Condor3 camera installation

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Epix driver Installation

Requirements:

1. A Windows 7 or Windows 10 desktop computer
2. EPIX PIXCI EL1 (or variation of) frame grabber
3. EPIX USB dongle with valid software ID
4. EPIX XCAP 64 bit installer
    a. xcapwin64.exe, from http://www.epixinc.com/support/files.php)
    b. Tested with : version 3.8 (01/08/2019)

Procedures:

1. Install the EPIX PIXCI EL1 frame grabber
    a. Read the following instructions carefully. You will have to turn off the computer.
    b. Turn off the computer.
    c. Insert the frame grabber in a PCI Express (PCIe) x4, x8 or x16 slot. NOT a PCIe x1 (the slot must be longer than the connector on the card).

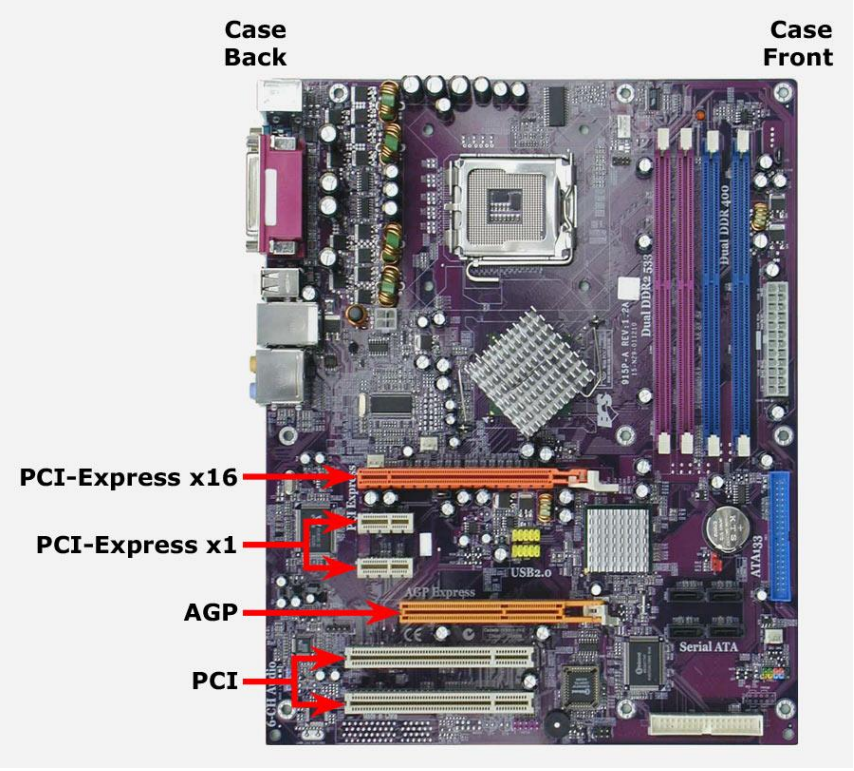

Figure 1: Pc PCI ports to look for

    d. Close the computer case and turn it on again.
2. Install EPIX XCAP. **Refer to EPIX_QuickStartGuide.pdf sections 1 - 4 for additional information.**
    a. Insert the EPIX USB dongle in the computer.
    b. Run xcapwin64.exe as Administrator.
    c. Follow the instructions on screen until you need to insert a software ID.
    d. Click on “Submit ID from authorization key”, or manually enter the Software ID.

e. If asked to install a new version of the driver, click “OK”.
f. When asked to restart XCAP, click “No”.
g. Start XCAP for Windows as Administrator.
h. A message should pop-up with an error saying that the driver or frame grabber is not installed. Close it.
i. In the top menus, go to PIXCI -> PIXCI Open / Close -> Driver Assistant and check “Set PIXCI Frame Grabber memory size.
j. Check “Request Normal Frame Buffer Allocation
k. Set “Memory Requested for Frame Buffers” to 256 Mbyte.
l. Set “Frame Buffer Memory Partition Size to 64 Mbyte.
m. Click “Apply”
n. On the left menu, check “Set PIXCI Driver advanced options”
o. Go to “Memory 2” tab.
p. Check “Restrict Non-Forceful Memory to be below 4 GByte (-WT)*.
q. Click “Apply”
r. Exit and reboot the computer.

3. Reinstall the EPIX driver. **Refer to EPIX_QuickStartGuide.pdf section 4 for additional information.**

a. Open Device Manager (type “Device Manager” in the search box). Under “Imaging devices” should be a device called “PIXCI EL1 PCI Express Camera Link …”. If there is no yellow triangle (see Figure 2) on the bottom right corner of the device’s icon, skip the following steps.

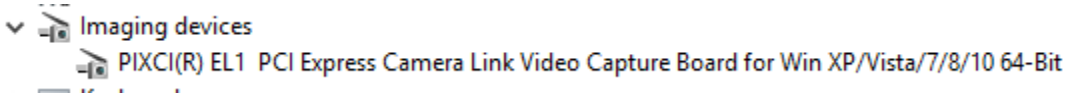

Figure 2: Frame grabber as seen in the device manager

b. If there is a yellow triangle on the icon, open XCAP for Windows as Administrator, go to PIXCI -> PIXCI Open / Close -> Driver Assistant. Check “Uninstall PIXCI Driver” and click “Apply”. Close XCAP.
c. Go back to Device manager and refresh until an “Unknown device” appears.
d. Right-click on the unknown device, click on “Update Driver Software”.
e. Click “Browse my computer for driver software”.
f. Enter “C:\Program Files\EPIX\XCAP\drivers” as path and make sure “Include subfolders” is checked.
g. Click next and finish the driver installation.
h. Reboot the computer and check the driver status as done in step 3.a). If the procedure failed, repeat the process until it succeeds or seek help. You can also try uninstalling the driver with Device manager instead of XCAP for Windows.

4. Plug the camera in the frame grabber
   a. Use the connector as shown in the Figure 3 if two camera connectors are present on the frame grabber.

Figure 3: Frame grabber camera link port to use

Condor Suite Installation

Requirements:

1. A Windows 7 or Windows 10 desktop computer
2. EPIX Driver correctly installed (see Epix driver Installation)
3. The Condor Suite software folder

Procedures:

1. Install Condor Suite
    a. Extract the Condor Suite folder anywhere on your computer.
    b. Inside that folder, right-click “setup.bat” and click “Run as Administrator". If no error occurred, a window like the one shown in Figure 4 will appear. If an error occurs, the window will instantly close, or an error message will be shown in the console.

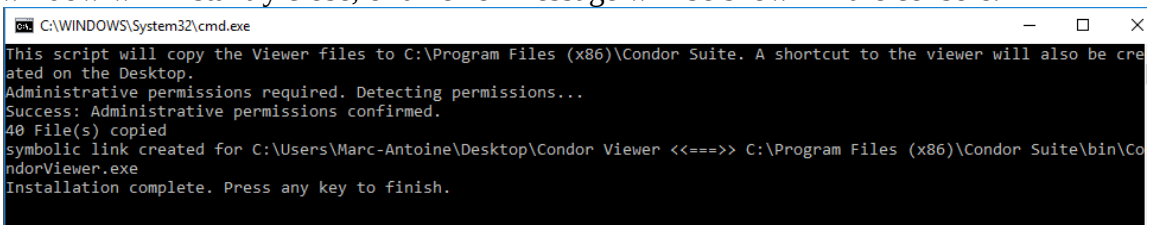

Figure 4: Successful install window

    c. Install the Microsoft Visual C++ 2012 and 2013 Redist packages To do so, run “vcredist2012_x64.exe” and “vcredist2013_x64.exe” located in the Condor Suite folder and follow the instructions on screen.
2. Create the defective pixels files
    a. Right-click the desktop shortcut that was created and click “Run as Administrator”.
    b. Select the currently connected camera in the dialog window (Condor3 or Ninox640 if used with an Epix frame grabber) and enter the required information.
    c. Update the hot pixels list (from the Hardware Menu, refer to Updating the hot pixels files for details)
3. Configure the laser controllers
    a. Open the Hardware Settings and select the correct laser system from the dropdown.
    b. Close the menu.
    c. Try to connect the lasers. If they work, you can stop here. If not, follow along.
    d. The most common problem will be an incorrect COM port. To fix it, you should:
        i. Open “Device Manager” and locate the COM port name used by the lasers. In the case of Figure 5, it would be “COM1”. The name will change depending of the laser type, it might be a bit of trial and error to find the correct one.

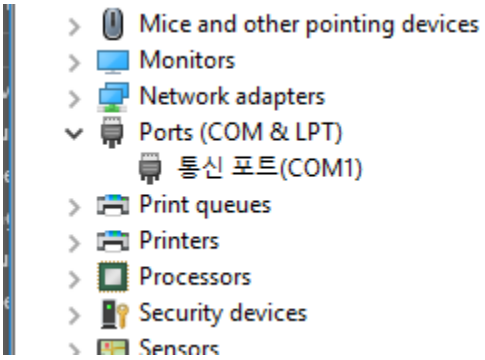

Figure 5: Device manager COM ports

ii. Navigate to "C:\Program Files\Condor Suite\bin\resources".
iii. Locate the configuration file(s) of the laser system you are trying to connect.
iv. Open the configuration file (the one ending with ".csv")
v. Change the com_port value to the name of the port identified above.
vi. Save the file.
vii. In the Condor Viewer, go to the Hardware Settings and open the tab of the wavelength you are trying to configure. (Some lasers share the configuration for all wavelength, in that case, only the first wavelength is shown).

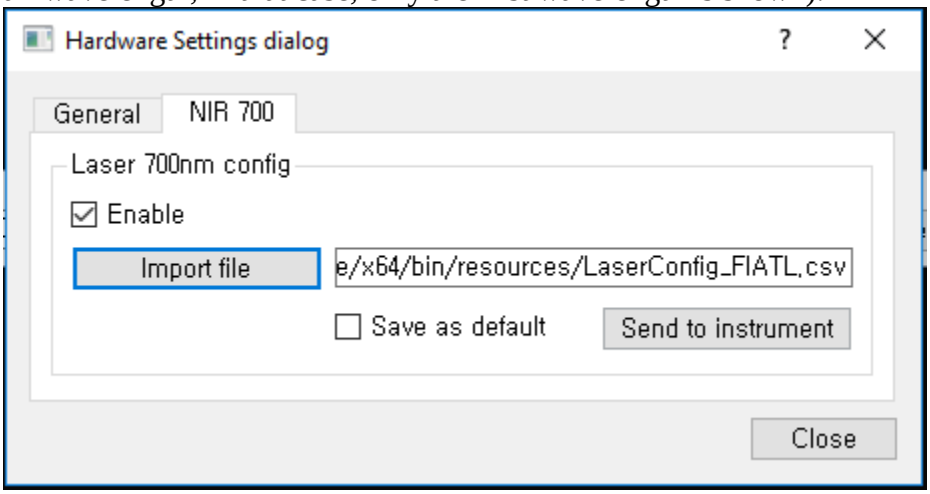

Figure 6: Laser configuration tab in the hardware settings

viii. Check the "Enable" box and then import the file you previously modified.
ix. If the com port is the only value you modified in the file, you should check the "Save as default" box so the configuration persists when closing the software.
x. Then click "Send to instrument", close the Hardware Settings and try connecting again.

If the program doesn't start, or the laser won't connect, contact Marc-André Tétrault at MTETRAULT@mgh.harvard.edu.

Condor Suite Update

Requirements:

1. A Windows 7 or Windows 10 desktop computer

2. EPIX Driver correctly installed (see Epix driver Installation, but it should be okay if the software is already working on a previous version)
3. The new Condor Suite version software folder

Procedures:

1. (Optional) Backup the configuration files so you can keep the same configurations
    a. Navigate to "C:\Program Files\Condor Suite\bin"
    b. Copy the "applicationFiles" folder as well as the laser config files you wish to save.
    c. Paste the files at a known location on the computer
2. Install Condor Suite
    a. Extract the Condor Suite folder anywhere on your computer.
    b. Inside that folder, run the "setup.bat" file as administrator. If no error occurred, a window like the one shown in Figure 7 will appear. If an error occurs, the window will instantly close, or an error message will be shown in the console.

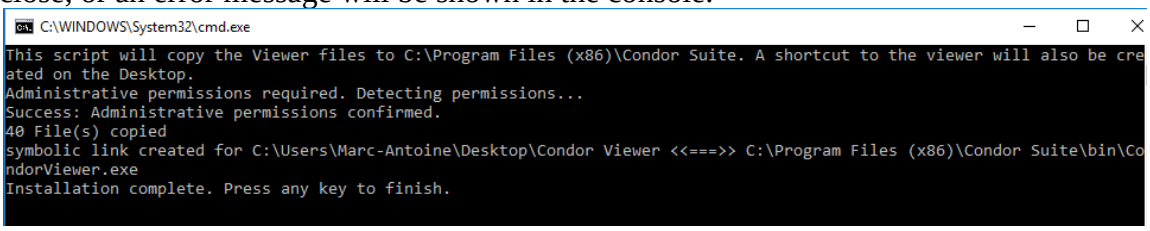

Figure 7: Successful install window

3. (If step 1 was done) Replace the backed-up configuration files in the application folder
    a. Copy the files from where you pasted them in step 1
    b. Navigate to "C:\Program Files\Condor Suite\bin" and paste the files

ImageJ/Fiji Metadata plugin Installation/Usage

Requirements:

1. ImageJ or Fiji correctly installed (See https://imagej.net/Fiji/Downloads)
2. The Xmp_Reader.py ImageJ/Fiji plugin (Found in "C:\Program Files\Condor Suite\Tools" on the imaging computers with Condor Viewer installed.)

Procedures:

1. Open ImageJ or Fiji
2. Got to Plugins>Install…

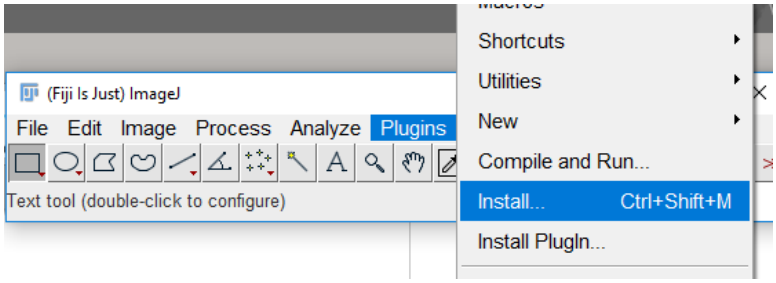

Figure 8: ImageJ plugin installation button

3. In the file browser that opens (Figure 9), navigate to and select the Xmp_Reader.py file, click "Open".

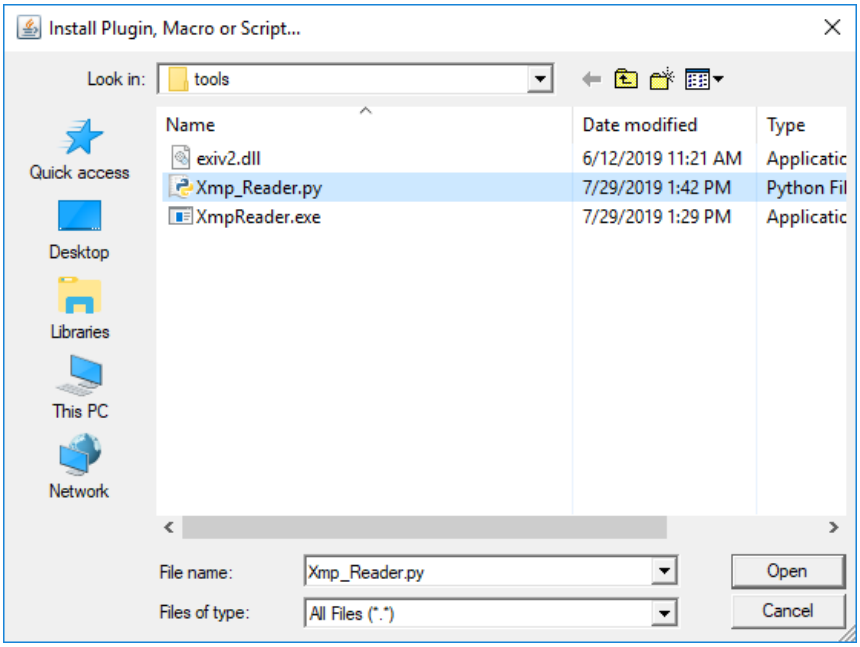

Figure 9:Plugin file browser

4. On the next window, click “Save”.
5. Restart ImageJ/Fiji to complete the installation.
6. To use the plugin, simply open an image with ImageJ (or Fiji), and then go to Plugins, scroll all the way to the bottom and click “Xmp Reader”. As shown in Figure 10.

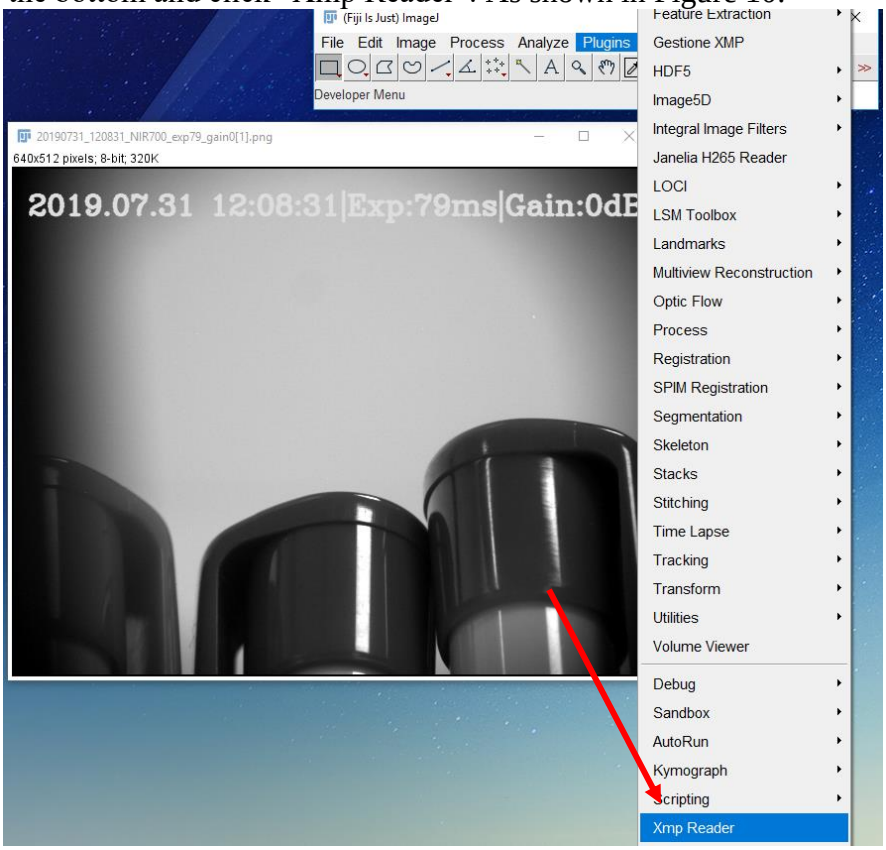

Figure 10: Using the plugin

7. The first time, a console with an error will open (on the left in Figure 11), you may ignore and close it. Shortly after, another window will open containing the metadata. On the right in the Figure 11.

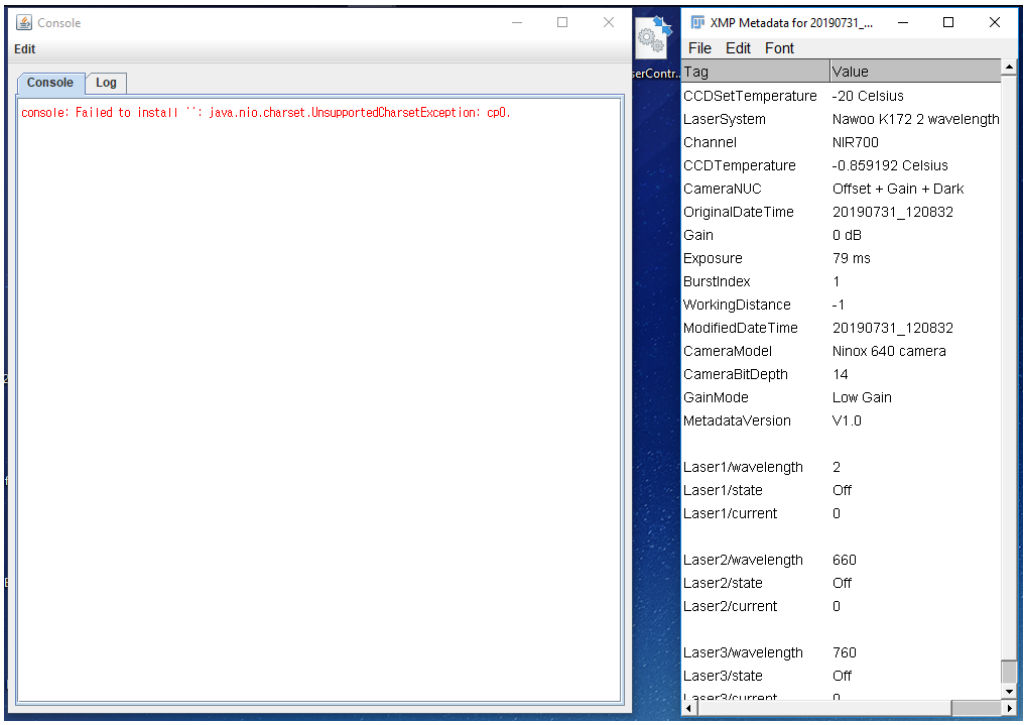

Figure 11: Result of running the plugin

Standalone Metadata Tool Usage

Requirements:

1. The XmpReader.exe and Exiv2.dll files (Found in “C:\Program Files\Condor Suite\Tools” on the imaging computers with Condor Viewer installed.)

Procedures:

1. You may place the XmpReader.exe and Exiv2.dll files wherever you want on your computer, as long as the two files are together.
2. Drag and drop an image file onto the XmpReader.exe file.

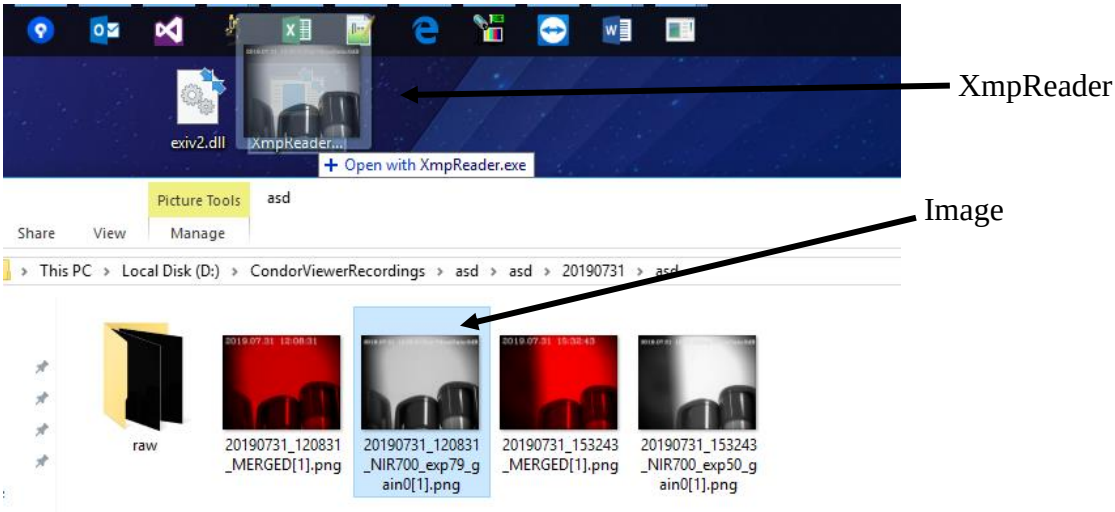

Figure 12: Using the standalone tool

3. A console window will open displaying the metadata for the file as in Figure 13:

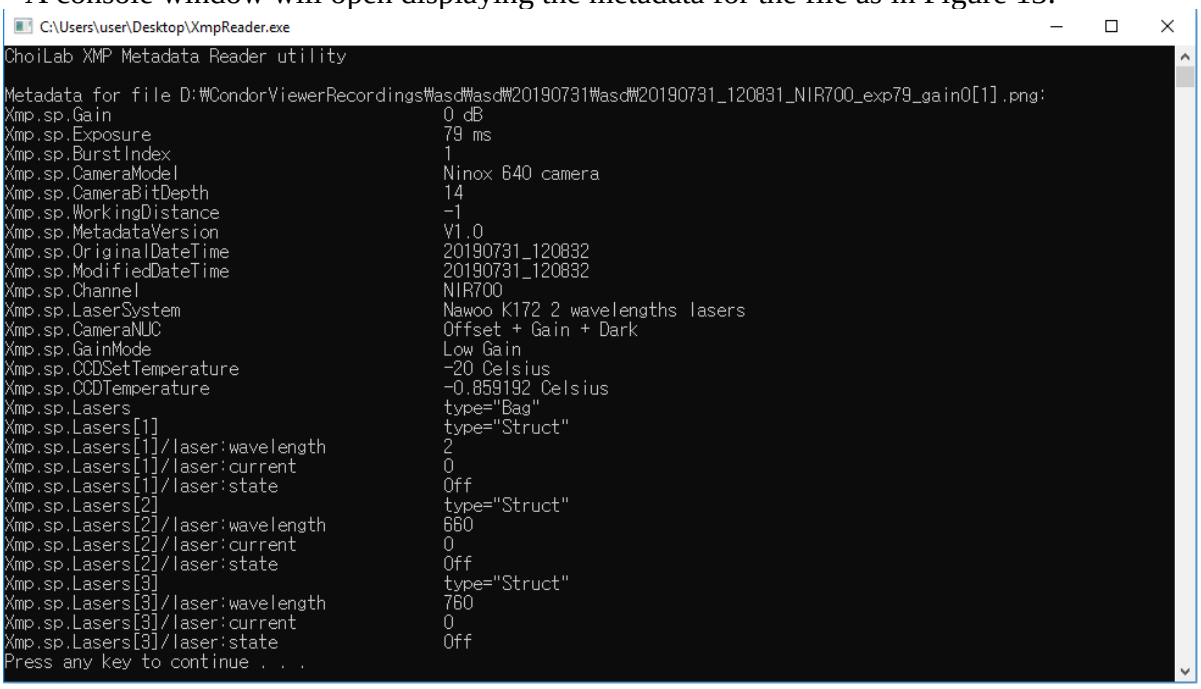

Figure 13: Standalone tool result window

Updating the hot pixels files

Materials:

1. Camera setup (Camera, lens, Computer with a frame grabber and Condor Viewer installed, the lasers and white lights are not required) (See Epix driver Installation and Condor Suite Installation for details on how to set this up).

Procedures:

1. Setup
    a. Turn on the computer and camera.

   b. Launch Condor Viewer software.
   c. Note the current lens aperture (The aperture knob is the upper-most knob on the lens).
   d. Close the camera lens aperture completely. To close it, aim for the ‘c’ position.
   e. Turn off all the filters in the software. NIR images should appear as completely black, if not, stop the procedure now and diagnose the issue.
   f. Close the lights in the room.
2. Identification
   a. In condor software, got to Hardware Settings > Reset hot pixels.
   b. Carefully read the warning and click “Ok”.
   c. Carefully read the second warning and click “Ok”.
   d. WAIT for a confirmation message to appear. It should take about 5 to 10 seconds for the process to complete.
3. Applying the change
   a. Restart the Condor Viewer software to apply the new hot pixels lists.
   b. Set the lens aperture back to its previous position, noted in step 1.c.

Issues and Considerations:

1. It is a good practice to make a copy the previous hot pixels files before attempting this procedure. These files are located in the application installation directory (usually C:\Program Files\Condor Suite\bin\applicationFiles\hotPixelsX.csv).
2. Make sure that the images appear as completely black in Condor Viewer (without any filters activated) after closing the lens aperture.