

ARC Gen IV

Quick Start Guide

v.003

Scott Streit
Astronomical Research Cameras, Inc.
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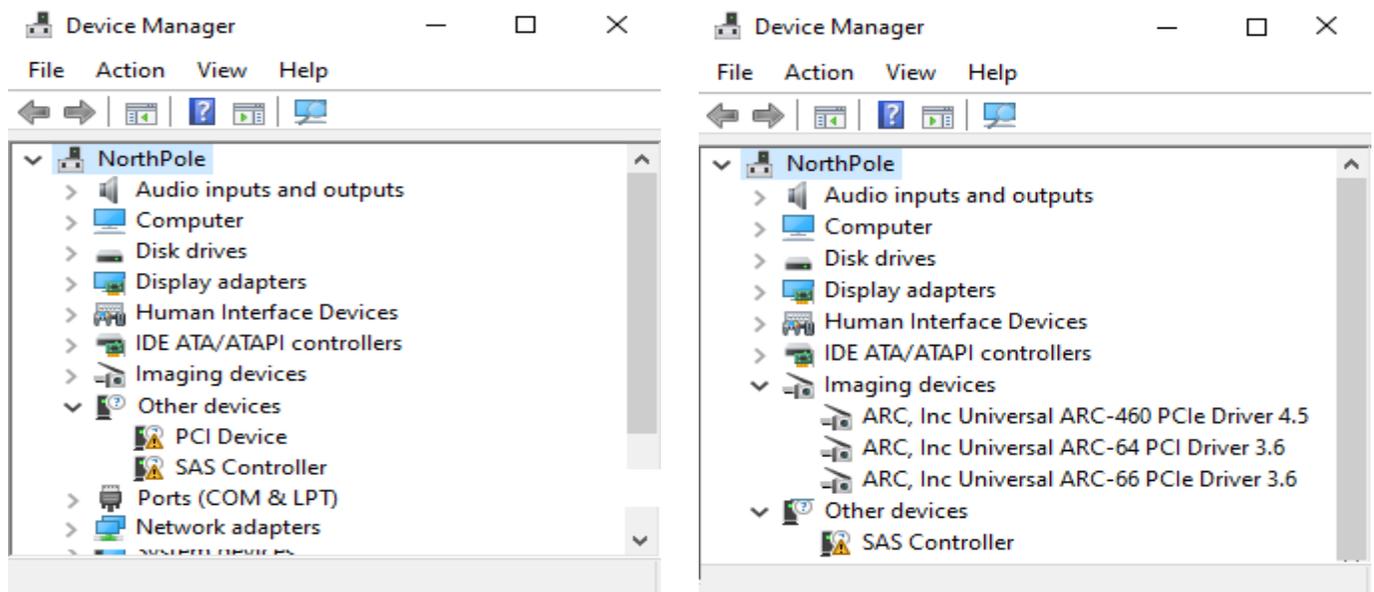
Requirements:

- Windows 10 with latest Visual Studio 2019 redistributable installed. The redistributable can be downloaded from the Microsoft support website.
- Linux (Ubuntu 20.04 LTS) with GCC 10 (specifically g++10) or greater.
- It's recommended to have a multi-core processor or multiple processors.
- The latest ARC-460 PCIe device driver, G4 app and the controller microprocessor code downloaded from the ARC website (www.astro-cam.com).

Step 1 - Install the PCIe interface board and device driver

Turn off your computer and install the ARC-460 PCIe interface card in any 4, 8, or 16 lane PCIe slot. Then restart the computer and install the device driver, which can be downloaded from www.astrocam.com.

To install the driver on **Windows**, unpack the driver files and open the *device manager* control panel app by searching for it in the search area of the taskbar. There should be a listing for *PCI Device* under *Other Devices*. If the device is not listed, right-click on the computer name at the top of the list and select *Scan For Hardware Changes*. The device should now be listed. If not, there may be a problem with the PCIe board and you will need to contact ARC for support. Finally, right-click on the *PCI Device* listing and select *Update Driver*. Select *Browse My Computer* on the next window and follow the on-screen instructions to complete the installation. When successfully installed, there should be a listing for *ARC, Inc Universal ARC-460 PCIe Driver 4.5* under *Imaging Devices*.



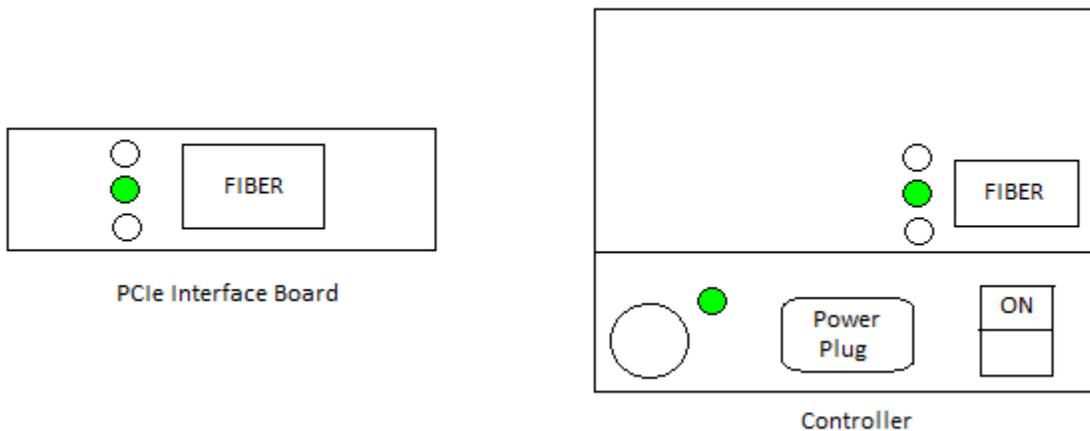
To install the driver on **Linux**, open a terminal and unpack the driver files. Then change directory into the driver folder and compile, install and load the driver as follows:

```
% make
% sudo make install
% ./LoadDriver
```

On success there should be a listing for ARC460 in the */dev* folder.

Step 2 - Connect the controller to the host computer

Connect the controller to the ARC-460 PCIe interface card, installed in the host computer, using the fiber optic cable and turn on the controller. The LED on the power supply will turn ON if it is producing valid +5 volt power. The center green LED on the controller, next to the fiber connector, should be ON, indicating that the controller has established a communications link with the host computer. If the LED turns ON briefly and then stays OFF, it indicates that there is no connection with the PCIe interface card.



Step 3 - Install the G4 application

On **Windows**, unpack and run the *ArcG4Setup.exe* installer. Follow the on-screen instructions.

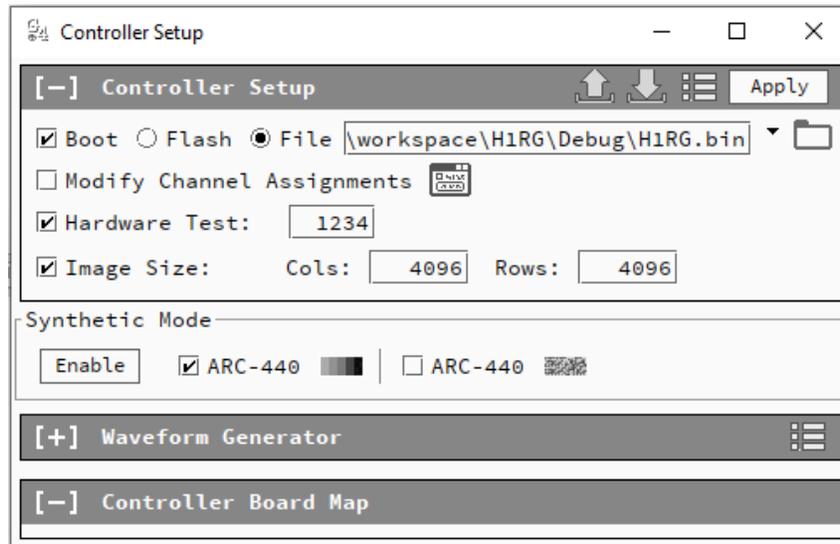
On **Linux**, unpack and run the install script. The program will install in */usr/local/G4* by default.

Important Note, the program uses modern C++ features. ***On Linux***, you may need to install a newer version of GCC. Specifically, G4 is currently compiled using g++ 10 or newer. To install g++ 10 on Ubuntu (debian):

```
% sudo apt install g++-10
% sudo apt install gcc-10
```

Step 4 – Start G4 and Initialize the Controller

Start the G4 app and then click the *Setup* menu option. The microprocessor file (ends with *.bin*) to be uploaded to the controller can be downloaded from the ARC website (www.astro-cam.com). This file is required to boot the controller. Next, select *Hardware Test* and *Image Size*. Set the values and click the *Apply* button. Check the log window for any potential problems.



Step 5 – Take an Image

The controller is now ready to take images. In the main program window enter an exposure time (in seconds), click on *File Path* and enter a path and name for the FITS file to be saved. Then press Expose. The default readout code should read the image in less than one second. During readout two or three of the green LEDs should blink. The FITS file viewer DS9 can be started by pressing the sun-like icon towards the center right of the main window. That's it, congratulations.

