

# How to program ARC controller FPGAs and CPLDs

April 8, 2021

1. Obtain a Terasic Technologies Model P0302 programmer. It operates from a USB port on your computer, and is referred to as a USB-Blaster. It is available from Mouser for \$50.



2. Connect one end of the USB-Blaster to a USB port on your computer. Connect the other end to the keyed 10-pin connector on the board whose FPGA or CPLD you wish to program. Power must be applied to the board. If the programmer has been installed already then skip to step 5.

3. Download software from [www.astro-cam.com](http://www.astro-cam.com). Go to Downloads, GenIV Microcontroller Software Development Tools, Gen IV Other. Click on the version suitable to your operation system. The download will take a long time, since the file is gigantic (blame Intel). The Linux installation is harder than the Windows one, and requires that the programming be done as root.

4. Once the download is complete, install the USB-Blaster's USB driver. On your computer go to the directory **C:\intelFPGA\_pro\21.1\qprogrammer\quartus\drivers**, and double click on the file **DPIInst.exe**. Or go to your **device manager** to update the driver manually by referencing the above directory.

5. Start the Programmer software. In the **Mode** list select

## Active Serial Programming

ARC-420 timing board

ARC-430 clock driver board

ARC-440 video board

ARC-460 PCIe interface board. Install a jumper on J2 during programming.

## or JTAG

ARC-480 power control board

If it shows **No Hardware** then click on the “**Hardware Setup...**” tab and the **Hardware Setup** dialog box will be displayed. Select **USB-Blaster [USB-0]** from the drop-down menu. Then press **Close**.

7. Back in the main menu press the **Add File...** button and browse to select your \*.pof file for programming your device. Then check **Program/Configure** and **Verify**, and press **Start**. A blue LED on the USB-Blaster will be lit during the programming time, and the window will tell you if programming was successful.

8. After programming the ARC-460 PCIe interface board, the computer must be powered OFF, the jumper J2 must be removed and the computer must be powered ON for the new contents of the memory to get written to the FPGA. Restarting the computer is not enough.