Quartus, Modelsim, and SystemBuilder Software Installation Guide

EEC 18, EEC 180, & EEC 181 • UC Davis

The Quartus Lite edition is free and may be installed on a 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

Disable any popup blockers you may have running. If you do not, nothing will happen when you click the arrow.

Select edition: Lite
Select release: 20.1 (as of Jan 2022. Often the best version is the second newest.)

Click the "Individual Files" tab.

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.

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.

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.
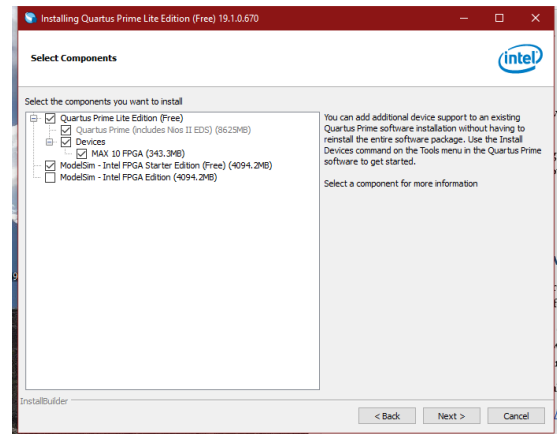
And then this window. Choose "Run the Quartus Prime software" and OK.
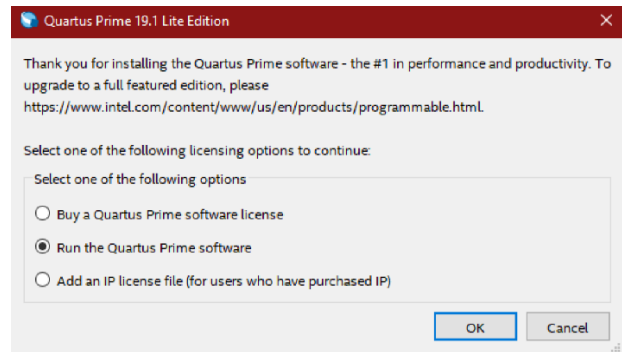
Try running Quartus. With version 19.1, you may get this error message:
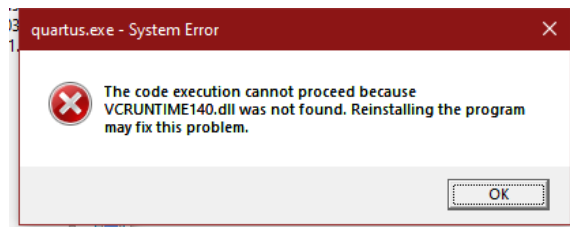
If you get this error message, follow these 3 steps:

    i) download and install the VC 2015 redist 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"
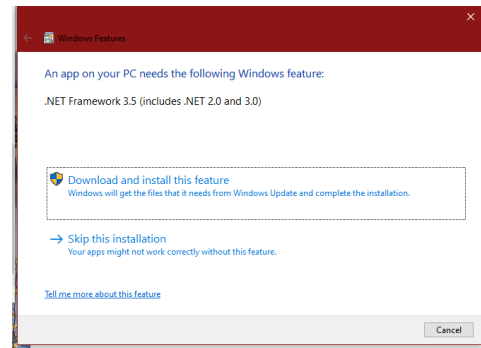
iii) it takes a long time to complete; don't touch anything until you get the following window:
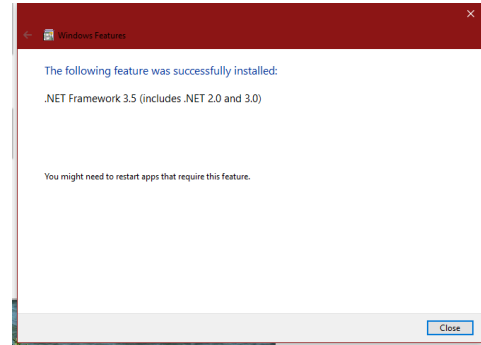
iv) to be extra safe, reboot your machine again.

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:
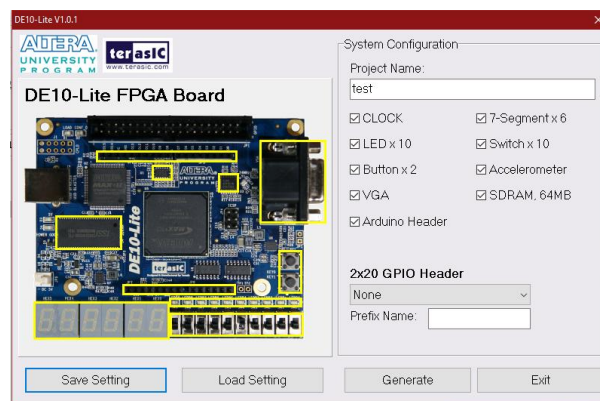
As a test, enter a project name and select some configuration options, then click Generate which will create two files: a *projectname*.htm file which can viewed by a web browser, and *projectname*.qpf, *projectname*.qsf, *projectname*.sdc, and *projectname*.v files to be used for implementing a design 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.
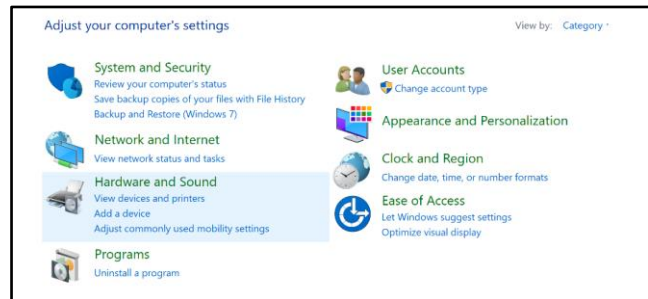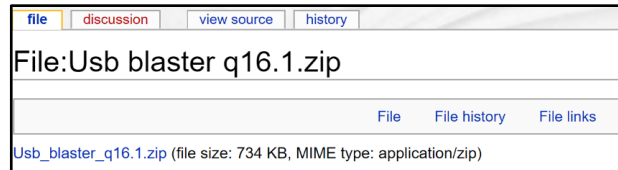
If the USB-Blaster driver is not installed yet, follow the following steps to install it:
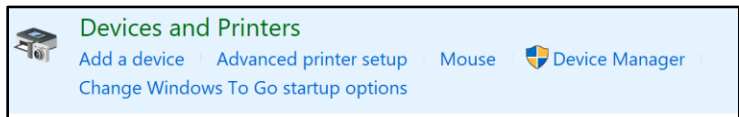
1. Download the zip file from http://www.terasic.com.tw/wiki/File:Usb_blaster_q16.1.zip

2. Decompress and extract the .zip file you just downloaded to a location you can easily remember such as on your Desktop.
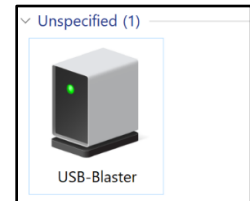
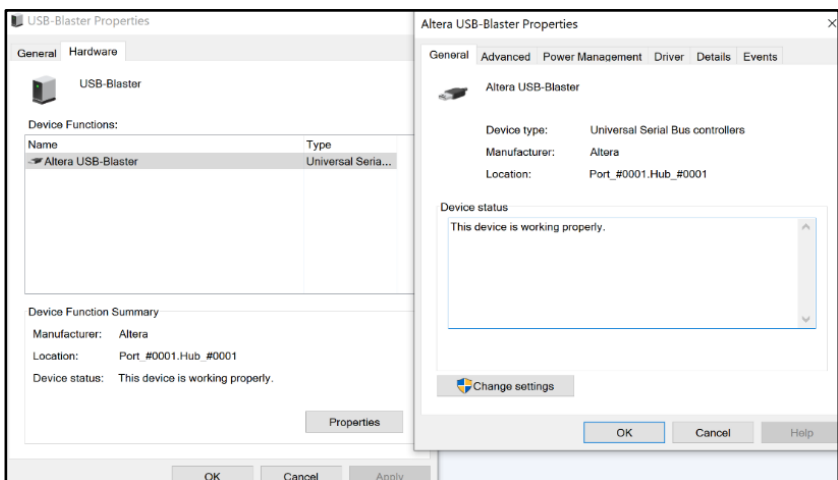3. Go to the **Control Panel** and select **Hardware and Sound.**

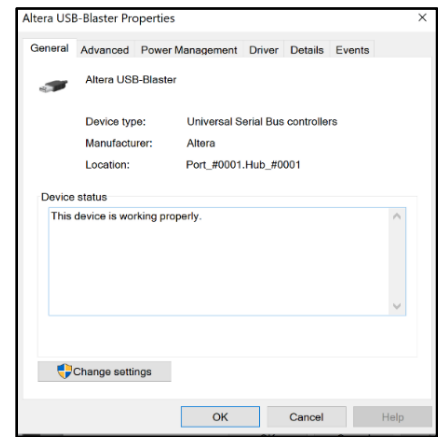4. Choose **Devices and Printers**

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

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

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

8. Under **Driver** and choose **Update Driver**.

If you have Windows 11 and you are unable to install the driver, follow these steps:
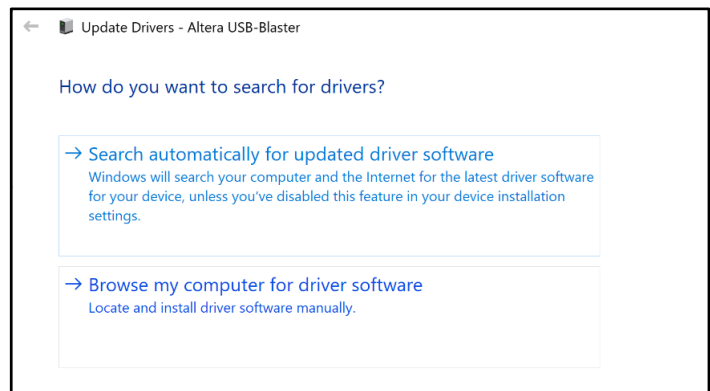   Start > Power > Restart > Troubleshoot > Advanced Options >
   > Startup Settings > select number "7" to disable the driver signature enforcement option.

Re-start the procedure now from Step 3.

[https://gearupwindows.com/how-to-disable-driver-signature-enforcement-on-windows-11-10/]
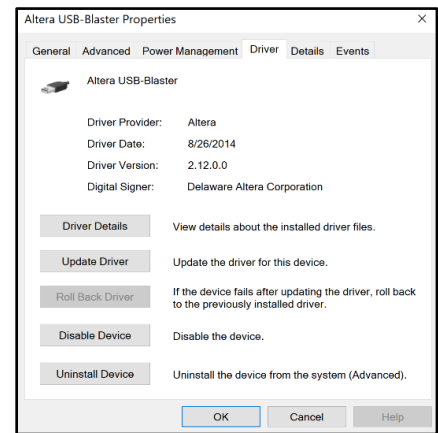
9. Choose **Browse my computer for driver software** and choose the downloaded file location in step 2.

Written by Shifu Wu, Ziyuan Dong, Haotian Wu, and Bevan Baas
2019/01/01   Original version written Shifu Wu
2020/02/01   Added windows installation notes
2020/04/04   Added Quartus installation details and Microsoft patch instructions
2020/04/06   Added SystemBuilder installation instructions
2021/01/14   Added a new step in Appendix A to decompress the downloaded file
2022/01/13   Re-wrote portions of page 1. [BB]
2022/01/17   Added windows 11 driver suggestion to step #8.