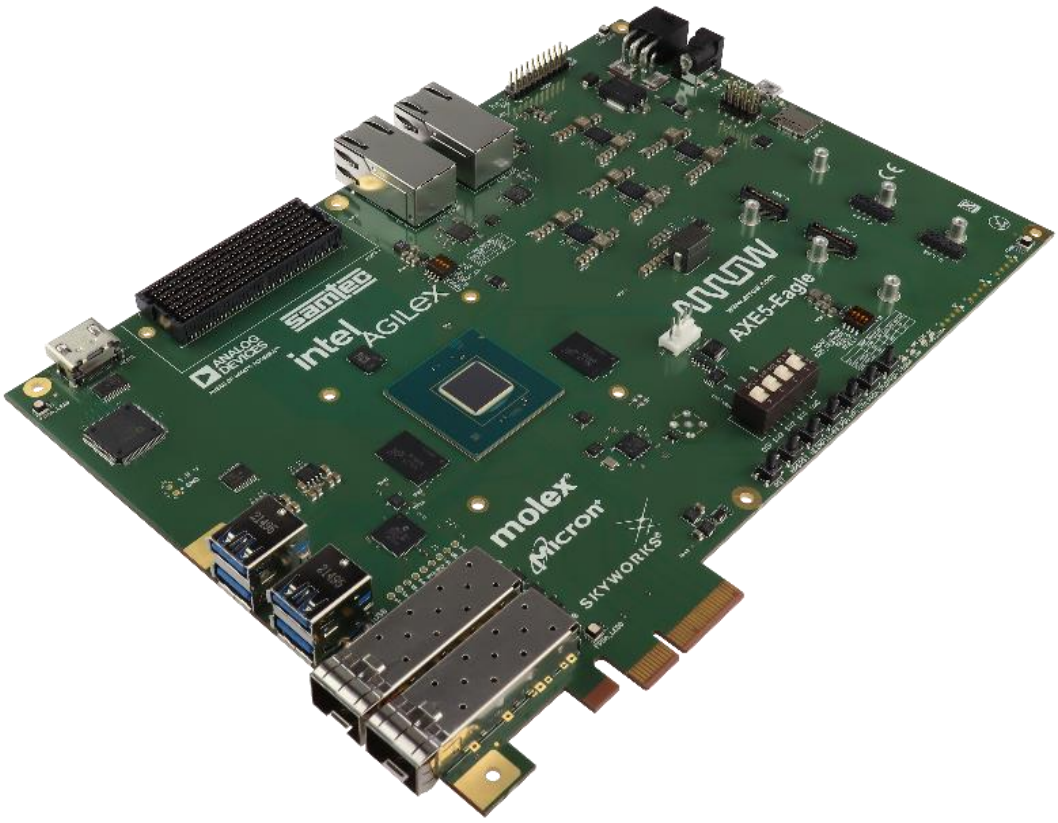
AXE5-Eagle Software Installation



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Please read the legal disclaimer at the end of this document.

NOTE: All references to installation files labelled 24.2.0.40 for Quartus 24.2, should be replaced with 25.1.0.129 for Quartus 25.1

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1. Software Download and Installation

If the Quartus software will be run locally or a remote (cloud server), the steps to download and install the software will be different.

If the software will be used on a local computer, refer to the Section called Local Software download and install.

If the software will be run remotely, refer to the Section called Remote Software and install.

For a local install, the files are large, so the internet speed needs to be fast.

2. Local Software download and install

When running on a local computer, there will be 2 software packages to be installed.

The first one will be Quartus 25.1 software package. Within the Quartus 25.1 software package, Quartus, RiscFree (for the Nios V software) and Questa-Sim Intel FPGA Starter (for simulation) will all be installed.

The Power Thermal Calculator (stand-alone) version will also need to be downloaded and installed.

These steps are for Windows based install, because the workshops were run on Windows computers.

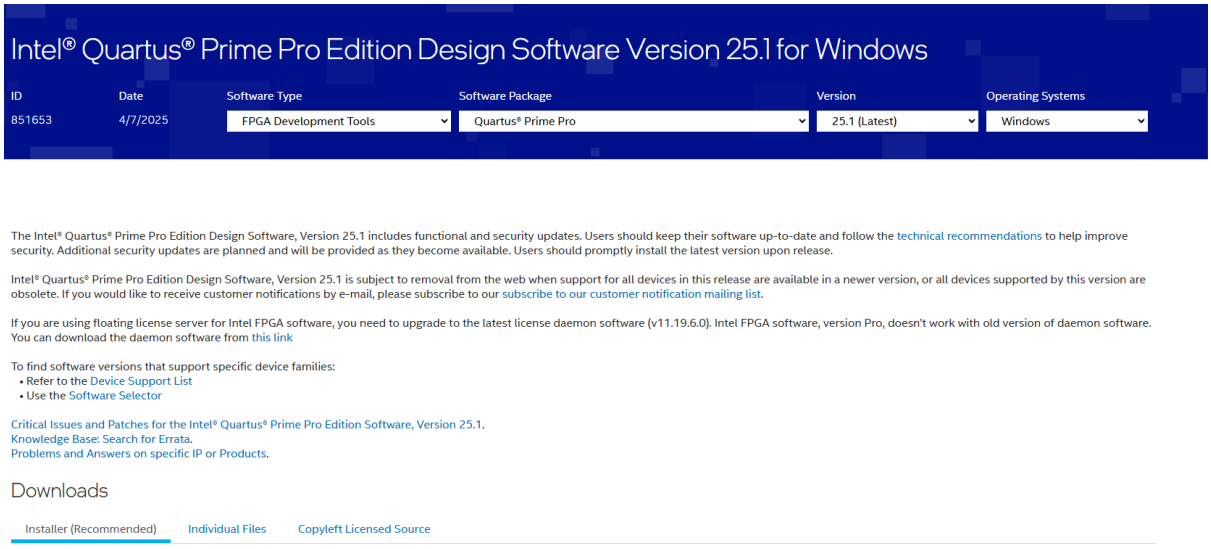
2.1 Software download

2.1.1 Quartus Prime Pro download

Go to the Quartus Prime Pro 25.1 at

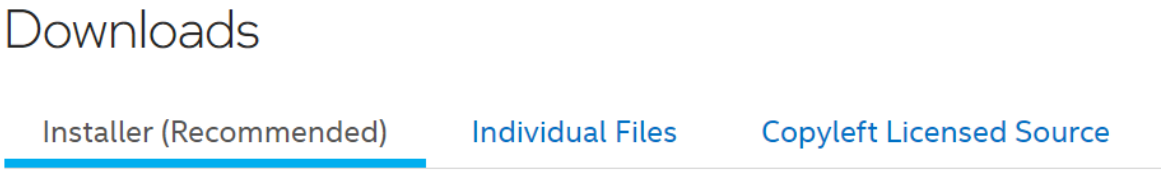
https://www.intel.com/content/www/us/en/software-kit/851653/intel-quartus-prime-pro-edition-design-software-version-25-1-for-windows.html

Which looks like:

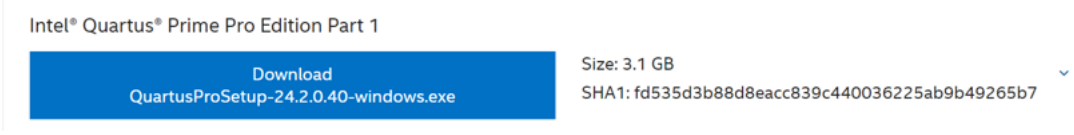


Quartus Prime Pro (unlike the Quartus Prime Standard or Quartus Lite) supports Agilex 5.

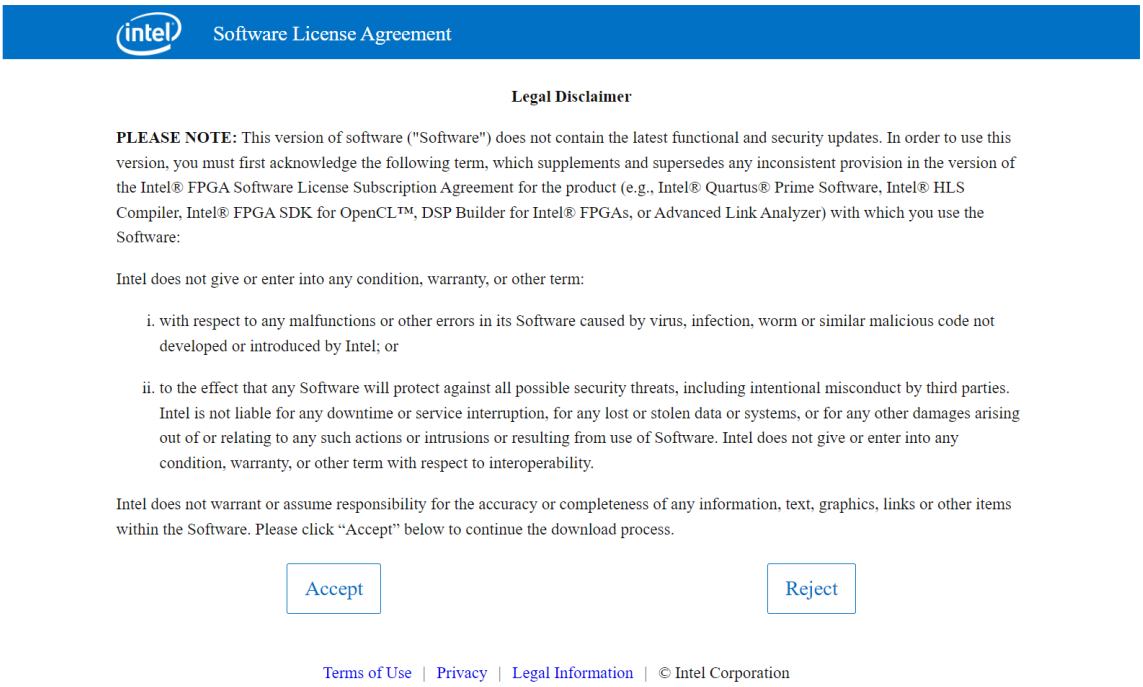
2.1.1 **Select the Individual Files** to reduce the amount of space needed on a computer. (The complete install could be downloaded, if wished but it will use more space.)



2.1.2 Select the Quartus Prime Pro Edition Part 1 as

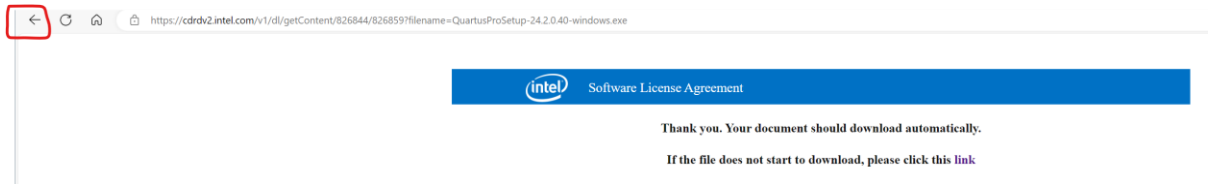


2.1.3 When the Legal Disclaimer appears, read it and **select Accept** as

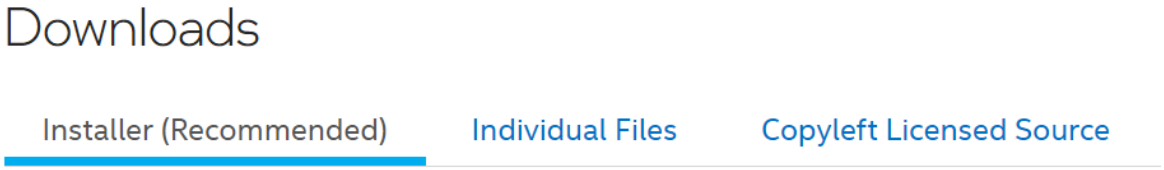


2.1.4 It should start downloading.

2.1.5 **Select** the back button in the Browser to go back to the other files



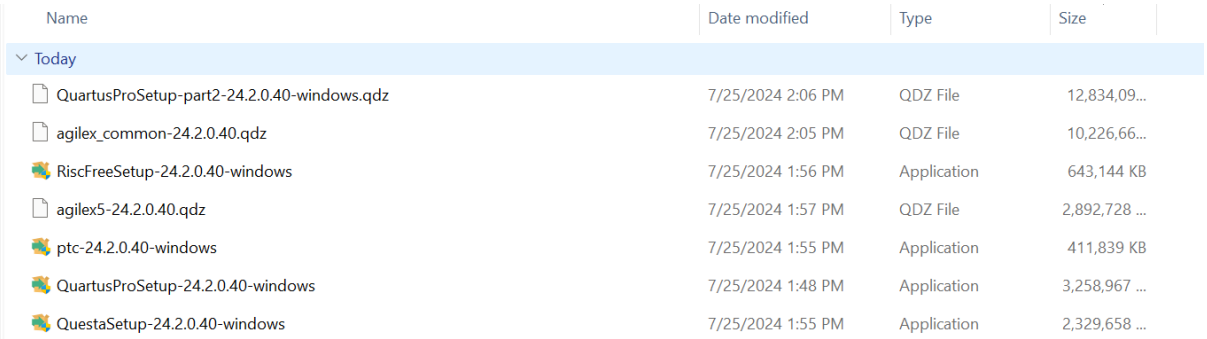
2.1.6 Under the Individual files of



Select one by one the following files (and repeat as needed the legal disclaimer and the back button) for the following

The legal disclaimer will appear for the Agilex 5 devices and RiscFree IDE. The RiscFree IDE is used for software for Nios V (soft core processor).

2.1.7 The files will now be downloaded in the computer's default download directory (usually called downloads). The files will look like:

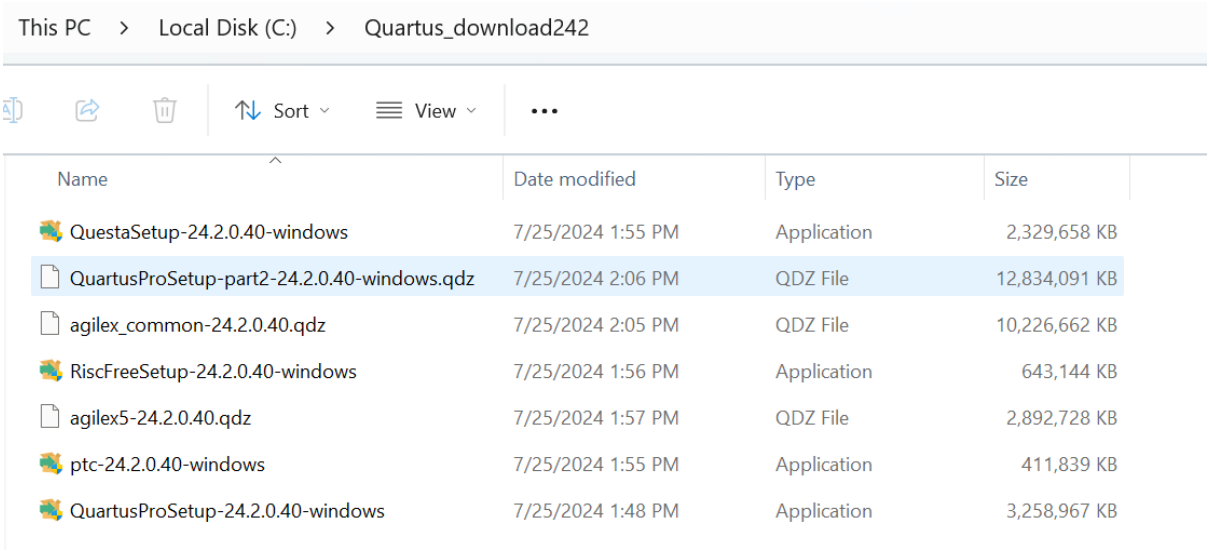


Name	Date modified	Type	Size
Today			
QuartusProSetup-part2-24.2.0.40-windows.qdz	7/25/2024 2:06 PM	QDZ File	12,834,09...
agilex_common-24.2.0.40.qdz	7/25/2024 2:05 PM	QDZ File	10,226,66...
RiscFreeSetup-24.2.0.40-windows	7/25/2024 1:56 PM	Application	643,144 KB
agilex5-24.2.0.40.qdz	7/25/2024 1:57 PM	QDZ File	2,892,728 ...
ptc-24.2.0.40-windows	7/25/2024 1:55 PM	Application	411,839 KB
QuartusProSetup-24.2.0.40-windows	7/25/2024 1:48 PM	Application	3,258,967 ...
QuestaSetup-24.2.0.40-windows	7/25/2024 1:55 PM	Application	2,329,658 ...

Note: Depending on the browser, there will be a circle showing the progress of the download files, so you might have wait a while.

2.1.8 **Create a new directory on your computer** ie c:\Quartus_download251

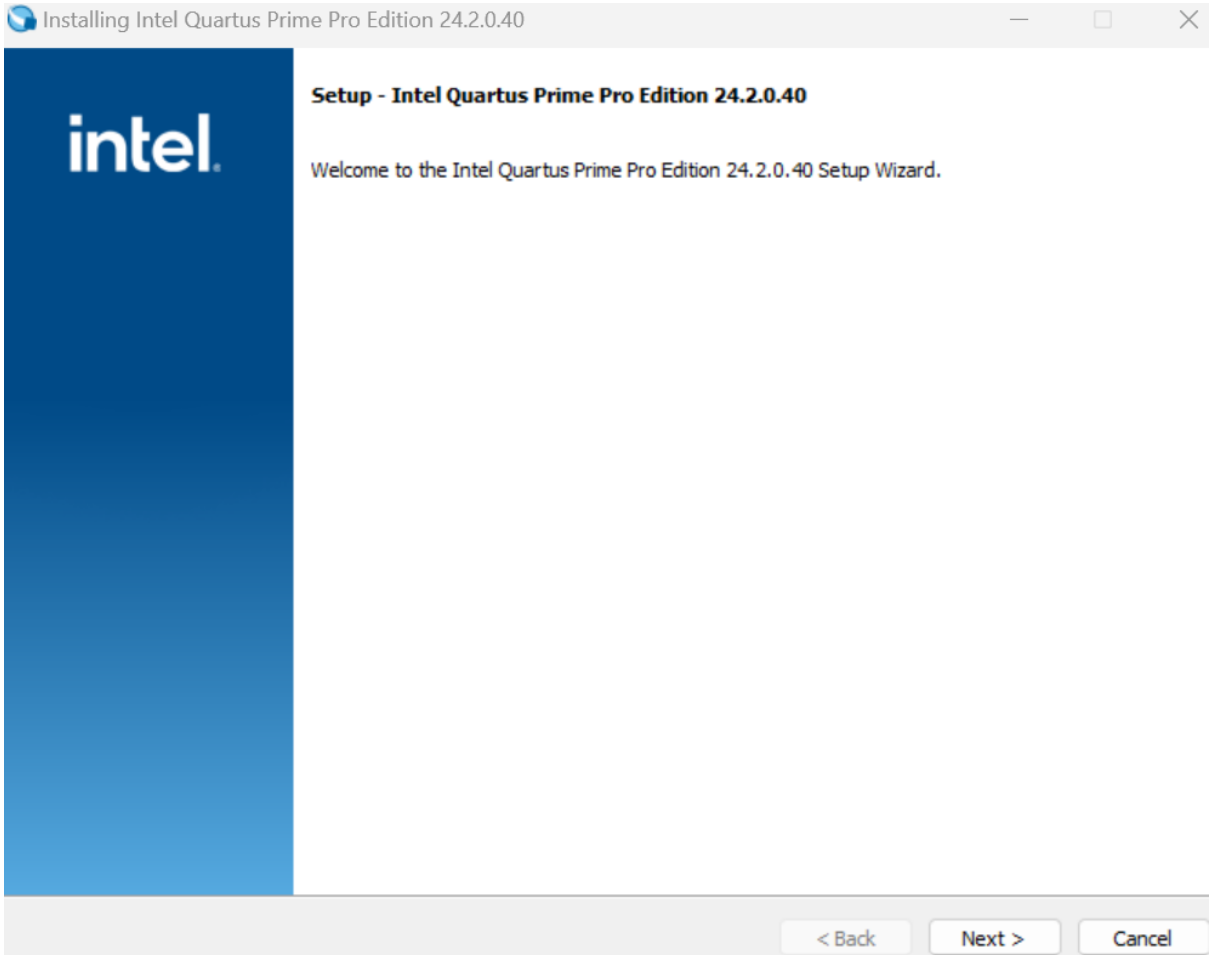
2.1.9 Move all the above files to this new directory. It will be easier to have the files in a directory to keep better track of the file such various versions of Quartus can be installed on a computer.



2.1.10 Select QuartusProSetup-25.1.0.129-windows

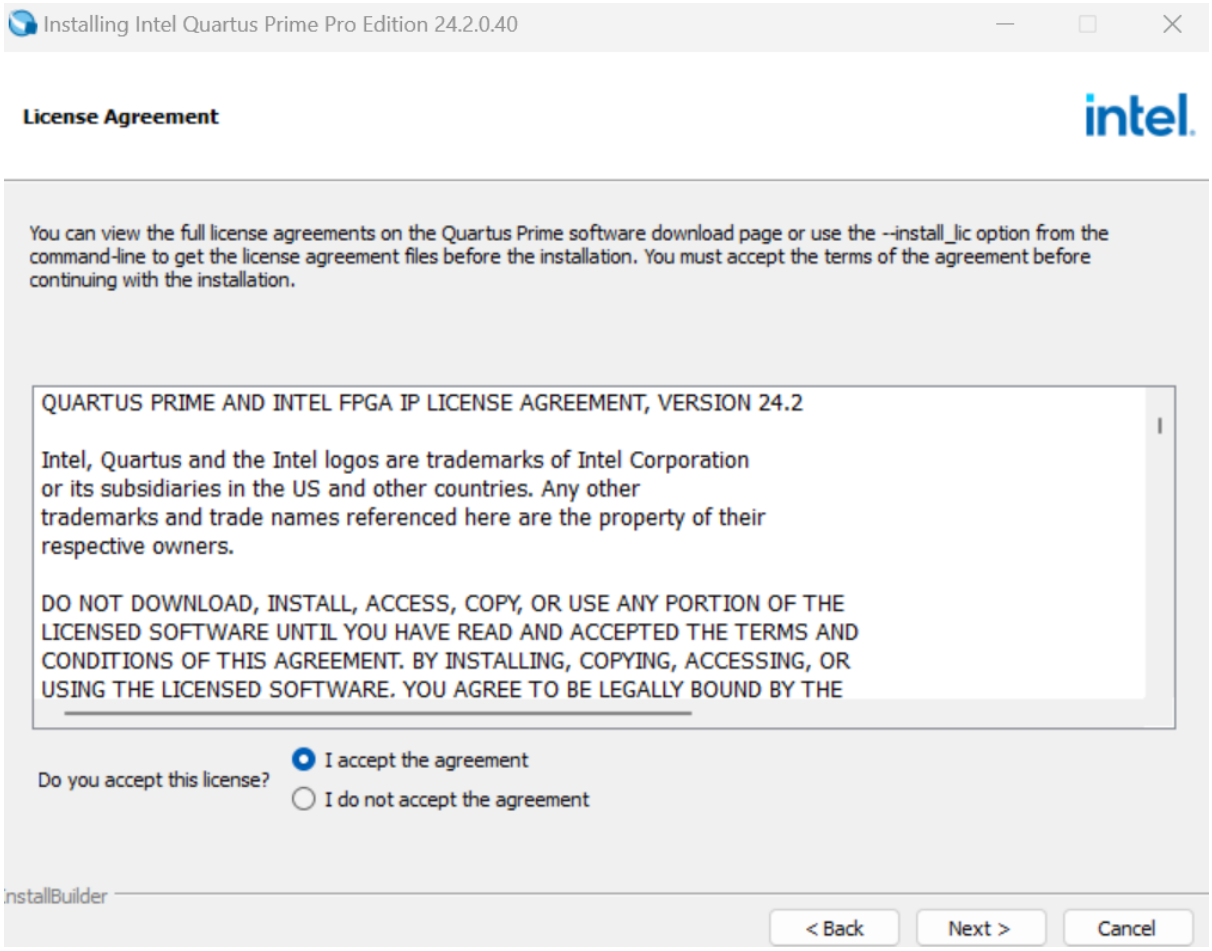
2.1.11 On some computers, it may be possible that you need to sign in for admin access in order to install software. It may be a while for the Quartus to appear.

2.1.12 Quartus window will appear as



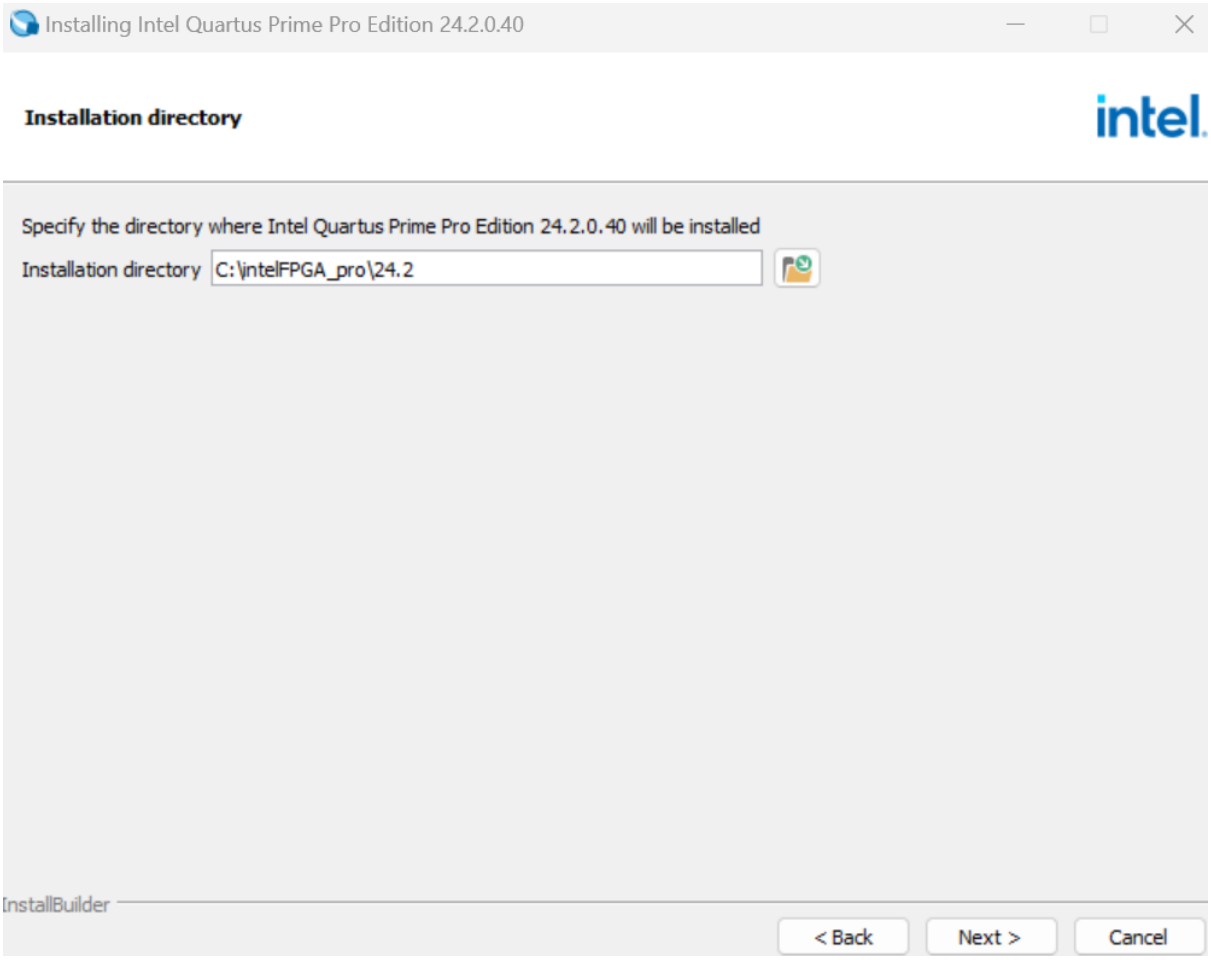
2.1.13 Select **Next**

2.1.14 Read the License Agreement and **select I accept the agreement as**



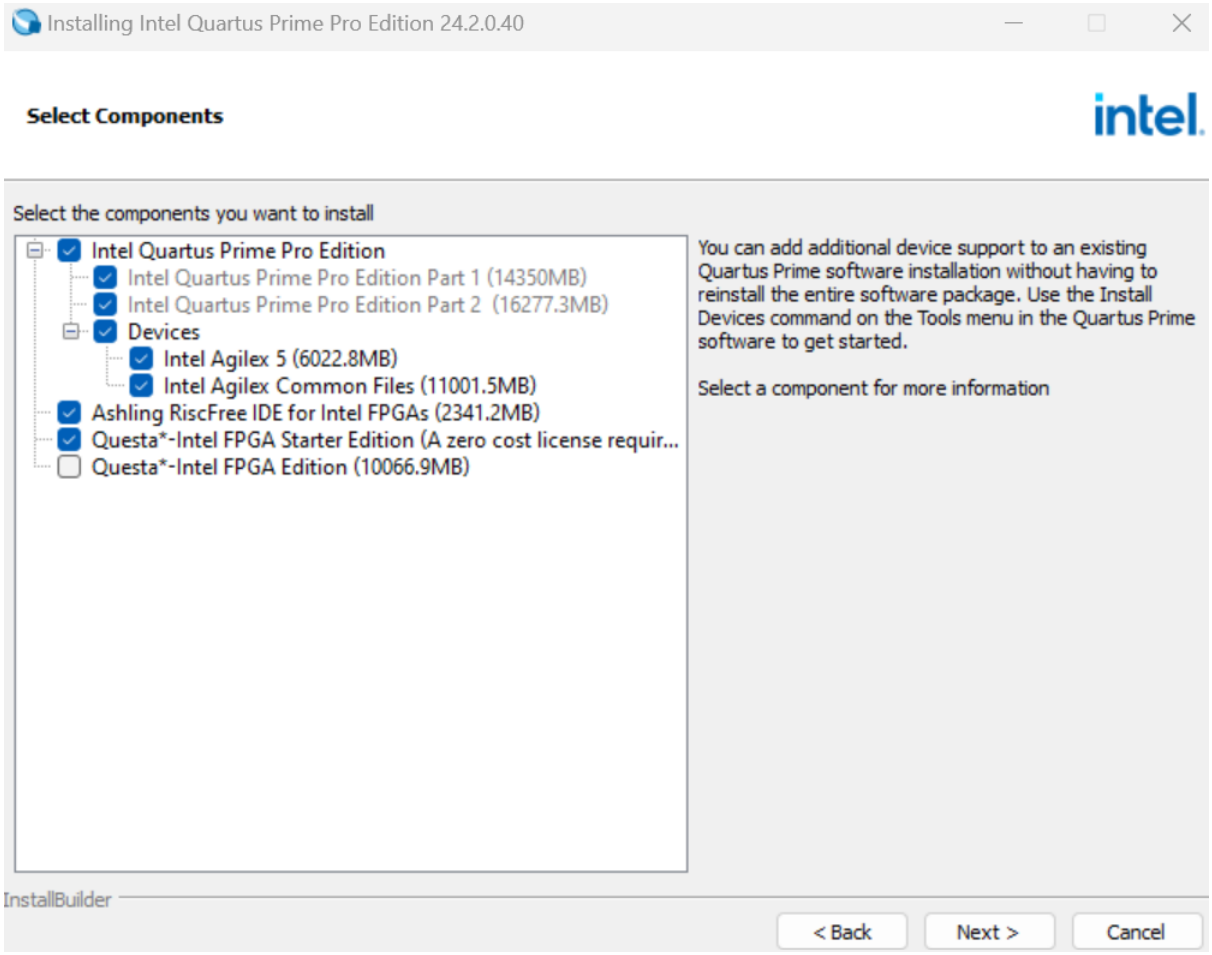
2.1.15 Select **Next**

2.1.16 **Select the directory**. The default directory can be left as



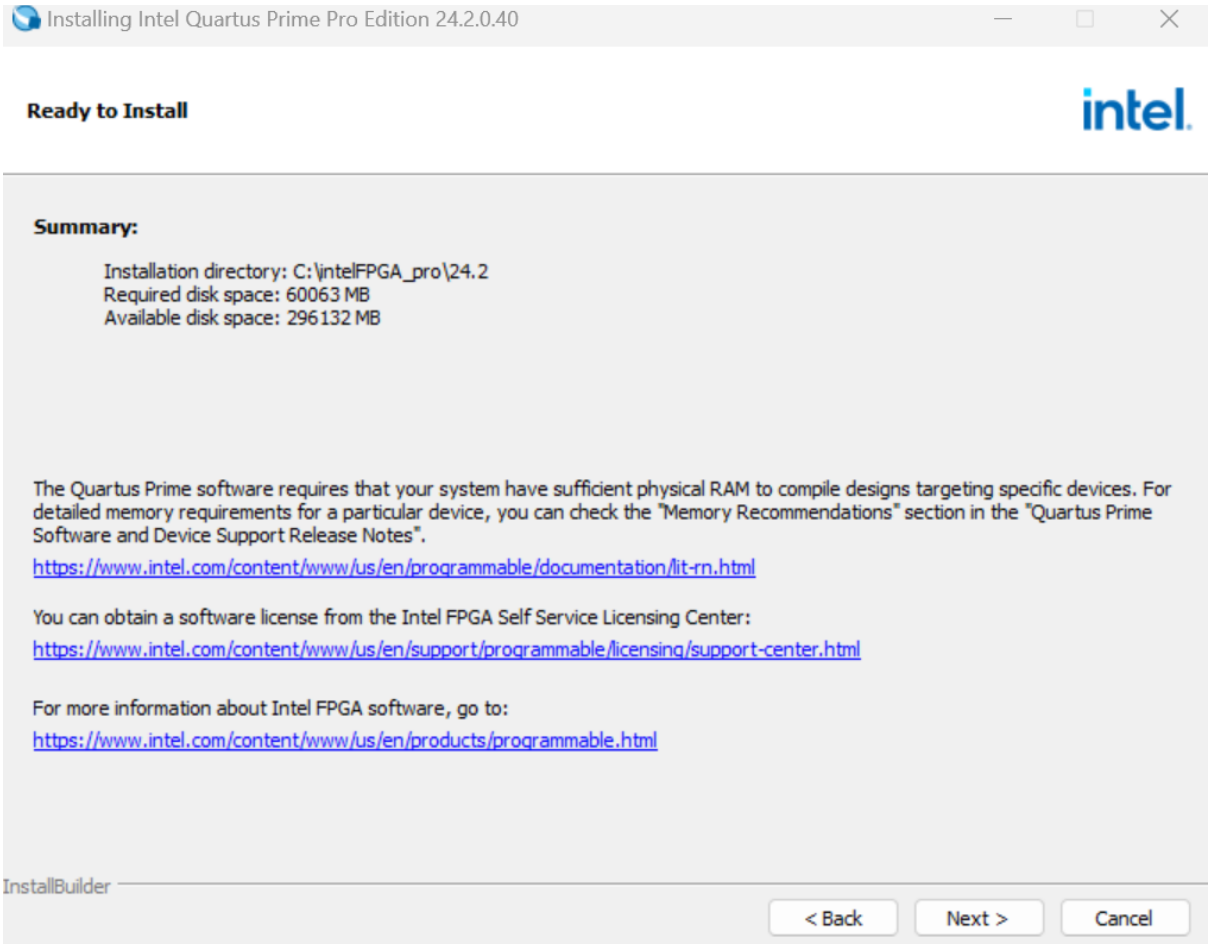
2.1.17 Select **Next**

2.1.18 **Ensure that the following items are enabled (and in blue**) as

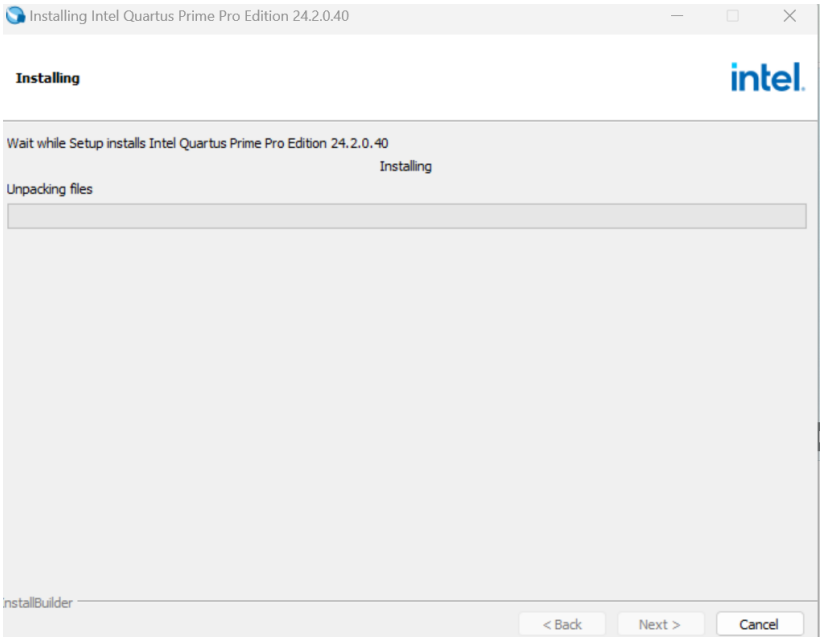


2.1.19 Select **Next**

2.1.20 The Summary window will appear as

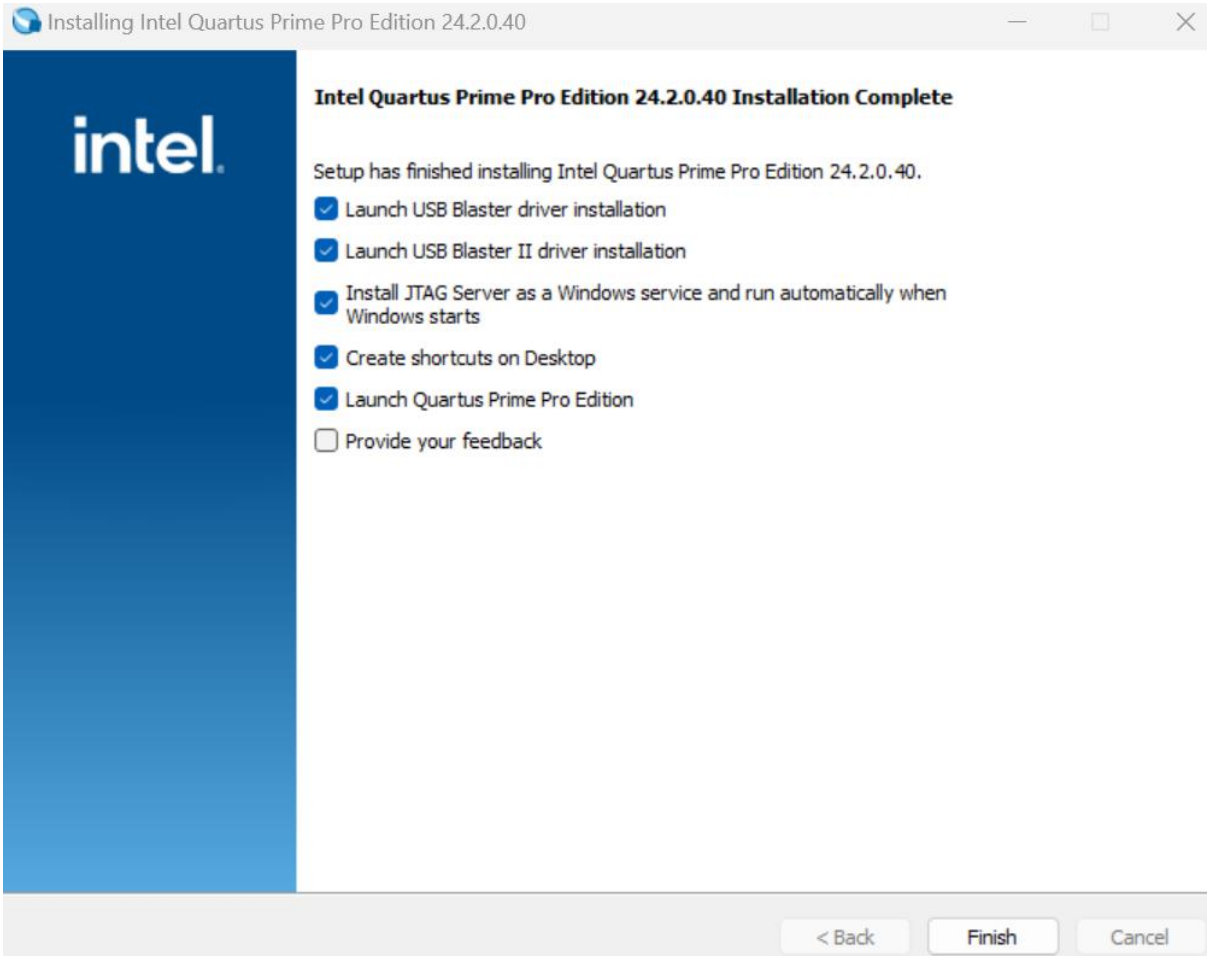


2.1.21 It will then install as:



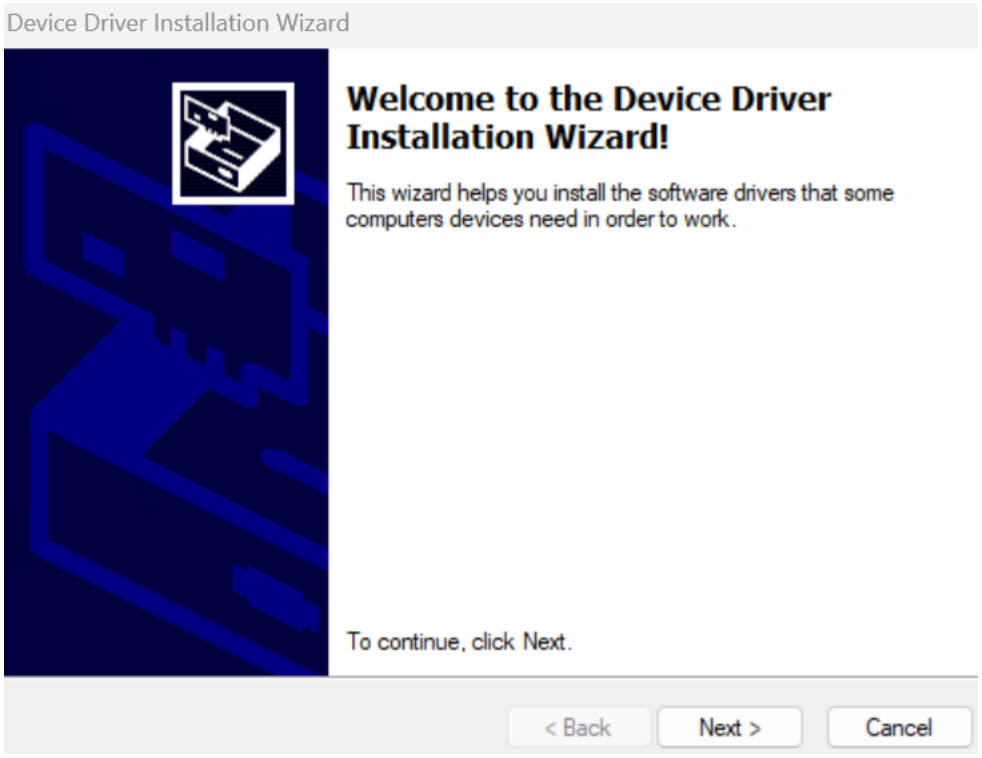
2.1.22 The install can take a while. (Time depends on the computer being used).

2.1.23 It will then show the following:



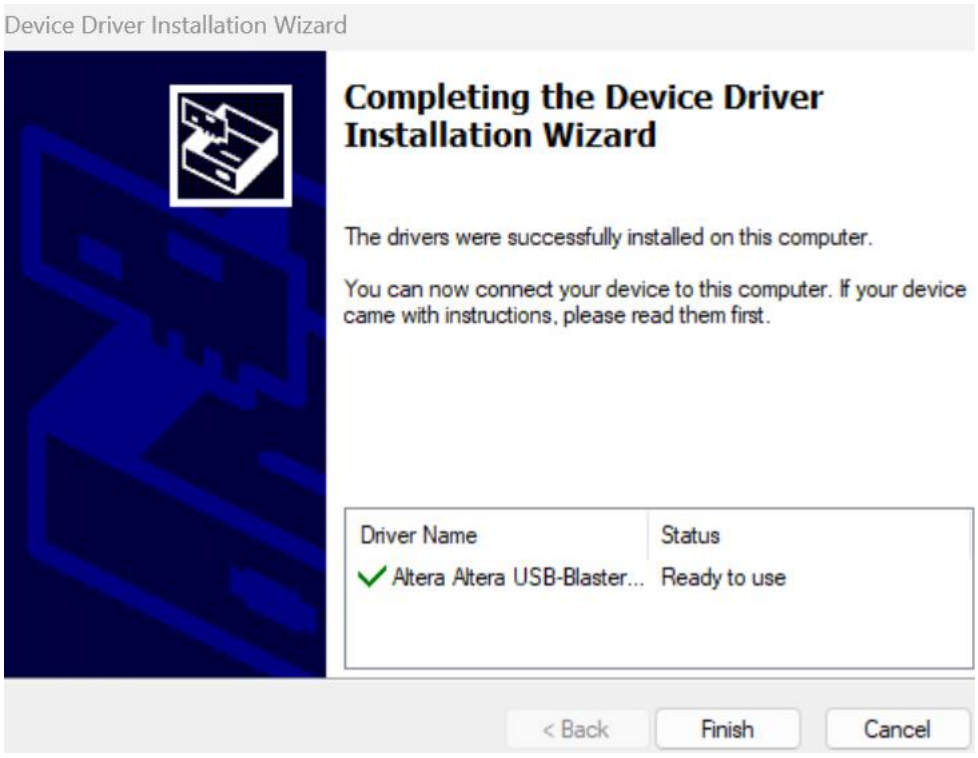
2.1.24 Select **Finish**

2.1.25 When the window of

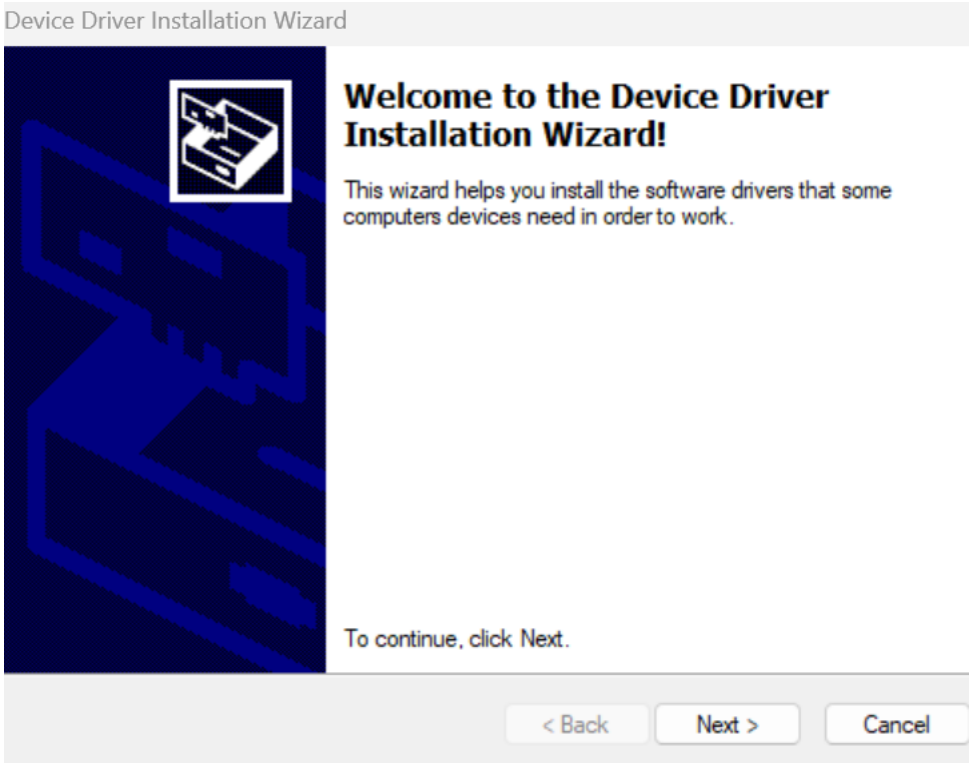


Appears, select **Next**

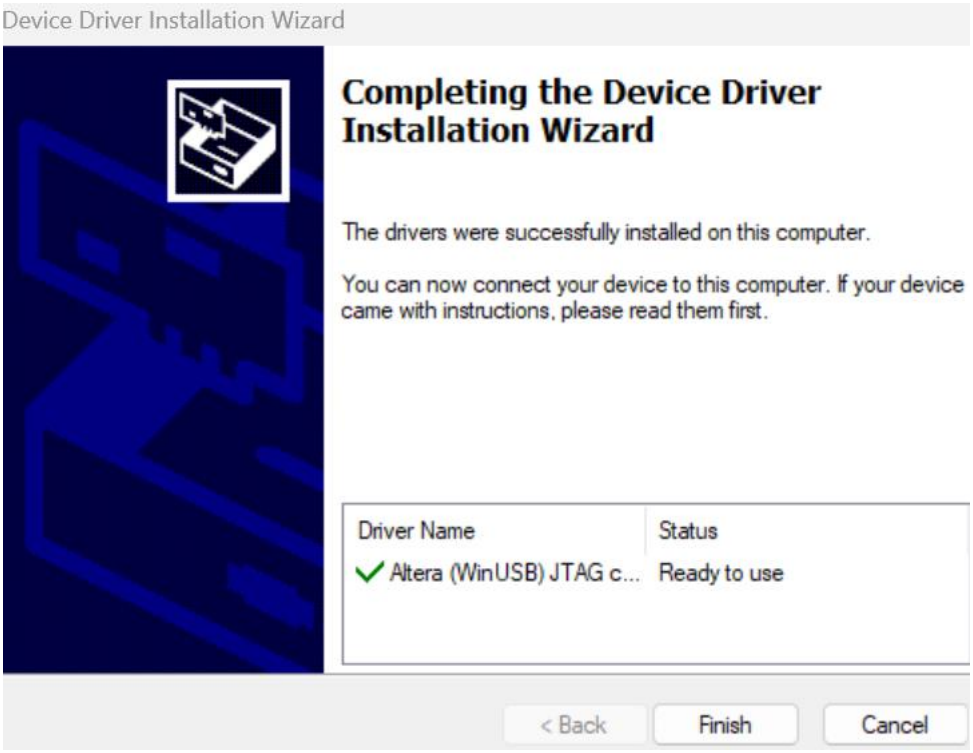
2.1.26 Select **Finish** for the window of



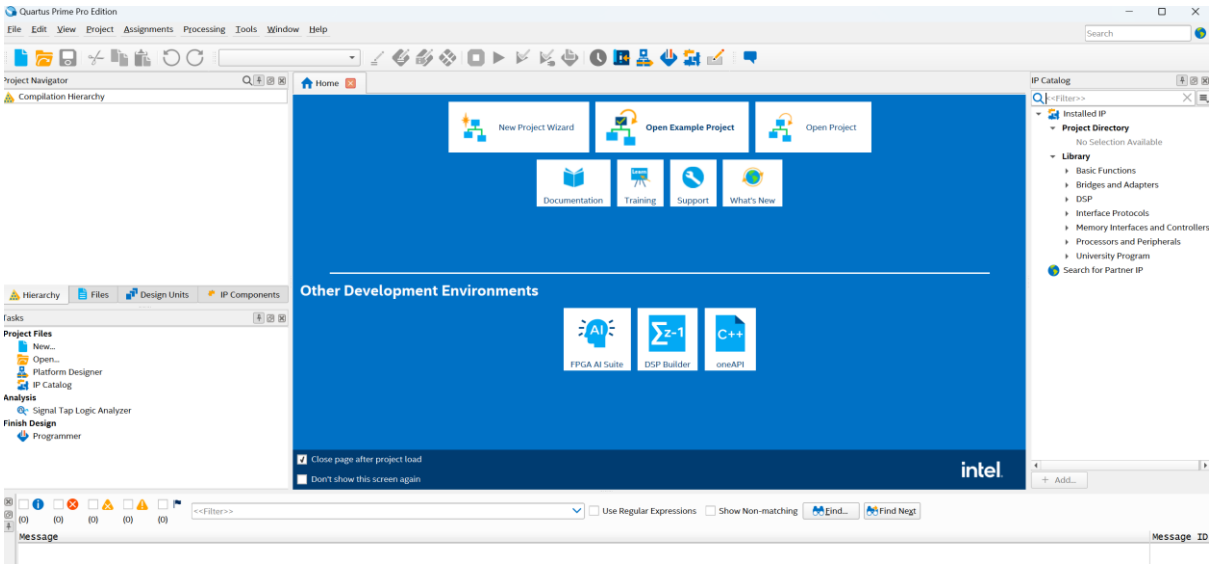
2.1.27 There are two device drivers so another Device Driver window will appear. Select **Next**



2.1.28 Select **Finish** for



2.1.29 Quartus 2025.1 will now open as



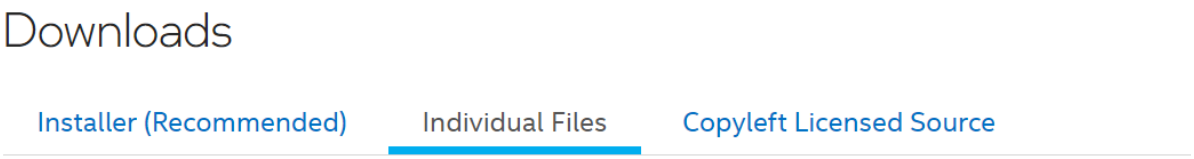
2.1.30 Select **File -> Exit** to close Quartus.

2.1.31 The next step is download and install the Intel FPGA Power Thermal Calculator. There is a reason for installing this as a separate download (even through the PTC is within Quartus). The reason is in “real life” that you

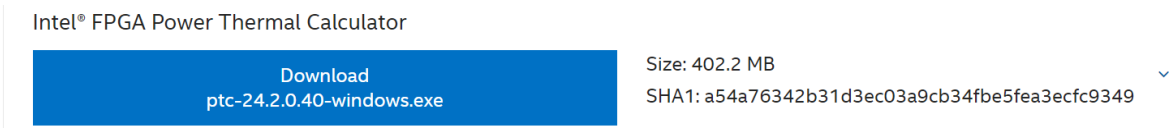
might want to see the approx. power of a device (to see if it would be even suitable in terms of power) before a RTL design is even created but without downloading and installing the entire Quartus software. The stand-alone PTC is fast to install, requires no license file and allows you to see the approx. power quickly. Knowing the approx. power would allow a quick target of which device would be suitable so that Quartus work could follow.

2.1.32 **Go to the Intel website** of
Intel® Quartus® Prime Pro Edition Design Software Version 25.1 for Windows

2.1.33 Select Under Downloads -> Individual Files



2.1.34 Scroll down the webpage to Power Thermal Calculator

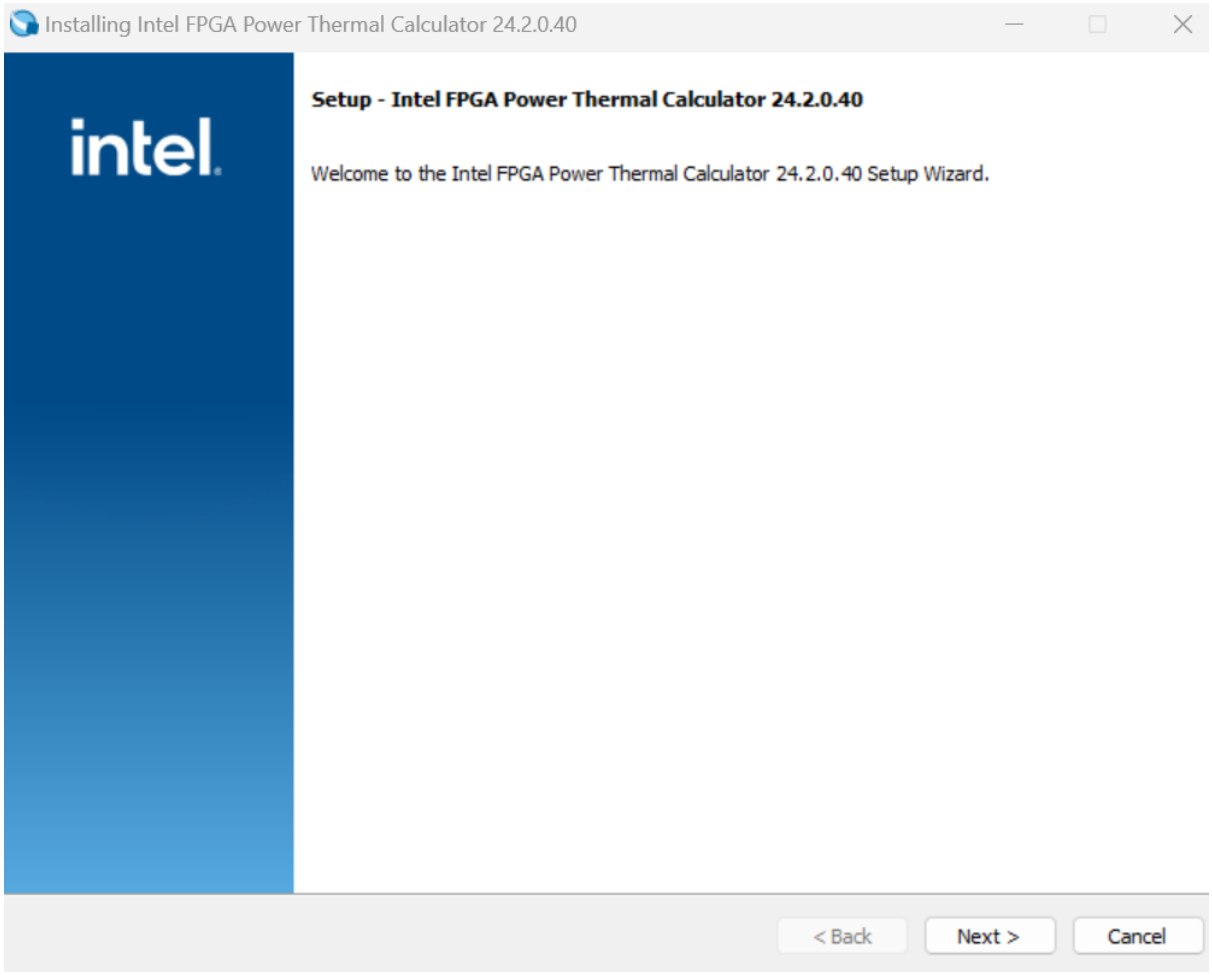


2.1.35 Double Click on the Download for the Power Thermal Calculator

2.1.36 The file will download

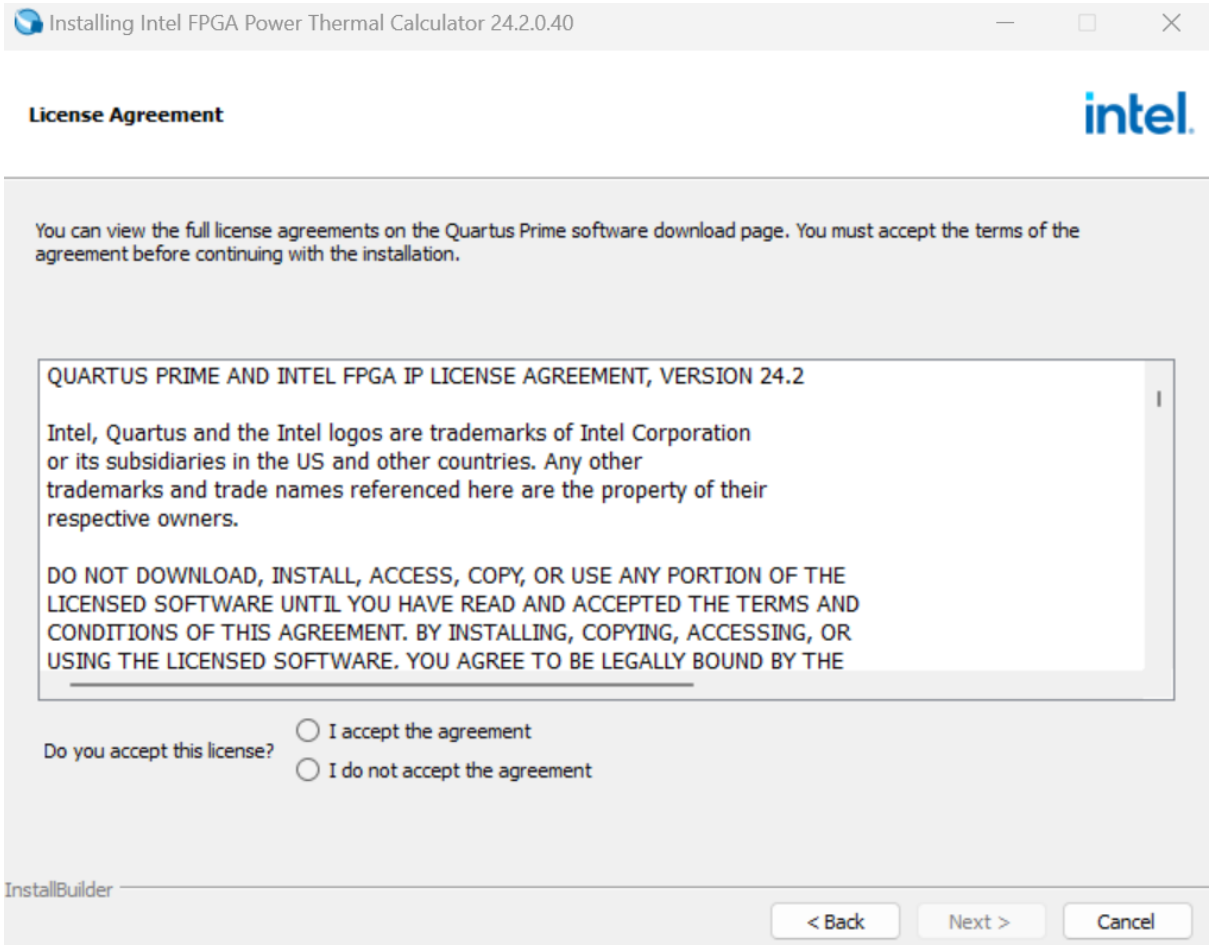
2.1.37 After the file is downloaded (by default, it will be in the download folder of your computer), **double-click the application file** as

2.1.38 The window will appear



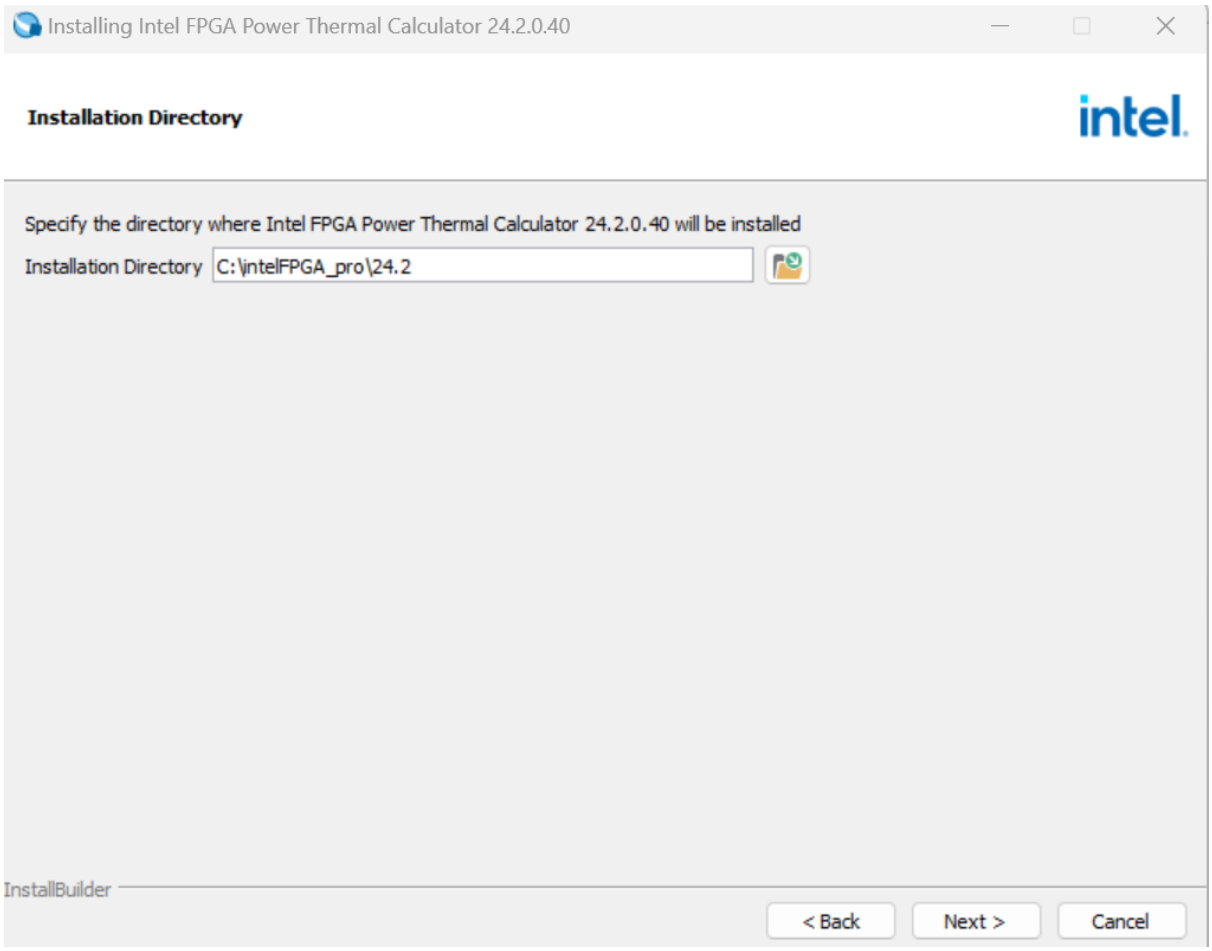
2.1.39 Select **Next**

2.1.40 Read the License Agreement, and then select the I accept the agreement



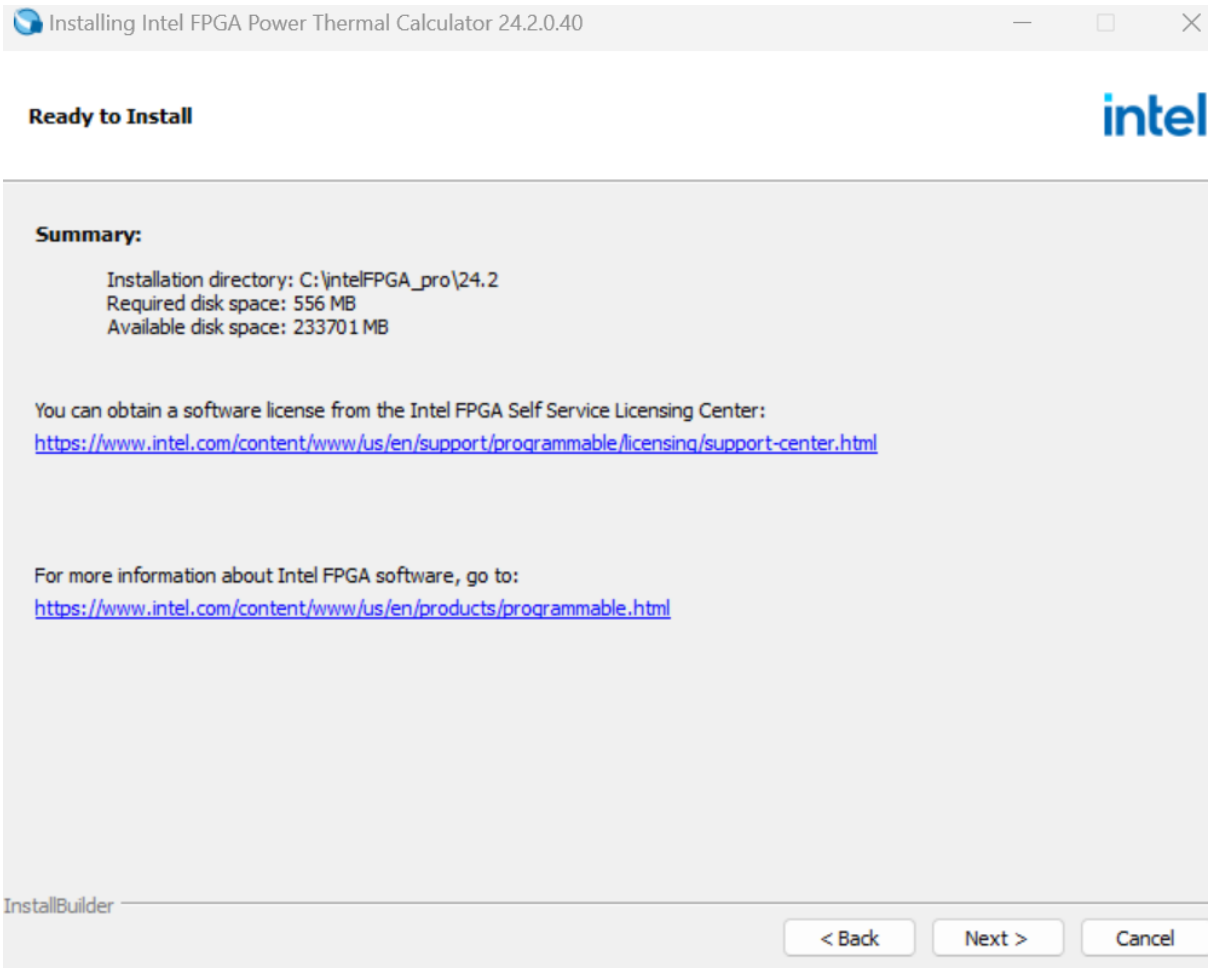
2.1.41 Select **Next**

2.1.42 **Select the Installation Directory**. It can be selected as the default one as



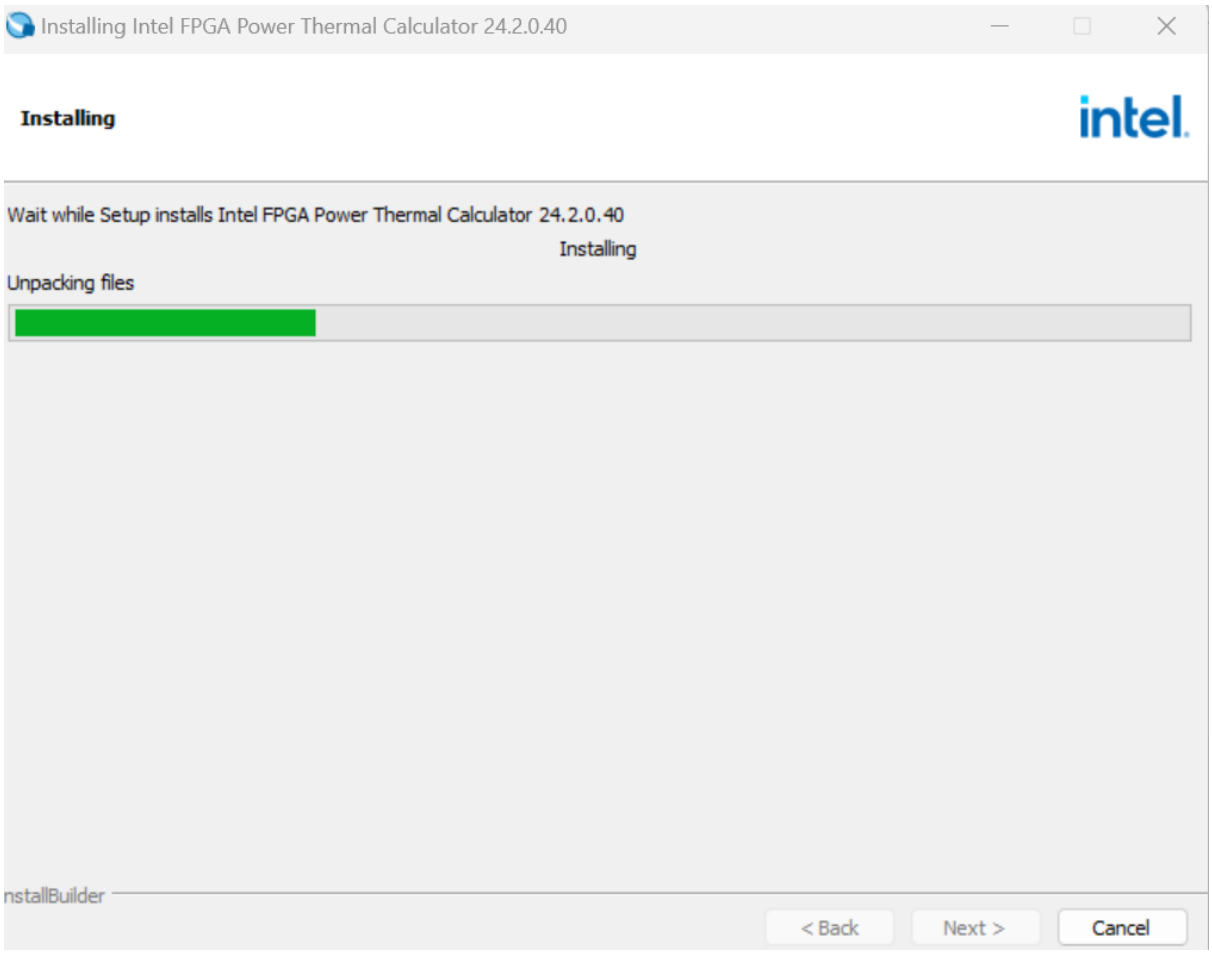
2.1.43 Select **Next**

2.1.44 The summary page will appear

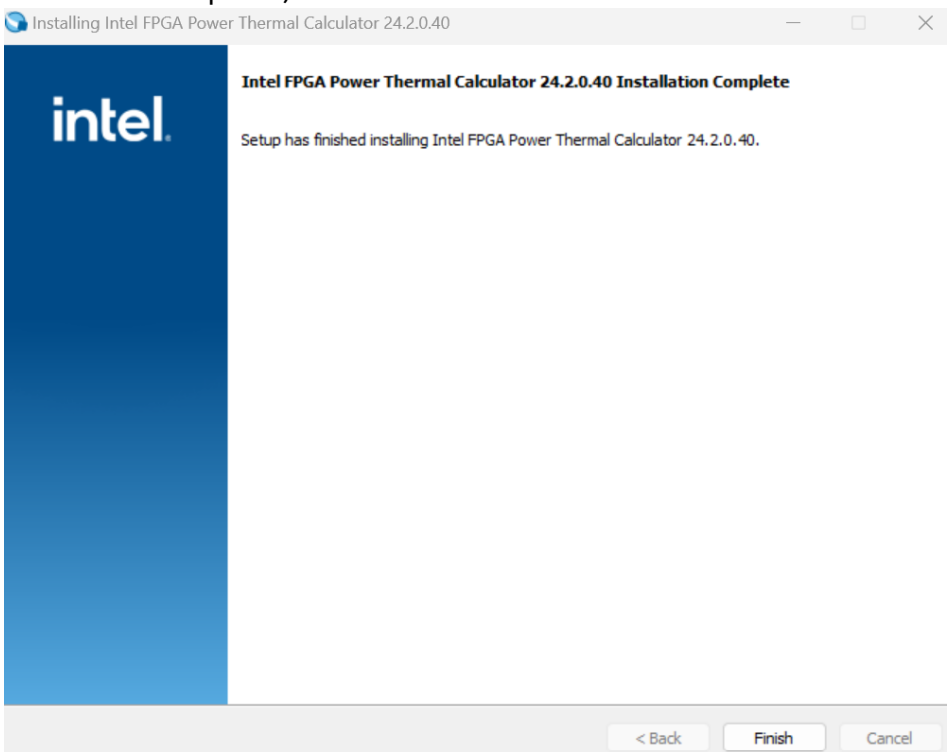


2.1.45 Select **Next**

2.1.46 It will then install as



2.1.47 Once it is complete, it will show the window as



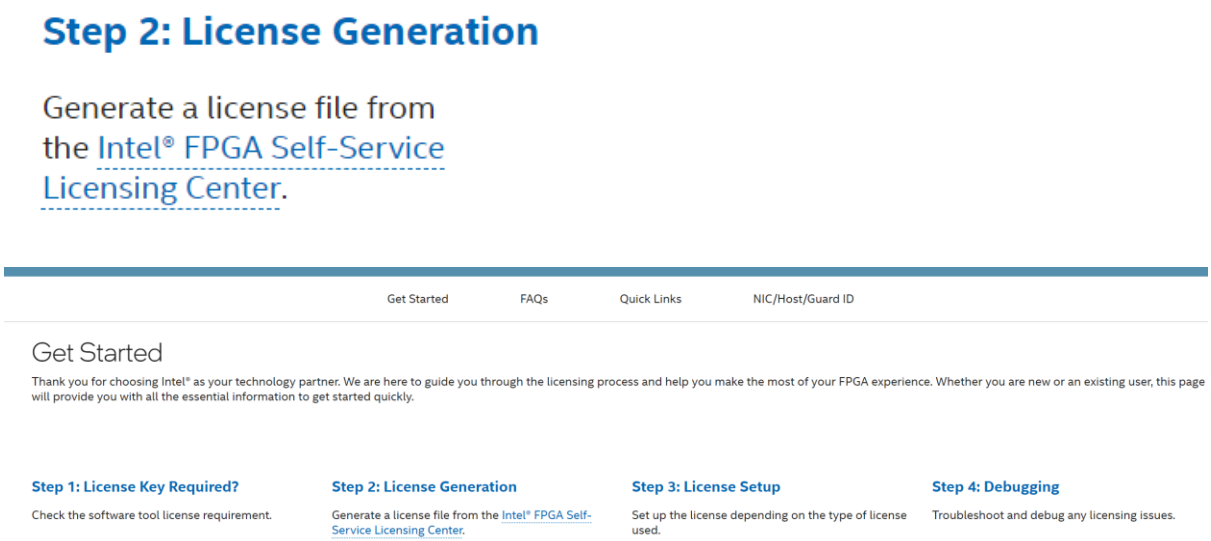
2.1.48 Select **Finish**

3. Licensing

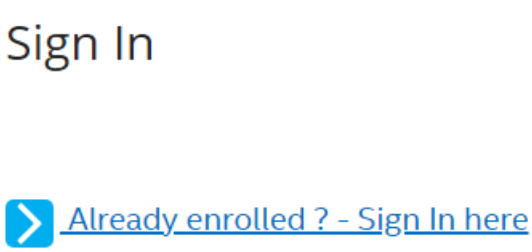
The Quartus software (when targeting Agilex 5) needs a free license. The Questa-Sim Intel FPGA Starter and NIOS-V /m 32-bit RISC-V soft processor also needs a free license.

To license the Quartus and Questa-Sim Intel, which is free license software, **go to**

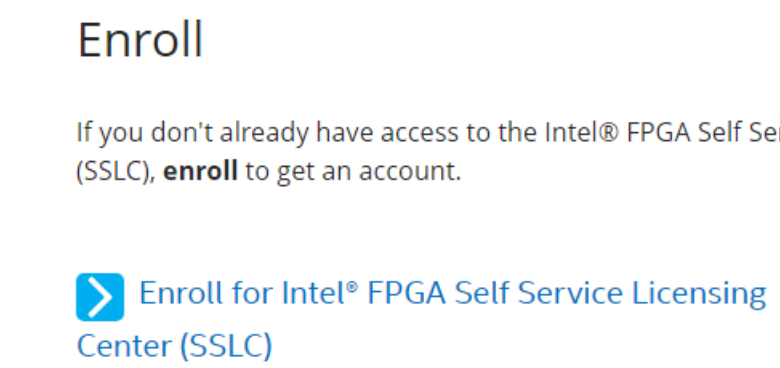
> Intel® FPGA Licensing Support Center and select **License Generation for Self Service Licensing Center. You will need to login and program your NIC # to get a license file.**



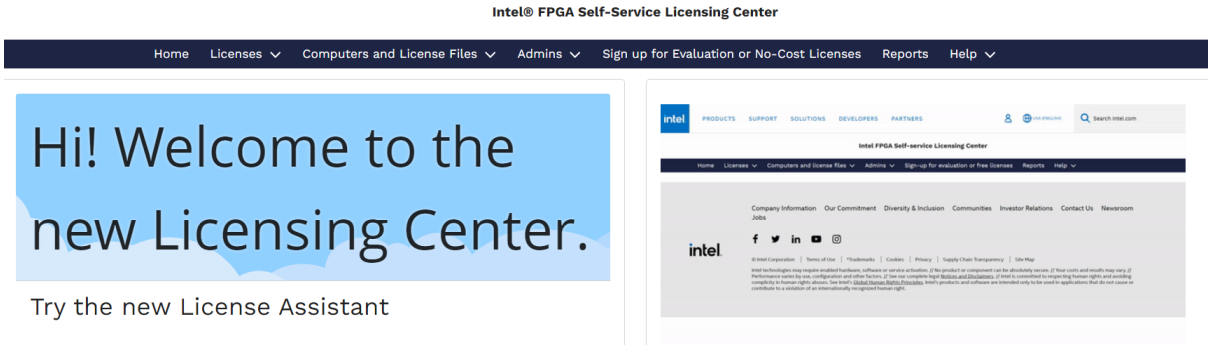
If already enrolled in the **Intel® FPGA Self-Service Licensing Center:**



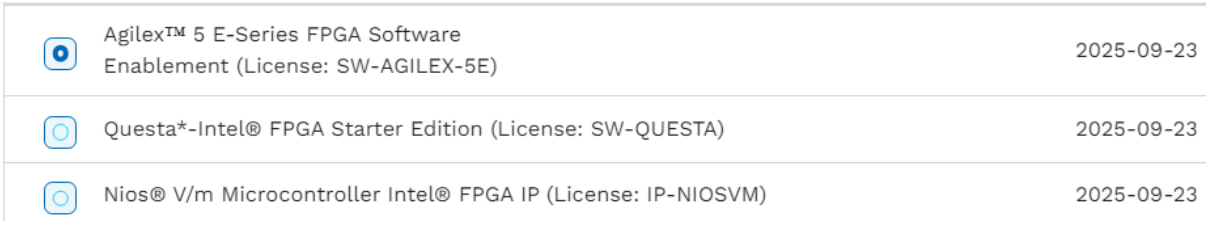
If you are not enrolled in:



Sign up for Evaluation or No-Cost Licenses:



Create the following licenses, repeat the same steps for the creation of each license.



A license file will be sent to your registered e-mail address for each license.

Save the attached license file to the computer where you will use the license. It is recommended to save the file with the extension**.dat**.

Do not use double-byte characters or spaces when renaming the file and when saving in the folder path

Perform the following steps to install the licenses:

1. Save the license.dat file. The preferred location is:
    - Windows* :<drive>:\flexlm
    - Linux: /usr/local/flexlm/licenses

2. Set the OS environment variables. In Windows:

a. Open the System Properties window by pressing the Windows key and “R”. This will open the Run window. Type the following Run command:

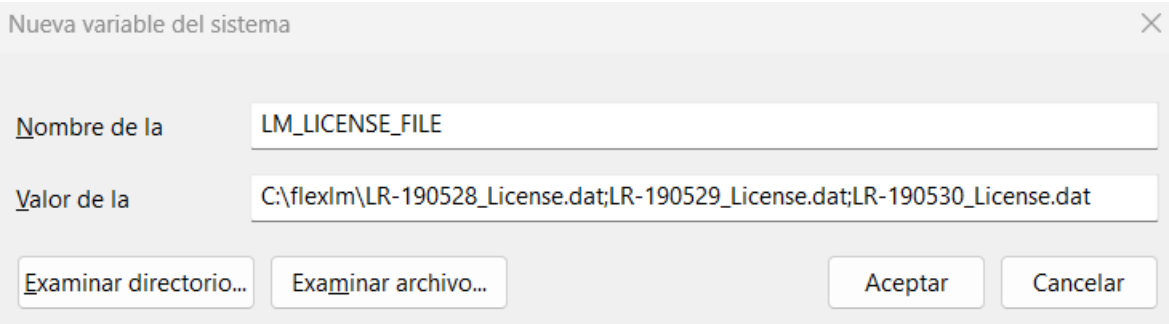
   SystemPropertiesAdvanced

   Then hit enter.

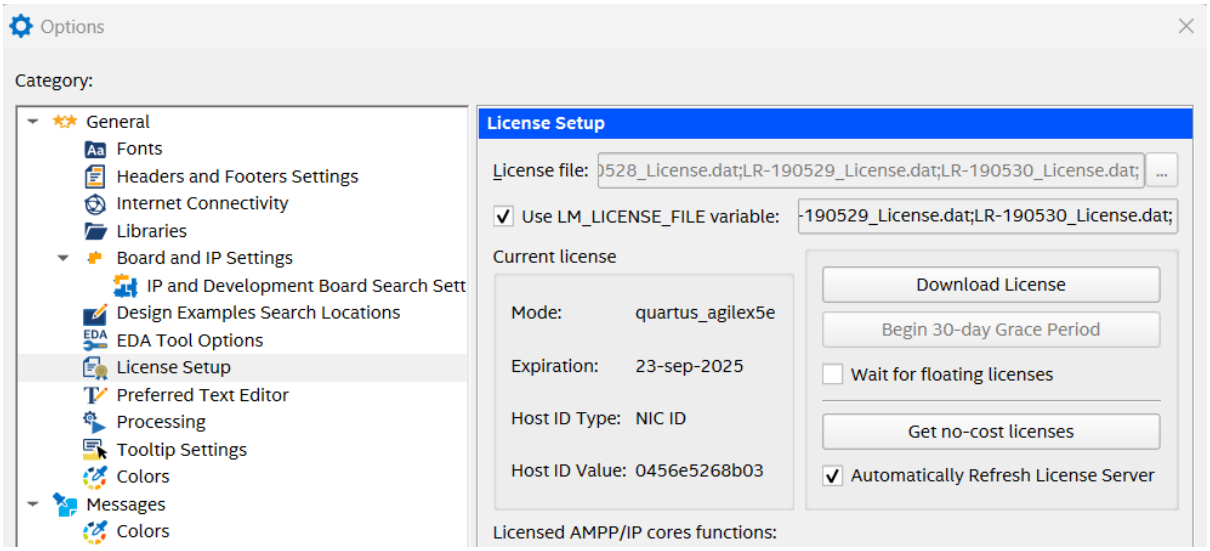
b. Next click the Environment Variables button near the bottom.
c. Go to New to make to set the tree variables, for example

Variable name	LM_LICENSE_FILE
variable value	Questa-Sim Intel FPGA Starter location in drive

To specify more than one license location with the LM_LICENSE_FILE environment variable, modify the existing LM_LICENSE_FILE environment variable and separate the different paths with semicolons (;), as shown in the following example:



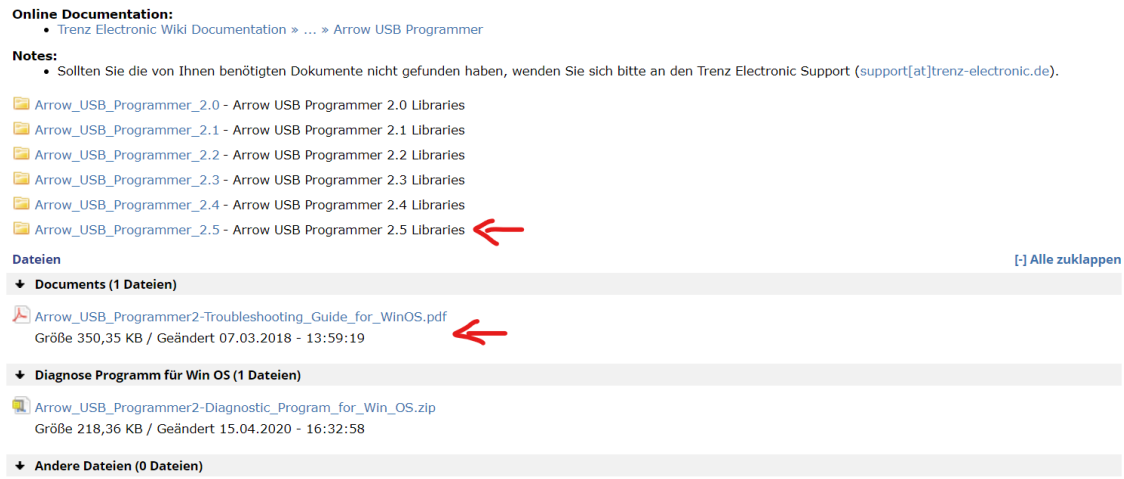
3. Open Quartus software. Go to Tools -> License Setup and select LM_LICENSE_FILE variable.



4. USB Programmer

Before programming the Arrow AXE-5 Eagle board, the USB Programmer needs to be installed.

4.1. The USB Programmer is needed for Arrow USB Programmer that is on the AXE-5 dev board can be found at the Trenz website
Download | Trenz Electronic GmbH Online Shop (DE) (trenz-electronic.de)
And selecting the following (The website can be translated to English)

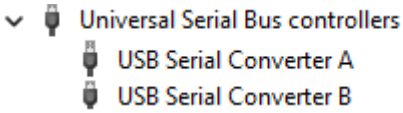


4.2 Verify the installation was successful.

Plug the USB cable into the micro USB connector of the Arrow Blaster module. Plug the other end of the cable into the USB type A connector of the PC.

Open the Device Manager.

If the following appears, then it is successful.

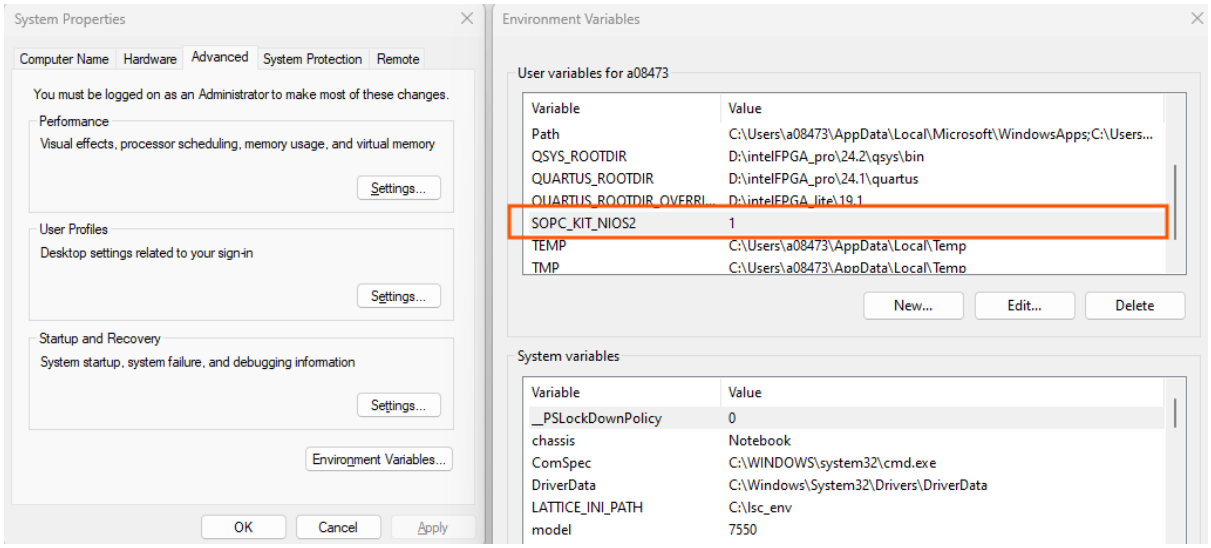


However, if there are two entries under Other Devices then **an additional driver installation is required.**

Click on the following link to install the [FTDI D2XX Direct Drivers for Windows](#).

5. Environment Variables

5.1 Add an environment variable for the Nios processor tools as shown in the figure below.



6. Remote Software and install

6.1 If you are using the CloudLabs Virtual Machines, the Quartus software and lab source material will be pre-installed and licensed.

7. VirtualBox Virtual Machine Installation (Linux lab only)

The Linux lab needs a Linux host to create a Linux bootable system for the AXE5-Eagle board. Download the Oracle VirtualBox Manager. Then download and unzip the Ubuntu 22.04 LTs VM image. You need approximately 40GB of free disk space to download and extract the VM.

7.1 Download and install the VirtualBox manager for Windows.

7.2 Navigate to the Workshops page. Click on **Download the Ubuntu 22.04 LTs Virtual Machine**. This will take a while depending on your internet connection (18 GB file size).

7.3 Extract the Virtual Machine by right clicking on Ubuntu_2204_LTS_xxxx.zip. This can take approximately 10 minutes depending on the performance of your laptop.

7.4 Open the VirtualBox Manager. Select Machine → Add. Navigate to the **Agilex 5 Workshop** VirtualBox Machine Definition file and select **open**.

7.5 Use the Settings option to make changes to the System based on your laptop. Click on System and then the **Motherboard tab** to adjust **Base Memory**. Click on The **Processor tab** to adjust the **number of processors**.

7.6 The password for the VirtualBox VM is **root**. This must be used when executing super user **sudo** commands.

7.7 Download and install Tera Term terminal emulator.

8. Legal Disclaimer

ARROW ELECTRONICS

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