

Logging On

Username: xraydetector23\pco

Password: !aps9490!

Starting Software

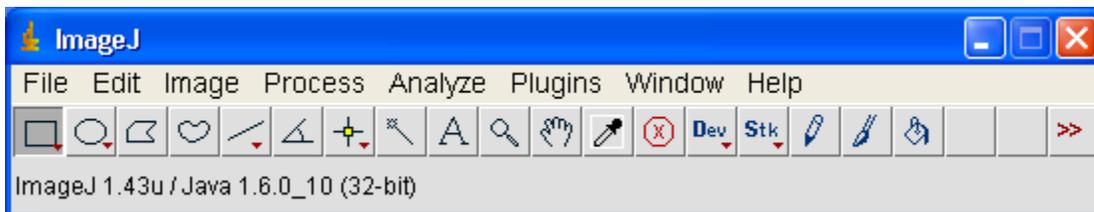
Hit these 3 icons:

1. Shortcut to PCO_start_medm
2. Shortcut to PCO_start_IOC
3. Shortcut to ImageJ

To stop the software, just close all the windows.

In Image J, open the menu

Plugins->EPICS Area Detector->Epics AD Viewer



You will see the following window:



Hit the START button on this window. This starts the Image viewer

The window below is the PCO User window. It has virtually all the settings a typical user needs.

PCO_User.adl

asyn port Null

EPICS name PCOIOC:cam1:

Manufacturer PCO-Cooke

Model PCO Dimax Camera

Sensor size 2016 2016

480 500

ROI Size

Exposure time 0.000

Delay Time 0.000

Frame Rate 1000.000

Acquire period 0.001

Images 1000

Images complete 4173

Frame Rate 0.000

LiveView No

Done

Acquire

Detector state Idle

Time remaining 0.000

Image counter 4173

Image rate 0.0

Array callbacks Enable

Seg0 NImages 999

Seg0 Max Images 999

Dump Counter 999

Dump Wait(ms) 13

Max Rate(kB/s) 20000

MissedFrames 0

RepeatFrames 0

Taking Data Into Memory in PCO Dimax

Setting Image Size

Set ROI Size x and Y. Type in numbers from 100x100 to 2016x2016. It will take about 5s for the grabber and camera to reconfigure. Type in your image size, say 500 by 500. The driver will pick exact image sizes supported by the grabber and camera close to your settings.

Setting Frame Rate

Sett Frame Rate to 1000, for 1000fps. Set #Images to 1000, to store 1000 images to memory.

Setting Expose Time, Delay Time

You can set expose time and delay time instead of Frame Rate.

Take Data

Hit Acquire Start. You can see the memory fill up by watching Seg0 NImages. You can see frame rate by looking at Frame Rate. For viewing data as it is taken, set Live View to YES. This mode is not recommended, because these files will be saved. Make sure all file saving is OFF.

Dump Data to Computer

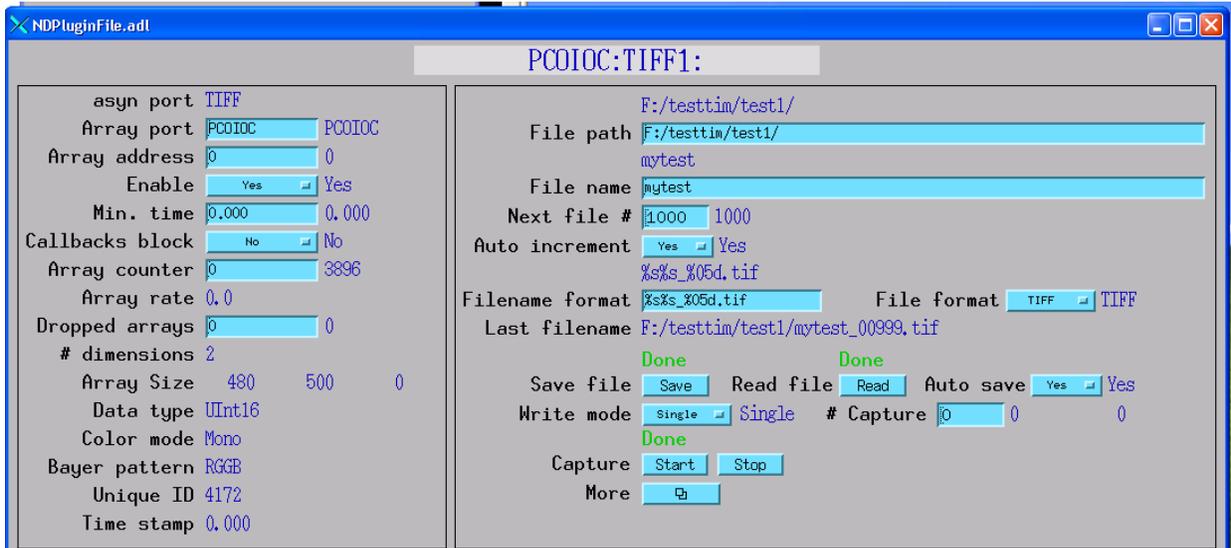
Set max Rate to 30000, for 30MB/sec. this is a pretty safe number to avoid losing data when writing to disk. Hit Dump Mem. You should see data appear in the Image J Image viewer. If you can't see the images, hit START in the Image J EPICS AD Viewer Plugin window. Note, that this data is not being saved unless you set up file saving. Hit Cancel to stop the data dump.

Saving Data

On the PCO_User.adl window, note the More menu at bottom. Hit and select the TIFF plugin 1.

1. On NDPluginFile.adl window, Set Enable to Yes. (on left)
2. Set File path to F:/testtim/test1/ You must make sure slashes are exactly as noted here.

3. Set File Name to mytest
4. Set Auto Increment to YES
5. Set Filename Format to %s%s_%05d.tif
6. Set Autosave to YES
7. On PCO_User.adl, Hit Dump Mem. Tiffs will be written to disk.



Suggested Data Rates

Smaller images create more files in a given time for some data rate. Because of overhead, small images must be saved at slower data rates.

For TIFF Files to the ESATA F Drive:

X size	Y size		Speed (kB/s)
2016	2016		50000
1008	1000		30000
480	500		20000

The camera link interface can run at up to 160MB/sec on the Dimax. The ESATA disk is the bottle neck.

How to tell if everything worked

1. On PCO_User.adl, check Missed Frames and Repeat Frames. They should remain at 0. If not, then either a frame was repeated or one was missed. You have to Cancel and Dump the memory again. The images will still be in the camera. The driver checks 16 consecutive pixels in each image. If to images have the same pixel values then it is assumed that the image repeated.

2. Check on the TIFF NDPluginFile.adl window, Dropped Arrays; it should remain zero. If not, then the disk is too slow. You must Dump the whole camera memory again. Set Dropped Arrays to zero before dumping again to avoid confusion.

Special Dimax Settings

The dimax defaults to useful settings. If you want special settings, on PCO_User window, open for More menu, Pco Params. You will see many settings for the dimax camera.

1. For Correlated Double Image Mode, set CDI mode to YES (Left). In CDI mode, the frame rate will not be exactly what you set because of overhead. The overhead depends on image size. Also, the memory will only store only ½ as many images. Play with it so you understand what will happen.
2. For streaming data instead of recording, set Storage Mode to FIFO. This is not as useful for very fast frame rates as camera link cannot keep up.
3. For Triggering from connector on the Dimax instead of software, set Trigger Mode to External. For software triggering, set to AUTO. In External Mode, hit Acquire Start on the PCO User window, then provide the trigger.
4. It is best to not mess with settings too much. If the camera gets messed up because of your curiosity, then power down the dimax and power back up.
5. For super users, the dimax has four segments of recording memory. You can store data into four independent segments and dump independently. See dimax manual. This feature can be accessed through the PCO User window, More Menu, select Pco Memory. If you do not understand this, then forget you read this.

Other Settings

The EPICS software interface has many features you probably will not use. There are windows for various file types, special camera settings, and frame grabber control. You should not need to use these. The PCO User screen has almost everything a user will need, except perhaps CDI mode.

Getting help

APS Detector Group:

2-9490

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