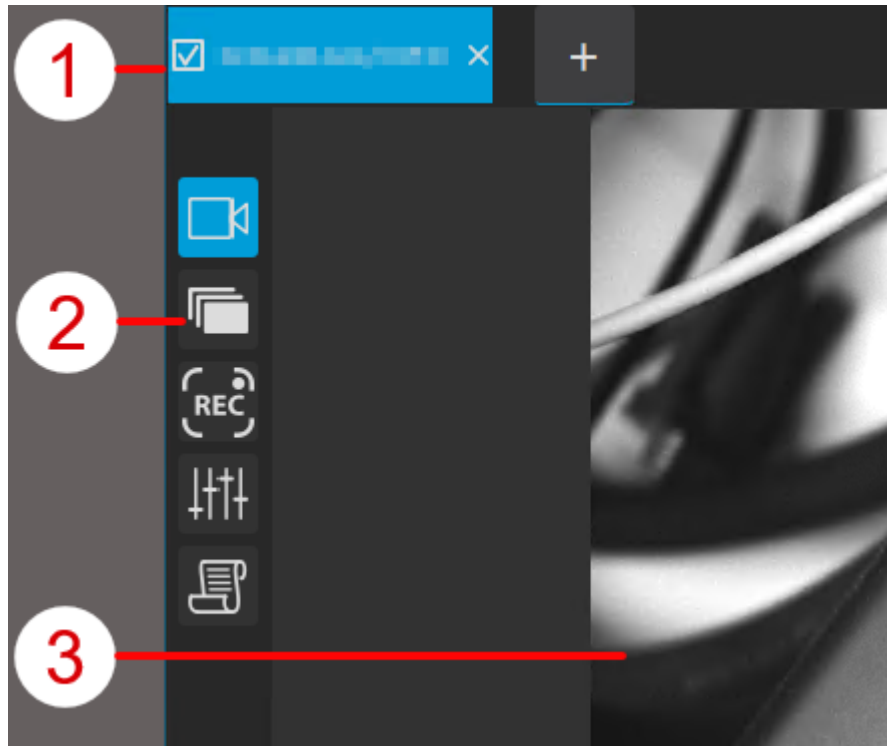
1. In the **Sources** pane, click the **Recorder** icon.
The most recent recorder containers are displayed in bottom area.
2. To open the recording, do one of the following actions:
 - If the recording is displayed in the list, select it and click **Open** (or double-click the recording).
 - If the recording is less recent and not displayed in the list, click **Browse** and select the folder with the desired container.

A new tab for the selected recording opens in the **eGrabber Studio** main window.

See also "[Overview of the Recorder Container Window](#)" on page 53.

1.5. Overview of the Main Window

When you display a source on the **eGrabber Studio** main window (called *main window* in this user manual), this window is made up of the following areas.




1. The **Tab bar** displays the open sources as tabs.
2. From the **Toolbar**, you can display/hide a dedicated pane on the main window.
3. From the **Output pane**, you can view the images being acquired, an image stored in a buffer or saved in a recorder container.

Tab bar (1)



The **Tab bar** displays the open sources as tabs.

- To open a new source, click  in the **Tab bar** and select the requested source.
- To display a single source on the main window, click the tab name.
- To display several sources on the main window, select the check boxes corresponding to the tabs you want to display.

The selected tabs are highlighted in blue.

When sources from several tabs are displayed, each source is displayed in a sub-window.



TIP





When several sources are displayed on the main window and you move the mouse cursor over a sub-window or tab, the corresponding tab and sub-window are surrounded by a light-grey border to help you visualize which tab corresponds to which sub-window.


Toolbar (2)

From the **Toolbar**, you can display/hide a dedicated pane on the main window.

You cannot open more than two panes at a time: the **Output** pane and a second pane at the bottom.

The available controls are listed below:

Control	Command / Pane
	Output pane See " Overview of the Output Pane " on page 24.
	Buffer pane Buffers allow you to store images in the allocated memory on the hard disk. In this pane, you can perform the following actions: <ul style="list-style-type: none"> • "Modify the Buffer Configuration" on page 16 • "View images" on page 22 • "Save Buffered Images to Files" on page 22
	Recorder pane In this pane, you can record images to a container as they are being acquired. See " Record Images on the Fly " on page 48.
	Features pane In this pane, you can configure the GenApi features of a device and execute commands on the connected device.

Control	Command / Pane
	See "Edit GenApi Features" on page 35.
	Scripts pane In this pane, you can save and execute scripts to configure your device. See "Overview of the Scripts Pane" on page 42.

**NOTE**

When a recorder container is open, only the **Output** pane and **Buffer** pane are available.

Output pane (3)

The **Output** pane is the only pane displayed by default when you open a source.

In this pane, you can view the images being acquired, an image stored in a buffer or saved in a recorder container. See "Acquire and Browse through Images" on page 21.

When you hover over an image in the **Output** pane, the **visualization tools** display and you can:

- view information related to the image (e.g.: transfer speed, pixel components)
- analyze the image (e.g.: **zoom**, **histogram**, **line profile**)
- perform various actions (e.g.: share image with Open eVision studio 1.0)

2. Acquiring images

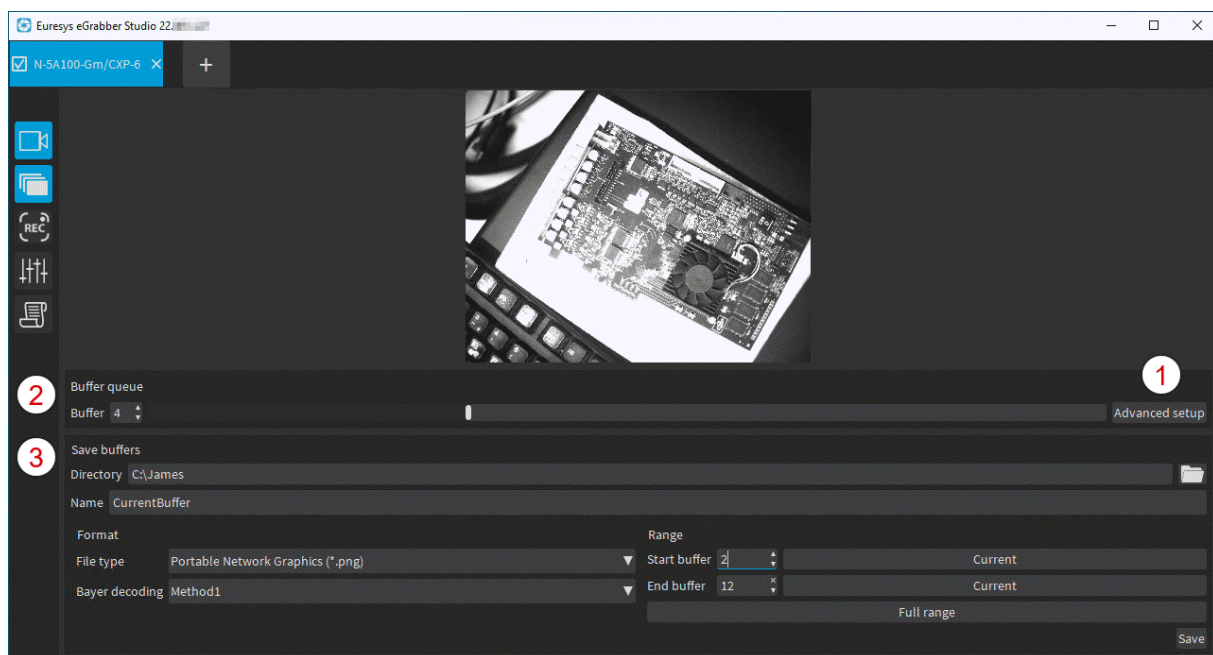
2.1. Overview of the Buffer Pane

You can open the **Buffer** pane by clicking the **Buffer** icon  in the toolbar.

In this pane, you can perform the following actions:

1. (Optional) **Modify the buffer configuration** using the **Advanced setup** button in the **Buffer queue** area.
2. **Browse through the buffered images** in the **Buffer queue** area.
3. **Save the buffered images to files** in the **Save buffer** area.

On the screenshot below, the numbers correspond to the above-mentioned actions:



2.2. Modify the Buffer Configuration

Using the advanced buffer setup in the **Buffer** pane, you can modify the default or current configuration of buffers to be created and allocated during the image acquisition.

Concepts of "replay buffers" and "additional buffers"

The total number of buffers created and allocated in the memory space is divided into "replay buffers" and "additional buffers".

- The **Replay buffers** are retained with their current content in the replay queue.
This makes it possible to replay the last buffers when the acquisition is stopped.
- The **Additional buffers** remain empty and available to receive new content.
This avoids running out of buffers during the acquisition. It is recommended to configure at least 3 additional buffers.

Refer to "[Buffer allocation process](#)" on page 20 to learn more on how buffers are managed during the acquisition process.



NOTE

You should dimension the number of additional buffers according to your system as a whole (camera speed, image sizes, PC performance, etc.).

Modify the buffer configuration




TIP

Starting from **eGrabber24.04**, the buffer queue allocation is no longer automatically performed when opening a grabber. This allows to change the configuration before starting the acquisition.

By default, 13 buffers are allocated in memory, of which 10 replay buffers and 3 additional buffers.

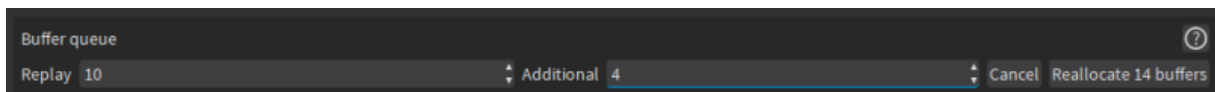
You can change the default or current configuration of buffers as follows:




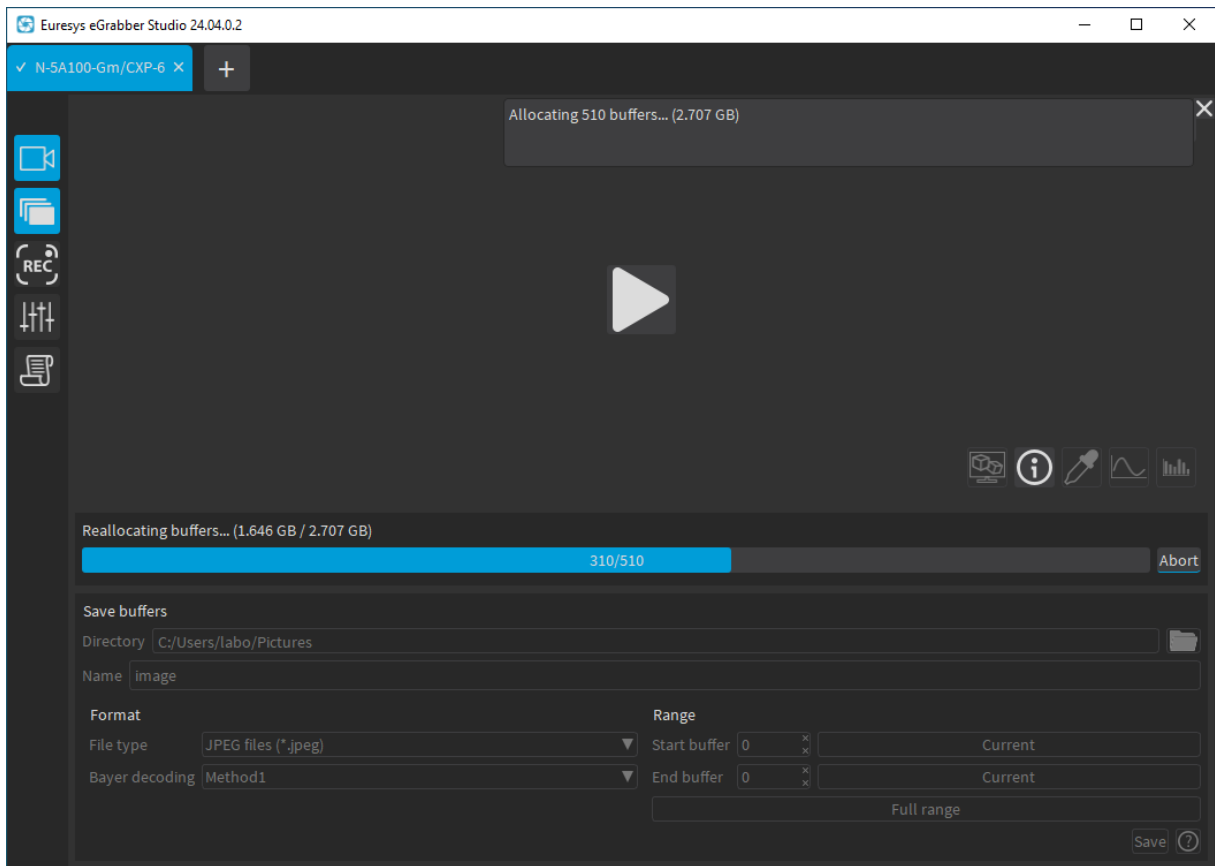
1. Click  to open the Buffer pane
2. In the **Buffer queue** area, click the **Advanced setup** button.



The **Buffer queue** area changes to the following display:



3. In the **Replay** and **Additional** fields, adapt the requested number of buffers.
Click  to get a detailed explanation of your configuration.
4. Click the button **Reallocate <xx> buffers** to validate the changes and come back to the default area display.



Allocating buffers



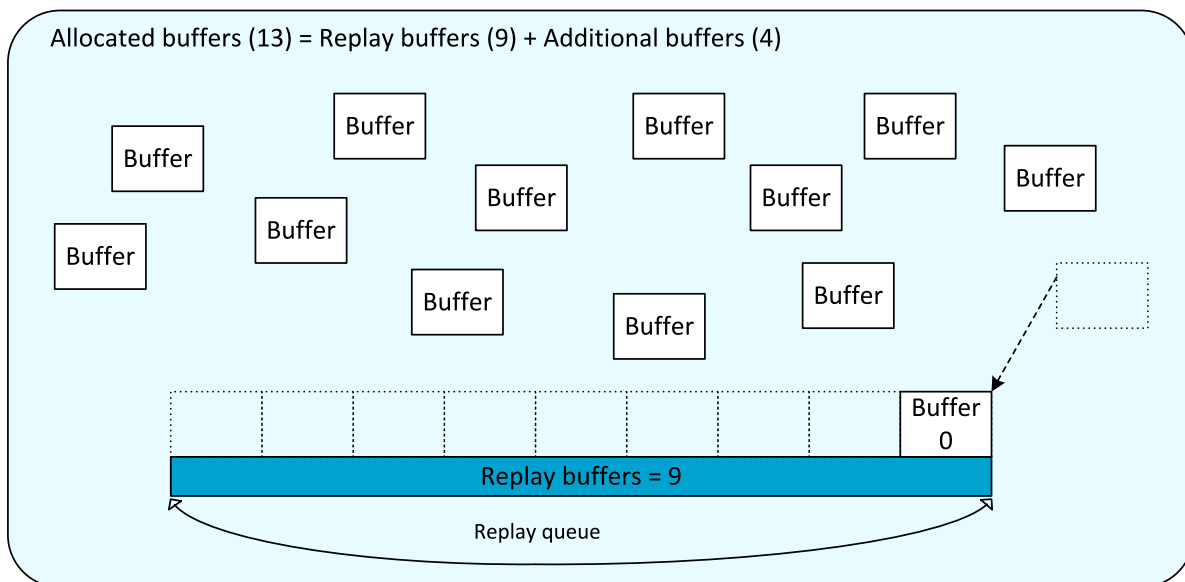
TIP

The reallocation can be aborted at any time by clicking on the **Abort** button..

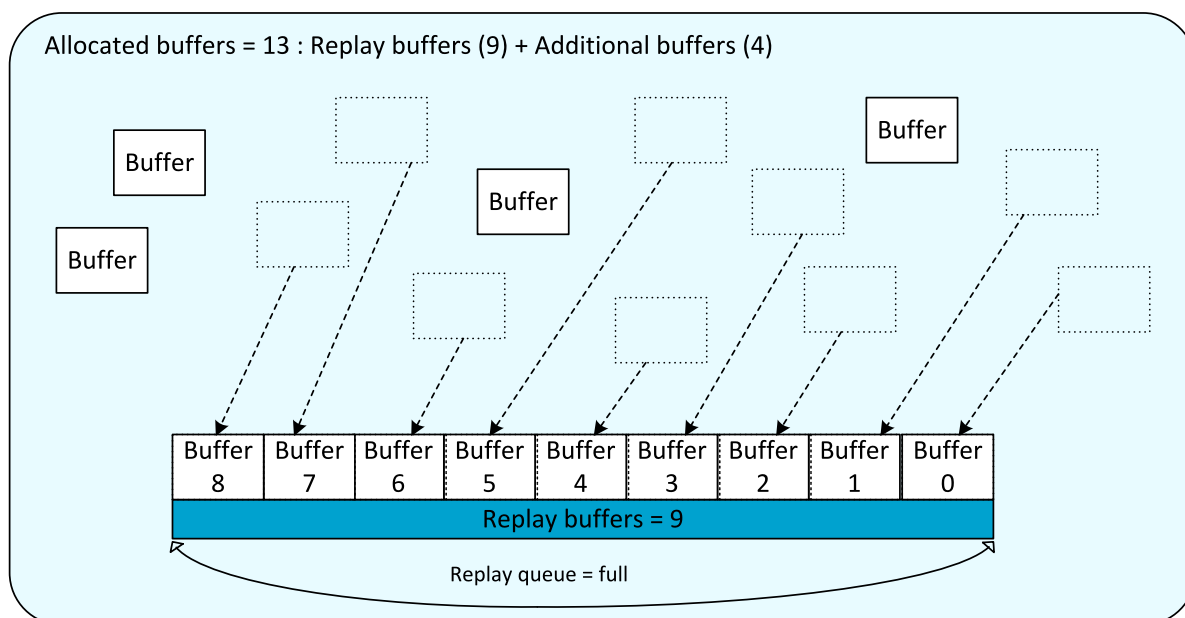
Buffer allocation process

The buffer allocation works as follows during the acquisition:

1. When an image is acquired, it is stored in an empty buffer that is then placed in the replay queue:

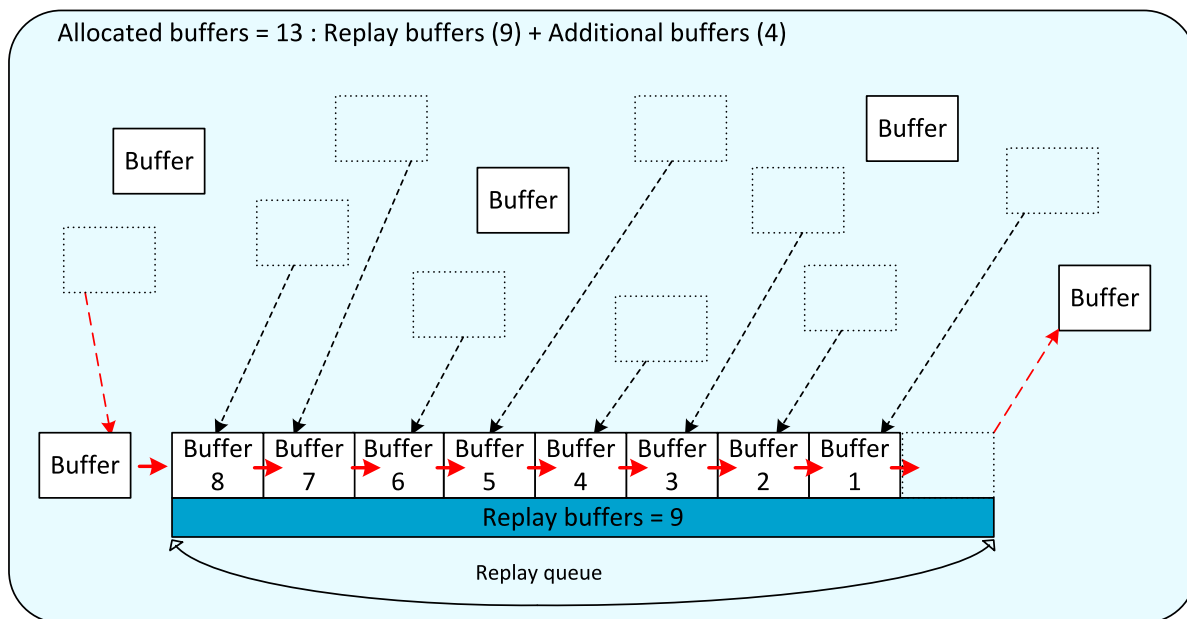


2. The buffers are progressively placed in the replay queue as they are filled with new images that come in:



3. When the replay queue is full and a new image comes in:
 - a. This new image is stored in an empty buffer out of the replay queue
 - b. The oldest buffer in the replay queue is returned to the empty buffers
 - c. The buffer with the new image shifts to the replay queue

This ensures that the number of empty buffers (= additional buffers) and the number of buffers in the replay queue (= replay buffers) remain unchanged.



2.3. Acquire and Browse through Images

Acquire images

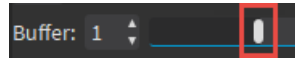
When you have configured the buffers, start the image acquisition as follows:

- To start a single grabber, click  on its **Output** pane. The play button toggles to .
- To stop a single grabber, click  on its **Output** pane.
- To start all open grabbers, click  on the top right corner of the main window.
- To stop all open grabbers, click  on the top right corner of the main window.

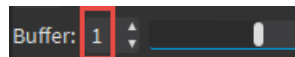
View images

When the image acquisition is stopped, you can view the images stored in the buffers in the **Buffer** pane. The following browsing actions are possible:

- Moving rapidly through the buffers with the slider:



- Loading a desired buffer by typing the buffer index in the **Buffer** field:



- Browsing the buffers one by one by clicking the **Up Arrow** or **Down Arrow** next to the **Buffer** field:



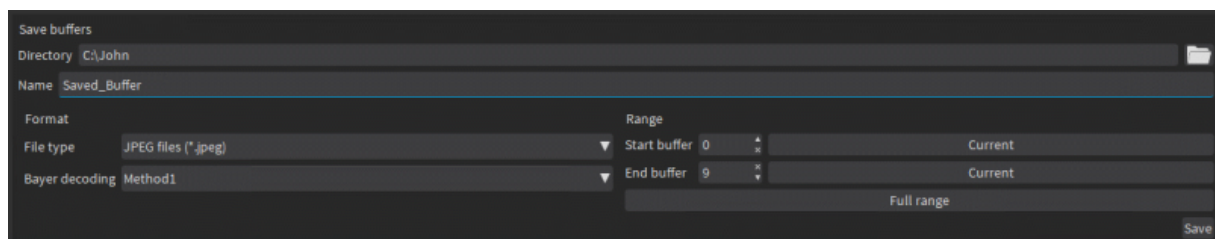
A cross replaces the **Down Arrow** or **Up Arrow** when you have reached respectively the oldest or latest buffer.

Alternately, you can select the **Buffer** field and use the **Up Arrow** and **Down Arrow** on your keyboard.

2.4. Save Buffered Images to Files

When you have stopped the image acquisition, you can save the images stored in one buffer or a range of buffers to files from the **Buffer** pane. You can do this in the **Save buffers** area displayed below.

Each image is saved in a separate file. The file name contains an incremented number corresponding to the buffer number.




The following table provides useful information on some fields:

Field	Description
Directory	<ul style="list-style-type: none">• If you do not specify any directory, the files are stored in the standard user directory for pictures.• If you specify a directory and use it for a save process, it will be stored in the user settings for the future.• If you specify a directory that does not exist, it is created when you save the images.
Name	<p>If you have already specified the file extension in the Name field, the corresponding file format is automatically detected and selected in the Format area below.</p> <p>The file extension in the Name field and the value selected in the Format area are then synchronized.</p>
Bayer decoding	<p>For Bayer images, select the Bayer decoding method to be applied when you save the buffers to files.</p>

3. Analyzing Images

3.1. Overview of the Output Pane

Access and Purpose

Clicking on the **Output** icon  in the toolbar shows the **Output** pane. This pane is however open by default when you create an eGrabber.

In this pane, you can perform the following actions:

- View the images being acquired or an image stored in a buffer or saved in a recorder container. See "[Acquire and Browse through Images](#)" on page 21.
- Use the visualization tools that help you configure your system.



NOTE

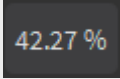






The controls to access the visualization tools become visible when hovering over the image in the **Output** pane.





Output pane - controls

Visualization tools







Top-right buttons

Control	Name	Click this button to ...
	Zoom factor	Indicates the current zoom factor
	Zoom in	Zoom in manually in an image. Alternatively, press CTRL while rotating the mouse wheel away from you.
	Zoom out	Zoom out manually in an image. Alternatively, press CTRL while rotating the mouse wheel toward you.
	Zoom 100%	Reset zoom to 100%
	Fit to view	Enable the fit-to-view zoom. The fit-to-view zoom is disabled when you zoom in or out manually.
	Fullscreen	Display the image in full screen.
	Undock	Undock the output pane

Bottom-left buttons

Control	Name	Click this button to ...
	Play vs. Stop	Start vs. stop the image acquisition. The Play / Stop button is a toggle control that corresponds to the action you can perform.
	Record off vs. Record on	Record vs. stop recording acquired images in the recorder container. The Record off / Record on button is a toggle control that corresponds to the current recording status.

Bottom-right buttons

Control	Name	Click this button to ...
	Bayer decoding method	<p>Select the requested decoding method for Bayer images:</p> <ul style="list-style-type: none"> • method 1: linear interpolation on a 3x3 kernel (legacy method) • method 2: median-based interpolation on a 3x3 kernel (advanced method) • method 3: gradient-based interpolation on a 5x5 kernel • method 5: average-based interpolation on a 2x2 kernel <p>The button is only displayed when Bayer images are stored in the buffers.</p>
	Share with Open eVision Studio	<p>Save the current image to make it available in Open eVision Studio. See "Share an image with Open eVision Studio 1.0" on page 29.</p>
	Source information	<p>Enable/Disable the display of source information in the upper left corner of the Output pane. See "Display of source information" on page 27.</p>
	Pixel components	<p>Enable/Disable the display of pixel components when hovering over the image with the mouse. See "Display of pixel components" on page 28.</p>
	Line profile	<p>Display a line profile on the top of the displayed image, and the corresponding line profile plot at the bottom of the Output pane. See "More About the Line Profile" on page 31.</p>
	Histogram	<p>Display the image histogram at the bottom of the Output pane. See "More About the Image Histogram" on page 29.</p>

Display of source information

eGrabber source

The following information on images being acquired or being stored to the recorder container is displayed:

- image size (width/height)
- pixel format
- frame rate (frames/sec)
- line rate (lines/sec)
- data rate (Megabytes/sec)
- delivered buffers
- diagnostic counters for Coaxlink sources:
 - rejected scans: number of scans completely missed (line-scan camera)
 - rejected frames: number of frames completely missed (area-scan camera)
- diagnostic counters for Gigelink sources:
 - lost frames: number of frames completely missed
 - lost packets: number of GigE Vision stream packets missed
- buffer metadata (only when [Buffer metadata insertion is enabled](#))

Width	1280	Width	1280
Height	1024	Height	1024
Pixel format	Mono8	Pixel format	Mono8
Frames/s	36.0211	Frames/s	36.3963
Lines/s	36885.6	Lines/s	37269.8
Megabytes/s	47.8038	Megabytes/s	47.7054
Delivered buffers	533	Delivered buffers	130
Rejected frames	0	Rejected frames	0
BufferMetadataContent0	GPC1Value: 0x00000457		
BufferMetadataContent1	GPC2LatchedValue: 0x000008ae		
BufferMetadataContent2	LineStatusAllHi: 0x00001e61		
BufferMetadataContent3	LineStatusAll: 0x000022b8		



Source information with Buffer metadata Without Buffer metadata

Recorder container opened for playback

The following information related to the records stored in the container is displayed:

- timestamp
- pixel format
- image size (width/height)

Display of pixel components

When you click  to enable the pixel component display, the mouse cursor turns into .

As you hover over the image, a small table displays the components of hovered-over pixel, as shown on the screenshots below:

- **X/Y**: horizontal/vertical position of the pixel on the image
- **L**: luminance decimal value
- **RGB**: red/green/blue decimal values
- **Offset**: pixel position in bytes in the pixel definition table
- **Bytes**: luminance or RGB expressed in hexadecimal values
- **Line metadata** (only when [Line metadata insertion is enabled](#))

■ (625, 392): L(170)	
Offset	Bytes
0007c2f1	aa
Line metadata	Value
GPC1Value	0x00000188
GPC2LatchedValue	0x000007d0
LineStyleAllHi	0x000fffff
LineStyleAll	0x000fffff

+ (148, 372): L(75)	
Offset	Bytes
00074494	4b

Without Line metadata

Pixel components with Line metadata

With Bayer pixel formats, the offset and bytes values are displayed in two lines as the red, green and blue data are spread in two pixel lines.


■ (1277, 516): RGB(0, 0, 180)	
Offset	Bytes
000a18fd	00 00
000a1dfd	b4 00

Pixel components with BayerGR8 pixel format


NEW When the Pixel Components overlay tool of the Output Pane is enabled, a rectangle identifying the current pixel is now displayed when the zoom level is high enough

Share an image with Open eVision Studio 1.0

You can share an image with **Open eVision Studio 1.0** installed on the same computer as **eGrabber Studio**.

- When you click  in the **Output** pane when an image is displayed, the image is saved to a dedicated folder.

In **Open eVision Studio**, you can load the shared image in one of the following ways:

- Select **Image > Open from eGrabber Studio** from the menu bar.
- Click the **eGrabber** icon  in the toolbar.
- Right-click in an open image and select **Load from eGrabber Studio**.

3.2. More About the Image Histogram

Overview

The histogram feature, available by clicking  in the **Output** pane, is a graph that shows the number of pixels in an image at each different intensity value found in that image.

For a grayscale image, the graph displays the intensity values showing the distribution of pixels amongst the grayscale values from left to right, from the darkest to the lightest tones.

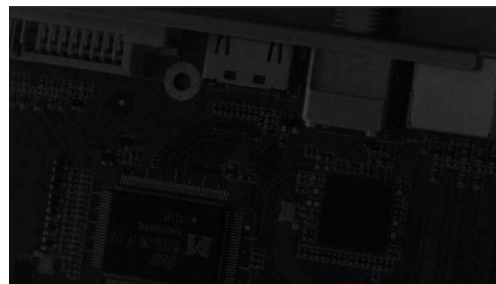
For a color image, individual graphs of red, green and blue are superimposed on the same histogram, with intensity values also displayed from left to right, from the darkest to the lightest tones.



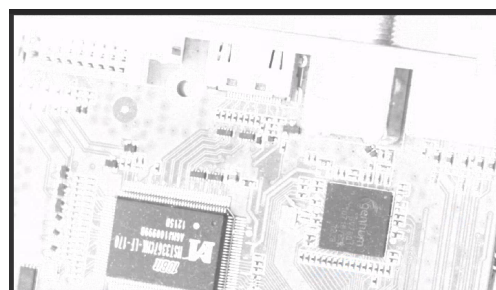
Histogram of a color image

Examples

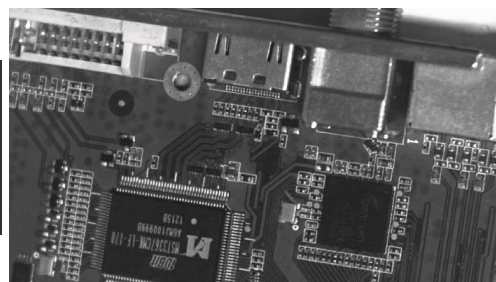
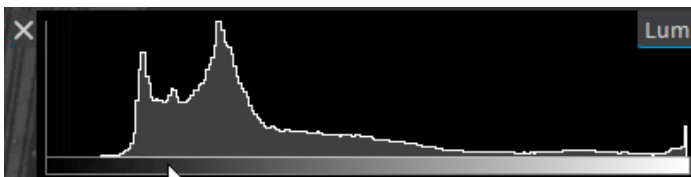
The histogram below shows that the intensity values are concentrated towards the left: The image contains too many dark pixels:



The histogram below shows that the intensity values are concentrated towards the right: The image contains too many light pixels:



The histogram below shows that the intensity values cover a broad and more central range of intensity values: The image shows a better brightness balance, although it still contains more dark pixels:



Possible actions

In order to ...	Proceed as follows:
View each pixel channel in a color image	Click one or more times on RGB .
Enlarge or reduce the Histogram pane	Click the arrow on the right of the Histogram pane.
Close the Histogram pane	Click the cross on the left of the Histogram pane.



NOTE

If an image format is not supported, the histogram is displayed as RGB values.

3.3. More About the Line Profile

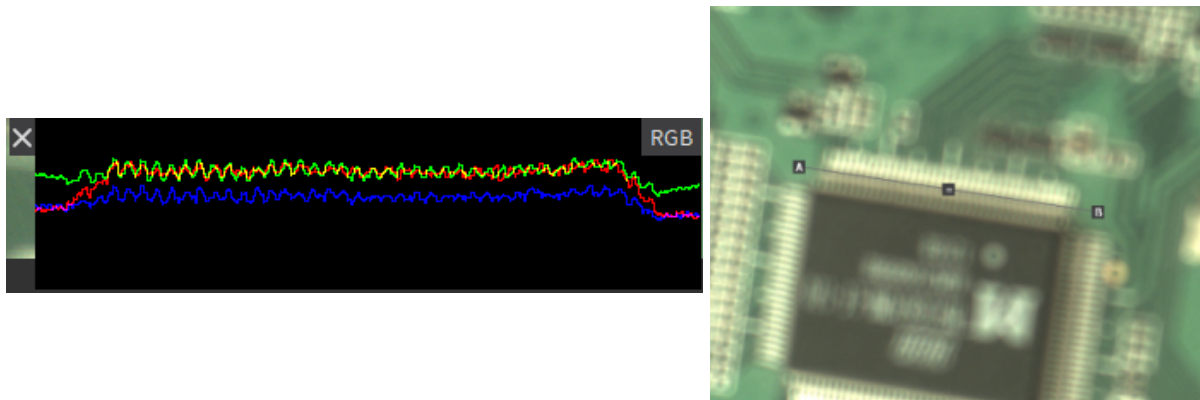
Overview

The line profile feature, available by clicking  in the **Output** pane, draws a line on the top of the displayed image, and shows the corresponding line profile plot at the bottom of the pane.

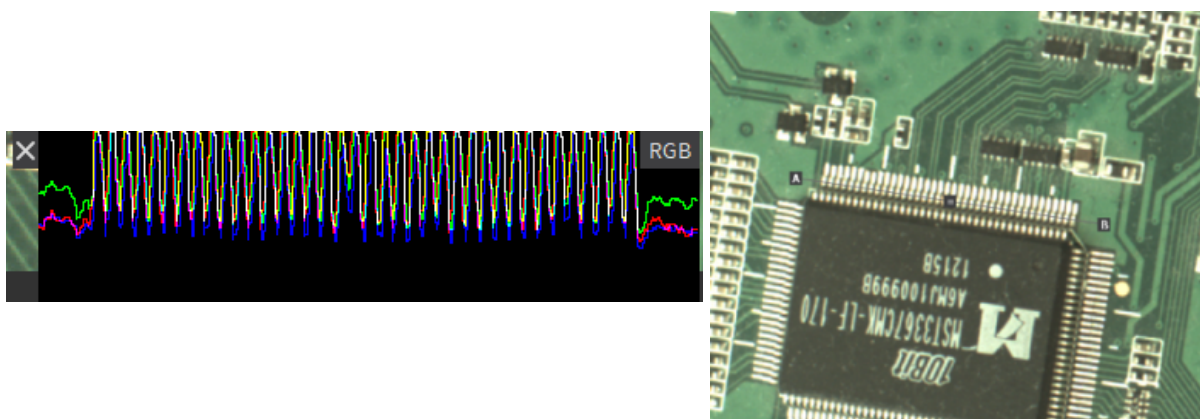
The line profile plot shows the light intensity values (monochrome image) or color intensity values (color image) on the various points along the line segment (line profile) drawn on the image.

Examples

When the image is not sharp enough, the line profile plot shows a rather flat profile.



When the image is sharp, the line profile plot shows a uneven or jagged profile.




Possible actions

In order to ...	Proceed as follows:
Move or resize the line profile	<ul style="list-style-type: none">• To move the line profile, click the central handle and drag the line profile to the desired position on the image.• To resize and modify the line profile, click and move one of the outer handles (A & B) to the desired position on the image.
View line profile of each color component	In the line profile plot, click one or more times RGB in the upper right corner.
Close the line profile	In the line profile plot, click the cross on the left of the Line Profile pane.

4. Configuring GenApi Features

4.1. Overview of the Features Pane

Access and purpose

Click the **Features** button  in the toolbar to open the **Features** pane.

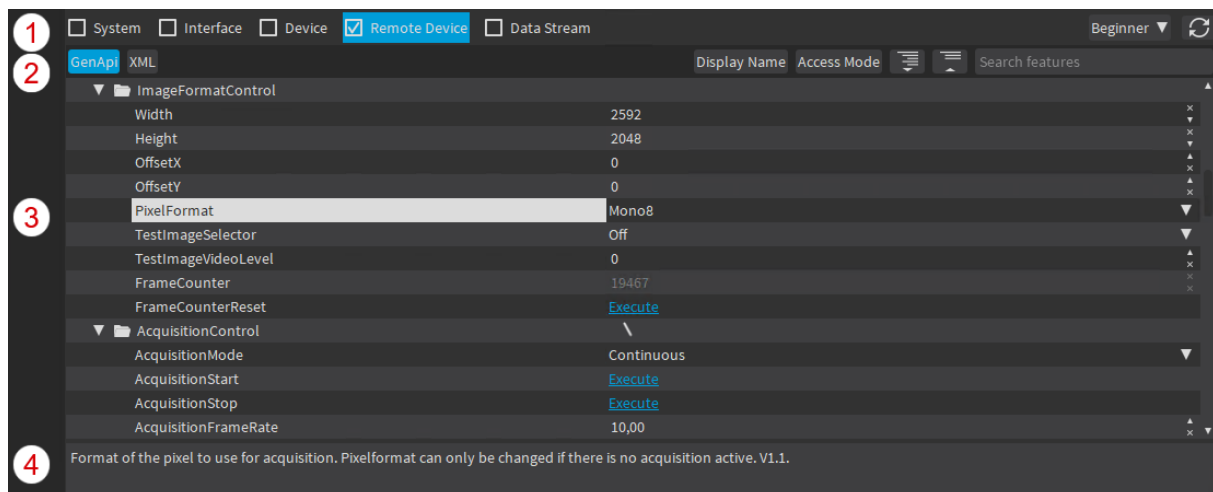
On this pane, you can perform the following actions:

- View, sort and filter the [GenApi](#)¹ features of the [GenTL](#)² modules related to the eGrabber you are connected to.
- Perform a manual configuration of your eGrabber.

See also: "Edit GenApi Features" on page 35 for detailed information on sorting, filtering and editing features in the **Features** pane.

Displayed items

In the **Features** pane, the features are organized in different tabs named according to the five GenTL modules.



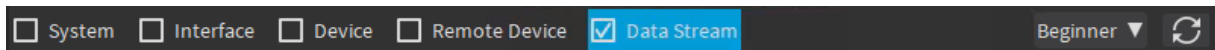
¹GenICam standard that deals with camera and frame grabber configuration

²GenICam standard that deals with data transport. TL stands for Transport Layer.

The items displayed on this pane are briefly presented from top to bottom, and from left to right.

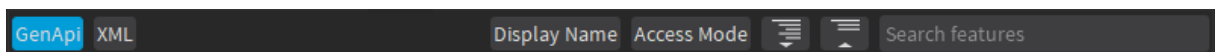
1. Controls applicable to the whole **Features** pane (from left to right):

- radio buttons to display the features module
- drop-down field to select the user profile
- button to refresh the pane



2. Controls specific to a features module (from left to right):

- GenApi** and **XML** buttons to display the GenApi tree view and/or the XML file
- Display Name** field to show the display name of the GenApi feature, when available
- Access Mode** field to show/hide the access modes (RW, WO, RO, NA) of the features
- buttons to expand / collapse the whole feature tree
- field to search for features



3. Feature tree view with the following columns: feature name, feature value, access mode.

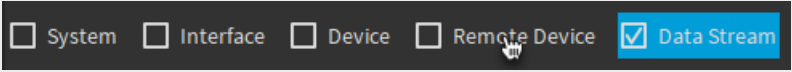
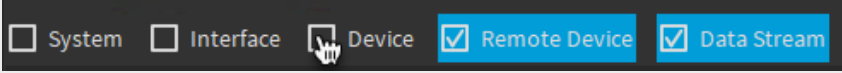
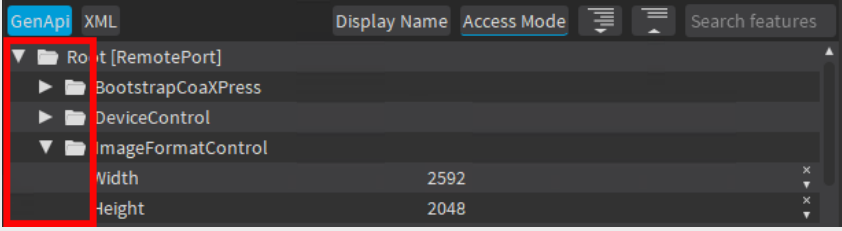
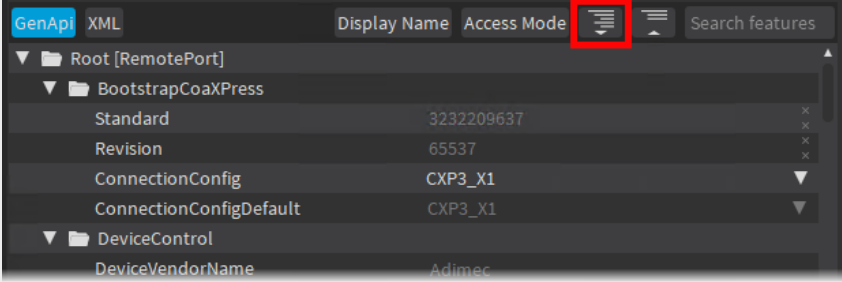
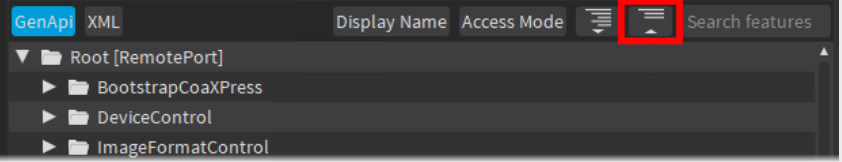
Feature Name	Feature Value	Access Mode
▼ BufferHandlingControl		
StreamAnnouncedBufferCount	13	x RO
StreamBufferHandlingMode	Default	▼ RW
StreamAnnounceBufferMinimum	1	x RO
StreamAcquisitionModeSelector	Default	▼ RW

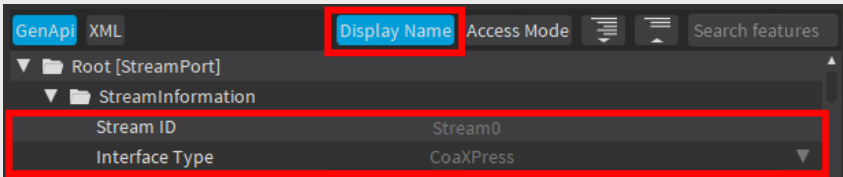
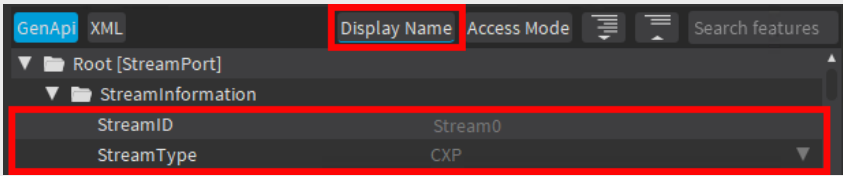
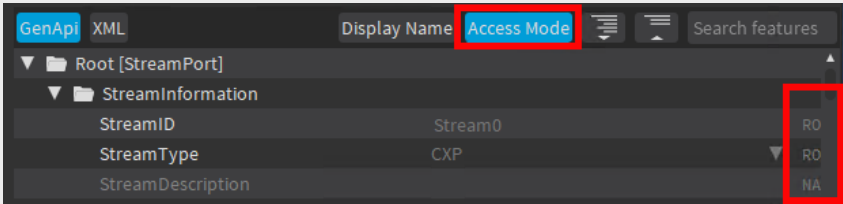
4. Short description of the selected feature at the bottom of the pane.

By default, the features of the GenTL module selected in the Welcome screen are displayed in a fully expanded feature tree, based on the **Beginner** user profile.

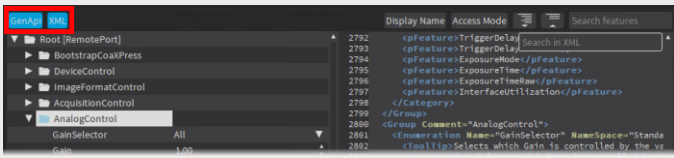
4.2. Edit GenApi Features

Display features in the feature tree view

In order to ...	Proceed as follows:
Display another (single) tab on the Features pane	<p>Click the tab name.</p> 
Display several tabs on the Features pane	<p>Select the check boxes corresponding to the tabs you want to display.</p> 
Expand and/or collapse a feature group	<p>Click the arrows in front of the feature group:</p> 
Expand all features (in a module)	<p>Click the Expand all button in the requested tab:</p> 
Collapse all features (in a module)	<p>Click the Collapse all button in the requested tab:</p> 
Show feature display name	<p>Click Display Name to show the display name of the GenApi feature, when available.</p>

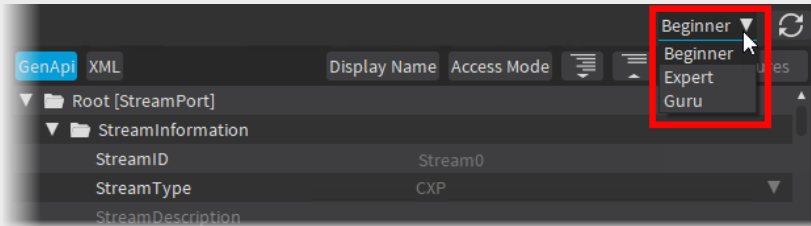
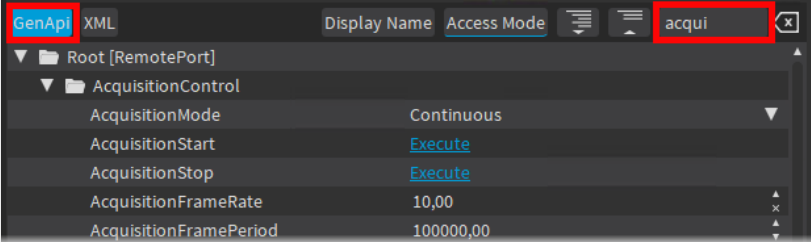
In order to ...	Proceed as follows:
	 <p>When it is not available or when the <code>DisplayName</code> is not selected, the name of the GenApi feature is displayed.</p> 
<p>Show access mode</p>	<p>Click <code>Access Mode</code> to display the feature access mode (see Feature access modes).</p>  <p>Otherwise, nothing is mentioned, and the non-editable features are dimmed.</p>

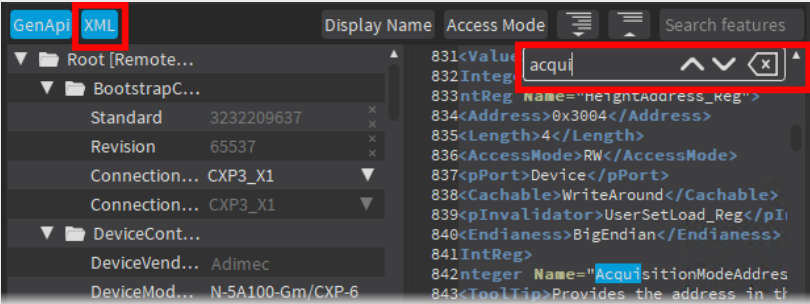

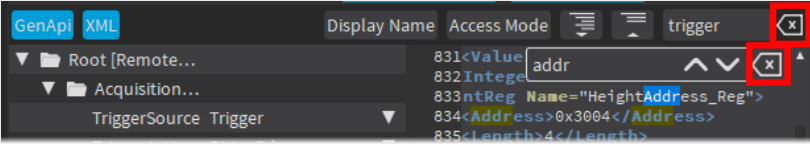
Display features in the XML view

In order to ...	Proceed as follows:
<p>Display the features of a module in the tree view and/or in the XML file</p>	<p>Click the <code>GenApi</code> and/or <code>XML</code> buttons:</p> 
<p>Display a feature node in XML view</p>	<p>From the feature tree view, do one of the following actions:</p> <ul style="list-style-type: none"> • Double-click the feature node. • Select the feature node and press F12.
<p>Display a feature value in XML view</p>	<p>Hover over a feature name in the XML view, and a pop-up message displays the feature value.</p>

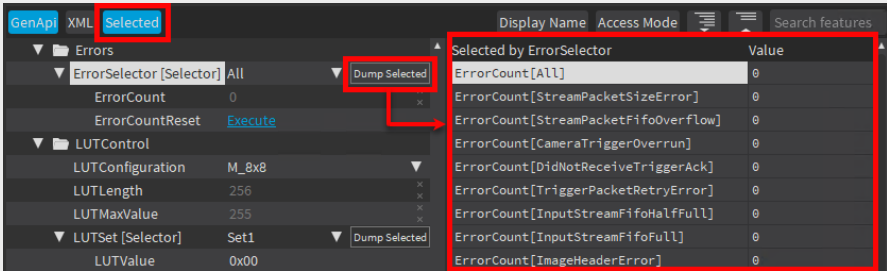
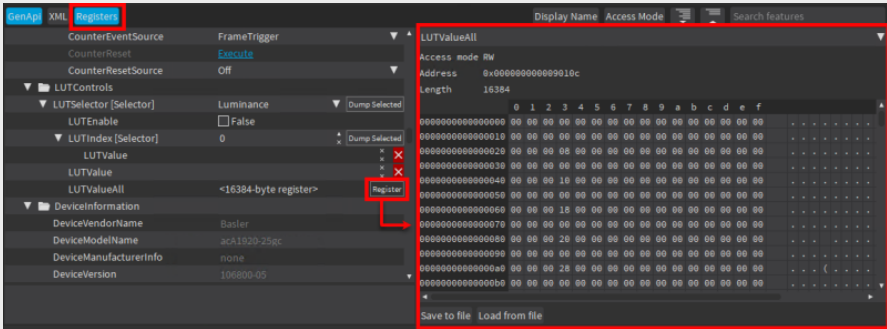
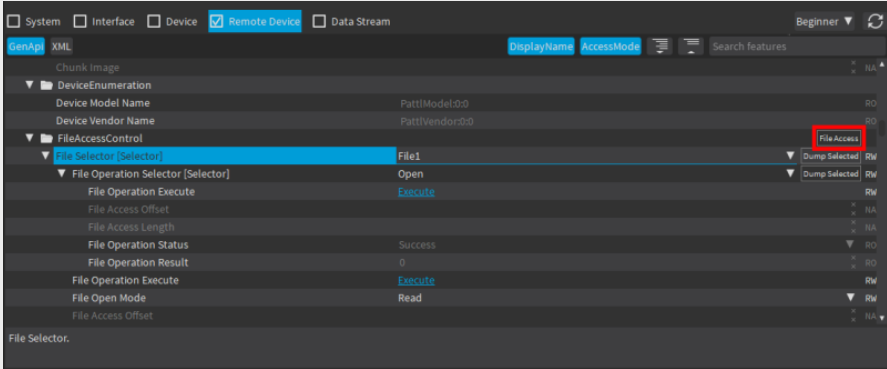
Filter and Search features

You can filter the displayed features as explained below:

In order to ...	Proceed as follows:
<p>Filter the displayed features by user profile (for all modules)</p>	<p>Select a user profile Beginner, Expert, Guru on the right of the Features pane:</p> 
<p>Search for features or categories based on their name in the tree view (in a single module)</p>	<ol style="list-style-type: none"> 1. Click the Search features field. 2. Type the text string corresponding to (part of) the feature name you are looking for.  <p>The features are automatically filtered based on the entered text string, and displayed in their respective categories.</p>

In order to ...	Proceed as follows:
<p>Search in the XML file (in a single module)</p>	<ol style="list-style-type: none"> 1. When a module is open in XML view (XML button selected), click the Search in XML field. 2. Type the text string corresponding to (part of) the feature name you are looking for.  <p>The first occurrence of the searched string is highlighted in blue in the XML file and arrow buttons make it possible to go to the next and previous occurrences.</p>
<p>Clear the search</p>	<p>Whether you search in the feature tree or in the XML file, click  next to the relevant search field to clear its content:</p> 

Advanced functionality with specific features

In order to ...	Proceed as follows:
<p>(with selectors)</p> <p>Display all values linked to a feature selector in a dedicated pane</p>	<p>Click the Dump Selected button next to the feature selector. For example, clicking Dump Selected next to the Errors selector in the Data Stream feature pane displays a pane with the error count for all values of the Errors selector:</p>  <p>Once the dedicated pane is displayed, click Selected on the top to hide or show the pane again.</p>
<p>(with features having a value pointing to a register)</p> <ul style="list-style-type: none"> • Display a register content in an hexadecimal editor • Load register values from a file • Save register values to a file 	<p>Click the Register button next to the feature whose value corresponds to a register content on the device.</p>  <p>From the hexadecimal editor, load register values from a file or save them to a file with the Save to file and Load from file controls. Once the dedicated pane is displayed, click Registers on the top to hide or show the pane again.</p>
<p>(with the FileAccessControl category)</p> <ul style="list-style-type: none"> • Upload a file to the remote device • Download a file from the remote device 	<p>Click the FileAccess button on the right of the FileAccessControl category (defined in SFNC standard).</p>  <p>You can then select a file (LUT table, new firmware, etc.) and upload it to or download it from the current remote device.</p>

Edit features

In the Features pane, the feature name, feature value, and access mode (when enabled) are displayed from left to right.

Editable features vs commands

You can modify or interact with **RW** (Read-Write) and **WO** (Write-Only) features. Non-editable features are dimmed.

- For editable *Parameter* features (**RW** and **WO**), enter the requested value in the second column using the available controls.
- For *Command* features, click **Execute** in the second column to trigger the command.

Automatic rounding of integer feature values

When you enter a non-supported value in an integer feature field, the value is automatically adapted based on the minimum value, maximum values, or increment steps (value = minimum + x * increment).

Example: The ExposureTimeRaw field with a given camera has an increment step of 35. If you type the value 4000, it will be automatically rounded to the closest supported increment value: 3990.

Feature access modes

The following access modes, which are displayed when you click **Access Mode** in the feature pane of a module, are possible:

- **RW** (Read-Write) allows you to read and edit the feature value.
- **WO** (Write Only) allows you to set the feature value. The value of a write-only feature cannot be retrieved.
- **RO** (Read Only) allows you to read the feature value, but not to edit it.
- **NA** (Not Available) refers to a feature that you can neither read nor edit. Such features or categories are dimmed and their child elements are not displayed.

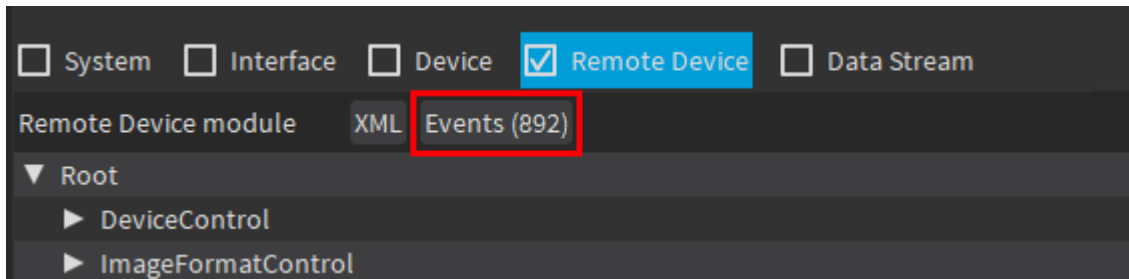
A red cross is displayed next to the access mode if an error occurs when accessing the corresponding register or reading the feature value in the register.

An error pane will display if you enter a wrong value for a given feature.

Specific GenICam features

Remote Device Events

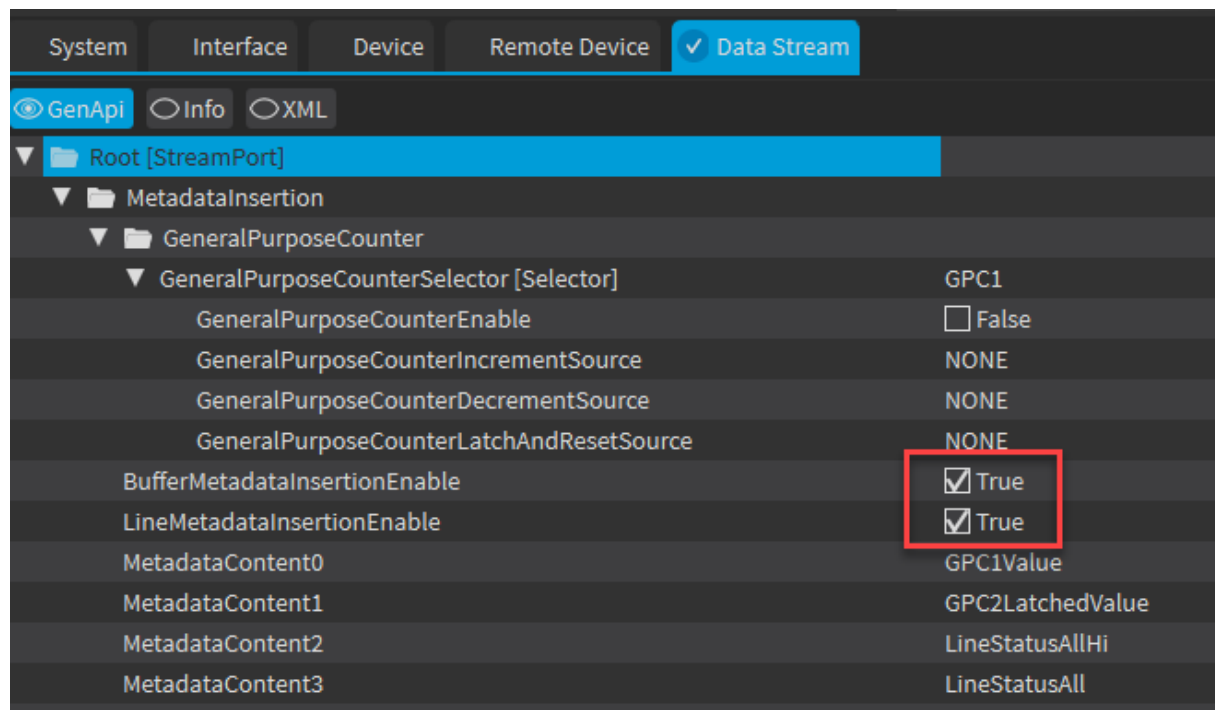
When **eGrabber Studio** receives GenICam remote device events from a camera, an **Events** button is displayed in the **Features** pane, **Remote Device** module, with a general event counter.



Clicking the **Events** button opens an **Events** pane showing a counter of received events for each EventID.

Metadata Insertion

For boards featuring *metadata insertion*, the **Features** pane, **Data Stream** module, shows the **MetadataInsertion** category.



To enable the insertion of Buffer metadata, check the **BufferMetadataInsertionEnable** button.

To enable the insertion of Line metadata, check the **LineMetadataInsertionEnable** button.

4.3. Overview of the Scripts Pane

Access and Purpose

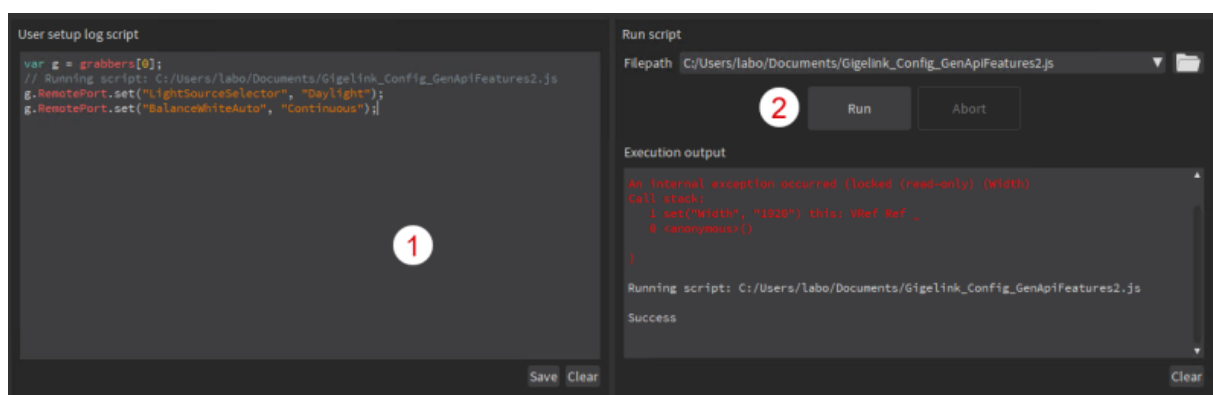


You can open the **Scripts** pane by clicking the **Scripts** button in the toolbar.

In this pane, you can perform the following actions:

1. Save a configuration performed manually in **eGrabber Studio** to a **Euresys GenApi** script.
2. Load and run a **Euresys GenApi** script (.js file) previously created.

On the screenshot below, the numbers corresponding to the above-mentioned actions show where you can perform these actions:



Save a configuration to a script

When you set the **GenApi** features or execute **GenApi** commands to configure a device manually in **eGrabber Studio**, your configuration is automatically logged into the **User setup log script** area.

You can then save this log into a **Euresys GenApi** script, that you can freely modify and apply on the same device or on other devices.



NOTE

Other interactions with the **eGrabber Studio** application are logged as comments. They are only used for information's sake and will not trigger any action if you run an exported script containing such information.

Run a script

Some information on loading and running a script:

- A notification informs you when the script has been successfully run.
- When an error occurs, a **Script Failed** error is displayed.
- The **Abort** command stops the script execution but does not roll it back.

You should therefore include log functions in your script to be able to trace back the executed actions.

4.4. Resources on Scripts

Introduction

This section is intended to provide introductory information on **Euresys GenApi** scripts and includes the following items:

- A sample configuration script to help you create basic scripts to set the GenApi features in the various GenTL modules of your eGrabber.
- A short description of the scripts already available with the **eGrabber** package.

See also: Refer to the "Euresys GenApi scripts" section of the D204ET-eGrabber Programmer Guide PDF document

Sample configuration script

```
// This file is a sample configuration script for a CoaXPress camera connected
// to a Coaxlink card.

var grabber = grabbers[0];

// Configure the Line Input Tool LIN1
grabber.InterfacePort.set("LineInputToolSelector", "LIN1");
grabber.InterfacePort.set("LineInputToolSource", "TTLIO11");
grabber.InterfacePort.set("LineInputToolActivation", "RisingEdge");

// Configure the Camera and Illumination Controller
grabber.DevicePort.set("CameraControlMethod", "RG");
grabber.DevicePort.set("CycleTriggerSource", "LIN1");
grabber.DevicePort.set("ExposureReadoutOverlap", true);
grabber.DevicePort.set("ExposureTime", 10000); // 10ms

// Configure the remote device (i.e., the camera)
grabber.RemotePort.set("PixelFormat", "Mono8");
grabber.RemotePort.set("TriggerSource", "Trigger");
grabber.RemotePort.set("ExposureMode", "TriggerWidth");
```

Initialize the eGrabber

The following instruction initializes the grabber variable for the grabbers[0] instance.

When working with a standard camera, you will have only one eGrabber instance: grabbers[0] created in **eGrabber Studio**.

```
var grabber = grabbers[0];
```

Set a feature value

The following instruction allows you to set the value "LIN1" to the feature "LineInputToolSelector" that is stored in the GenTL Interface module for the grabbers[0] instance.

```
grabber.InterfacePort.set("LineInputToolSelector", "LIN1");
```

Use instructions with the following syntax to set or change a feature value:

```
<grabber>.<GenTL_module>.<function> ("<feature_name>","<feature_value>");
```

Element	Description
<grabber>	Variable grabber initialized earlier in the script
<GenTL_module>	GenTL module where the desired feature is stored. Each module corresponds to a specific GenTLPort: <ul style="list-style-type: none"> • TLPor for the GenTL System module • InterfacePort for the GenTL Interface module • DevicePort for the GenTL Device module • RemotePort for the GenTL Remote Device module • StreamPort for the GenTL Stream module
<function>	Function to be used, in the above example "set" to set a feature value
<feature_name>	Feature name to be set, in the above example "LineInputToolSelector"
<feature_value>	Feature value to be set, in the above example "LIN1"

Make sure you use the proper syntax, including the dots, brackets, quotation marks, colons and semi-colons when appropriate.

Available scripts


The following scripts are available in ...\\Euresys\\eGrabber\\scripts and can be used for the following purposes:

Script name	Description	Source
check-config.js	Perform consistency checks between the Coaxlink series frame grabber and the camera settings.	Coaxlink series
cxptest.js	Test the CoaXPress connection in both directions on connected remote device(s).	Coaxlink series
export-xml.js	Export GenApi features to an XML file	Coaxlink series Gigalink
lamps.js	Control the bracket lamps of a Coaxlink series frame grabber.	Coaxlink series
load-ffc.js	Load Flat Field Correction coefficients.	Coaxlink series
lut-builder.js	Populate the Coaxlink series LUT using a parametric method.	Coaxlink series
monitor-io.js	Monitor the I/O state forever.	Coaxlink series
pocxp-auto.js	Enable automatic power control over CoaXPress	Coaxlink series
pocxp-cycle.js	Perform power cycle over CoaXPress and wait for remote device(s) to be ready	Coaxlink series
pocxp-off.js	Turn off power over CoaXPress	Coaxlink series
show-mio-config.js	Show I/O extension module configuration	Coaxlink series

5. Using Recorder Containers

5.1. Overview of the Recorder Pane

Access

Click the **Recorder** icon  in the toolbar to open the **Recorder** pane.

The **Recorder** pane gives access to the **eGrabber Recorder** feature. This feature makes it possible to store high-bandwidth streams on the fly for long time periods in so-called recorder containers.



NOTE

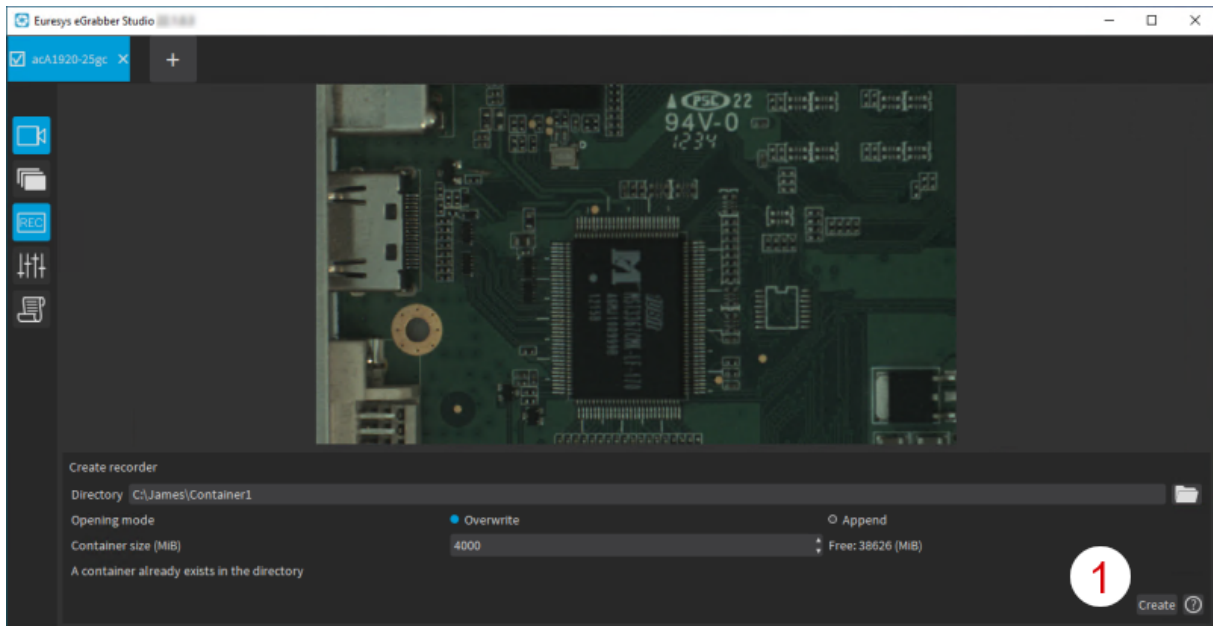
To be able to use the **eGrabber Recorder** feature, you need to buy a license for the **eGrabber Recorder** library, and activate your license key. Refer to [the Neo License Manager manual](#).

Possible actions

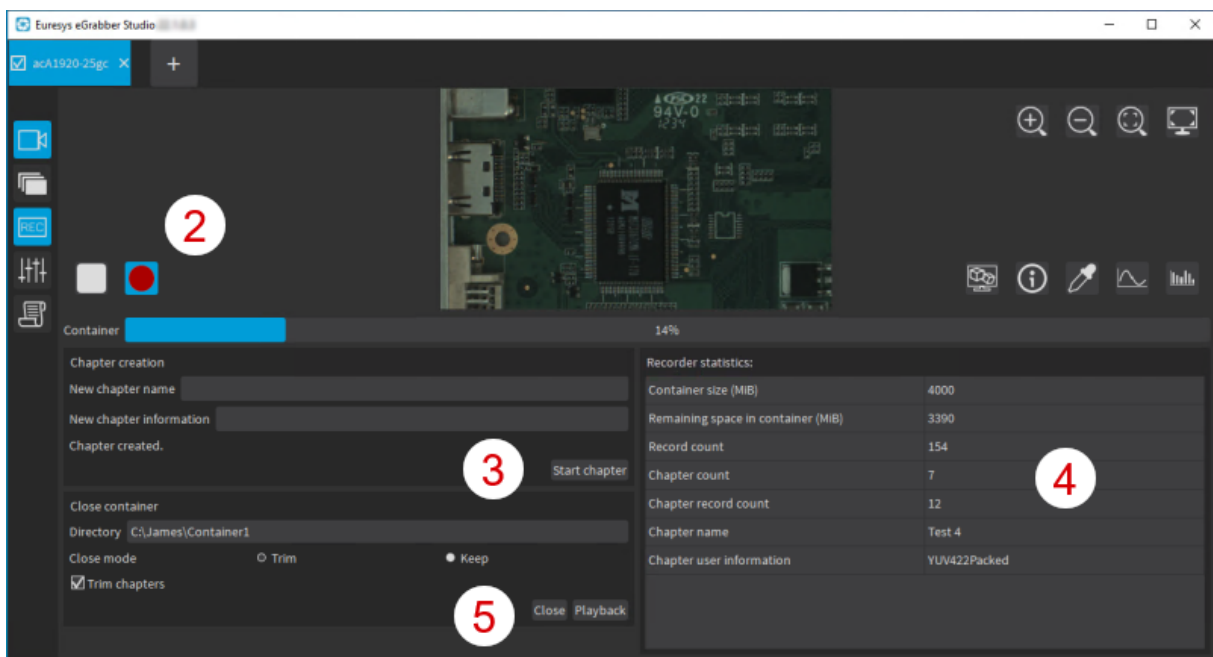
On this pane, you can perform the following actions:

1. Create a recorder container in the **Create recorder** area.
2. Start the recording process with the **Record** button.
3. Create chapters in the **Create chapter** area.
4. View statistics in the **Recorder statistics** area.
5. Close the recorder container or play back the recorder container in the **Close container** area.

On the screenshots below, the numbers show where you can perform the above-mentioned actions:



Recorder Pane - Before Creating a Recorder Container



Recorder Pane - After Creating a Recorder Container

5.2. Record Images on the Fly

Introduction

Using recorder containers, you can record images on the fly as they are being acquired. This section explains various steps of the recording process.

Don't forget to purchase and activate your **eGrabber Recorder** license key to be able to use the recorder feature. Refer to [the Neo License Manager manual](#).



NOTE

The recording performance depends on the performance of the disk system where your recorder containers are stored.

Recording Process

In the **Recorder** pane, you can perform the following consecutive actions to store a stream in a recorder container:

1. [Create a recorder container](#) in the **Create recorder** area.
2. [Record images in the container](#) with the **Recorder** button.
3. [Close the recorder container](#) in the **Close container** area.

In addition, you can [create chapters in the container](#) before or after you start recording.



NOTE

You have to close the recorder container to be able to access it from the Welcome screen and view its content.

See [Play back a recorder container](#) for more information on viewing the content of a recorder container.

Create a recorder container

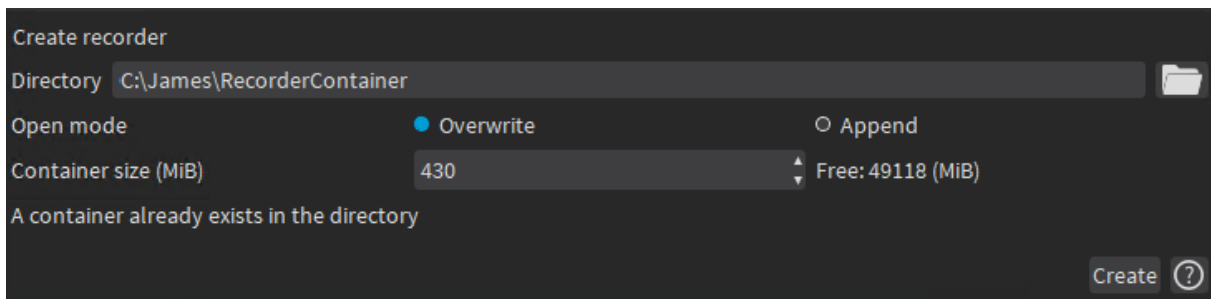
New container vs. existing container

Depending on whether you use an existing or a new recorder container, the **Create recorder** area in the **Recorder** pane slightly varies:

Existing Recorder Container

If you select an existing directory in the **Directory** field:

- The message "A container already exists in the directory" is displayed at the bottom of the pane.
- The **Opening mode** controls let you choose between following options:
 - **Overwrite** overwrites the previously recorded content in the existing container.
 - **Append** appends the new images to be recorded after the existing content in the container.

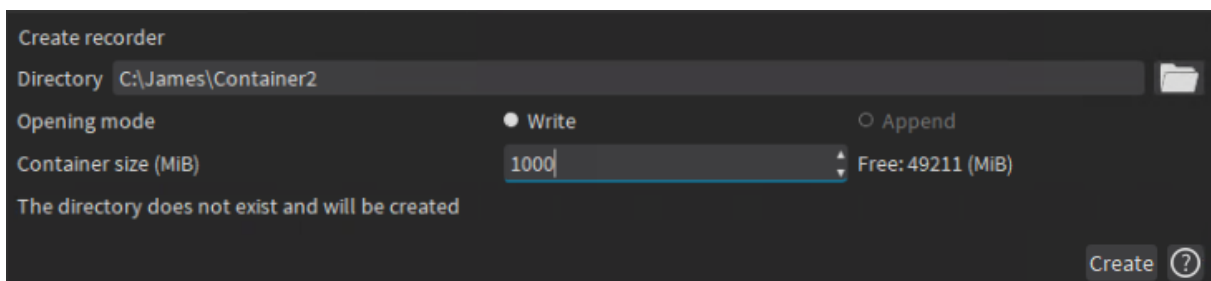


Create recorder area - Existing recorder

New Recorder Container

If you specify a new directory name in the **Directory** field,

- The message "The directory does not exist and will be created" is displayed at the bottom of the pane.
- As **Opening mode**, you can only select the **Write** mode as the images will be written directly from the beginning of the container.



Create recorder area - New recorder

Container Size

In the **Container size** field, type the requested size for the container (in MiB), taking into account the remaining free storage space on the disk specified on the right.



NOTE


When a container is created or restored, the **Recorder** pane displays the **Close recorder** area.

Record images in the recorder container


When a recorder container is open and images are not being recorded, the following controls are displayed at the top of the **Recorder** pane:



You record images when:

- the image acquisition is started, i.e. you have clicked  in the **Output** pane.

AND

- the container recording is started, i.e. you have clicked  in the **Output** pane.

When new images are being recorded into the recorder container, the recorder button turns red/blue and a progress bar shows how much the container is filled:



During this process, you can independently pause/resume the recording and/or the image acquisition.



WARNING

A warning message appears when the recorder container is full. To go on recording, close the recorder and reinstantiate the recorder container choosing either to overwrite the recorded content and/or to increase the container size. You can also create a new recorder container in a different folder.

Create chapters in a container

During the recording process, you can create subdivisions called "chapters" in a recorder container.

You can create chapters at any time in the **Create chapter** area and associate information to them to find back images more easily.

Principles for chapter creation

- The first chapter, named Chapter0 by default, is created automatically on the first frame of the recorder container.
- A new chapter is created automatically when you close, then recreate the same recorder container.
- As long as a recorder container is displayed in the **Recorder** pane, you can create a new chapter manually when the recording process is on or off.


Rules for chapter names

- The default chapter name is Chapter<xx> where <xx> is the index of the new chapter.
- The user can specify another name for a chapter before starting the recording.
- The chapter name must be unique within the container.
- The chapter name cannot exceed 255 characters.
- The chapter name can only include the following characters: [A-Za-z0-9_].

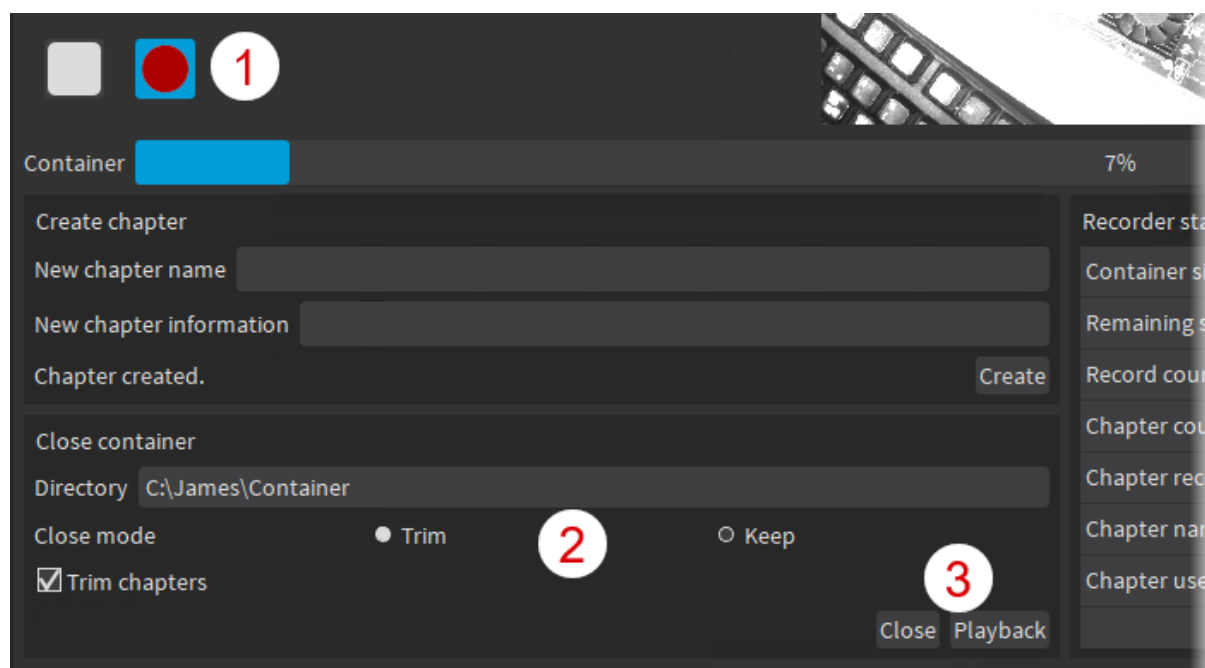
Close the recorder container

Procedure

When you want to close a recorder container, proceed as follows:

1. Click  to stop recording.
2. Select the desired **Close mode** before you close the container. See [Close mode](#).
3. Do one of the following actions:
 - If you want to directly read the container content, click **Playback**.
This closes the container and opens it in read mode in a new pane on the right.
 - If you do not want to directly read the container content, click **Close**.
You can play back the container later on from the **Welcome screen**, **Recorder** area.
See "[Play Back and Export Container Recorders](#)" on page 53.

When you close the recorder, the flag **Trim chapters** is selected by default: this removes any trailing chapter that doesn't contain any data.



Close mode

The **Close mode** option allows you to manage any remaining space still available at the end of the recorder container:

- **Trim** to remove the remaining space on the container when closing the recorder.
This is useful to reduce the container size when you don't intend to record more images to that container.
- **Keep** to keep the remaining space on the container when closing the recorder.
The recorder container can later be reopened in **Append** mode to record additional images in the remaining space.

5.3. Overview of the Recorder Container Window

Access

You access the Recorder Container window when you open a recorder container from the Welcome screen.

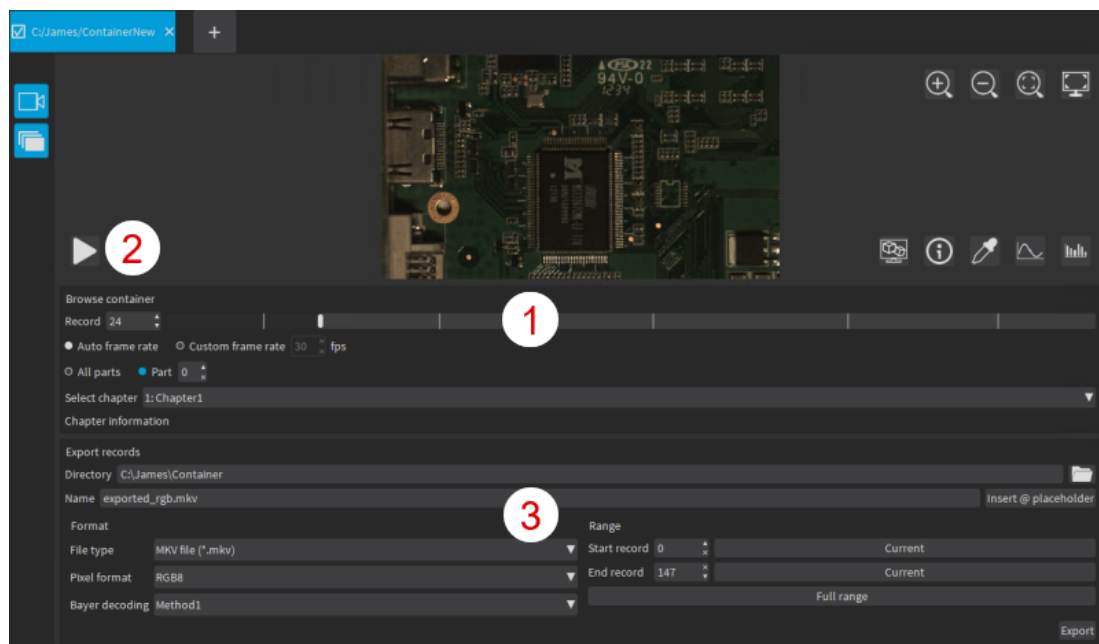
The Recorder Container window gives access to the **Output** and **Buffer** tools, like the main window in which you open an eGrabber source. However, the Output pane and the Buffer pane have been adapted to a recorder container.

Possible actions

In the Recorder Container window, you can perform the following actions:

1. Browse the record container and identify which part you want to play back in the **Browser container** area.
2. Play back the recorder container in the **Output** pane.
3. Export container records in the **Export records** area.

On the screenshot below, the numbers show where you can perform the above-mentioned actions:



5.4. Play Back and Export Container Recorders

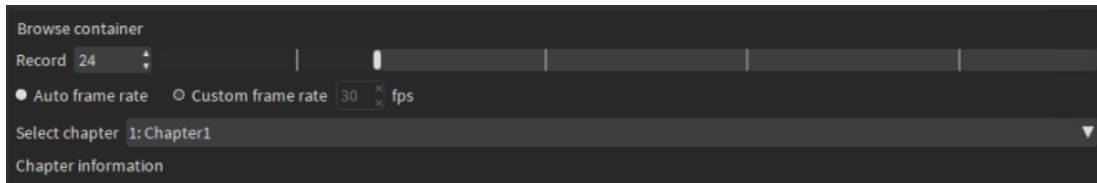
Play back a recorder container

After you have recorded images in a container, you can:

- directly play it back from the **Recorder** pane using the **Playback** button.
This automatically closes the container before reopening it in read mode.
- close it and open it later on from the Welcome screen.
See also ["Close the recorder container" on page 52](#) or ["Open a recorder container" on page 12](#).

In both cases, the recorder container opens in the Recorder Container window.

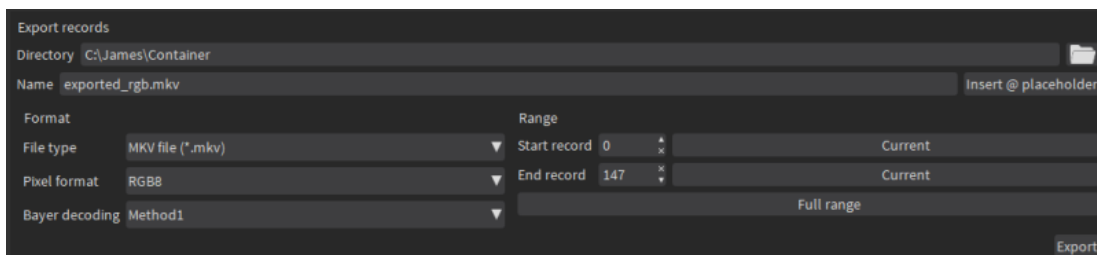
Besides the standard playback with the **Play** button, the following playback options are available in the **Browse container** area:



Use the following controls	to ...
Record field and slider	browse through the recorder container, just as you browse in the images buffers (see also "View images" on page 22).
Auto frame rate and Custom frame rate radio buttons	define the play back speed: <ul style="list-style-type: none"> • The Auto frame rate option plays back the images following the timestamps associated with the recorded buffers. In this mode, eGrabber Studio adds a three-second delay when it detects a timestamp discontinuation between successive records. • The Custom frame rate option allows you to specify the desired playback frame rate.
Select chapter field	jump directly to the start of the selected chapter.

Export container records to files

In the Recorder Container window, you can export the container records and specify several export options:



When you export records from the open recorder container in the **Export records** pane, bear the following in mind:

File name extensions

When you type the file extension in the **File Name** field, the file type controls update accordingly. You can then change the file type either in the **File Name** field or in the file type controls.

File name placeholders

By typing @ or clicking the **Insert @ placeholder** control, you can insert the following placeholders for a variable export file name:

Placeholder	Description
@i	Record index relative to the first buffer of the container (= 0)
@n	Record index relative to the first buffer of the export range (= 0)
@p	Part index. When working with HFR (High Frame Rate) cameras, each buffer contains several parts, and an image is stored in each buffer part. This placeholder displays the buffer part where the image is stored.
@t	Timestamp of the buffer.
@c	Chapter index.
@C	Chapter name.
@@	Character @ is added in the file name.

6. Specific Use Cases

6.1. Using Multi-Bank Cameras

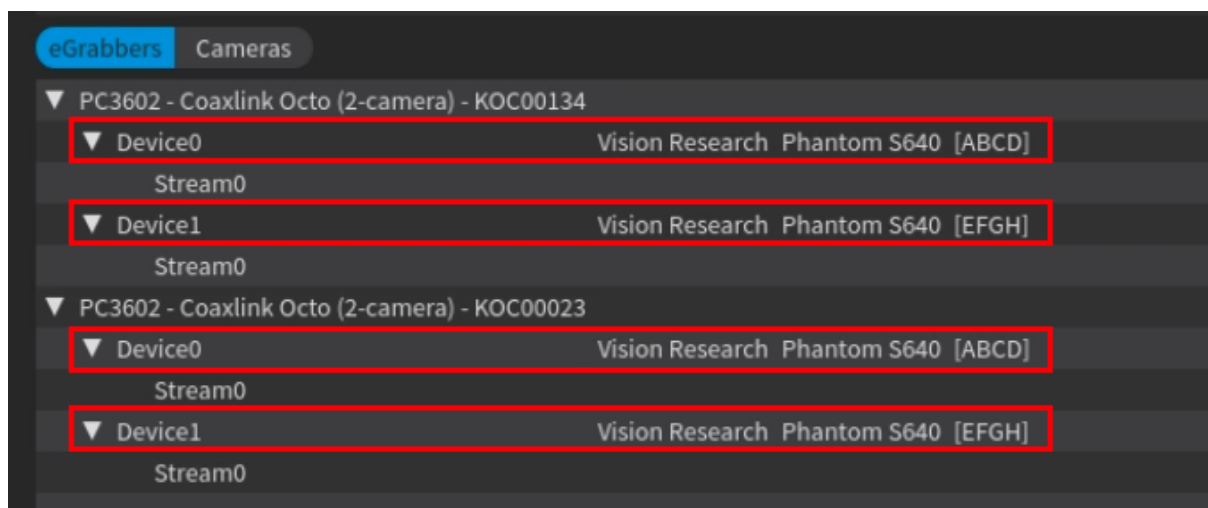
The following features allow you to easily configure multi-bank cameras with **eGrabber Studio**.

Camera-Oriented discovery in the Welcome screen

In the Welcome screen, the **Cameras** view allows you to open the streams of a multi-bank camera linked to several eGrabbers, and get the full images in the **Output** pane.

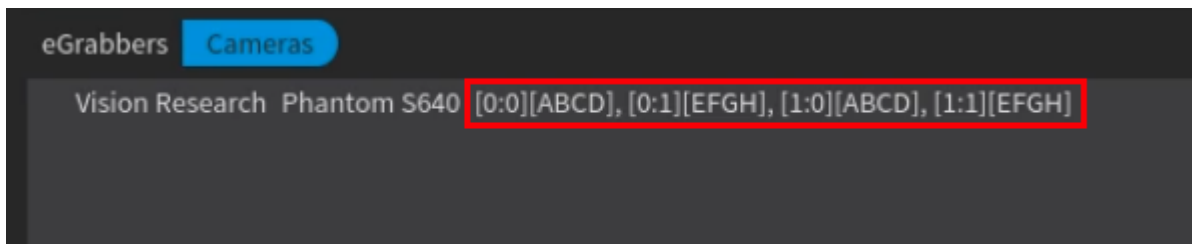
A 16-connection CoaxPress camera made up of 4 banks of each 4 connections is displayed as follows in the **eGrabbers** view and **Cameras** view:

- In the **eGrabbers** view: Two Coaxlink Octo frame grabbers (GenTL interfaces), configured in the 2-camera variant, receive each two banks (two GenTL devices) of the camera:



eGrabbers view of a multi-bank camera (4 banks of 4 connections)

- In the **Cameras** view: The camera is made up of two interfaces (0,1), each having two devices (0,1) with 4-connection links on each device: this makes up the four eGrabbers. Each eGrabber is identified as follows: [`<interface number>:<device number>`][`<host connectors>`].



Cameras view of a multi-bank camera (4 banks of 4 connections)



NOTE

The discovery reorders the devices if they are not connected in the right order, and shows the master device of the camera as the first device.


eGrabber-Specific configuration in the Features pane

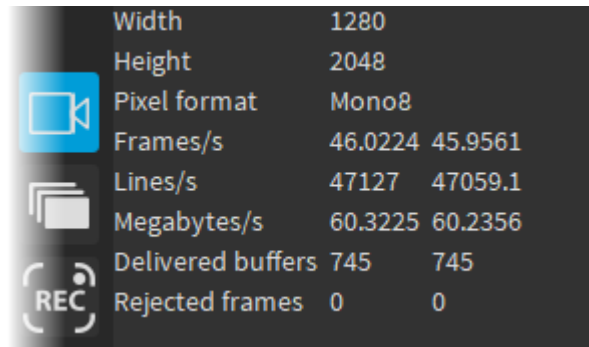
When you open the camera in **eGrabber Studio**, it is made up of as many eGrabbers as connected camera banks.

From the **grabbers** list, you can select and configure a given eGrabber. By default, the grabbers[0] instance corresponds to the master device of the camera and is displayed first.



eGrabber-Specific Info in the Output pane

In the **Output** pane, the transfer rate information, accessible from the  icon, is displayed specifically for each eGrabber:



Width	1280	
Height	2048	
Pixel format	Mono8	
Frames/s	46.0224	45.9561
Lines/s	47127	47059.1
Megabytes/s	60.3225	60.2356
Delivered buffers	745	745
Rejected frames	0	0

eGrabber-Specific logging in the Script pane

When configuring a GenApi feature on a given eGrabber, the action log in the **Scripts** pane specifies the eGrabber on which the feature has been modified:

```
User setup log script
var g0 = grabbers[0];
var g1 = grabbers[1];
var g2 = grabbers[2];
var g3 = grabbers[3];
// Start acquisition
// Stop acquisition
g1.RemotePort.set("PixelFormat", "Mono8");
```

You can save the script and reapply it to the same camera later on since the eGrabbers will always be organized in the same order even if the devices are connected in a different order.

7. Firmware Manager - GUI mode

7.1. Overview

eGrabber Studio provides a GUI (Graphical User Interface) to the **Firmware Manager**.

It allows to manage the embedded firmware of any **Coaxlink and Grablink Duo frame grabbers**.

Access

To open the **Firmware Manager** select one of the following methods:

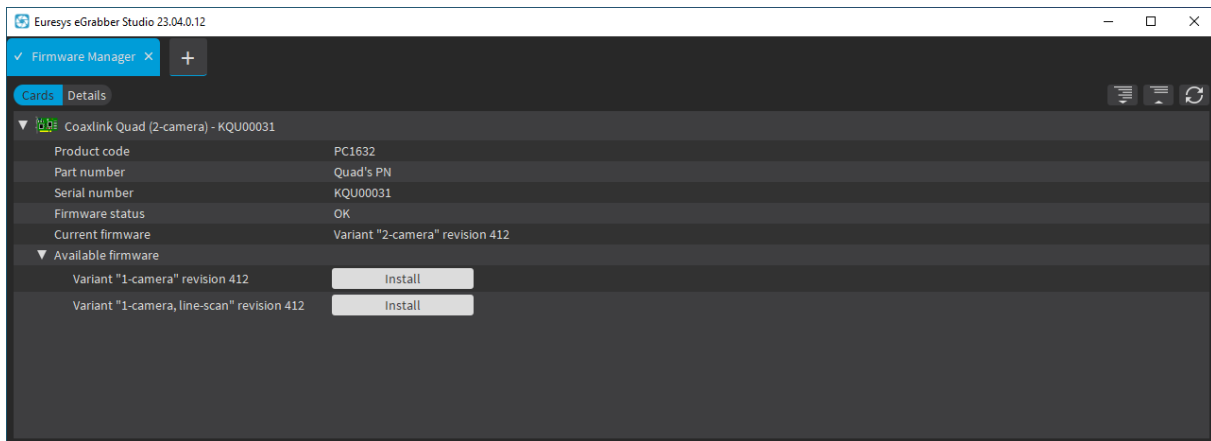
- From the Windows Start Menu: click on Firmware Manager shortcut
- From the **Welcome Screen** of **eGrabber Studio**, click on the **Firmware Manager** button.

Displayed items

- The **Cards** view lists all the cards in the system. It allows to view or modify the installed firmware.
- The **Details** view lists all the available firmware variants embedded in the release. It also allows to select an alternate source of firmware (file or folder).

7.2. Cards View Description

The **Cards** view lists all the cards in the system.



Cards view

Card entry

A card entry line is composed of:

- A card icon,
- A card identifier string,
- An optional tag,
- An additional orange/red tag to report a warning/error related to the card (if any).

Card identifier

The card identifier string is composed of:

- The product name (e.g. 'Coaxlink Quad'),
- The currently installed firmware name (e.g. '2-camera'),
- The serial number (e.g. 'KQU00031').

Card properties

The following card properties can be displayed by expanding a card entry:

- Product code (e.g. 'PC1632'),
- Part number,
- Serial number (e.g. 'KQU00031'),
- Firmware status (e.g. 'OK'),
- Current firmware variant and revision number (e.g. 'Variant "2-camera" revision 412'),
- A list of available firmware variants.

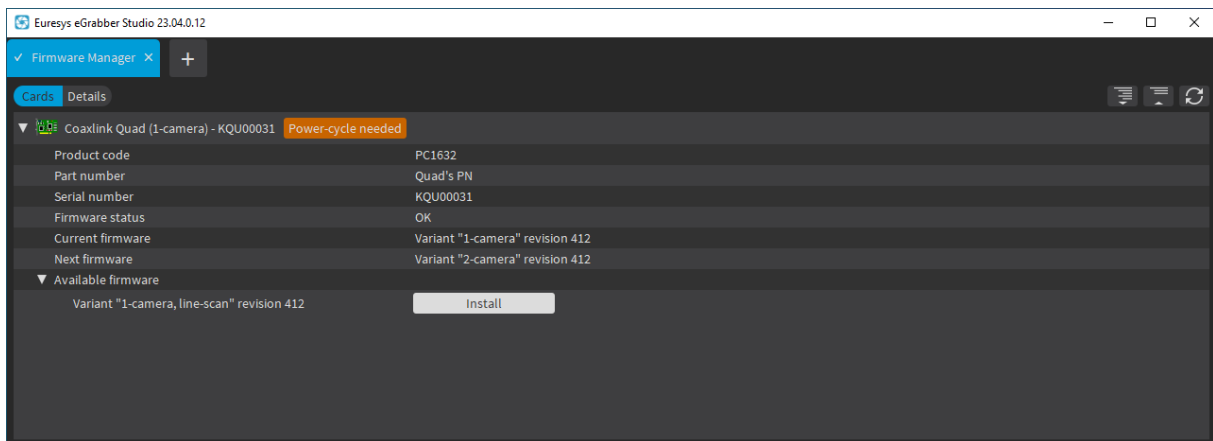
Available firmware

Each entry in this list provides:

- Variant name and revision (e.g. 'Variant "1-camera" revision 412'),
- An **Update** button to update the current firmware variant or an **Install** button to install another variant than the current one.

Power cycle needed tag

A **Power cycle needed** tag is added after having installed a firmware to inform the user that a power-cycle is now required to finalize the operation. It will disappear after the next power cycle.



Cards view with "Power-cycle needed" tag

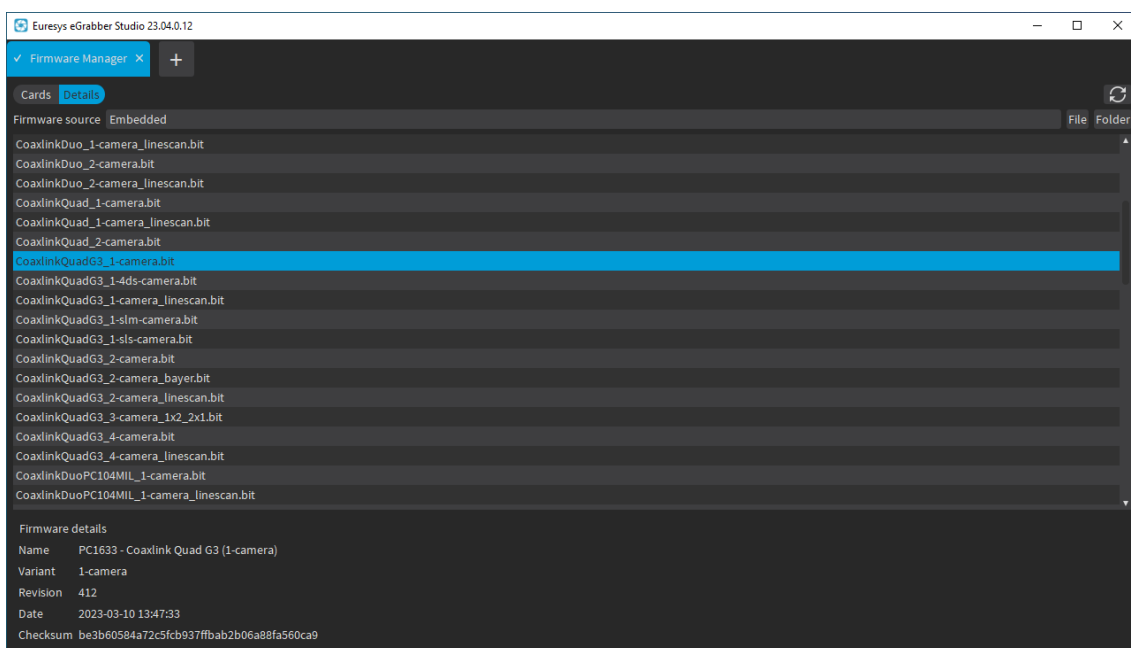
7.3. Details View Description

The **Details** view lists all the available firmware variants in a firmware source.

Firmware sources

Possible firmware sources are:

- **Embedded**: all the firmware variants embedded in the eGrabber installation package. (Default source.)
- **File**: firmware variant(s) within a specific file (to specify)
- **Folder**: firmware variant(s) within a specific folder (to specify)



Details view (Embedded firmware source)

Firmware properties

The following firmware properties are shown when selecting a firmware entry:

- Firmware name (e.g. 'PC1633 - Coaxlink Quad G3 (1-camera)'),
- Firmware variant (e.g. '1-camera'),
- Firmware revision (e.g. '412'),
- Checksum value.

8. Glossary

B

Buffer module

GenTL module that represents a memory buffer. Buffers must be announced to the data stream that will fill them with image data.

C

Callback model

Defines when and where (in which thread) callback functions are executed. eGrabber supports three callback models named respectively `CallbackOnDemand`, `CallbackSingleThread` and `CallbackMultiThread`.

Camera and illumination controller

Part of a frame grabber card that controls a camera and its associated illumination devices. Hosted in the device module.

CIC

Acronym for Camera and Illumination Controller

Camera Link

Robust communications link using a dedicated cable connection and a standardized communications protocol. Camera Link is a hardware specification that standardizes the connection between cameras and frame grabbers. It defines a complete interface that includes provisions for data transfer, camera timing, serial communications, and real-time signaling to the camera.

Coaxlink

Euresys product series of CoaXPress frame grabbers

Coaxlink card

Euresys CoaXPress frame grabber

Coaxlink driver

Euresys software driver for Coaxlink cards (superseded by eGrabber driver since release 12.8)

Coaxlink series

Euresys product series of CoaXPress frame grabbers

CXP

Acronym for CoaXPress

CoaXPress

Interface and communication standard for industrial cameras using single or multiple coaxial cables. It supports the asymmetric high-speed transmission of images and related control data. This digital interface standard, hosted by the JIIA (Japan Industrial Imaging Association), has been developed for high-speed image data transmission in machine vision applications. (Source: <http://www.coaxpress.com/>)

Common transport interface

GenTL producer

CTI

Acronym for Common Transport Interface

D

Data Stream module

GenTL module that handles buffers

device

Represents the camera component in the frame grabber driver. This is the camera defined in the driver, as opposed to the camera actually connected to the frame grabber (remote device). This corresponds to the GenTL Device module.

Device module

GenTL module that contains the frame grabber settings relating to the camera. Parent of the data stream module. Sibling of the remote device.

E

eGrabber card

Euresys frame grabber driven by eGrabber (Coaxlink series and Grablink Duo)

eGrabber driver

Euresys software driver for the latest generation of image acquisition products (Coaxlink series and Grablink Duo)

eGrabber Gigalink

Optional library of eGrabber that provides a universal, hardware-independent access to GigE Vision cameras

eGrabber Recorder

Optional library of eGrabber that provides video recording services to hard drives

EMVA

Acronym for European Machine Vision Association

G

GenApi

GenICam standard that deals with camera and frame grabber configuration

GenApi feature

Camera or frame grabber feature, defined in a register description. Either a set/get parameter, or a command with side effects.

GenApi features

Camera or frame grabber feature, defined in a register description. Either a set/get parameter, or a command with side effects.

GenICam

Set of EMVA standards. It consists of GenApi, GenTL, the SFNC and the PFNC.

GenTL

GenICam standard that deals with data transport. TL stands for Transport Layer.

GenTL producer

Software library that implements the GenTL API. File with the cti extension (e.g., coaxlink.cti).

Gigelink

Shortname of eGrabber Gigelink

Grablink

Euresys product series of Camera Link frame grabbers

Grablink card

Euresys Camera Link frame grabber

Grablink series

Euresys product series of Camera Link frame grabbers

I

I/O toolbox

Part of eGrabber card that controls digital I/O lines and implements tools such as rate converters, delay lines, etc. Hosted in the interface module.

Info command

Numerical identifier used to query a specific piece of information from a GenTL module. Info commands are defined either in the standard GenTL header file, or in a vendor-specific header file (e.g., info commands specific to eGrabber are defined in include/GenTL_v1_5_EuresysCustom.h).

interface

Represents the frame grabber component in the frame grabber driver. This corresponds to the GenTL Interface module.

Interface module

GenTL module that represents a frame grabber. Parent of the device module.

P

PFNC

Acronym for Pixel Format Naming Convention

Power-over-CoaXPress

Standard power delivery method over the CoaXPress cables

PoCXP

Standard power delivery method over the CoaXPress cables

R

Recorder

Short name of eGrabber Recorder

Register description

XML file mapping low-level hardware registers to camera or frame grabber features

Remote device

Camera connected to a frame grabber. The term remote is used to distinguish this from the GenTL device module.

S

SFNC

Acronym for Standard Features Naming Convention

source

Corresponds to the GenTL producer in GenICam (for example coaxlink.cti)

System module

GenTL module that represents the GenTL producer. Also known as TLSystem. Parent of the interface module.

T

Timestamp

The time at which an event occurs. For Coaxlink series and Grablink Duo, timestamps are always 64-bit integers and are expressed as the number of

microseconds that have elapsed since the computer was started.