

Quartus, Modelsim, and SystemBuilder Software Installation Guide

EEC 180 • UC Davis

EEC 18 and EEC 180 use Quartus II Prime and Modelsim Waveform viewer. Students can download the Lite edition for free and install it on a personal Windows or Linux computer. This document describes steps to download these software tools, and install and configure the necessary drivers.

1. Download Quartus and Modelsim

Step #1: Using your browser, navigate to the webpage:

<http://fpgasoftware.intel.com/?edition=lite>,

Select the edition "Lite," and the latest release.

Next, click the blue download arrow for these three software packages:

1. Quartus Prime
2. ModelSim-Intel FPGA
3. Max 10 FPGA device support

You will then be redirected to a "Sign in" page. You must register an account the first time.

Quartus Prime Lite Edition
Release date: September, 2019
Latest Release: v19.1

Intel® Quartus® Prime
Design Software

Select edition: Lite
Select release: 19.1

Operating System: Windows, Linux

- ✓ The Quartus Prime Lite Edition Design Software, Version 19.1 includes functional and security updates. Users should keep their software up-to-date and follow the [technical recommendations](#) to help improve security. Additional security updates are planned and will be provided as they become available. Users should promptly install the latest version upon release.
- ✓ The Quartus Prime Lite Edition Design Software, Version 19.1 is subject to removal from the web when support for all devices in this release are available in a newer version, or all devices supported by this version are obsolete. If you would like to receive customer notifications by e-mail, please subscribe to our [subscribe to our customer notification mailing list](#).
- ✓ To use the Quartus Prime Lite Edition Design Software, Version 19.1 on Windows, you must download and install the patch available in this [KDB Solution](#).
- ✓ OS Support and IP support have changed in this release. Refer to the [Release Notes](#) for details.
- ✓ The Quartus Prime Lite Edition Design Software, Version 19.1 supports the following device families: Arria II (536.5MB), Cyclone 10 LP (293.5MB), Cyclone IV (516.3MB), Cyclone V (1434.3MB), MAX II, MAX V (13.1MB), and MAX 10 FPGA (343.3MB). [- More](#)

Download and install instructions: [- More](#)
[Read Intel FPGA Software v19.1 Installation FAQ](#)
[Quick Start Guide](#)

Quartus Prime Lite Edition (Free)

Quartus Prime (includes Nios II EDS)
Size: 1.5 GB MD5: C64B01C9F5DE3E14724FOCA046E56A3E
** Nios II EDS on Windows requires Ubuntu 18.04 LTS on Windows Subsystem for Linux (WSL), which requires a manual installation.
** Nios II EDS requires you to install an Eclipse IDE manually.

ModelSim-Intel FPGA Edition (includes Starter Edition)
Size: 968.2 MB MD5: C094C7B72139545F77D93DB0F750594C

Devices
You must install device support for at least one device family to use the Quartus Prime software.

Arria II device support. (536.5MB)
Size: 499.1 MB MD5: B9D8043A8978EA0C60D841C3B61DB43B

Cyclone IV device support. (516.3MB)
Size: 466.0 MB MD5: 421FCB85BCD5C66AF026EB693FCCA7EF

Cyclone 10 LP device support. (293.5MB)
Size: 265.7 MB MD5: 09CC8E9314101A1224F4364950D97431

Cyclone V device support. (1434.3MB)
Size: 1.3 GB MD5: FF775862C7E1EB0F0083844DAE554079

MAX II, MAX V device support. (13.1MB)
Size: 11.4 MB MD5: 8D4FB07A55F9894C53695808F9779D44

MAX 10 FPGA device support. (343.3MB)
Size: 332.8 MB MD5: C5D8FB781E2816D9433A0B64240233F5

Step #2: Create an Account: In the "Sign In" page, click on "Register for an Individual Account". Follow the following screenshots. Remember to Replace "Personal Information" with your own information of name, email and phone number etc. Click "Next Step" twice, and then click "Submit". An email will sent to your email address, click the link in that email to verify your account.

Products Solutions Support

Intel® FPGA Program – Register for an Individual Account

Join the Intel® FPGA Program to get immediate access to online tools, technical content, and other resources. If you do business with Intel as an individual, you can request for basic access to Intel® FPGA Program tools and resources. If you wish to register for a company account and be eligible for Intel® Premier Support, please register for a premier account.

Personal Information

First Name: SHFU Last Name: WU
 Email: wushifu92@gmail.com Username: wushifu92@gmail.com
 Country: United States
 Job Function: Engineering
 Country Code: +1 Phone: 5301234567 Extension (optional):
[Next Step](#)

Products Solutions Support

Enrollment Questions

Company Name: University of California, Davis
 Company Country: United States Company Zip/Postal Code: 95616
 Time to Solution Development: 0 to 3 Months Company Size: 5000+
 Primary End Market: Academic / Research
 Preferred Distributor: North America - Digi-Key

Communication Subscriptions

Subscribe to email updates from Intel (optional)

Programmable Logic Product Announcements
 Programmable Logic Newsletters
 System Design Journal

[Next Step](#)

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Intel® FPGA Program – Register for an Individual Account

Join the Intel® FPGA Program to get immediate access to online tools, technical content, and other resources. If you do business with Intel as an individual, you can request for basic access to Intel® FPGA Program tools and resources. If you wish to register for a company account and be eligible for Intel® Premier Support, please register for a premier account.

Personal Information [Edit](#)

Enrollment Questions [Edit](#)

Terms and Conditions

Clicking "Submit" confirms your acceptance of the Intel Terms of Use and understanding of the Intel Privacy Policy.

[Submit](#)

Step #3: Follow instructions in Step #1 to download the software installation files.

2. Install Quartus

Place the three downloaded files into the same folder (or Desktop) if they are not already.

Double click the Quartus installer which is named something like:

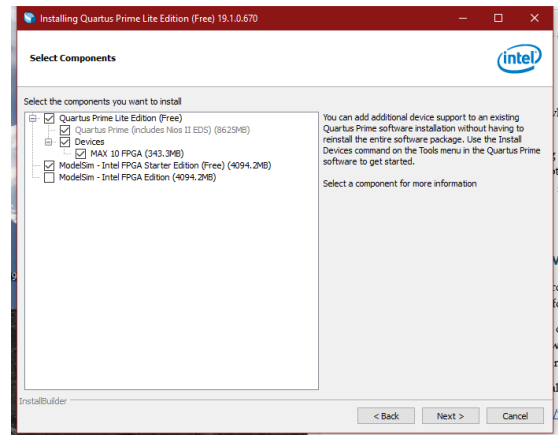
QuartusLiteSetup-19.1.0.670-windows.exe

Accept all default options including the installation directory which is in an unfortunate location at C:\intelFPGA_lite\19.1\ in the root directory but this is necessary because it cannot accept a space in the path so the normal location under C:\Program Files\... is not possible.

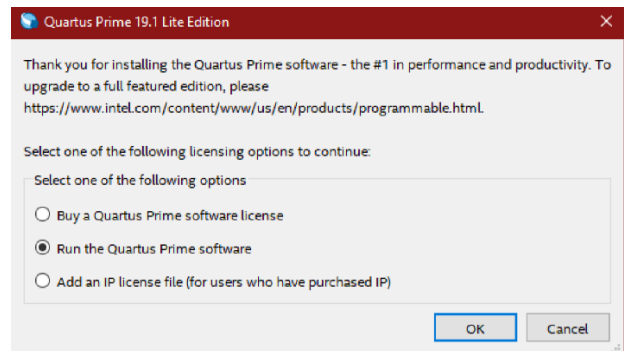
Accept the default components.

The installation takes a very long time—plan on approximately 60-90 minutes!

Next the tool will launch a Device Drive Installation Wizard.



And then this window. Choose “Run the Quartus Prime software” and OK.



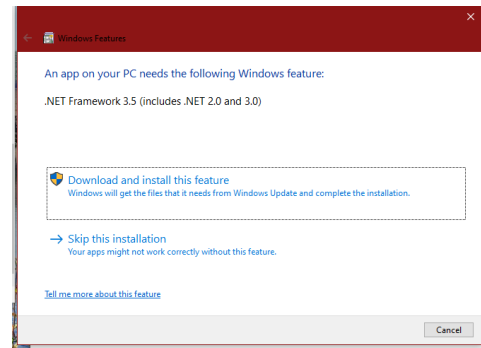
Try running Quartus. With version 19.1, you may get this error message:



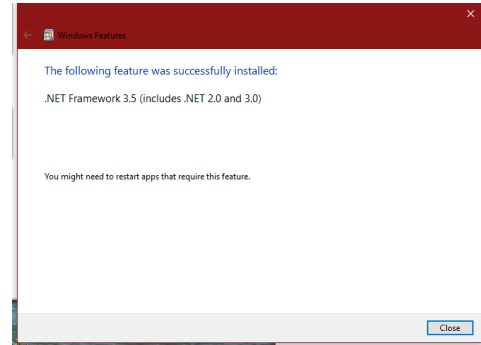
If you get this error message, follow these 3 steps:

- i) download and install the VC 2015 redistributable package from Microsoft:
<https://www.microsoft.com/en-us/download/details.aspx?id=48145>

ii) reboot your computer. After restarting, you may get this installation request from Windows. Press “Download and install this feature”



iii) it takes a long time to complete; don't touch anything until you get the following window:



iv) to be extra safe, reboot your machine again.

3. Update the USB Blaster Driver

Before your computer can connect to the DE-10 board, you will likely need to install or update the USB blaster driver. Plug the DE10-Lite FPGA board into your computer using the included USB cable, open the **Device Manager** utility program, open the **Universal Serial Bus controllers** category, and find the **Altera USB-Blaster** entry. It will likely have a yellow warning triangle by the name. Follow the instructions in Appendix A if you do not see the driver.

Right click on **Altera USB-Blaster**, click **Update Driver** and choose **Search automatically for updated driver software**. If the yellow warning triangle goes away, you are done (be prepared to wait a long time, like 10-15 minutes). If it does not go away, follow the instructions in Appendix A.

4. Install SystemBuilder

Click on the following link which is believed to always point to the latest version:

<http://download.terasic.com/downloads/cd-rom/de10-lite/>

Download the file **DE10-Lite_v.2.0.3_SystemCD.zip** or similar under the **CD-ROMs** heading.

If for some reason you do not see the aforementioned .zip file, click instead on the following link and follow the indented instructions:

<https://www.terasic.com.tw/cgi-bin/page/archive.pl?Language=English&CategoryNo=234&No=1021&PartNo=4>

Under the **CD-ROM** heading, click on the round CD icon in the **DE10-Lite CD-ROM** row and **Download** column.

You will then be asked to setup an account with Terasic, which is separate from the account you setup with Intel to download Quartus. Click Join Now, fill out information, submit, and click the link in an email sent to you by Terasic.

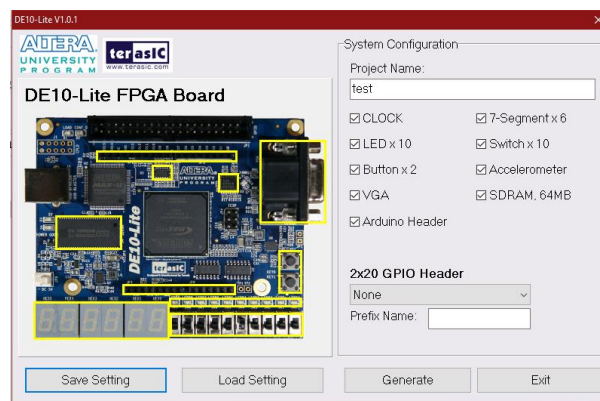
Log into the website, go back to the CD-ROM download page above, and download the file **DE10-Lite_v.2.0.3_SystemCD.zip** or similar under the **CD-ROMs** heading.

Unzip the .zip file (for example, by right-clicking and choosing "Extract All...") into a convenient location.

Optional organization:

- Move the **DE10-Lite_v.2.0.3_SystemCD** folder somewhere convenient such as into the folder **C:\Program Files (x86)**
- Open the following folders inside that folder: **Tools\SystemBuilder**
- Right-click on **DE10_Lite_SystemBuilder.exe** and choose **Create Shortcut**. Move the shortcut somewhere convenient such as on your Desktop.

Run SystemBuilder by double-clicking on the shortcut. You should see the main window:



As a test, enter a project name and select some configuration options, then click Generate which will create two files: a *projectname.htm* file which can viewed by a web browser, and *projectname.qpf*, *projectname.qsf*, *projectname.sdc*, and *projectname.v* files to be used for implementing a design on your DE10-Lite board.

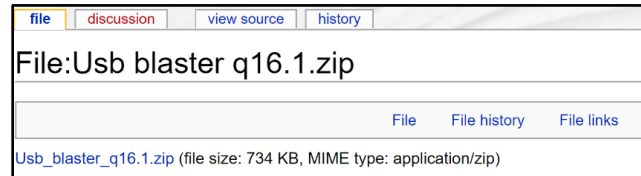
Appendix A. Update the USB Blaster Driver with a Downloaded Driver

Right click on **Altera USB-Blaster** and click **Browse my computer for driver software** and choose the **location, which is likely inside the Quartus installation directory, for example** C:\intelFPGA_lite\18.1\quartus\drivers\usb-blaster.

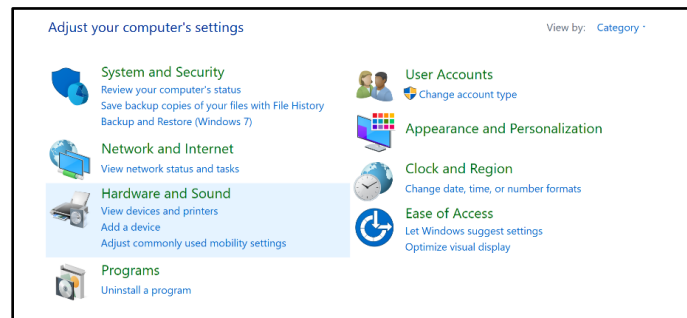
If the USB-Blaster driver is not installed yet, follow the following steps to install it:

1. Download the zip file from

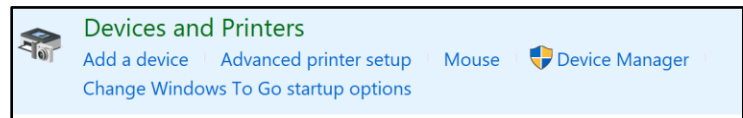
http://www.terasic.com.tw/wiki/File:Usb_blaster_q16.1.zip



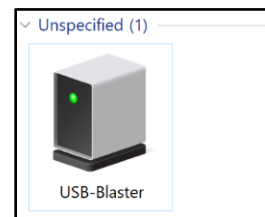
2. Go to **Control Panel** and select **Hardware and Sound**.



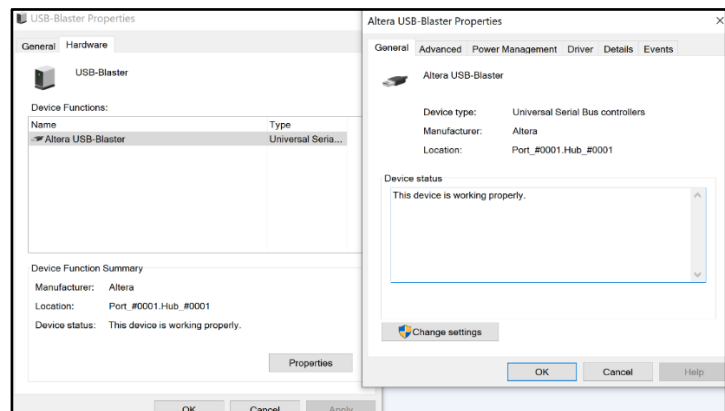
3. Choose **Devices and Printers**



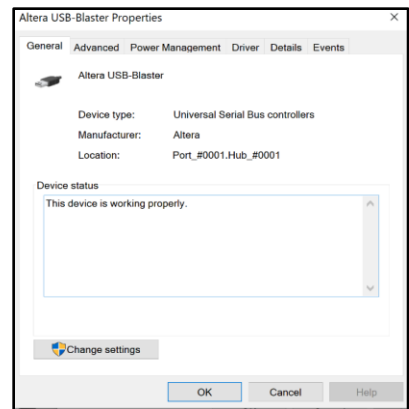
4. Right-click on Unspecified Device (USB-Blaster) and choose **Properties**



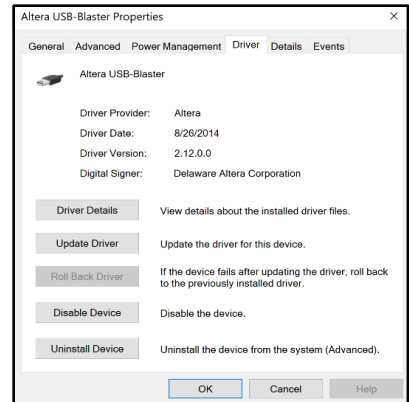
5. Go to **Hardware** and choose **Properties**.



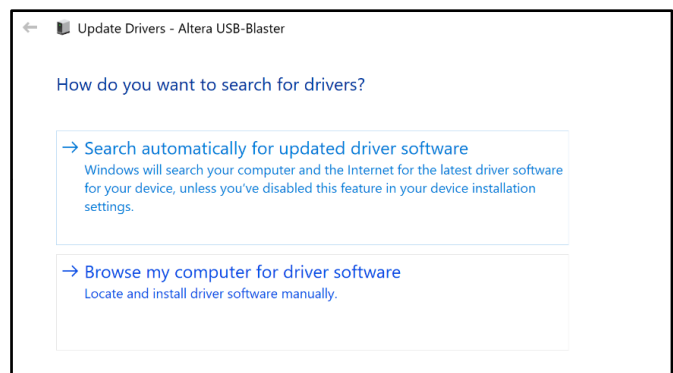
6. In the Altera USB-Blaster Properties Window, Choose **Change settings**.



7. Under **Driver** and choose **Update Driver**.



8. Choose **Browse my computer for driver software** and choose the downloaded file location in step one.



Written by Shifu Wu, Ziyuan Dong, and Bevan Baas

2020/04/06 Added SystemBuilder installation instructions

2020/04/04 Added Quartus installation details and Microsoft patch instructions

2020/02/01 Added windows installation notes

2019/01/01 Original version written Shifu Wu