



# **KAYA Vision Point**

## **Application for**

### **Simulation Mode**

**User Guide**  
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International Distributors

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Version	Date	Notes
4.0	04/2017	Application release 4.0 Initial Release
4.1	12/2017	Application release 4.1 <ul style="list-style-type: none"> <li>• Triggering additional parameters were added</li> </ul>
4.2	04/2017	Application release 4.2 <ul style="list-style-type: none"> <li>• Added troubleshooting section</li> </ul>
4.3	09/2018	Application release 4.3 <ul style="list-style-type: none"> <li>• Review and minor corrections</li> </ul>
4.4	01/2019	Application release 4.4 <ul style="list-style-type: none"> <li>• Review and minor corrections</li> </ul>
5.0	03/2019	Application release 2019.1/API 5.0 <ul style="list-style-type: none"> <li>• Toolbar description modifications</li> <li>• Review and minor corrections</li> </ul>
5.0.1	05/2019	Application release 2019.1/API 5.0.1 <ul style="list-style-type: none"> <li>• Added “Grabber Links” parameter to indicate the device link connection</li> <li>• Indication message about Camera connection loss</li> <li>• Camera re-detection retains open cameras</li> </ul>

Table 1 : Revision History

### 2.1 Safety Precautions

With your *KAYA Chameleon Simulator* board in hand, please take a minute to read carefully the precautions listed below in order to prevent unnecessary injuries to you or other personnel or cause damage to property.

- **Before using the product, read these safety precautions carefully to assure correct use.**
- **These precautions contain serious safety instructions that must be observed.**
- **After reading through this manual, be sure to act upon it to prevent misuse of product.**



#### Caution

**In the event of a failure, disconnect the power supply.**

If the product is used as is, a fire or electric shock may occur. Disconnect the power supply immediately and contact our sales personnel for repair.

**If an unpleasant smell or smoking occurs, disconnect the power supply.**

If the product is used as is, a fire or electric shock may occur. Disconnect the power supply immediately. After verifying that no smoking is observed, contact our sales personnel for repair.

**Do not disassemble, repair or modify the product.**

Otherwise, a fire or electric shock may occur due to a short circuit or heat generation. For inspection, modification or repair, contact our sales personnel.

**Do not touch a cooling fan.**

As a cooling fan rotates in high speed, do not put your hand close to it. Otherwise, it may cause injury to persons. Never touch a rotating cooling fan.

**Do not place the product on unstable locations.**

Otherwise, it may drop or fall, resulting in injury to persons or failure.

**If the product is dropped or damaged, do not use it as is.**

Otherwise, a fire or electric shock may occur.

**Do not touch the product with a metallic object.**

Otherwise, a fire or electric shock may occur.

**Do not place the product in dusty or humid locations or where water may splash.**

Otherwise, a fire or electric shock may occur.

**Do not get the product wet or touch it with a wet hand.**

Otherwise, the product may break down or it may cause a fire, smoking or electric shock.

**Do not touch a connector on the product (gold-plated portion).**

Otherwise, the surface of a connector may be contaminated with sweat or skin oil, resulting in contact failure of a connector or it may cause a malfunction, fire or electric shock due to static electricity.

**Do not use or place the product in the following locations.**

- Humid and dusty locations
- Airless locations such as closet or bookshelf
- Locations which receive oily smoke or steam
- Locations close to heating equipment
- Closed inside of a car where the temperature becomes high
- Static electricity replete locations
- Locations close to water or chemicals

Otherwise, a fire, electric shock, accident or deformation may occur due to a short circuit or heat generation.

**Do not place heavy things on the product.**

Otherwise, the product may be damaged.

**Be sure to drain static electricity from body before you touch any electronics component**

The electronic circuits in your computer and the circuits on Frame Grabber board are sensitive to static electricity and surges. Improper handling can seriously damage the circuits. In addition, do not let your clothing come in contact with the circuit boards or components.

Otherwise, the product may be damaged.

## 2.2 Disclaimer

This product should be used for CoaXPress video simulation. It also can be used for digital input/output (GPIO) simulation purposes. KAYA Instruments assumes no responsibility for any damages resulting from the use of this product for purposes other than those stated.

Even if the product is used properly, KAYA Instruments assumes no responsibility for any damages caused by the following:

- Earthquake, thunder, natural disaster or fire resulting from the use beyond our responsibility, acts caused by a third party or other accidents, the customer's willful or accidental misuse or use under other abnormal conditions.
- Secondary impact arising from use of this product or its unusable state (business interruption or others).
- Use of this product against the instructions given in this manual or malfunctions due to connection to other devices.



KAYA Instruments assumes no responsibility or liability for:

- Erasure or corruption of data arising from use of this product.
- Any consequences or other abnormalities arising from use of this product, or damage of this product not due to our responsibility or failure due to modification.

Repair of this product is carried out by replacing it on a chargeable basis, not repairing the faulty devices. However, non-chargeable replacement is offered for initial failure if such notification is received within two weeks after delivery of the product.

## 2.3 Overview

The *Chameleon* is the industry's first *Camera Simulator* supporting CoaXPress standard. This simulator is capable of generating video streams and test patterns of up to 4 CoaXPress links in single, dual and quad modes. Each link supports standard CoaXPress bitrates up to 6.25 Gbps. This product is ideally suited for development of industrial, defense and aerospace Machine Vision Systems and applications. The Chameleon can easily transmit generic test patterns, customer's specific pre-processed data or custom video streams on the CoaXPress links. It also provides GPIO for machine control signals, such as triggers, exposure control and general I/O, which can be simulated together with the video streams. The simulator enables run time transition of the video streams directly from computer memory enabling almost unlimited simulation time.

The principle of the simulator operation can be seen in Figure 1 .

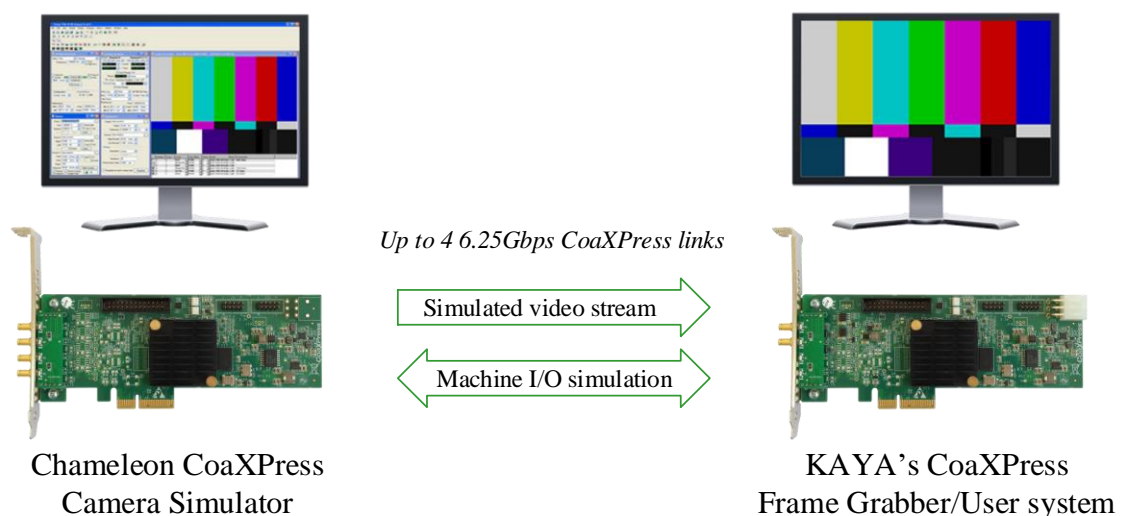


Figure 1 : Chameleon system structure

KAYA Vision Point App is a high-level windows application that provides interactive and highly configurable camera simulation interface for the Chameleon camera simulators.

It allows:

- Interfacing to various CoaXPress Frame Grabbers
- Simulation of different CoaXPress cameras
- Simulation of different resolutions, frame rates and image formats
- Configuration of simulation parameters

Vision Point App is also provides a way to connect, calibrate, control and capture images from camera and camera simulator. For Frame Grabber mode, please refer to KAYA Vision Point application for Acquisition Mode User Guide.

## 2.4 Requirements

To run the Vision Point App a PC with following is required

- Intel x64 processor or compatible.
- At least 4 GB of system memory. (The duration of simulation depends on system memory).
- One of the following operating systems:
  - Windows 7 32/64 bit OS
  - Windows 10 32/64 bit OS
  - Ubuntu 14.04
  - Ubuntu 16.04
  - Linux Red Hat 7
  - Linux CentOS 7
  - A hard drive with 200 MB of free space
- One of KAYA Instruments' camera simulator boards installed
- Internet connection

### 2.5 Installation

Vision Point App is included with KAYA simulator software package installation.

Please refer to the Vision Point Software Installation Guide for the installation information.

#### NOTES:

- 1) Vision Point 2019.1 will be the last version to support Windows 7 OS. We encourage our customers to switch to Windows 10 OS in order to support our latest updates and hotfixes.
- 2) In order for Windows OS to support the latest version of Vision Point, please make sure your Windows is up to date and all the latest updates and hotfixes are installed.
  - a. In case your computer hardware does not support Windows 7 latest updates, please consider using Vision Point 4.4 software version.
  - b. In order to downgrade Vision Point application from version 2019.1 to 4.4, please refer to “Vision\_Point\_Software\_Installation\_Guide” document, troubleshooting section.

The Vision Point App main window with all of its components is shown in Figure 2.

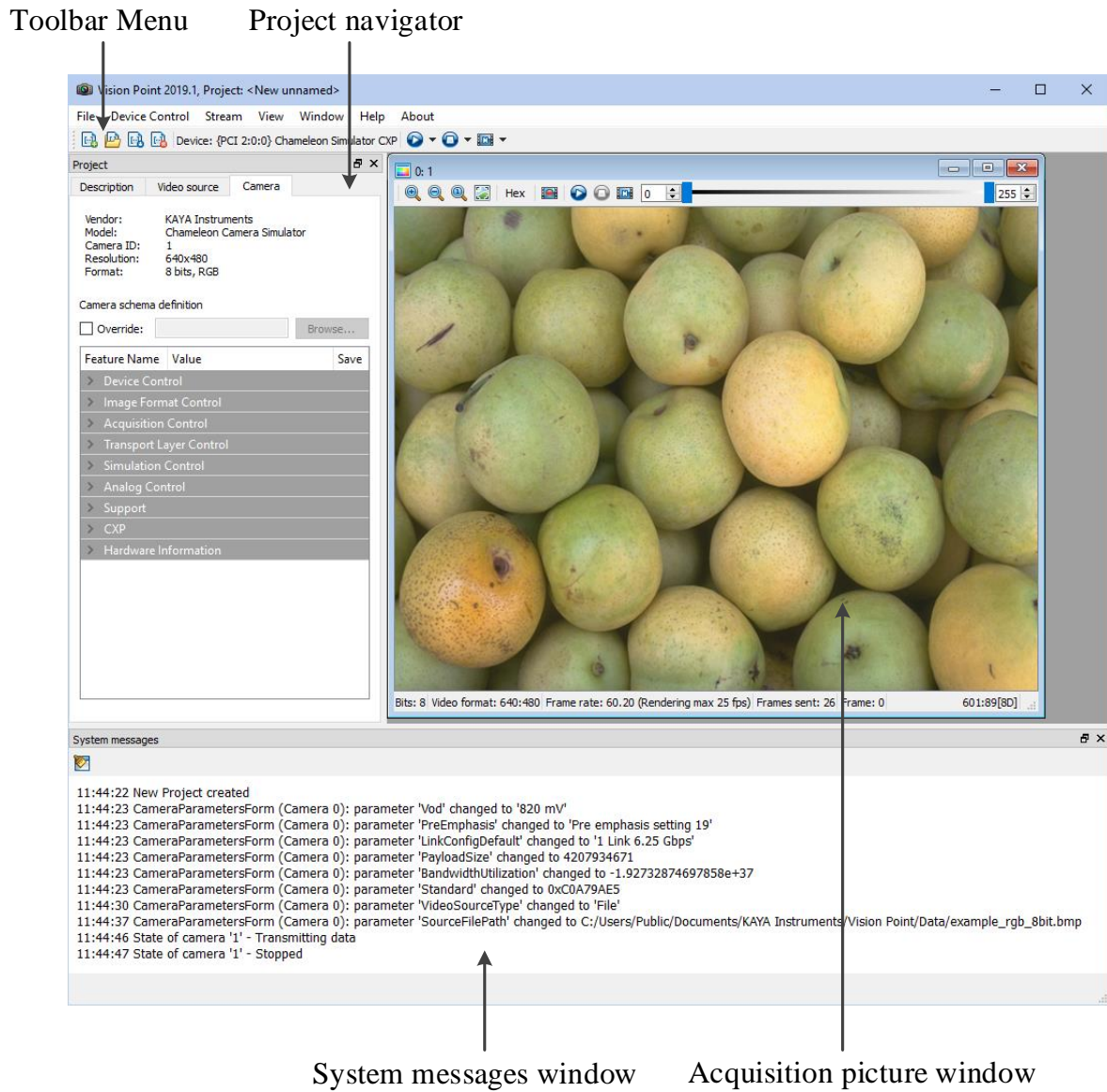


Figure 2 : Vision Point App main window

The main items of Vision Point App are:

### 3.1 Main Toolbar Menu

The Toolbar Menu includes project operation buttons, hardware selection and simulation control buttons. The Toolbar Menu is shown in Figure 3 and includes the following components:

1. New project button to create a new project from scratch
2. Open project button to open existing project or example
3. Save project button to save the opened project and all of its configurations
4. Close project button
5. Device selection list displays the selected hardware board simulator or Demo mode.
6. Start button to generate continues simulation
7. Stop button to stop generated simulation
8. Single frame simulation button to simulate one frame at a time (arrow to simulate 1 frame of a specific camera).

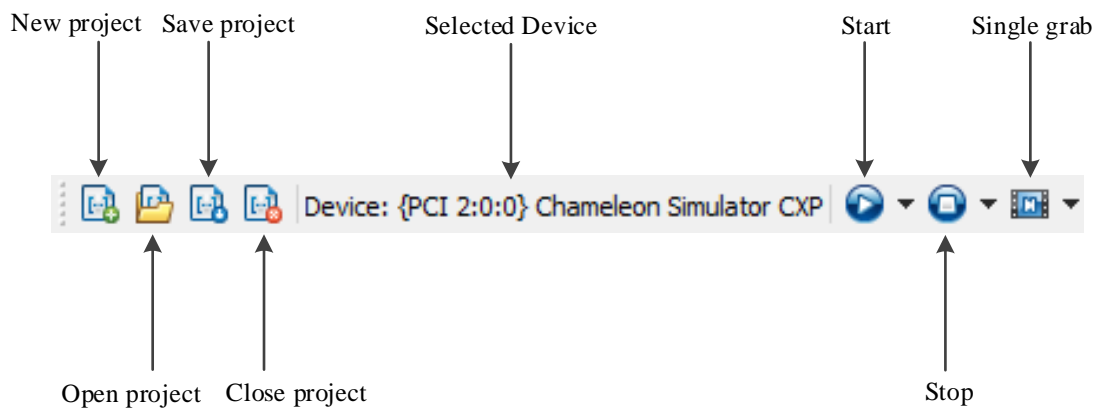


Figure 3 : Toolbar Menu

### 3.2 Project navigator

The project navigator allows configuring the camera and selecting a video source. It includes several tabs:

- 1. A Description tab, used to specify the project name and description as shown in Figure 4.

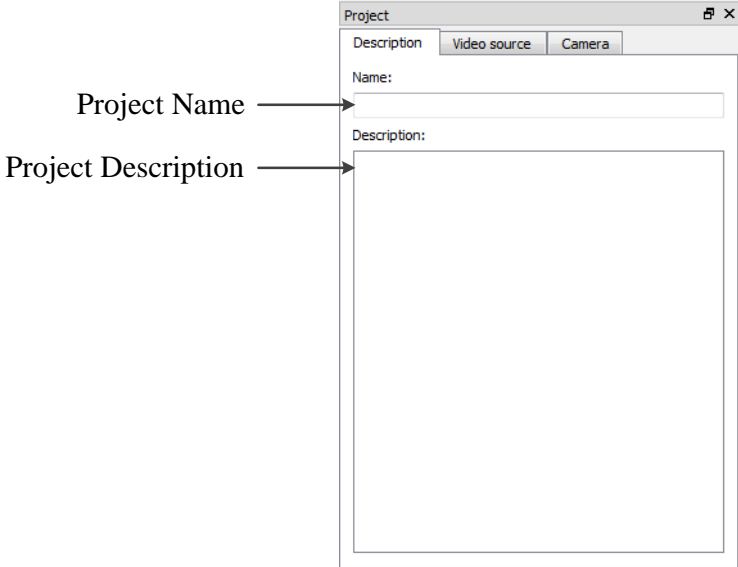


Figure 4 : General project navigator tab

- 2. A Video source tab is used to specify a video source for the current project as shown in Figure 5.

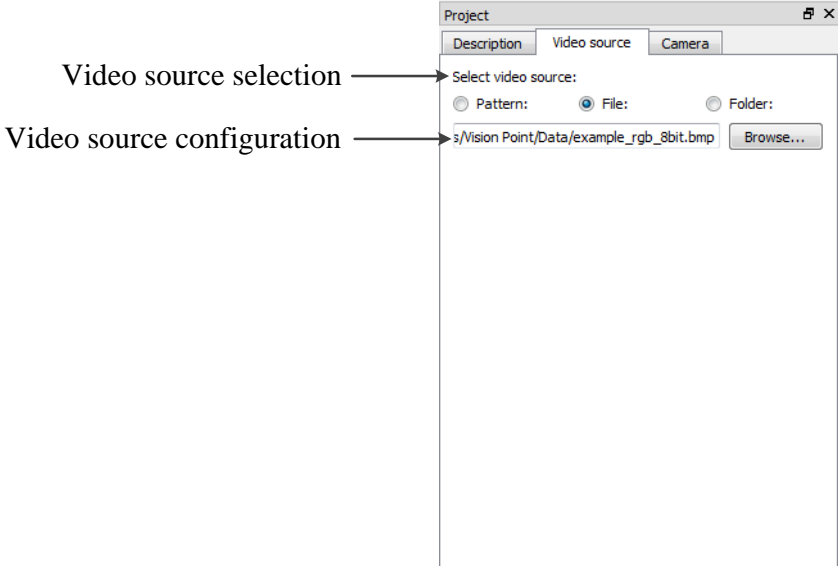


Figure 5 : Video source project navigator tab

3. A Camera tab enables configuring the camera GenCam parameters listed in the camera XML file. It also enables specifying a camera configuration of the native XML file or an external XML file may be loaded from the camera. Override option should be selected in that case. Refer section 7 for more information. The camera tab is shown in Figure 6.

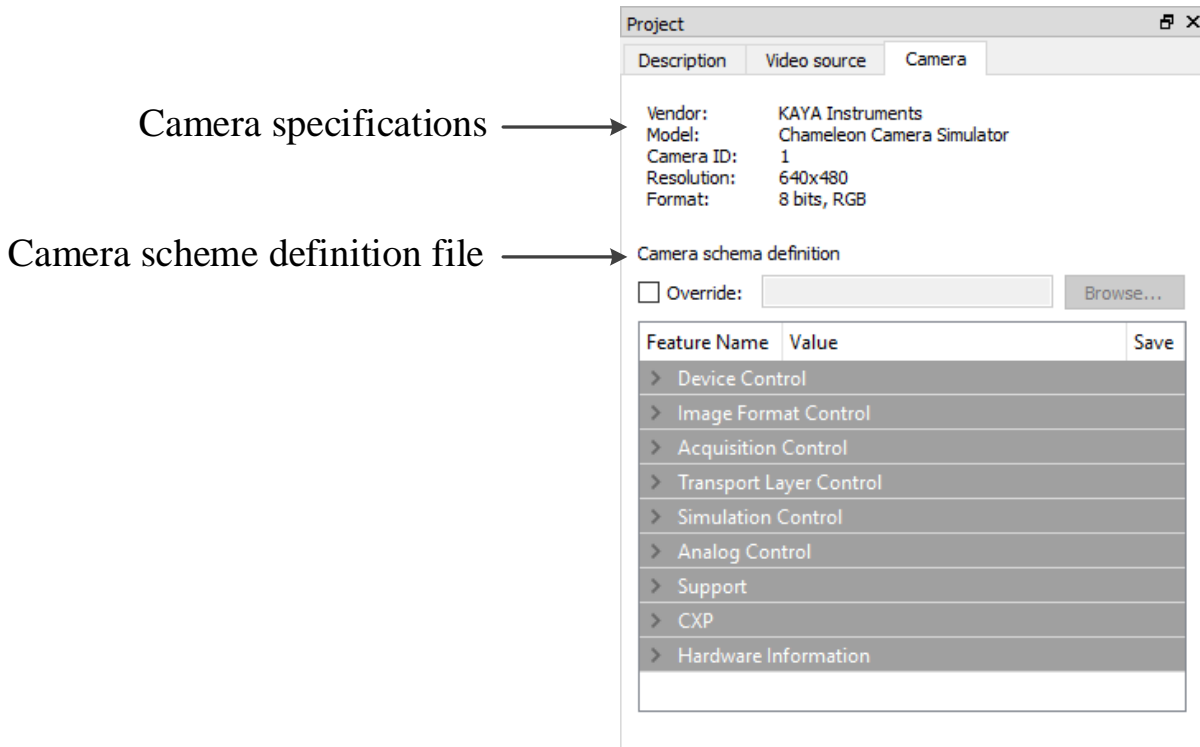


Figure 6 : Camera project navigator tab

### 3.3 System messages window

The system messages window displays general, runtime informational and error messages about state of simulation and changes to various components. If not needed, the message window can be hidden/shown via View tab of the Vision Point App menu bar. The system messages window is shown in Figure 7.

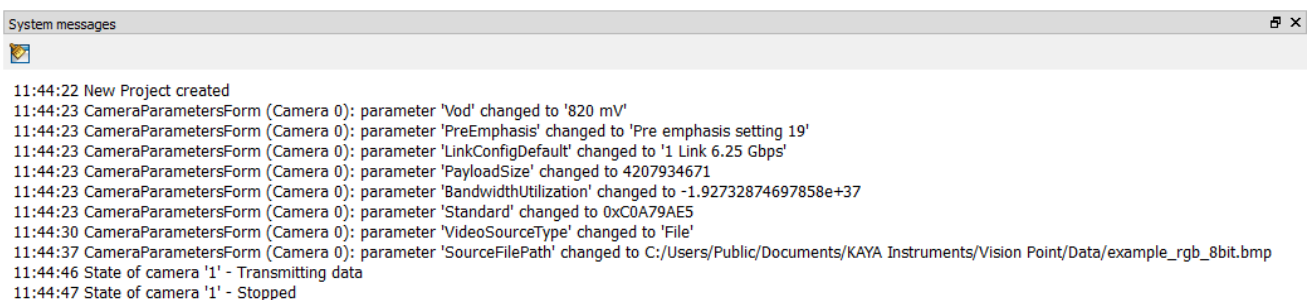


Figure 7 : System messages window



### 3.4 Simulated picture window

The simulated picture window, displays the last frames that has been generated. .Information on frame rate and image format can be found at the bottom of the picture window. The picture window can be seen in Figure 8.

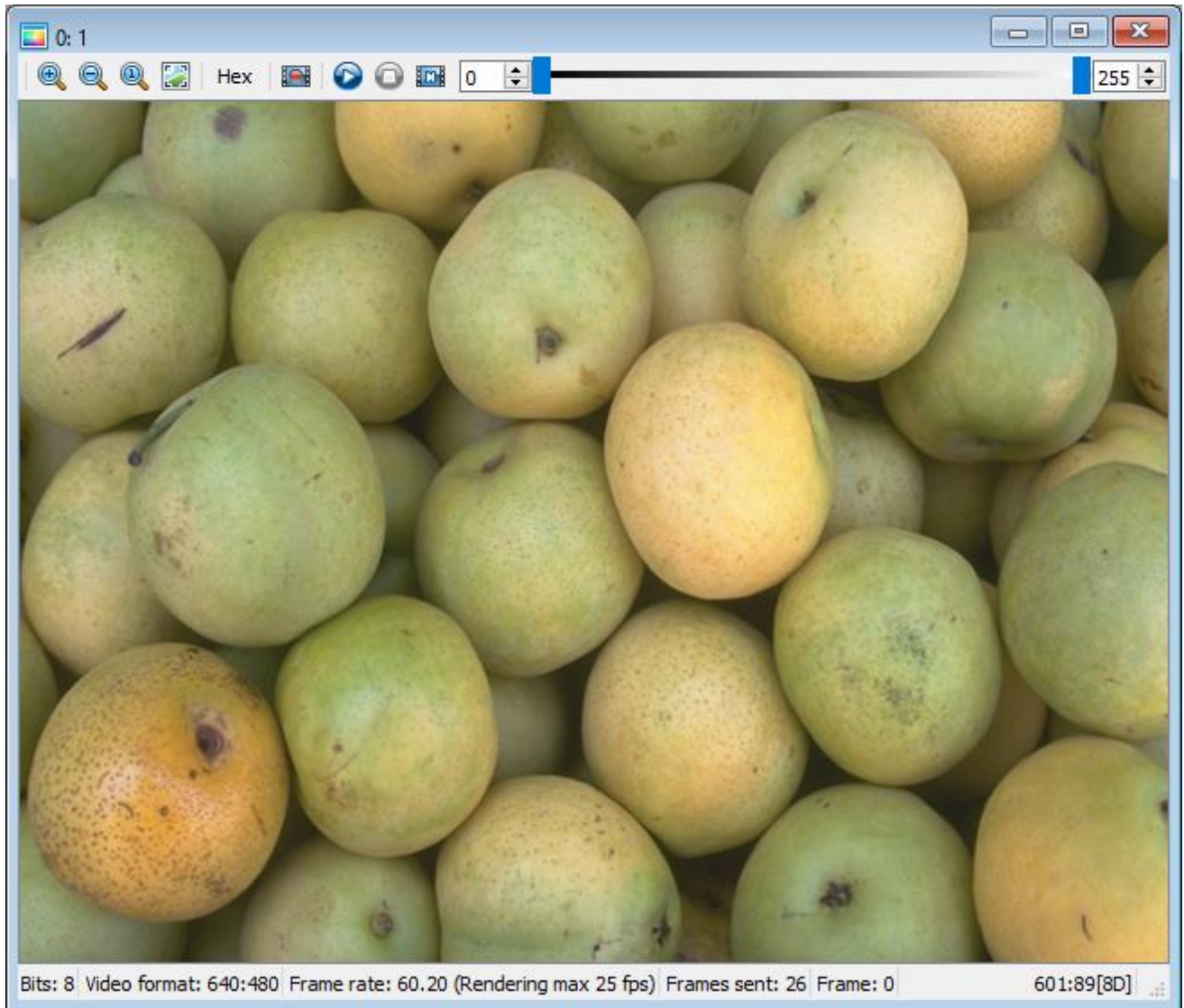


Figure 8 : Picture window



### 3.4.1 Picture window top toolbar

The Picture window toolbar includes stream simulation and image dimensions control buttons. The Picture window toolbar is shown in Figure 9 and includes the following components:

1. Zoom in button to zoom in the image.
2. Zoom out button to zoom out the image.
3. Zoom 1:1 button to reset the image size.
4. Fit to window button to fit the image to the current window size.
5. Hex view of the picture
6. Simulation / **Replay Mode** to switch between live simulation and replaying frames.
7. Stop button to stop simulation of stream of specific camera.
8. Start button to start continues simulation of stream of specific camera.
9. Single grab button to simulate one frame at a time of specific camera.
10. Color level threshold bar - Adjust image level in range of specified minimum and maximum threshold pixel values
11. Minimum threshold pixel value
12. Maximum threshold pixel value

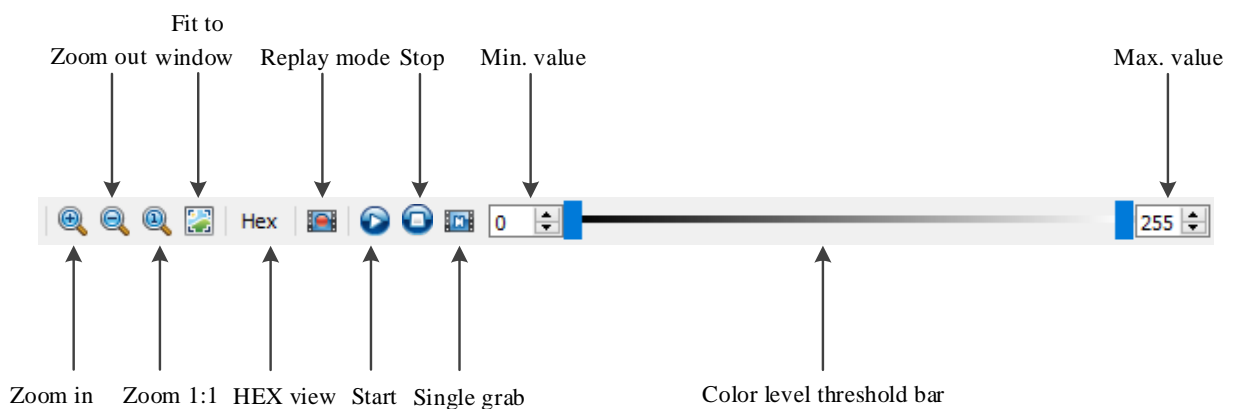


Figure 9 : Picture window toolbar

### 3.4.2 Picture window summary

The Picture summary display toolbar is shown in Figure 10 and includes the following components:

1. Image format
2. Resolution of the image

3. Frame rate
4. Number of sent frames
5. Current frame number
6. Pixel value - location of the mouse cursor in x : y [R G B]

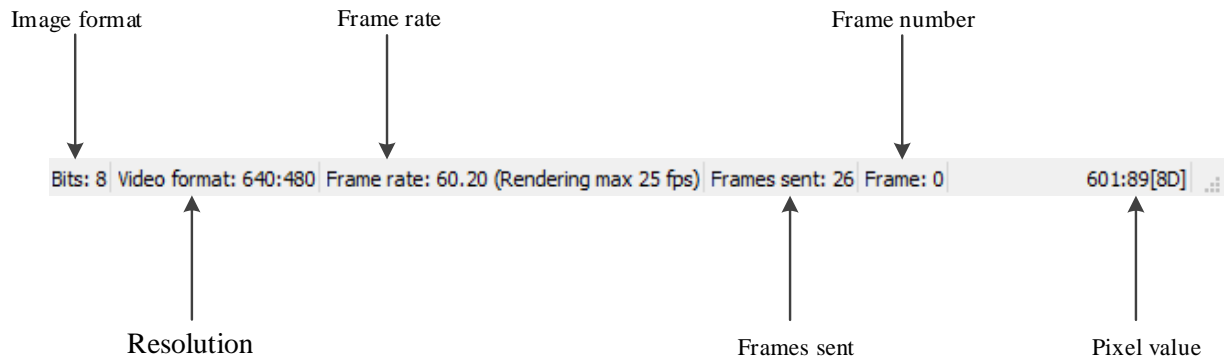


Figure 10 : Picture window summary display toolbar

In addition to the image dimension control buttons in picture window toolbar, two features are available:

1. Moving picture – by holding left mouse button and moving the mouse.
2. Zooming IN/OUT using scroll mouse button – by moving the mouse cursor on top of the image and use scroll button.

### 3.4.3 Buffer Replay Mode toolbar

When Replay Mode for specific camera is chosen, additional icons will appear, as shown in Figure 11:

1. Play button to play the simulated stream.
2. Stop button to stop the simulated stream.
3. Show previous frame button to show the previous simulated frame.
4. Show next frame button to show the next simulated frame.
5. Jump to start button to go to the first simulated frame.
6. Jump to end button to go to the last simulated frame.
7. Looping ON/ OFF button to play/stop the broadcasted frames in a loop.
8. Frame rate window shows the current frame rate.

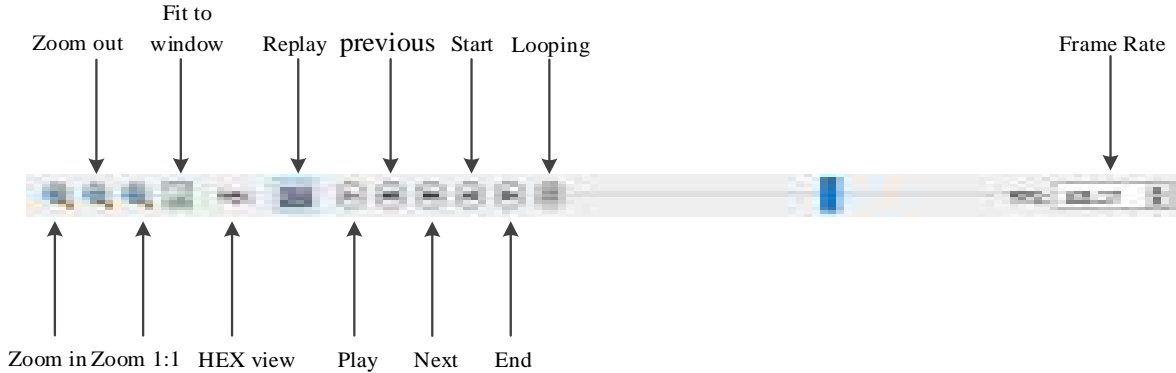


Figure 11 : Replay mode additional toolbar

### 4.1 Using Vision Point App

This section describes the basic simulation setup. The basic step for the simulator configuration includes:

1. Selecting a simulator board
2. Opening/creating a project
3. Adjusting the camera parameters
4. Selecting the video source
5. Starting the simulation

### 4.2 Selecting a simulator board

A Vision Point App requires selecting a KAYA simulator target board before using any simulation features. Different boards may include different feature sets. The target board is selected from the combo box and is only available when there is no active project mounted. If a different target board needs to be selected, the active project needs to be closed first.

To select a target board:

- Close any active project.
- The application start window will appear.
- In the opened window, click ▼ button to view the list of the available devices.
- When the list of available target devices will open, select the required device - Chameleon Simulator/Demo mode from the list.

Note: When no ANY KAYA's board is installed the application will start in Demo Grabber device mode.

The simulator selection example is shown in Figure 12.

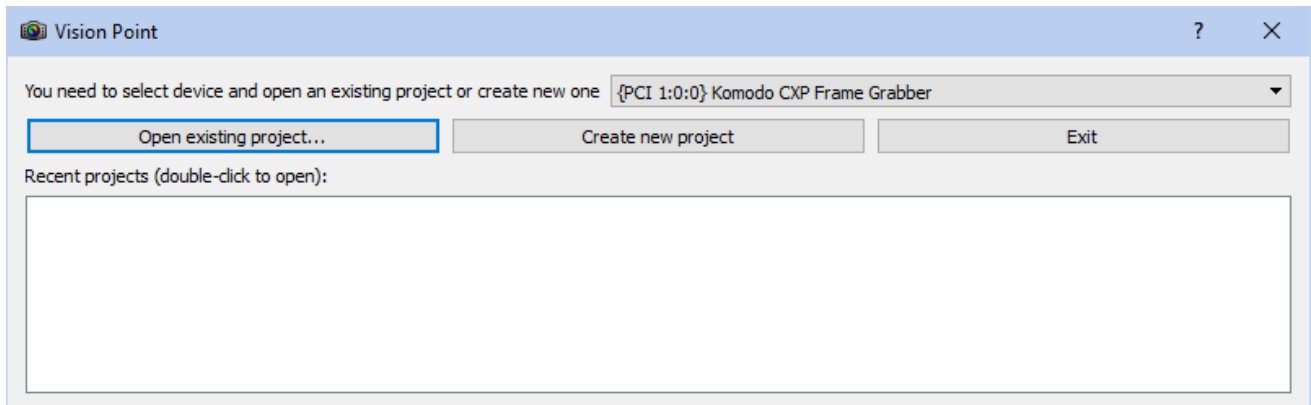


Figure 12 : Selecting the camera

### 4.3 Open a project file

After a target board is selected, a simulation project can be opened.

To open a project file choose one of the options:

- Click “Open existing project” button located on the application start dialog
- Use the 📁 button located on the Toolbar menu
- Click “Open Project” located under “File” menu

Select the desired project file (file extension .fgprj).

Vision Point Application provides an example project, located in *Examples\Vision Point\Data* under users Documentation. See section 8 for more information.

### 4.4 Creating new project file

To create a new project file choose one of the options:

- Click “Create new project” button located on the application start dialog
- Use the 📁➕ button located on the Toolbar menu
- Click “New Project” located under “File” menu

Please follow the instructions described in section 7 on creating a custom configuration.

### 4.5 Adjusting the camera parameters

The camera configuration contains many parameters. Some of the parameters are standard CoaXPress defines, some are camera dependent and some effect the image type and geometry. Before starting the simulation, the image parameters have to be configured to match the simulated camera requirements.

The parameters can be configured under the “Camera” tap in the project dialog as can be seen in Figure 13.

Camera XML is loaded automatically when Simulator board is chosen. To override the provided XML please refer to section 7.

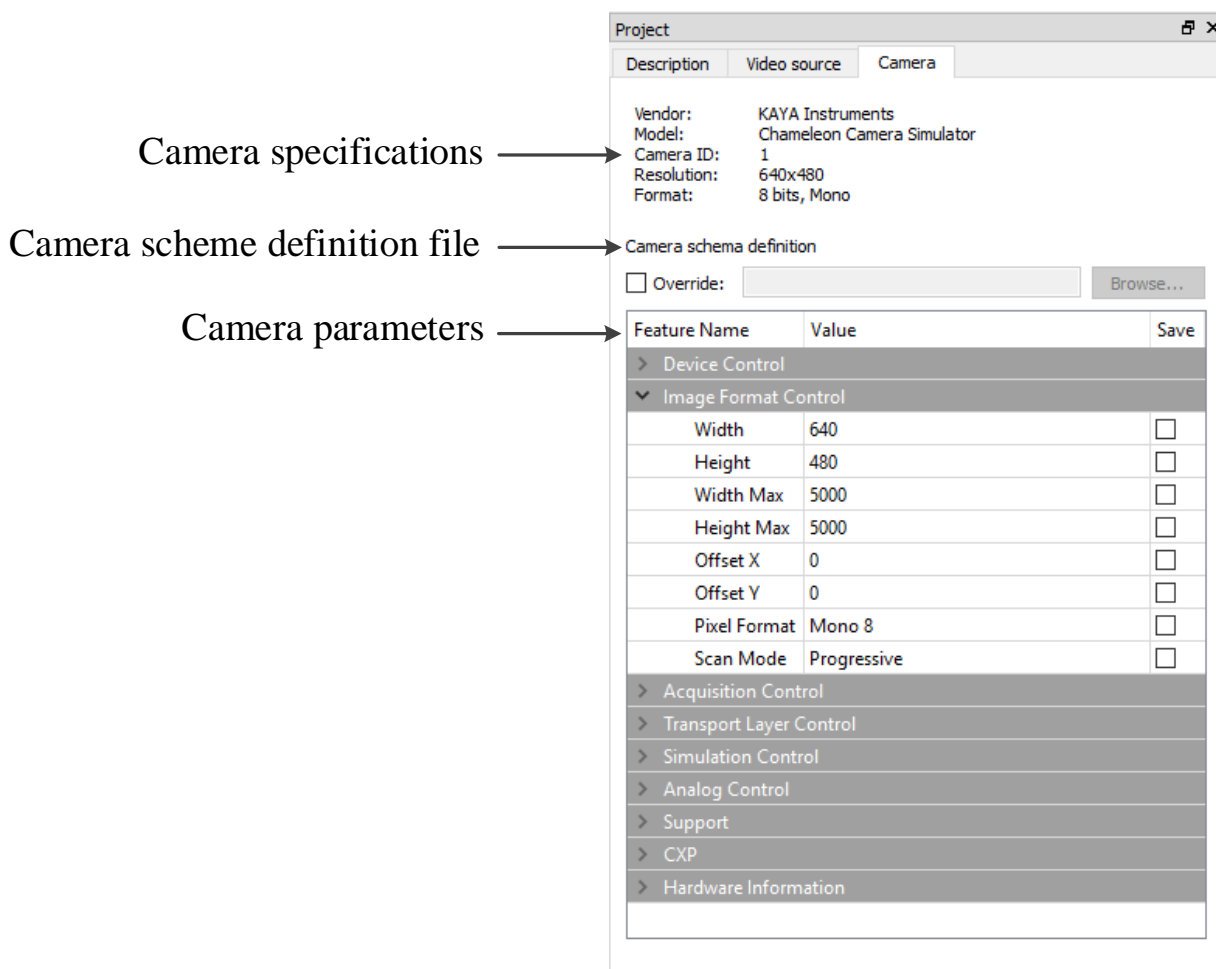


Figure 13 : Adjusting camera parameters

There are several properties that directly affect the simulation. These parameters must be configured prior to starting the simulation. The mandatory parameters are described in Table 2.

Category	Property	Description
Image Format Control	Width	This property defines the frame width in pixels
Image Format Control	Height	This property defines the frame height in pixels
Image Format Control	Offset X	This property defines the horizontal offset of the frame within ROI in pixels
Image Format Control	Offset Y	This property defines the vertical offset of the frame within ROI in pixels
Image Format Control	Pixel Format	This property defines the pixel format of the image as specified in section 9.4.1.1 of the CoaXPress 1.1 standard.
Acquisition Control	Acquisition Mode	This property defines acquisition mode of the camera, it can be “Continues”, “SingleFrame” or “MultiFrame”. In case of “Continues” mode the simulation will continue running until a stop command is issued. In “SingleFrame” mode a single frame will be sent. In “MultiFrame” mode the number of frames defined in “Acquisition Frame Count” field will be sent.
Acquisition Control	Acquisition Frame Rate	Defines the frame rate for frame scan cameras. The units are frames per second.
Acquisition Control	Acquisition Line Rate	Defines the line rate for line scan cameras. The units are lines per second.
Acquisition Control	Acquisition Frame Count	Defines the number of frames to be simulated. Used only if “MultiFrame” value is chosen in the “AcquisitionMode” enumeration field
Simulation Control	Trigger Mode	“Free Running” for internal timing and “Triggered” for external triggered timing. In case of “Free Running” mode, frames/lines are send according to “Acquisition Frame Rate”/“Acquisition Line Rate property“. In case of “Triggered” mode a new line/frame is send upon hardware/software trigger.
Simulation Control	Trigger Source	Selects a source for the trigger. The sources are described in Table 4.

Table 2: Mandatory camera properties


NOTE: The “Image Format Control” properties can be also modified from the Frame Grabber according to GenCam protocol. Such changes are only allowed when the simulation is stopped.

The other properties in the list do not affect the type and geometry of the image. They are either standard CoaXPress properties or a custom properties related to a specific camera.

For more information regarding the CoaXPress standard properties please refer to CoaXPress standard, Gen<i>Cam standard and specific camera documentation.


## 4.6 Saving a project

To save a project file choose one of the options:

- Click “Save” or “Save As...” located under “File” menu
- Use the  button located on the Toolbar menu

## 4.7 Closing a project

To close an opened project choose one of the options:

- Click “Close” located under “File” menu
- Use the  button on Toolbar Menu button

Closing a project will disconnect from the previously connected Device. Now you can connect to a new Simulator using either the “New Project” or “Open Project” option.

NOTE: Closing the project window using the X button, simply closes the project window, without closing the project itself. Display options can be found under “View” menu.

## 4.8 Selecting a video source

The next step prior to starting the simulation is to select the right video source. This can be one of the following:

1. Pattern
2. An image file
3. A directory containing several files of a specific type.

To select and configure the desired video source, use the “Video source” tab in the project navigator window as described in the next sections.



#### 4.8.1 Pattern source

A pattern source generates a static pre-defined pattern. In case of pattern, a pattern type should be specified in the “Pattern type” list. There are several patterns that can be selected as shown in Figure 14.

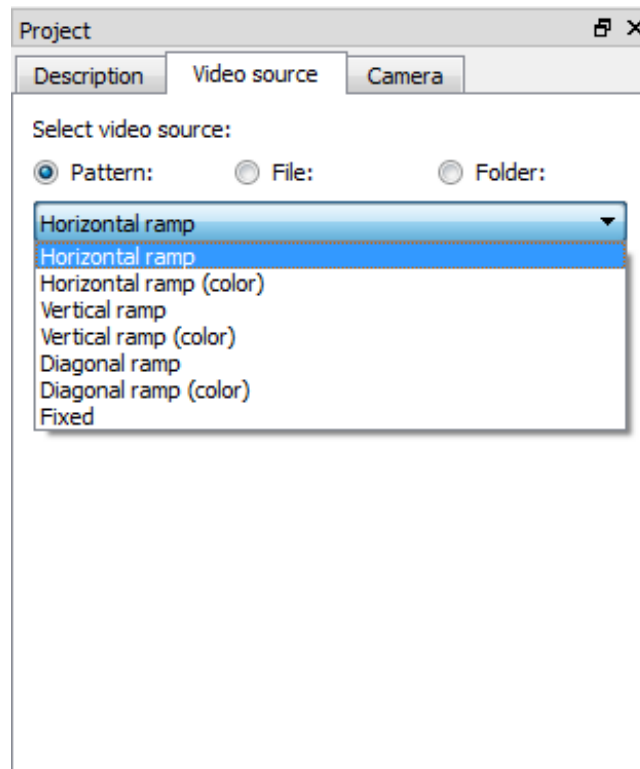


Figure 14 : Pattern video source

The different available patterns are:

1. Horizontal ramp – a gray scale horizontal gradient as shown in Figure 15.

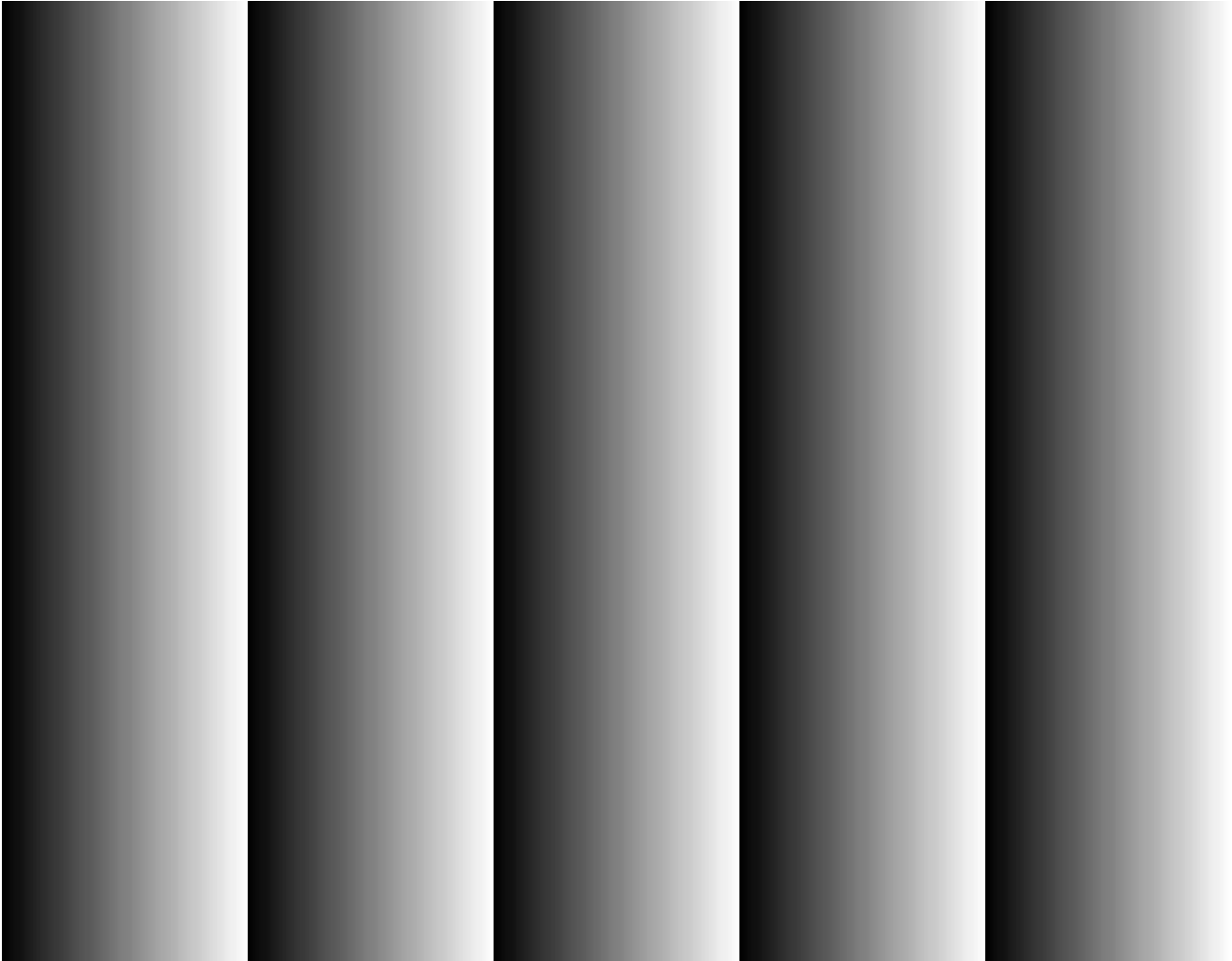


Figure 15 : Horizontal pattern

2. Horizontal color ramp – horizontal gradient of several color stripes as shown in Figure 16.

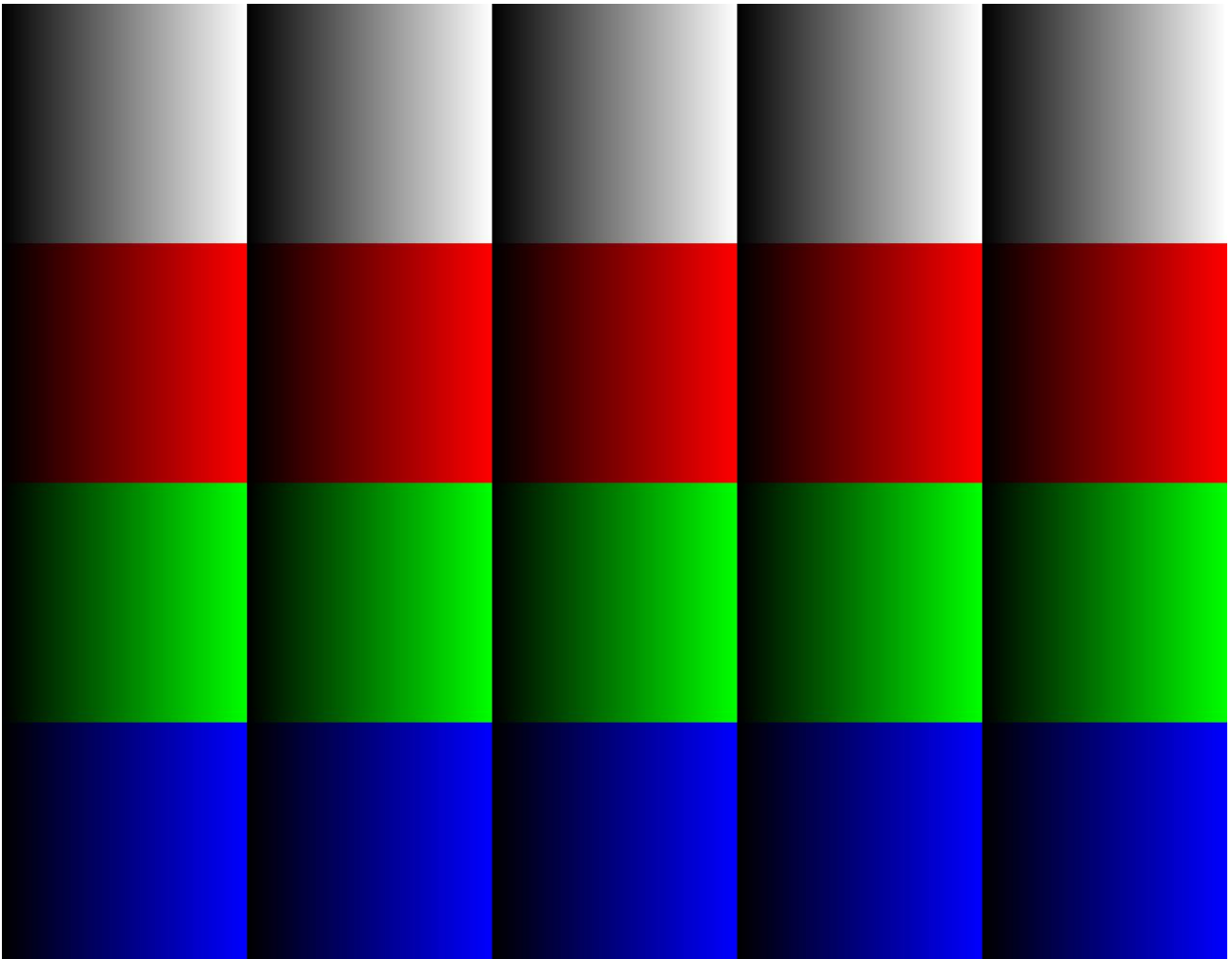


Figure 16 : Horizontal color pattern

3. Vertical ramp – a gray scale vertical gradient as shown in Figure 17.

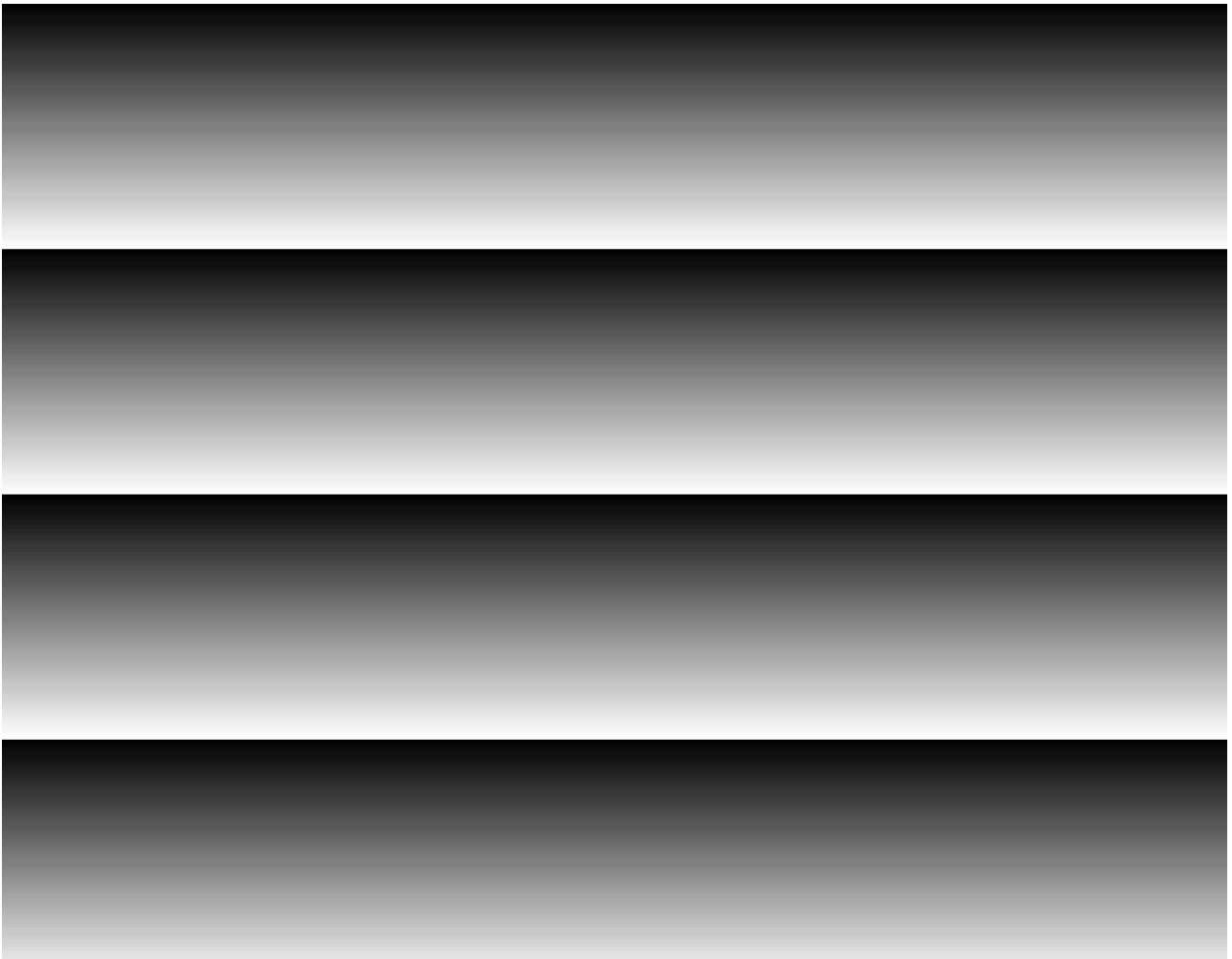


Figure 17 : Vertical pattern

4. Vertical color ramp – vertical gradient of several color stripes as shown in Figure 18.

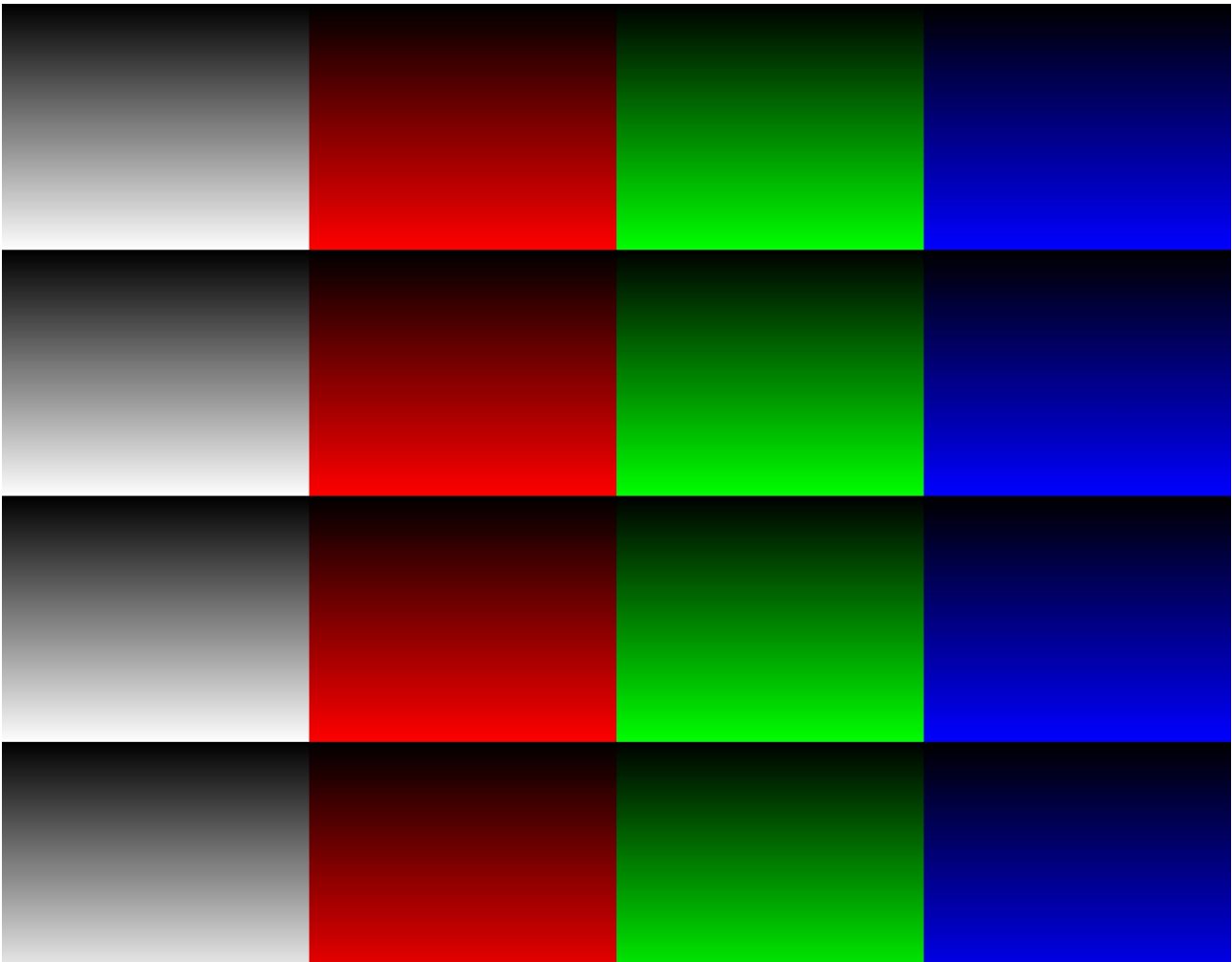


Figure 18 : Vertical color pattern

5. Diagonal ramp – a gray scale diagonal gradient as shown in Figure 19.



Figure 19 : Diagonal pattern

6. Diagonal color ramp – diagonal gradient of several color stripes as shown in Figure 20.

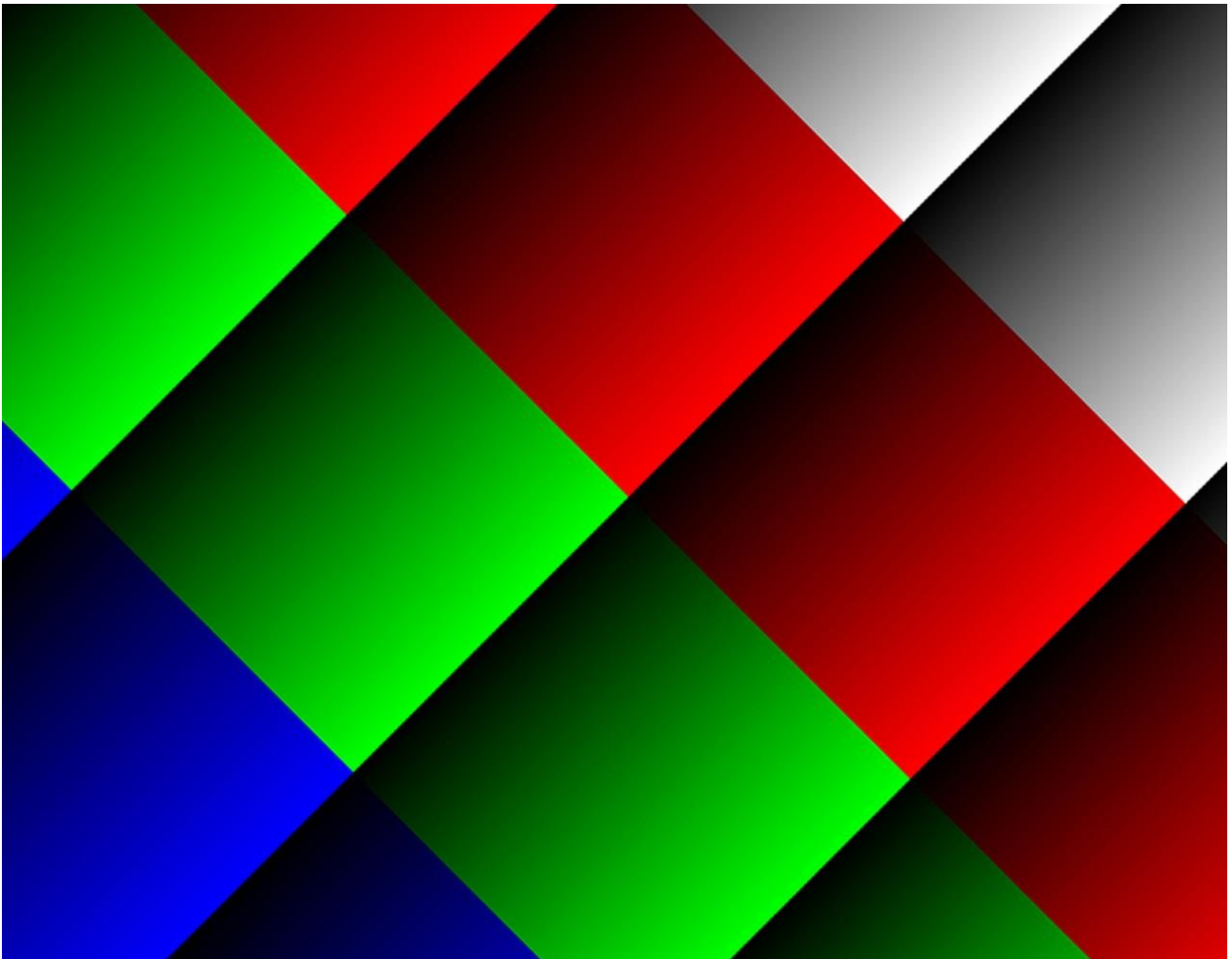


Figure 20 : Diagonal color pattern

### 7. Fixed – Fixed color filling of the entire frame

In case a Fixed pattern type is selected a color configuration controls are enabled as shown in Figure 21. There are few methods to select the desired color:

- The numeral values of individual color can be modified.
- The scales on the right may be used by dragging individual color until the desired result is achieved.
- The interactive color pane can be moved on the circular axle as well as the square shade pane to select the desired color.
- The “Pick” button may be clicked to activate the color sampling tool (resembles to the Eyedropper tool in Photoshop). Once the button is clicked, the next cursor selection will determine the color.
- The HEX value can be modified directly if a color value is known. The “Hex” value represents a combined color value that consists of all the color planes. Each color is represented by 2 bytes (16 bits) in the Hex value LSB aligned. The first color plane is on the left side of the value. For example for an RGB 10 bits format with R=255, G=1, B=512 the hex value will be #00FF00010200.



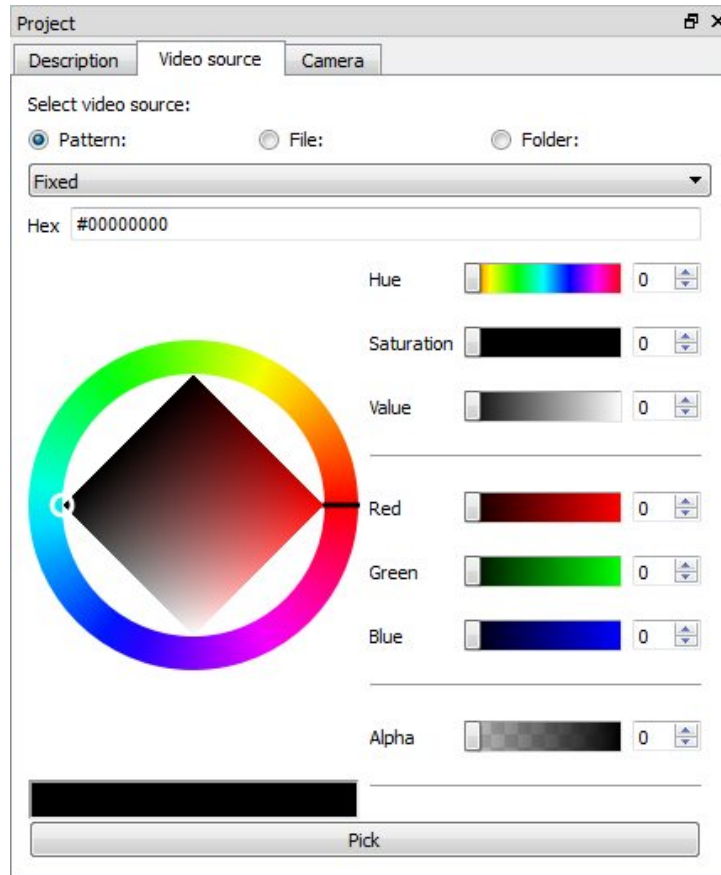


Figure 21 : Fixed color pattern

#### 4.8.2 File source

The Vision Point App supports loading of images from BMP, PNG, TIFF and RAW files. When a file source is selected, the Vision Point App loads an image from a single file. Please refer to Table 3 for the supported image formats that can be stored in each file type.

	RAW	BMP	TIFF	PNG
Mono/ Bayer 8 bit	✓	✓	✓	✓
Mono/ Bayer 10-16 bit	✓	✗	✓	✓
RGB 8 bit	✓	✓	✓	✓
RGB 10-16 bit	✓	✗	✓	✓
RGBA 8 bit	✓	✗	✓	✓
RGBA 10-16 bit	✓	✗	✓	✓
YCbCr 8 bit	✓	✗	✗	✗
YCbCr 10-16 bit	✓	✗	✗	✗
YUV 8 bit	✓	✗	✗	✗
YUV 10-16 bit	✓	✗	✗	✗

Table 3 : Supported image formats

**NOTE:**

1. If the source file resolution, color format or bit-width of BMP, TIFF and PNG files do not match the selected camera parameters, it will be rescaled automatically to match the camera. An appropriate message will appear in the log for this case.
2. The 8 bit formats are stored on a single byte basis, while 10, 12, 14 and 16 bit ones are stored on two byte basis LSB aligned.
3. The RAW files must match the camera parameters; otherwise they won't be loaded correctly.

RAW files are files that contain only the bitmap data of an image with no header.

The RAW file must be structured as follows:

- No header or Metadata is to be a part of the file.
- Upper-Left pixel has to be located first in the file.
- All the pixels in the RAW file should be packed and no intra-pixel and intra-line alignment allowed.
- For multi-byte color data, the byte-order is "Little Endian", i.e., LSB goes first.
- A RAW file can contain more than one frame. Only full frames will be taken from a RAW file, i.e. if there is a partial frame at the end of the file, it will be ignored.

### 4.8.3 Folder source

In case a folder source is selected, a type and number of frames to be loaded must be specified. Only the files of selected type will be loaded in alphabetical order (as they are located in the folder). If there are more frames in the files than the maximum number specified, the simulator will load the maximum number of frames ignoring the rest. In case there are less frames in files, the last frame will be multiplied until maximum number of frames is mounted.

The rules that apply to the single file also apply to the folder source.

For the RAW files, the number of frames in each file in the folder can vary.


## 4.9 Controlling a simulation


There are several ways for controlling the simulation:

1. Using the Toolbar Menu buttons and the Picture window buttons
2. Using the buttons in "Device Control" menu.
3. Using the "Acquisition Start" and "Acquisition Stop" commands located under "Camera" configuration tab, Acquisition control.
4. Using the "Acquisition Start" and "Acquisition Stop" commands from the frame grabber.



NOTE: A project has to be loaded and video source have to be selected to start the simulation. Once a simulation is started, a window with the currently transmitted frame will be shown. See section 3.4

#### 4.9.1 Controlling simulation from Toolbar Menu and Picture window menu

In order to start the simulation from Toolbar Menu or the Picture window, simply press the  button.

To stop the simulation, press the  button.

#### 4.9.2 Controlling simulation from Device Control menu

In order to start the simulation from Device Control Menu, simply open the “Device Control” tab and press the  button. To stop the simulation, press the  button.

#### 4.9.3 Controlling simulation from camera configuration

To control simulation from camera configuration, open the “Camera” tab in the project widow and expand the “Acquisition Control” category as shown in Figure 13.

To start the simulation click the Execute button near “Acquisition Start”

To stop the simulation click the Execute button near “Acquisition Stop”

#### 4.9.4 Controlling the acquisition from the frame grabber

Different Frame Grabbers have a different approach to starting an acquisition. On several models the “Acquisition Control Start” / “Acquisition Control Stop” commands are automatically written to the camera when Frame Grabber starts the acquisition, while on others it’s needed to manually issue Gen<i>Cam command or direct write to the camera register.

Please refer to the Frame Grabber documentation for more information.

Several applications require a triggered frame/line output. In such case a simulator waits for trigger event before sending a new line/frame. In case of frame scan cameras, each trigger event results in full frame output. In case of line scan cameras each trigger event results in full line output. In order to configure the simulator in triggered mode the following steps should be taken, as shown in Figure 22:

1. Open the “Camera” tab in the project window
2. Under “Simulation Control” category open “Triggered Control” category
3. Set "Trigger Mode" to Triggered
4. Set “Triger Source” To “Camera Trigger”
5. Set “Trigger Activation” To required edge
6. Set “Trigger Delay” according to your requirements

7. Detect the camera simulator

Note: Any configuration change on camera side should be followed by redetection or refresh.

8. Configure triggering in the Frame Grabber and start acquisition

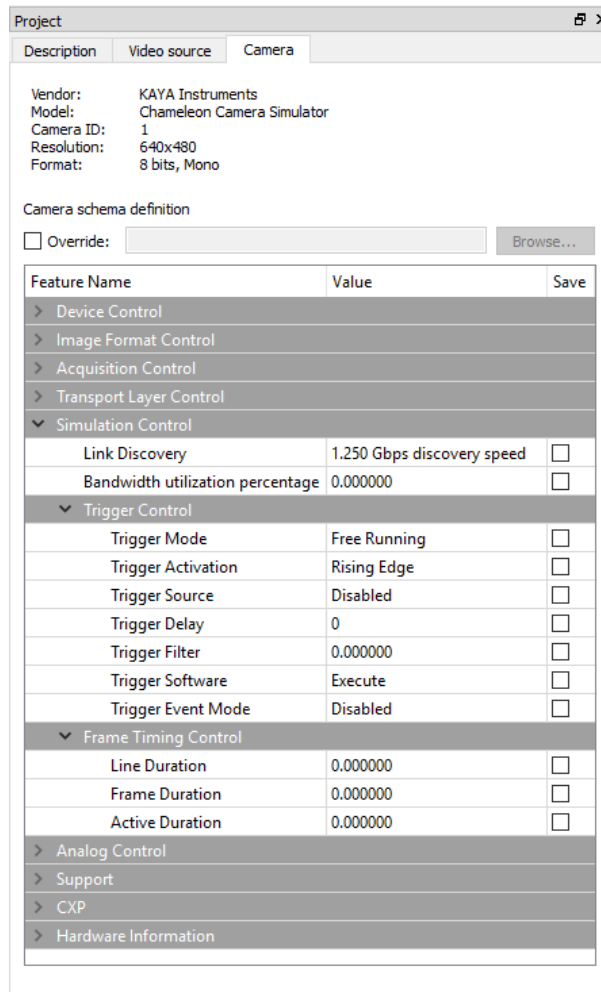



Figure 22 : Trigger control

The trigger event can be generated by:

- Software trigger, by pressing the  in the Toolbar Menu or clicking the “Trigger” from “Simulator Control” menu. This overrides the external trigger.
- External trigger that is received from GPIO or from CoaXPress link. The available sources for the trigger are described in Table 4.

Simulation Trigger Source	Description
Logic 0	Fixed Logical 0
Isolated Input 0	Isolated Input 0 from external connector
Isolated Input 1	Isolated Input 1 from external connector
Isolated Input 2	Isolated Input 2 from external connector
Isolated Input 3	Isolated Input 3 from external connector
LVDS Input 0	LVDS Input 0 from external connector
LVDS Input 1	LVDS Input 1 from external connector
LVDS Input 2	LVDS Input 2 from external connector
LVDS Input 3	LVDS Input 3 from external connector
TTL Input 0	TTL Input 0 from external connector
TTL Input 1	TTL Input 1 from external connector
TTL Input 2	TTL Input 2 from external connector
TTL Input 3	TTL Input 3 from external connector
TTL Input 4	TTL Input 4 from external connector
TTL Input 5	TTL Input 5 from external connector
TTL Input 6	TTL Input 6 from external connector
TTL Input 7	TTL Input 7 from external connector
LVTTL Input 0	LVTTL Input 0 from external connector
LVTTL Input 1	LVTTL Input 1 from external connector
LVTTL Input 2	LVTTL Input 2 from external connector
LVTTL Input 3	LVTTL Input 3 from external connector
CXP Trigger	Trigger Input from CoaXPress Link
CXP GPIO 0	GPIO Input 0 from CoaXPress Link
CXP GPIO 1	GPIO Input 1 from CoaXPress Link
CXP GPIO 2	GPIO Input 2 from CoaXPress Link
CXP GPIO 3	GPIO Input 3 from CoaXPress Link
Logic 1	Fixed Logical 1

Table 4 : Trigger source options

The sensor timing is controlled according to the waveform below:

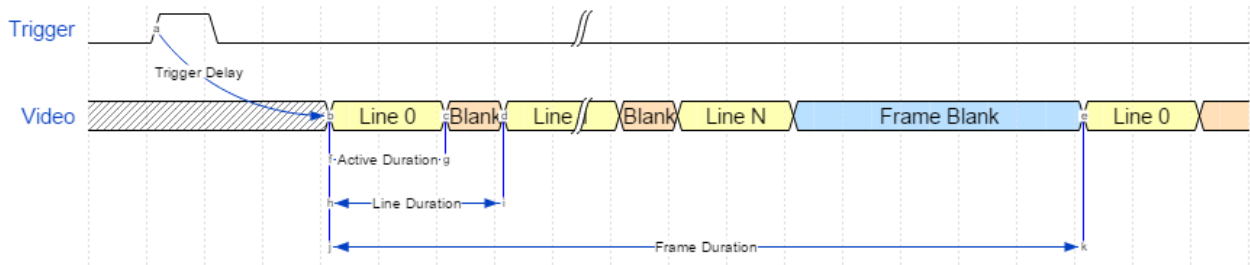


Figure 23 : Sensor timing diagram




In order to simulate a custom camera, a new project has to be created. The following components are required:

1. Gen<i>Cam XML file from the camera you wish to simulate
2. Required values for the properties described in the XML file

NOTES:

1. The custom XML file size limitation is 1 MByte. If your file is bigger than that it will have to be compressed to ZIP file.
2. The user address space on the KAYA simulators is 510 Mbytes in size (Not including the XML file) and spans from 0x6000 to 0x1FEFFC00. Any other addresses out of this range are ignored.

To start a new design:

1. Click the  button in the Toolbar Menu or click “New Project” from the “File” menu
2. A project window as shown in Figure 24 will be opened.

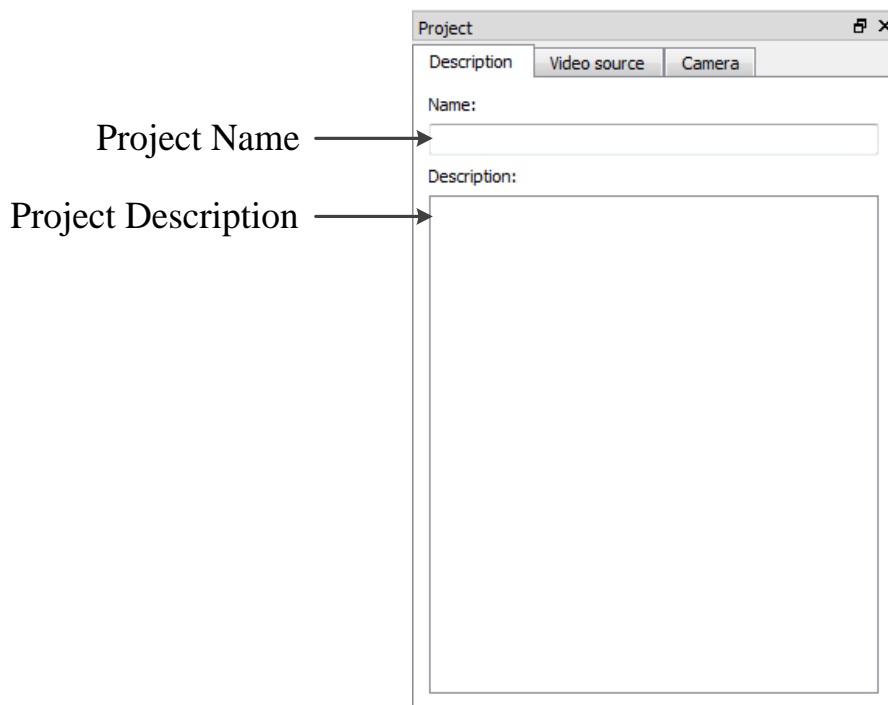


Figure 24 : New project window

3. Write a project name and description under the “General” tab.
4. Switch to Video source tab and specify the desirable video settings and video source as shown in section 4.8 and save the project
5. Switch to “Camera” tab and specify the custom Gen<i>Cam XML file in Camera scheme definition. Choose Override option and Browse the desirable XML as shown in Figure 25. The later will hold all the camera parameters values.

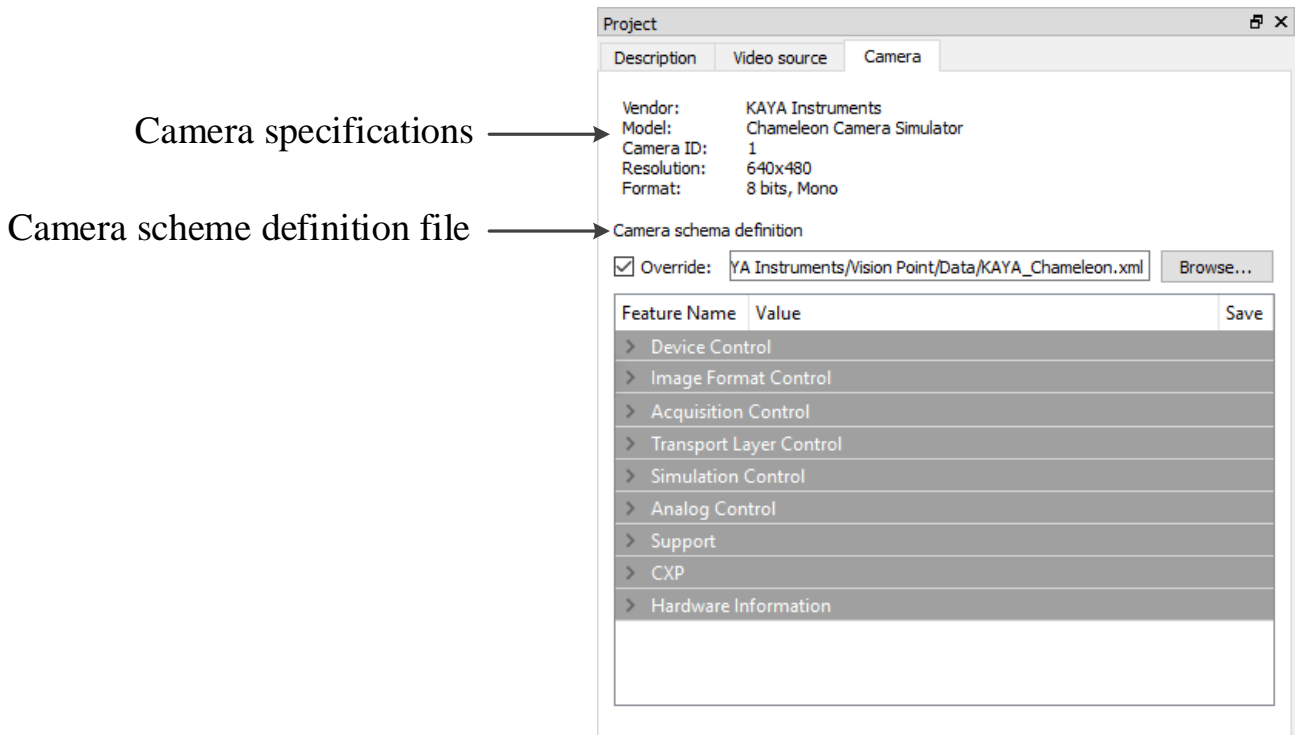


Figure 25 : New project camera parameters

6. Once the XML file is specified, camera properties will be displayed and loaded with default values as shown in Figure 26. If the XML file doesn't load correctly, an error probably exists in the chosen file. In this case the XML file structure must be repaired or another XML file is to be loaded.

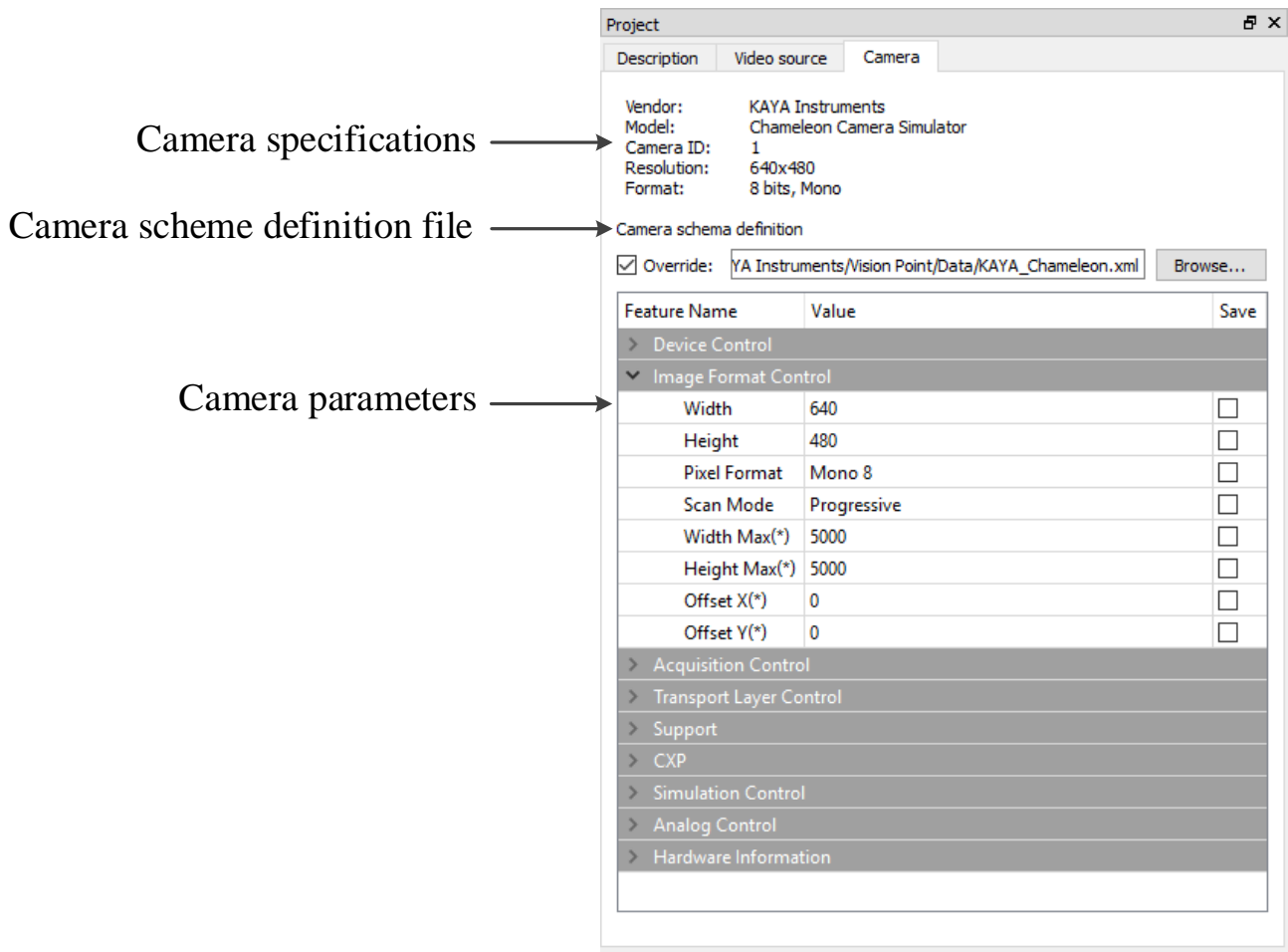


Figure 26 : New XML file loaded

7. At this stage a value for each property have to be specified in order to match the simulated camera settings by filling the values manually.
8. Now a simulation can be started for the custom camera.

Vision Point Application provides an example project, located in *Examples\Vision Point\Data* under users Documentation. The parameters of the example are:

1. Width : 640
2. Height : 480
3. Frame rate : 60 fps
4. Pixel Format: Mono 10 bit per pixel
5. Acquisition mode : Continuous
6. Video source : Horizontal ramp pattern

- CoaXPress standard ([http://jiia.org/en/standard\\_dl/CoaXPress-wg/](http://jiia.org/en/standard_dl/CoaXPress-wg/))
- Gen*i*cam standard (<http://www.emva.org/cms/index.php?idcat=47>)
- Chameleon HW and Installation Guide
- Vision Point Simulator API Data Book

## 10.1 Updating the device firmware using Vision Point Application

In order to update the firmware of a KAYA Instrument's device, a "Chameleon \_X\_X.bin" file is needed, when the X\_X is the desired firmware number.

1. In the Toolbar Menu, under Device Control tab, chose the "Firmware update" option. A new window will open displaying the current device firmware version.
2. Click "Browse..." button, as shown in Figure 27, and select the desired firmware update file, in accordance with the device chosen (.bin file extension), and Click "Next >" button.

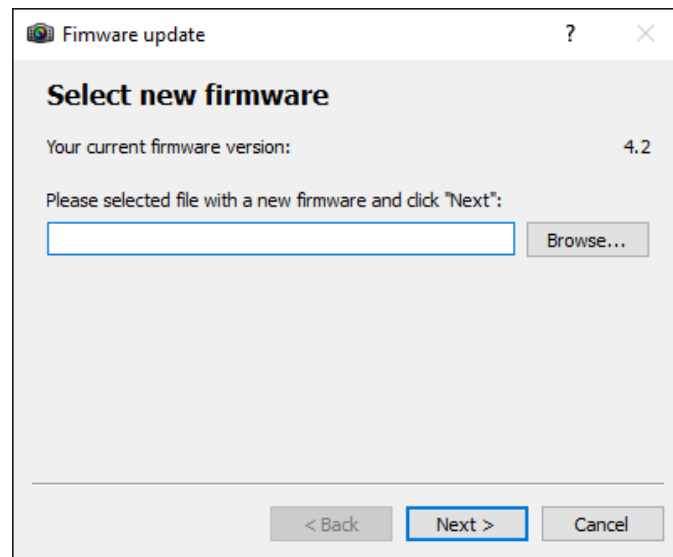


Figure 27 : Firmware Update selection window

3. The next window will display both, current and new firmware, as shown in the Figure 28. By clicking the "Next >" button, the conformation is made and the firmware update will start immediately.

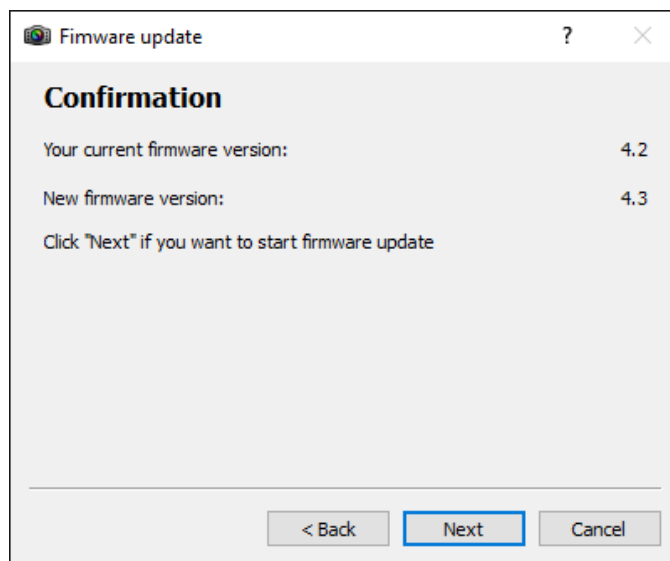


Figure 28 : Firmware Update Confirmation window

4. The next window displays the initiated firmware update. The firmware update process displayed in the first progress bar and the firmware validation displayed in the second, as shown in Figure 29.
5. **Do not interrupt the process!**  
In case of an error, the firmware update will fail and return to previous operation mode.
6. A successful update will result in reaching 100% on both progress bars.
7. **A full PC power off cycle is required to activate the new firmware.**
8. Turn on the PC and check the firmware version by opening the Vision Point application, Frame Grabber tab. The firmware version located under Hardware information. Make sure that the firmware version matches the version supplied. That would insure the success of the firmware update operation.

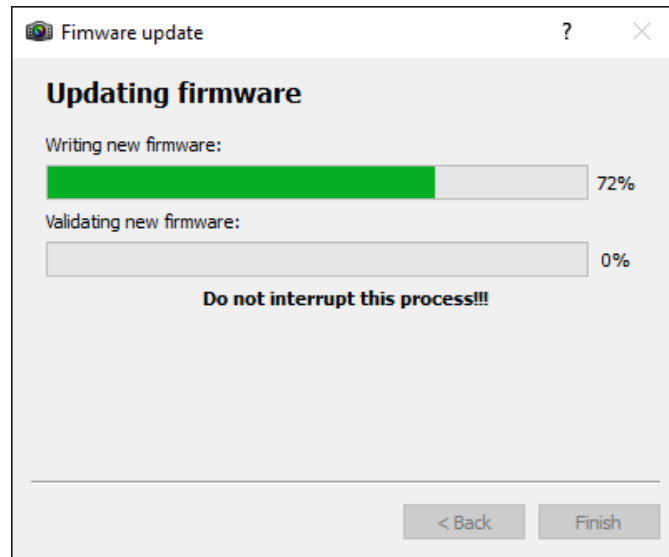


Figure 29 : Firmware Update process window

## 10.2 Updating the device firmware using pre-built utility for Linux

In order to update the firmware of a KAYA Instrument's device, a "Chameleon \_X\_X.bin" file is needed, when the X\_X is the desired firmware number.

**WARNING: Currently this method is not suitable in setups where more than one board with the same product ID installed on the same machine.** Please apply to KAYA's support if you need to update firmware in such setup

1. Make sure the .bin file is present in a local directory.
2. Open the Terminal and enter the directory path of KAYA Hardware Update executable file: "cd 'opt/KAYA\_Instruments/bin'".
3. Execute the KAYA Hardware Update using full path to the firmware update file as a parameter. Example:  
`./KAYA_Hardware_Update<path_to_folder_with_bin_file>/Chameleon _4_1.bin`
4. Press Enter and wait for a message that indicates the end of process.
5. **Do not interrupt the process!**
6. **A full PC power off cycle is required to activate the new firmware.**



7. The sequence of the steps is illustrated in the screenshot below.

Please, Contact KAYA Instruments’ representative for any question.

```
kaya@kaya-System-Product-test: /opt/KAYA_Instruments/bin
kaya@kaya-System-Product-test:~$ cd '/opt/KAYA_Instruments/bin'
kaya@kaya-System-Product-test:/opt/KAYA_Instruments/bin$ ./KAYA_Hardware_Update Chameleon_4_1.bin

KAYA hardware update application:
-----
Analizing file 'Chameleon_4_1.bin'File is suitable for updating devices with board ID 529
Connecting to device 0...
!---PLEASE DON'T SHUT DOWN THE COMPUTER OR DISCONNECT THE DEVICE!---
Starting device 0 update... 100%
Starting firmware validate 100%
Device 0 firmware update successful

IN ORDER FOR CHANGES TO TAKE EFFECT A COMPLETE SHUT DOWN IS REQUIRED!
kaya@kaya-System-Product-test:/opt/KAYA_Instruments/bin$
```

Figure 30 : Firmare Update via Terminal process window

### 10.3 Updating the device firmware using pre-built utility for Windows

In order to update the firmware of a KAYA Instrument’s device, a “Chameleon\_X\_X.bin” file is needed, when the XXX is the board name and XX is the desired firmware number.

**WARNING: Currently this method is not suitable in setups where more than one board with the same product ID installed on the same machine.** Please apply to KAYA’s support if you need to update firmware in such setup.

1. Make sure the .bin file is present in a local directory.
2. Open the Command line and enter the directory path of KAYA Hardware Update executable file:  
“cd ‘\Program Files\KAYA\_Instruments\Common\bin’ ”.
3. Execute the KAYA Hardware Update using full path to the firmware update file as a parameter. Example:  
“KAYA\_Hardware\_Update <path\_to\_folder\_with\_bin\_file>/Chameleon\_4\_1.bin “.
4. Press Enter and wait for a message that indicates the end of process.

5. **Do not interrupt the process!**
6. **A full PC power off cycle is required to activate the new firmware.**
7. The sequence of the steps is illustrated in the screenshot below.

Please, Contact KAYA Instruments' representative for any question.

```

C:\WINDOWS\system32\cmd.exe
C:\Users\Test_PC\Desktop\Chameleon_firmware_update_v4_18>KAYA_hardware_update.exe Chameleon_4_1.bin

KAYA hardware update application:
-----
Analizing file 'Chameleon_4_1.bin'File is suitable for updating devices with board ID 256
Connecting to device 0...
!--PLEASE DON'T SHUT DOWN THE COMPUTER OR DISCONNECT THE DEVICE--!
Starting device 0 update... 100%
Starting firmware validate 100%
Device 0 firmware update successful

To exit press any key
  
```

Figure 31 : Firmare Update via Command line process window

## 10.4 Collecting log files

The log files created and override each time the application is launched.

### Windows operating system:

KAYA's log folder can be easily opened using one of the two ways, listed below:

1. Choose Log files folder under KAYA Instruments from the quick start:

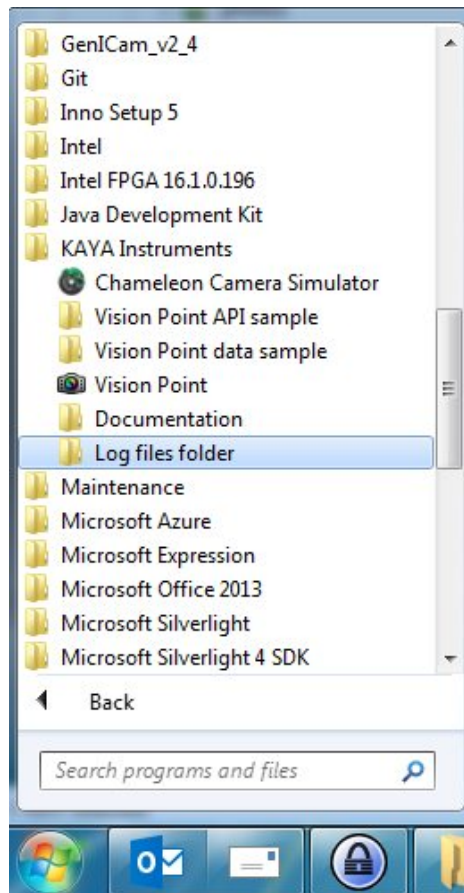


Figure 32 : Log files folder from the quick start menu path

- Using Vision Point application. Enter “Help” tab and click on "Open logs folder" option.

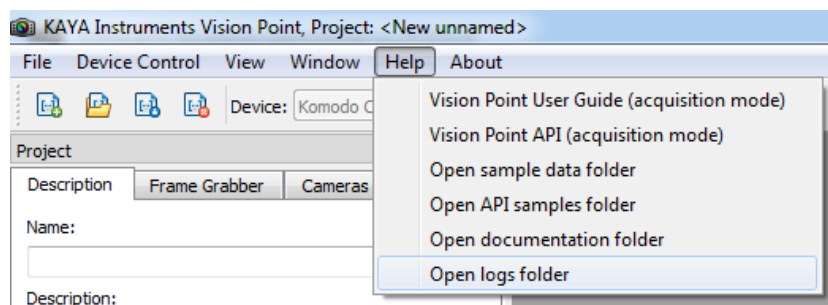


Figure 33 : Log files folder from Vision Point Help menu path

NOTES:

- A separate log file is created for each application, which uses KAYA API, with a display name of the main executable with addition of process ID and timestamp.
- The Vision Point application installation log files folder can be found under user’s main driver: C:\Program Files\KAYA Instruments\Log\Installer folder.

### Linux operating system:

KAYA's log files folder can be easily opened following the path:

```
/var/log/KAYA_Instruments
```

## 10.5 Technical Support and Professional Services

If you searched Vision Point API Data Book document and could not find the answers you need, contact KAYA Instruments support service. Phone numbers for our office are listed at the front of this document.

## 10.6 Submitting a support request

Before opening support request, one should prepare the following information:

- PC configuration
- Operation System
- Card part number or full name
- Firmware in use
- Software in use

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