

# Installing new Cores using Quartus Prime Programmer



To upgrade Cores, use the Quartus Prime Programmer application for Windows or Linux, and a USB-Blaster connected to the Vampire JTAG header.

End-users can use this method, or, alternatively, use dedicated [FlashROM executables](#) that run directly on AmigaOS 3.x. The Quartus method is the only one able to flash bricked cards.

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## Where to buy USB-Blaster



The official product page for the ALTERA USB-Blaster device is [here](#). The device looks like this:



This device can be found easily in many Online Shops. Estimated price is **between 4USD and 15USD**. Just ensure it is compatible with ALTERA Cyclone III FPGAs, and provided with:

1. The USB-Blaster device itself.
2. The JTAG cable.
3. The Mini-USB to USB cable.

For example, search this item on **eBay** or **Amazon**:

- [eBay.com >> ALTERA+USB-Blaster](#)
- [Amazon.com >> ALTERA+USB-Blaster](#)

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## How to connect USB-Blaster to Vampire board



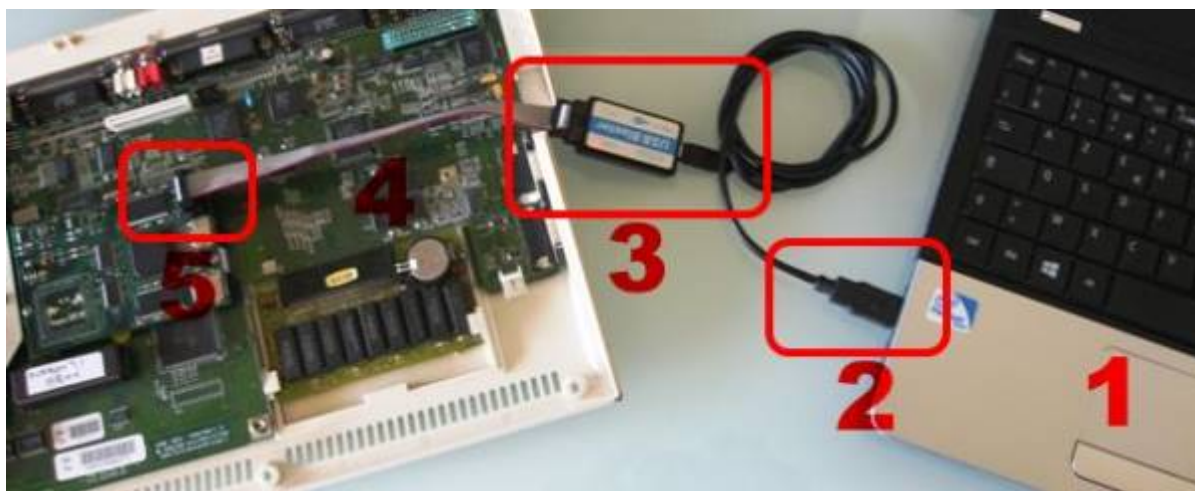
**⚠ POWER OFF your Amiga / Vampire**, and also **DISCONNECT** all devices that have their own power connection, such as Digital Video and Ethernet cables, to prevent power backfeed into the Vampire. **NEVER** connect or disconnect the **USB-Blaster** while your Amiga / Vampire is powered on!

Below is the full connection chain to use:

**(1) PC** ⇒ **(2) USB to Mini-USB cable** ⇒ **(3) USB-Blaster device** ⇒ **(4) JTAG cable** ⇒ **(5) Vampire JTAG header**

Afterwards, if your PC is turned on, the 'POWER' LED on the USB-Blaster should be 'red'.

*Example connection if you have a Vampire accelerator board connected to a classic Amiga:*



*Example connection if you have a Vampire Standalone:*



Make sure that the JTAG cable is inserted into the correct header on the Vampire, and with the correct orientation. The red stripe that is on one side of the JTAG cable must be aligned with Pin 1 of the JTAG header.

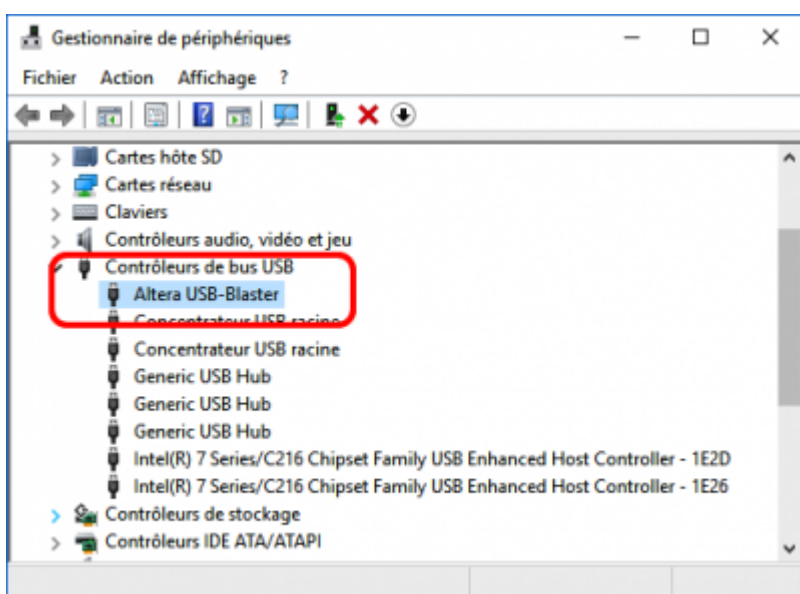
## How to install Quartus Prime Programmer



Linux users can simply use [this Docker image](#), which already has Quartus Prime Programmer and its dependencies set up properly.

1. **Download Quartus Prime Programmer and Tools.**
  - Be careful about what you are downloading.

- You do **NOT** need the **FULL** Quartus application. Avoid the >1GB setup!
  - What you need is called exactly Quartus Prime Programmer and Tools. It is about **300MB**. You can find it under “Additional Software”→“Stand-Alone Software” after selecting the “Lite” edition.
  - There are different versions for **Windows** and **Linux**. (Tested OK on Windows 10, CentOS 6 and Ubuntu 18.)
2. **Install** the program on your computer.
- If you are on Linux, you need to install the Linux desktop environment first.
    - On RHEL 6/CentOS 6, this can be done with `yum groupinstall "Desktop" "Desktop Platform" "X Window System" "Fonts"`.
3. You might need to install the USB driver for the USB-Blaster by hand.
- On Windows, open the **Device Manager** and ensure that the USB driver for USB-Blaster is correctly installed. If it is **NOT** correctly installed, then select the .INF driver information file from the Quartus setup archive.

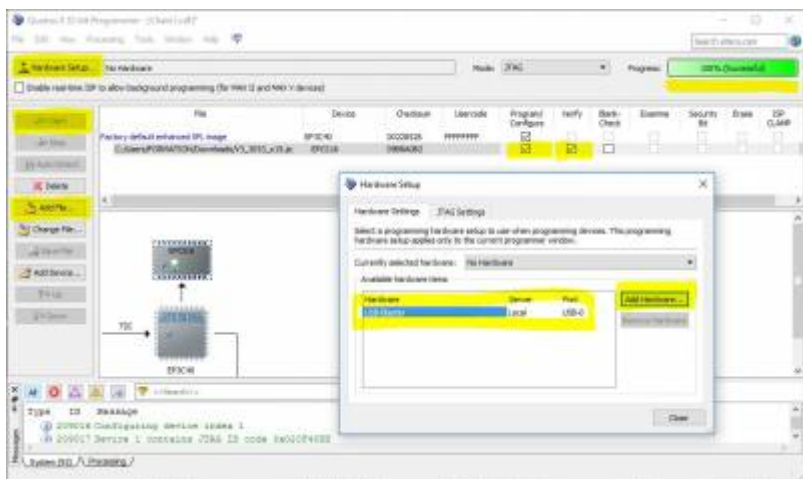


## How to flash the Vampire from Quartus Prime Programmer



1. Keep a copy of the previous working Core.
  - Having a copy will be useful in case of severe bugs in new release.
2. Follow the instructions above to connect the USB-Blaster.
3. Open Quartus Prime Programmer.
4. Click the '**Hardware Setup**' button.
5. Select the USB-Blaster item in the hardware device list.
6. Click '**Add file**' and select a .JIC file to flash onto the Vampire board.
  - **NEVER** USE a .JIC file that is not dedicated to your hardware. It might **DESTROY** your FPGA.
  - For example, do **NOT** flash a Core dedicated to Vampire 600 V2 on a Vampire 600 V1 or a Vampire 500 V2+.

7. Check the '**Program/Configure**' and '**Verify**' options. See picture below.
8. FYI, by selecting the Erase checkbox, the Vampire FPGA would be emptied.
  - If you have a Vampire 600 or a Vampire 1200, erasing the FPGA will cause the Amiga to boot on its built-in CPU.
9. **Power ON your Amiga / Vampire.**
10. Click the '**Start**' button.
  - If you have a Vampire accelerator board connected to a classic Amiga, your Amiga will freeze or reboot on its built-in CPU during this process.
  - If you have a Vampire Standalone, it will freeze during this process.
11. **Wait** until flashing is finished, with '100% (Successful)'. It takes about 1 or 2 minutes.
  - **NEVER** switch off the computer during a flash operation.
  - Do **NOT** use your operating system during a flash operation.
12. **Power OFF** your Amiga / Vampire, disconnect the USB-Blaster, and wait at least 10 seconds. Make sure that all devices that have their own power connection, such as Digital Video and Ethernet cables, are also **disconnected** during this time, to prevent power backfeed into the Vampire.
13. Finally, **Power ON** your Amiga / Vampire.



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