

# How to Operate Prosilica GC1380H & GC2450 CCD

- Connect Prosilica to PC via Ethernet cable (Cat 5e or better); use the secondary Ethernet card labeled “detector only.” Power up.
- Turn on the computer, and log in.
  - Username = dpuser
  - Contact DP staff for the password
  - Or, use the sector’s LDAP account (see beamline personnel)
- The start-up screen (shown right) will appear.
  - Select “Prosilica” from the dropdown menu
  - Choose the correct model number
  - Select a bit depth (8 for faster frame rate, 16 for better contrast)
  - Click “Start” to start the IOC, medm, and ImageJ (if desired)



- EPICS areaDetector help:
  - <http://cars9.uchicago.edu/software/epics/areaDetectorDoc.html>

# EPICS IOC and MEDM

**Prosilica Camera - dp\_gc1380h:cam1:**

**Setup**  
asyn port PS1  
EPICS name dp\_gc1380h:cam1:  
Manufacturer Prosilica  
Model GC1380H  
Connection    
Debugging

**Shutter**  
Shutter mode None  
Status: Det. Closed EPICS Closed  
Open/Close    
Delay: Open 0.000 Close 0.000  
EPICS shutter setup

**Collect**  
Exposure time 0.015 0.015  
Acquire period 0.033 0.033  
# Images 1 1  
# Images complete 0  
Image mode Continuous Continuous  
Trigger mode Free Run Free Run  
Software trigger    
Acquire    
Detector state Idle  
Time remaining 0.000  
Image counter 0 112  
Image rate 0.0  
Array callbacks

**Readout**

	X	Y
Sensor size	1360	1024
Binning	1	1
Region start	0	0
Region size	1360	1024
Image size	1360	1024
Image size (bytes)	1392640	
Gain	0.000	0.000
Data type	UInt8	UInt8
Color mode	Hono	Mono

**Attributes**  
File

I/O setup & statistics

**dp\_gc1380h: Common Plugins**

Plugin name	Plugin type	Port	Enable	Blocking	Dropped	Free	Rate
Image1	NDPluginStdArrays	PS1	<input checked="" type="button" value="Enable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
PROC1	NDPluginProcess	PS1	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
TRANS1	NDPluginTransform	PS1	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
CC1	NDPluginColorConvert	PS1	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
CC2	NDPluginColorConvert	PS1	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
OVER1	NDPluginOverlay	PS1	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
ROI1	NDPluginROI	PS1	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
ROI2	NDPluginROI	PS1	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
ROI3	NDPluginROI	PS1	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
ROI4	NDPluginROI	PS1	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
STATS1	NDPluginStats	ROI1	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
STATS2	NDPluginStats	ROI2	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
STATS3	NDPluginStats	ROI3	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
STATS4	NDPluginStats	ROI4	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
STATS5	NDPluginStats	PS1	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
FileNetCDF1	NDFileNetCDF	PS1	<input checked="" type="button" value="Enable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
FileTIFF1	NDFileTIFF	PS1	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
FileJPEG1	NDFileJPEG	PS1	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
FileNexus1	NDPluginFile	PS1	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
FileMagick1	NDFileMagick	PS1	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>
FileHDF1	NDFileHDF5 ver1.8.7	PS1	<input type="button" value="Disable"/>	<input type="button" value="No"/>	0	0.0	<input type="button" value="More"/>

**dp\_gc1380h:netCDF1:**

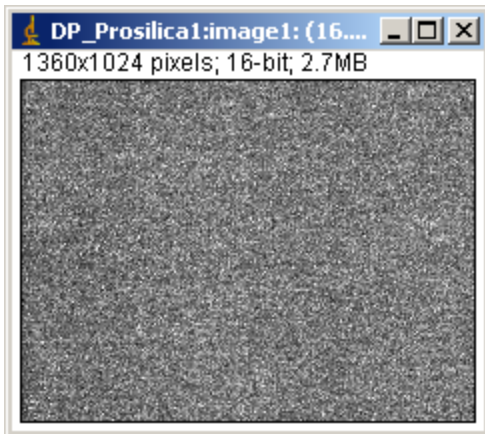
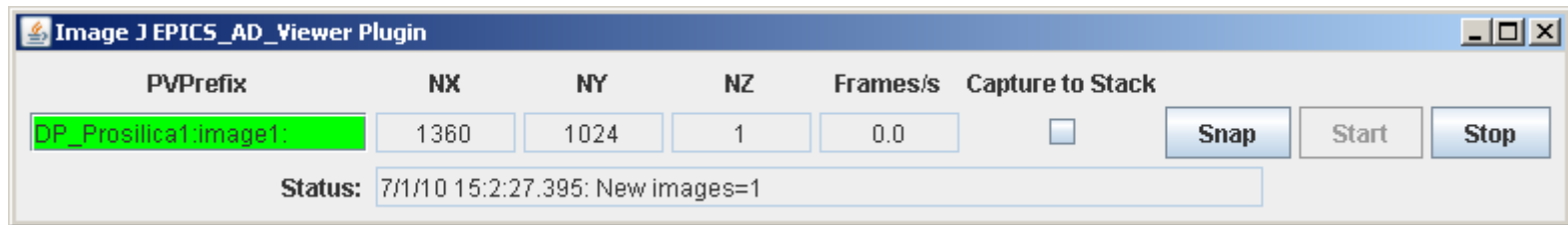
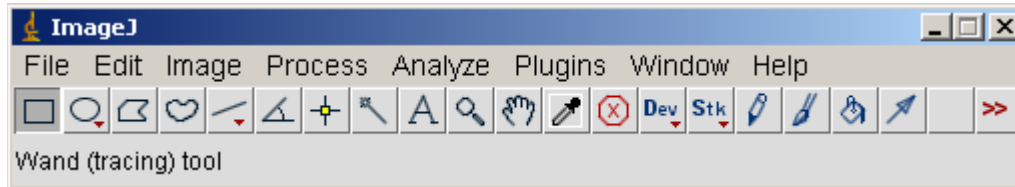
asyn port FileNetCDF1  
Plugin type NDFileNetCDF  
Array port PS1 PS1  
Array address 0  
Enable    
Min. time 0.000 0.000  
Callbacks block    
Queue size/free 20 20  
Array counter 0 0  
Array rate 0.0  
Dropped arrays 0 0  
# dimensions 0 0 0  
Array Size 0 0 0  
Data type UInt8  
Color mode Mono  
Bayer pattern RGGB  
Unique ID 0  
Time stamp 0.000  
Attributes file   
asyn record

File path /local/home/dpuser/ Exists: Yes  
File name test  
Next file # 1  
Auto increment Yes Yes  
Filename format %s\_%3.3d.tif Example: %s\_%3.3d.nc  
Last filename   
Save file    Yes Yes  
Write mode Stream Stream # Capture 1 0  
Capture   Delete driver file No No  
Write status Write OK  
Write message

Use the “Plugins” section to enable desired plugins

- NDPluginStdArrays must be enabled to allow viewing in Imagej
- Remember to enable *AutoSave* if you want to save images to disk

# ImageJ Viewer



- Remember to hit the “Start” Button
- EPICS PV: DP\_Prosilica1:image1:
  - The is from the “Image Plugin”
  - Should be highlighted green
- If you have problems, close the plugin, take some images from the MEDM screen, and then restart the Viewer.
  - You can re-start from the main ImageJ widget
    - Plugins → EPICS\_areaDetector → EPICS AD Viewer

Image J EPICS\_AD\_Viewer Plugin

PVPrefix	NX	NY	NZ	Frames/s	Capture to Stack		Snap	Start	Stop
dp_gc1380h.image1	1360	1024	1	0.0	<input type="checkbox"/>				

Status: 15/1/14 15:55:46.275: New images=1

ImageJ

File Edit Image Process Analyze Plugins Window Help

Type

- \*Point\* or multi-point selection tool
- Adjust
  - Brightness/Contrast... Ctrl+Shift+C
  - Window/Level...
  - Color Balance...
  - Threshold... Ctrl+Shift+T
  - Color Threshold...
  - Size...
  - Canvas Size...
  - Line Width...
- Show Info... Ctrl+I
- Properties... Ctrl+Shift+P
- Color
- Stacks
- Hyperstacks
- Crop Ctrl+Shift+X
- Duplicate... Ctrl+Shift+D
- Rename...
- Scale... Ctrl+E
- Transform
- Zoom
- Overlay
- Lookup Tables

B&C

10 41

Minimum

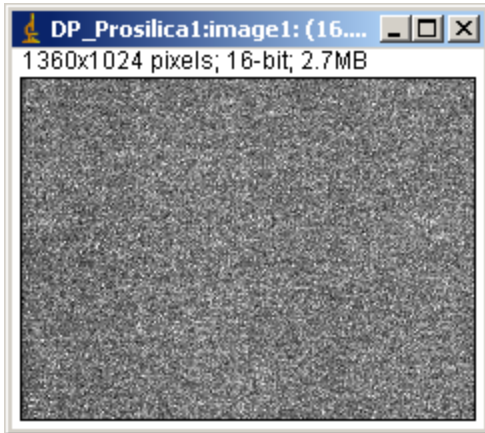
Maximum

Brightness

Contrast

Auto Reset

Set Apply



## 30 fps, High-Sensitivity CCD Camera

- High resolution - 1.4 megapixel (1360 x 1024)
- Fast frame rate - 30 frames per second at full resolution
- High sensitivity
- Exceptional image quality
- Sony ICX285 2/3" Progressive scan CCD
- Very small and light weight



Resolution	1360x1024
Sensor Type	2/3" CCD EXView HAD progressive scan Sony ICX285
Pixel Size (µm)	6.45 x 6.45
Maximum Frame Rate	30 fps at 1360x1024
Lens Mount	C-mount with adjustable back focus
Digital Interface*	GigE Vision 1.0
Interface Type	IEEE 802.3 1000baseT
Exposure Range	10µs to 80s
Region of Interest (ROI)	Independent x and y control; 1 pixel resolution
Binning	Independent H and V control
Imaging Modes	External Trigger, Fixed frame rate, Software trigger
External Trigger Modes	Rising edge, Falling edge, Any edge, Level high, Level low
External Sync Modes	Trigger ready, Trigger input, Exposing, Readout, Imaging, Strobe, GPO
External Trigger/ Sync Connection	12-pin Hirose
Monochrome Modes	Mono8, Mono16**
Color Modes	Bayer8, Bayer16, RGB24, YUV411, YUV422, YUV444, BGR24, RGBA24, BGRA24
GPIO	1 isolated TTL input, 1 isolated TTL output, 1 non-isolated TTL input, 1 non-isolated TTL output, RS232 I/O
Power Consumption	less than 3.5 W (12V)
Housing Size	33x46x43 mm
Weight	111 g
Conformity	CE, FCC, RoHS
SDK	Free - includes sample code and driver

\*GigE Vision™ is a trademark of the Automated Imaging Association

\*\*Mono16 is available on monochrome models only. Specifications are subject to change without notice.

Please refer to the Prosilica web site for a full list of specifications

### About the GC1380H / 1380CH

The ultra-compact GC1380H is a very sensitive, high-resolution CCD camera with Gigabit Ethernet interface that runs 30 fps at full-resolution. The GC1380H is the highest performance GigE Vision-based camera on the market. It incorporates the incomparable Sony ICX285 CCD sensor that uses EXView technology to provide high-sensitivity, excellent antiblooming, and superb image quality.

### Applications for the GC1380H include:

- industrial inspection
- machine vision
- microscopy
- ophthalmology
- fluorescence
- aeronautical and aerospace
- public security
- surveillance
- traffic imaging

### The Prosilica Advantage

- Image quality
- High reliability
- High performance
- Ultra-Compact
- Ease of use and integration
- Rich set of camera features