

FPGA configuration

1 DE2-115 Altera FPGA

2 Connecting FPGA

3 System device monitor

The FPGA board is found and listed as a new device named USB-Blaster

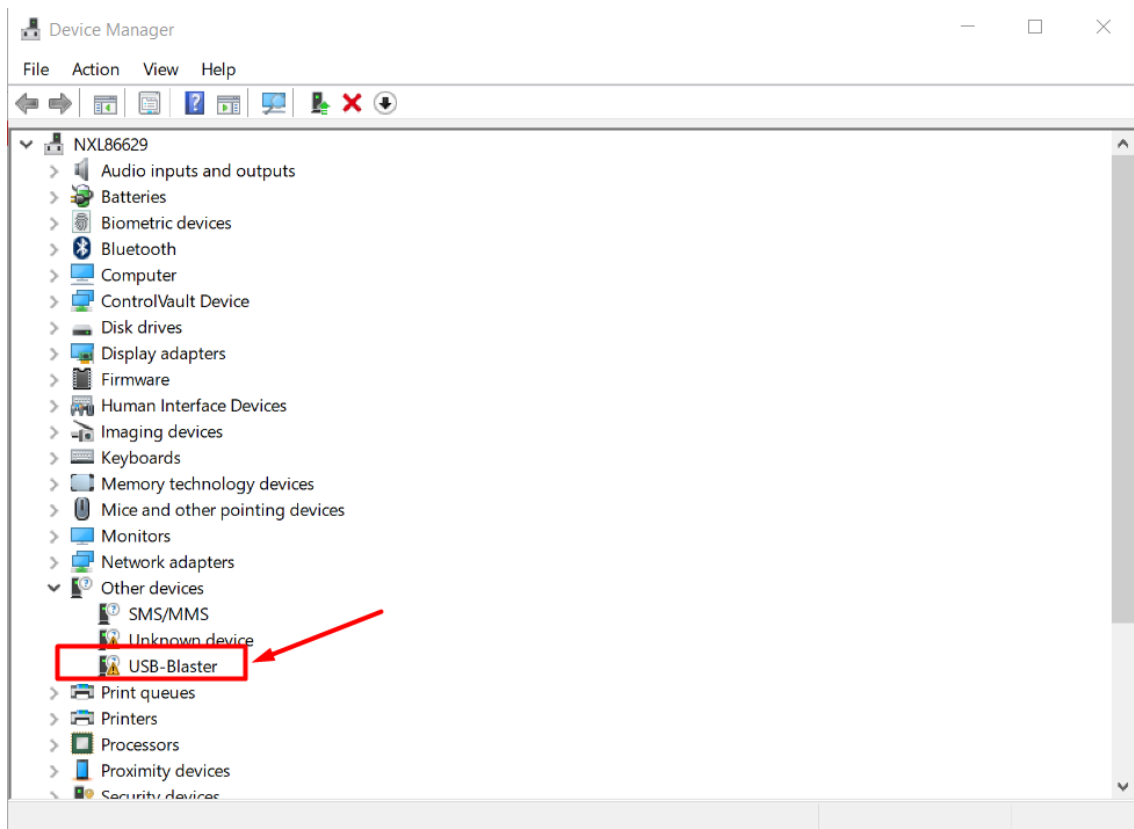


Figure 1 USB-Blaster device

4 Installing drivers for FPGA

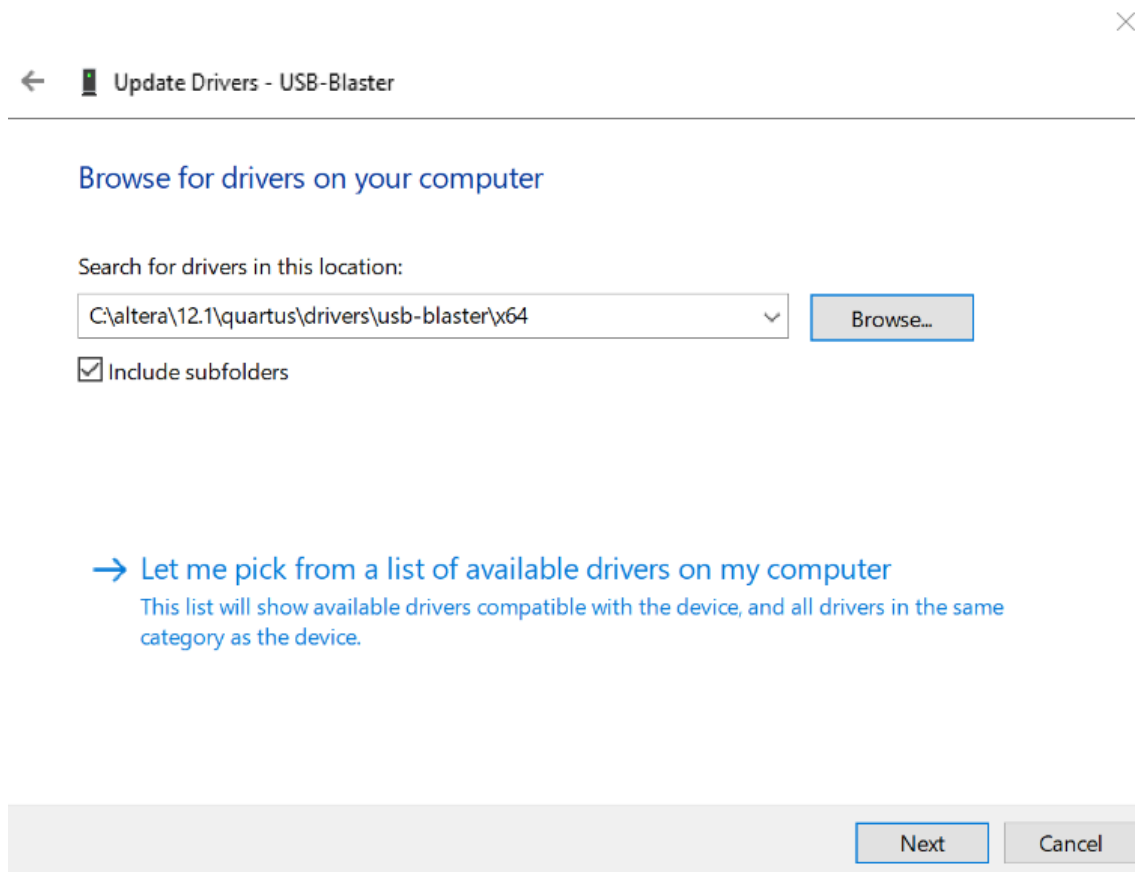


Figure 2 Locating drivers (*select usb-blaster folder*)

5 Already installed driver

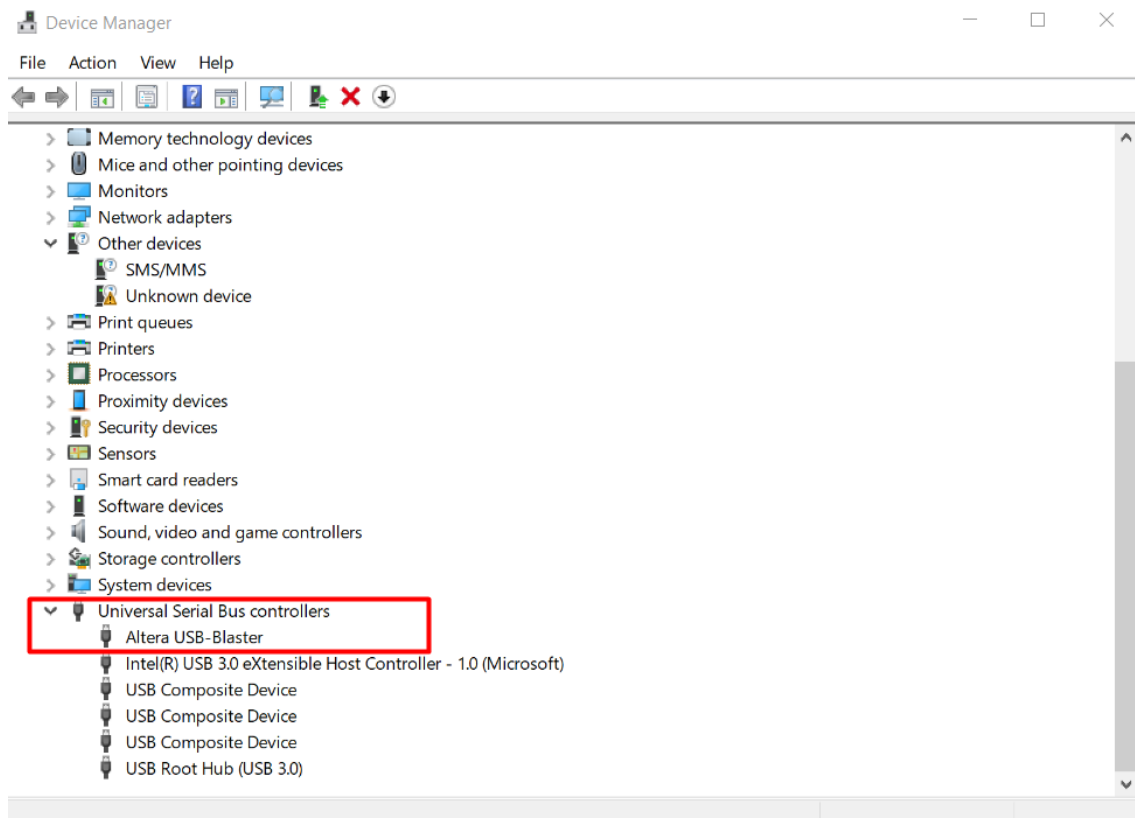
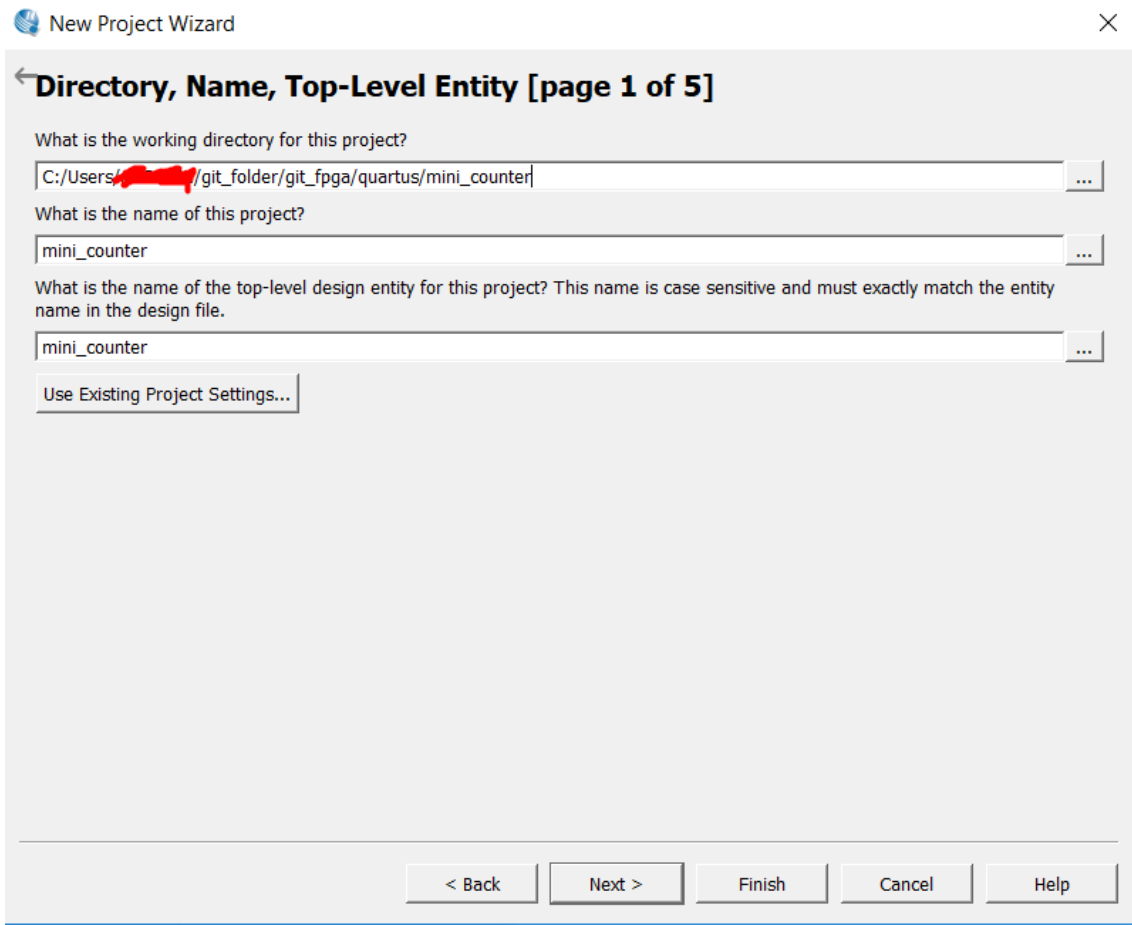


Figure 3 Correct detection

6 Opening Quartus

6.1 Define project and set location



The screenshot shows the 'New Project Wizard' dialog box, titled 'New Project Wizard' with a close button (X) in the top right corner. The dialog is on 'page 1 of 5' and is titled 'Directory, Name, Top-Level Entity [page 1 of 5]'. It contains three text input fields with '...' buttons to the right, and a 'Use Existing Project Settings...' button below them. The first field is labeled 'What is the working directory for this project?' and contains the path 'C:/Users/[redacted]/git_folder/git_fpga/quartus/mini_counter'. The second field is labeled 'What is the name of this project?' and contains 'mini_counter'. The third field is labeled 'What is the name of the top-level design entity for this project? This name is case sensitive and must exactly match the entity name in the design file.' and contains 'mini_counter'. At the bottom of the dialog are five buttons: '< Back', 'Next >', 'Finish', 'Cancel', and 'Help'.

New Project Wizard

← **Directory, Name, Top-Level Entity [page 1 of 5]**

What is the working directory for this project?

C:/Users/[redacted]/git_folder/git_fpga/quartus/mini_counter

What is the name of this project?

mini_counter

What is the name of the top-level design entity for this project? This name is case sensitive and must exactly match the entity name in the design file.

mini_counter

Use Existing Project Settings...

< Back Next > Finish Cancel Help

6.2 New project device settings

Skip project wizard step 2 and select device in step 3

New Project Wizard

×

← Family & Device Settings [page 3 of 5]

Select the family and device you want to target for compilation.

Device family

Family: Cyclone IV E

Devices: All

Target device

Auto device selected by the Fitter

Specific device selected in 'Available devices' list

Other: n/a

Show in 'Available devices' list

Package: Any

Pin count: Any

Speed grade: Any

Name filter:

☒ Show advanced devices

☐ HardCopy compatible only

Available devices:

Name	Core Voltage	LEs	User I/Os	Memory Bits	Embedded multiplier 9-bit element
EP4CE6E22A7	1.2V	6272	92	276480	30
EP4CE6E22C6	1.2V	6272	92	276480	30

Companion device

HardCopy:

☐ Limit DSP & RAM to HardCopy device resources

To use this fe

< Back

Next >

Finish

Cancel

Help

Figure 4 Select Cyclone IV

FPGA board cyclone IV chip can be looked to find correct device name:

EP4CE115F29C7N

Family & Device Settings [page 3 of 5]

Select the family and device you want to target for compilation.

Device family
Family: Cyclone IV E
Devices: All

Show in 'Available devices' list
Package: Any
Pin count: Any
Speed grade: Any
Name filter: 115
☒ Show advanced devices ☐ HardCopy compatible only

Target device
☐ Auto device selected by the Fitter
☒ Specific device selected in 'Available devices' list
☐ Other: n/a

Available devices:

Name	Core Voltage	LEs	User I/Os	Memory Bits	Embedded multiplier 9-bit ele
EP4CE115F23I8L	1.0V	114480	281	3981312	532
EP4CE115F29C7	1.2V	114480	529	3981312	532

Companion device
HardCopy:
☐ Limit DSP & RAM to HardCopy device resources

< Back

Next >

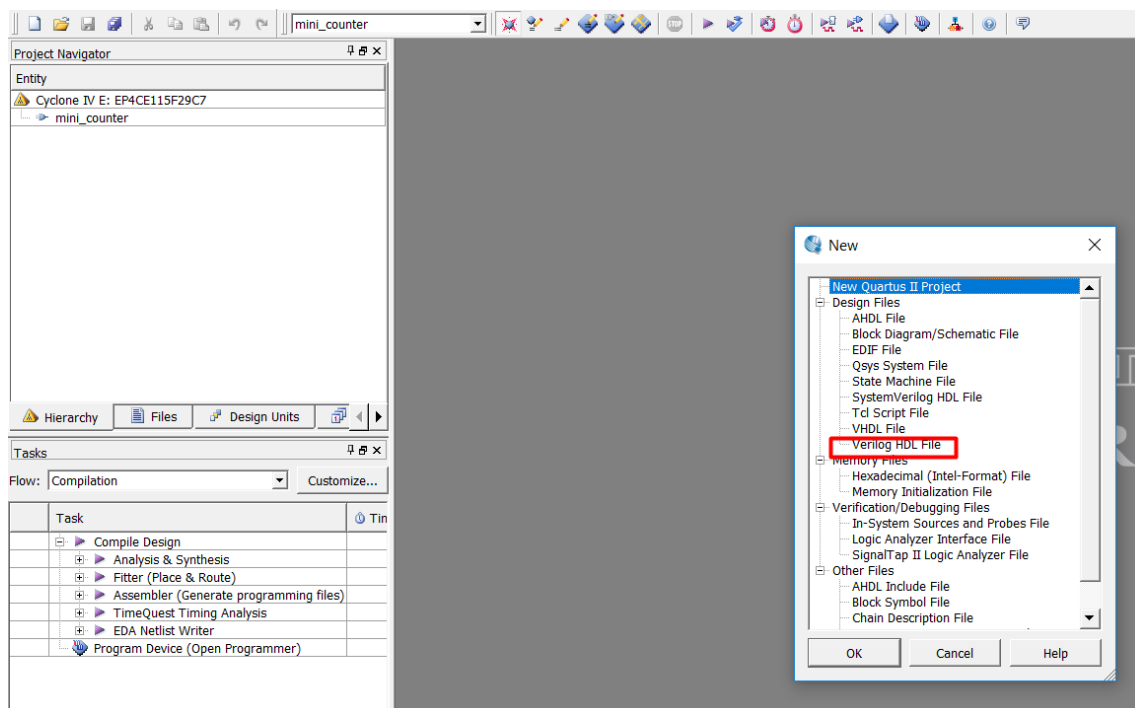
Finish

Cancel

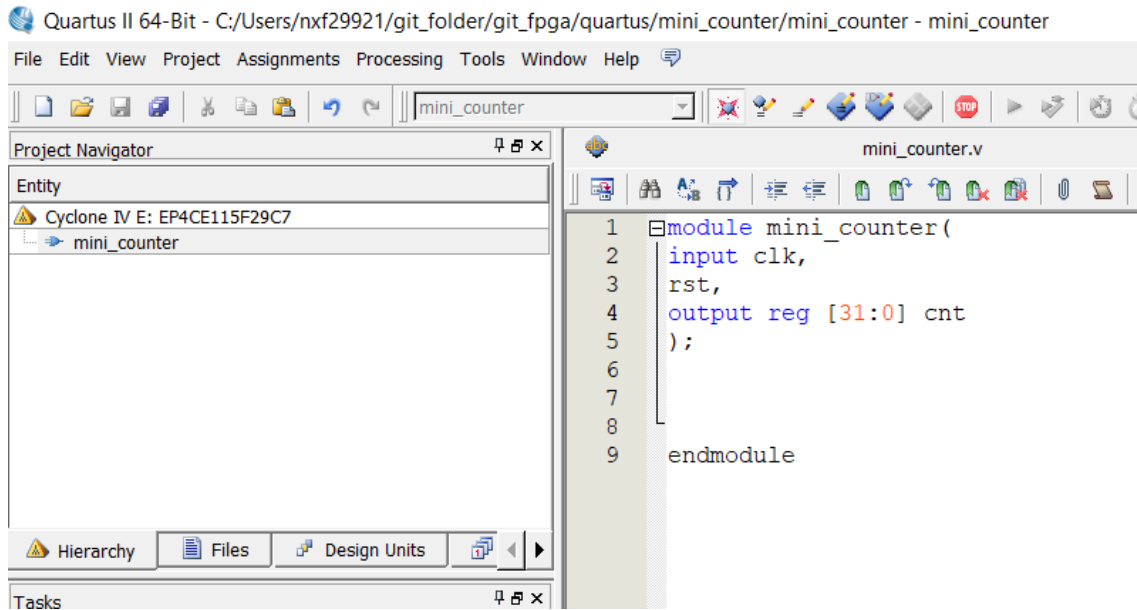
Help

Figure 5 Filter 115 to add EP4CE115F29C7N

6.3 Add a new Verilog file



6.4 Adding Verilog module



7 Reference

7.1 Web documents

- 7.1.1 Terasic setup https://www.youtube.com/watch?v=5R5Tw_zSKZM
- 7.1.2 Terasic driver guide
http://www.terasic.com.tw/wiki/Altera_USB_Blaster_Driver_Installation_Instructions
- 7.1.3 Git <https://git-scm.com/download/win>
- 7.1.4 Notepad++ <https://notepad-plus-plus.org/download/v7.6.html>
- 7.1.5 Git setup <https://git-scm.com/book/en/v2/Getting-Started-First-Time-Git-Setup>