

TN016:

# Creating .pcf files when using non-GenICam Camera Link cameras

## Summary

This technical note describes how to configure a machine vision system when using a **non-GenICam Camera Link camera** with an **Active Silicon FireBird frame grabber**.

We will explain how to save the settings as a reusable .pcf configuration file in ActiveCapture, the front-end application provided with FireBird frame grabbers.

**Compatibility:** All FireBird Camera Link frame grabbers  
Camera Link cameras

**Software required:** ActiveCapture v1.5.7 onwards

**Windows installer required:** All FireBird Camera Link installers from v1.5.0 onwards

## Background

For a camera and a frame grabber to work effectively together, the frame grabber needs information about the camera's configuration. When using GenICam-compliant cameras, their parameters become available to GenICam-compliant software and hardware. For example, the ActiveCapture application can talk to the frame grabber, which in-turn communicates with the camera to read the current camera settings. In this way the software also knows the valid settings that can be applied to the camera.

All CoaXPress cameras and also CLProtocol or GenCP Camera Link cameras follow the GenICam standard.

With non-GenICam-compliant cameras, however, the frame grabber or software cannot auto-detect camera settings and a manual configuration is required. Once you have determined the parameters for your camera, we recommend saving these as a parameter configuration file (.pcf) so that they always remain easily available.

## To start

This note assumes:

- A FireBird Camera Link board has been installed together with the ActiveCapture application.
- A non-GenICam Camera Link camera is connected to the FireBird via a Camera Link cable(s) and powered correctly
- The camera vendor's own camera control software and operational manual are available to find the cameras operating parameters like resolution, tap mode, bit depth and Bayer pattern (if color imaging is supported).

## Getting an initial live image

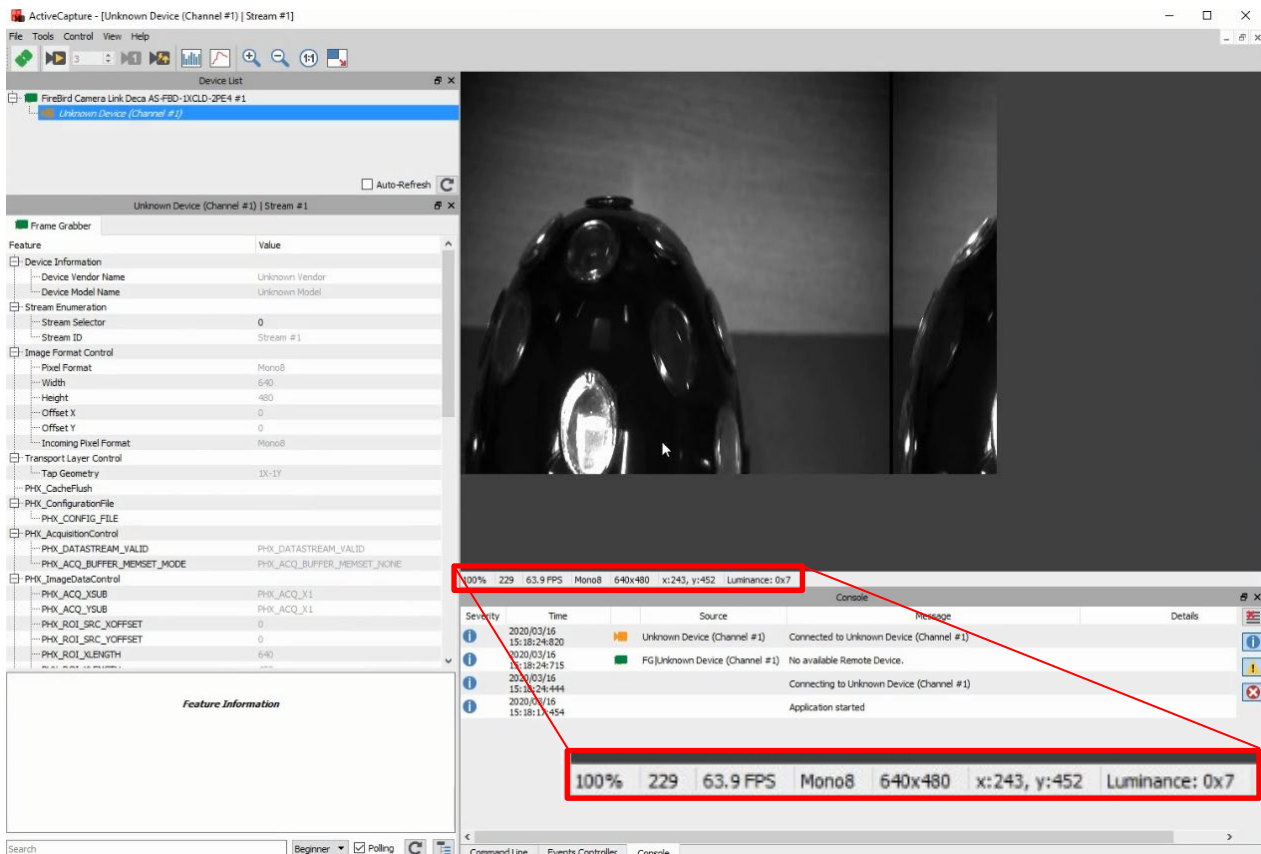
1. Open ActiveCapture.

The FireBird frame grabber is detected, while the camera is shown as un-known device.

2. Click “Connect”.

The default frame grabber settings are read into the Feature Browser.

3. Start the live acquisition and an image is produced. The frame rate, bit depth and resolution are displayed beneath the live image; these are the default values (Figure 1).



**Figure 1. ActiveCapture feature browser, live image and log console. Image data (e.g. frame rate, bit depth and resolution) are displayed beneath the live image.**

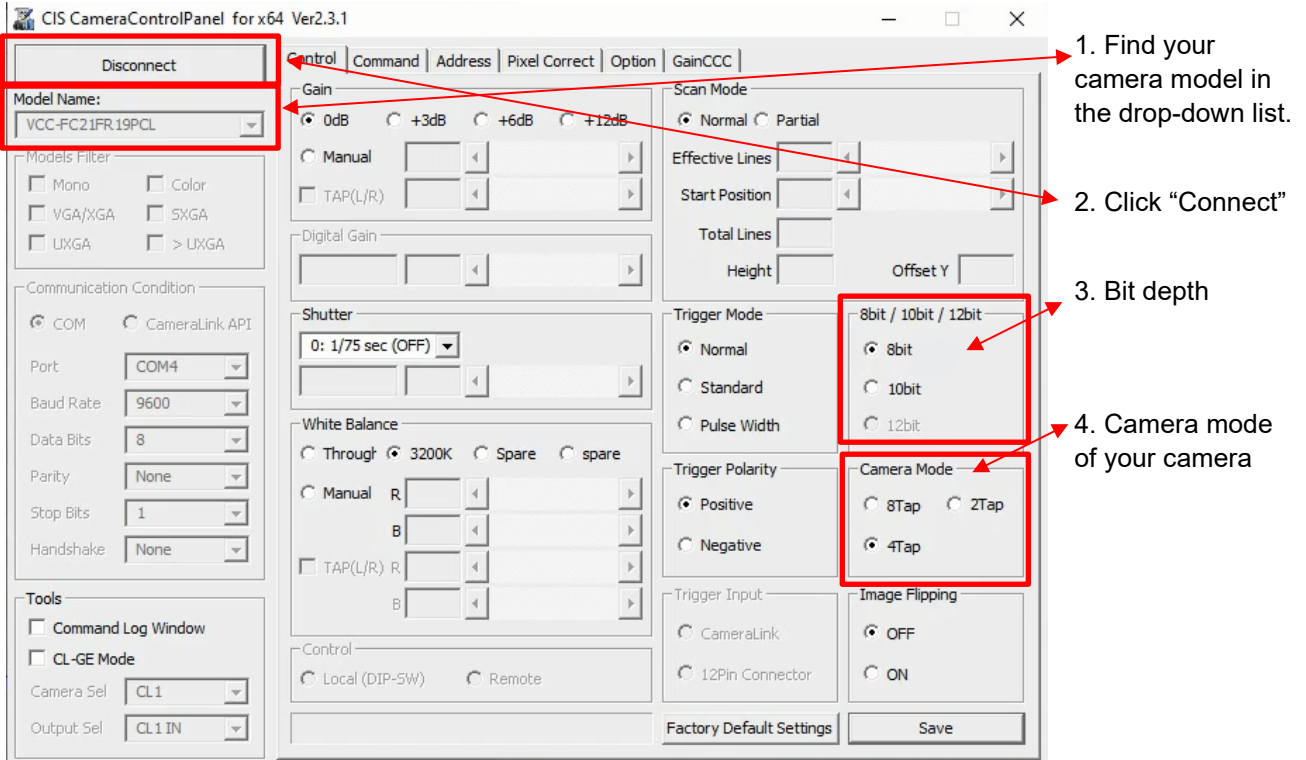
The default settings won't normally match the actual settings of the camera, and the displayed image might be distorted, split and/or black and white. To correct the image, the settings of the frame grabber need to match the settings of the camera.



## Obtaining camera parameters

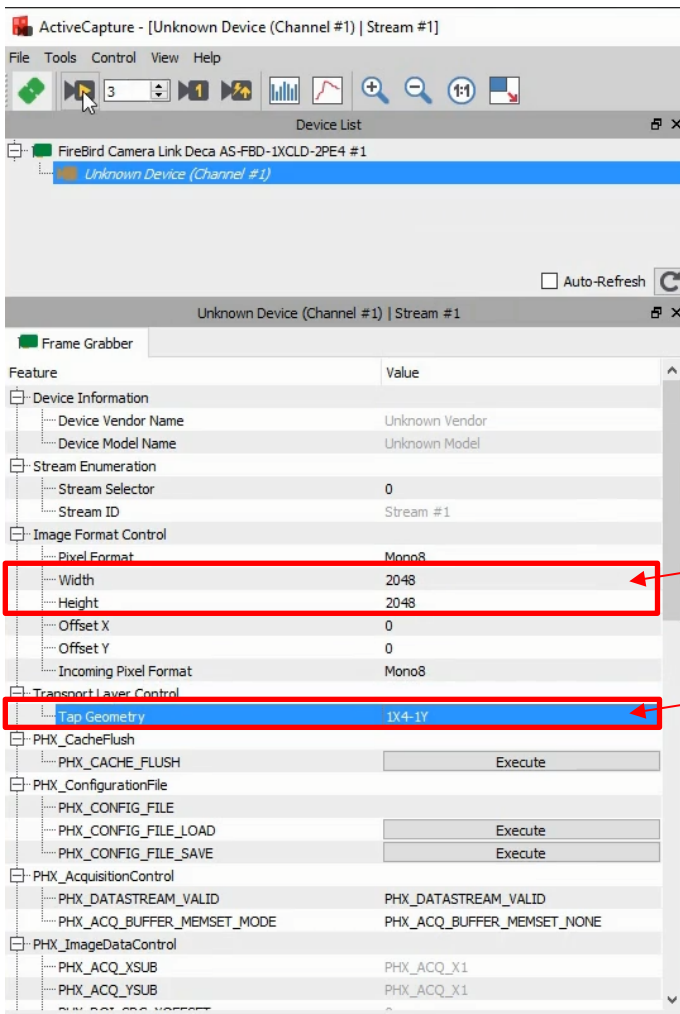
1. To manually change the parameters in ActiveCapture, stop the live acquisition.
2. Open the camera control software (provided by the camera manufacturer) and find the camera mode and the bit depth for your camera model. (Example in Figure 2)

Example:



**Figure 2. Example of a camera control software panel with information on bit depth and tap mode of the chosen camera model.**

3. Find the resolution of the camera in the operational manual under the video output format. In our example we found the resolution of the camera being 2048 pixels x 2048 pixels.
4. Go back to the ActiveCapture Feature Browser to enter the determined values. (Figure 3)



5. Enter the image format as width and height in pixels. In the example this is “2048” for each.

6. The camera is in 4 tap mode (also found in the manual); we therefore choose the tap geometry “1X4-1Y” from a drop-down list.

Figure 3. Enter the determined values into the Feature Browser.

7. To test the image again, click “Live Acquisition” and “Fit Image to Display”.
8. If you work with a color camera and the image is still black and white, check the operational manual for the Bayer specification.

Example:

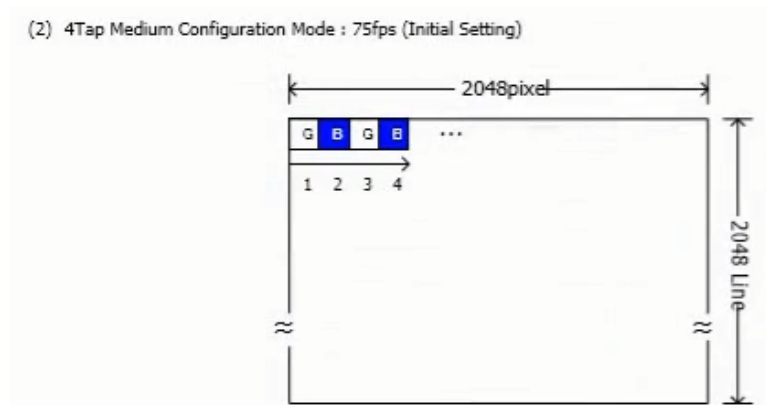
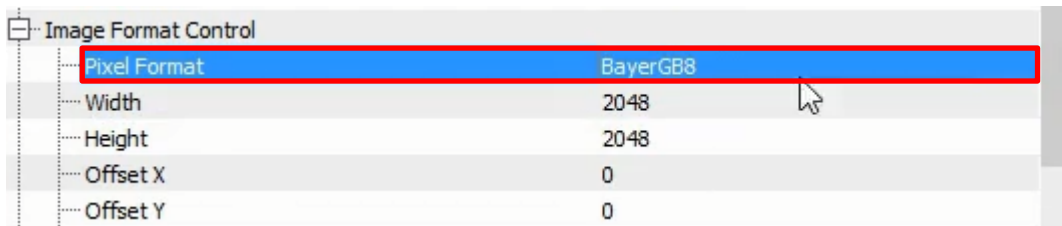


Figure 4. Excerpt from the example manual. We find that the Bayer specification for the camera is GB. GB stands for green and blue, and we remember the bit depth of the camera is set to 8 bit.

9. In the Feature Browser, set the Pixel Format to the correct Bayer specification (Figure 5). In our example this is BayerGB8.

Example:



**Figure 5.** In the Feature Browser the Pixel Format is set from a drop-down list to BayerGB8.

10. To test the image click “Live Acquisition”. The image should now be a correct color image.

## Saving the camera settings in a .pcf file

The camera settings obtained should however be more easily accessible at a later use. We therefore recommend saving them as a .pcf configuration file.

For this:

1. Stop the live acquisition.
2. From the ActiveCapture menu choose “File” and “Save Configuration as”.
3. Choose a folder and add a descriptive file name that includes resolution, bit depth and tap mode and set the file type to “pcf” e.g. 2048sq\_BayerGB8\_1X4-1Y\_tap.pcf.
4. Save.

## Loading a .pcf file

1. Open ActiveCapture.

The frame grabber is detected, and the camera is listed as unknown device, as before.

2. Click “Connect” to connect camera and frame grabber. Again, the default settings of the frame grabber are displayed.
3. Go to “File” and “Load Configuration File”.
4. Select the appropriate .pcf file.

The frame grabber settings are automatically updated to the correct values matching the camera.

5. Start the live acquisition and get a correct image.



## Multiple .pcf files for different camera modes

For different situations you might want to use different camera modes. Save multiple .pcf files for frequently used camera modes.

1. To set the camera into a different mode, bring up the Camera Control Software.
2. In the software panel choose for example another tap mode and/or bit depth. In our example you can choose a 2-tap mode and change from 8-bit to 10-bit image depth. Note that to enable a higher bit-depth it sometimes requires changing the tap mode.

With these changes the image will become distorted again and display incorrect colors.

3. Stop the acquisition to adjust the frame grabber settings to the new camera settings.
4. In the Feature Browser change the Incoming Pixel Format and the Pixel Format to BayerGB10 and the tap geometry to 1x2 taps in X direction and 1 tap in Y direction (1X2-1Y).
5. Click "Live Acquisition" to see if the display is correct and then stop it again to save the file.
6. Choose "File" and "Save Configuration As" in ActiveCapture as before.
7. In the dialog box enter a descriptive name, select a folder and save as .pcf.

## CoaXPress and .pcf files

CoaXPress cameras are always GenICam compliant to adhere to the CoaXPress specification. But .pcf files can still be useful for storing your preferred operating modes of the camera or saving your preferred triggering system of exposure values.

Find more information on frame grabbers and ActiveCapture on our website at [www.activesilicon.com](http://www.activesilicon.com).

The content of this Tech Note is also available as tutorial video on product pages of [Camera Link frame grabbers](#) and in our [video gallery](#).



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