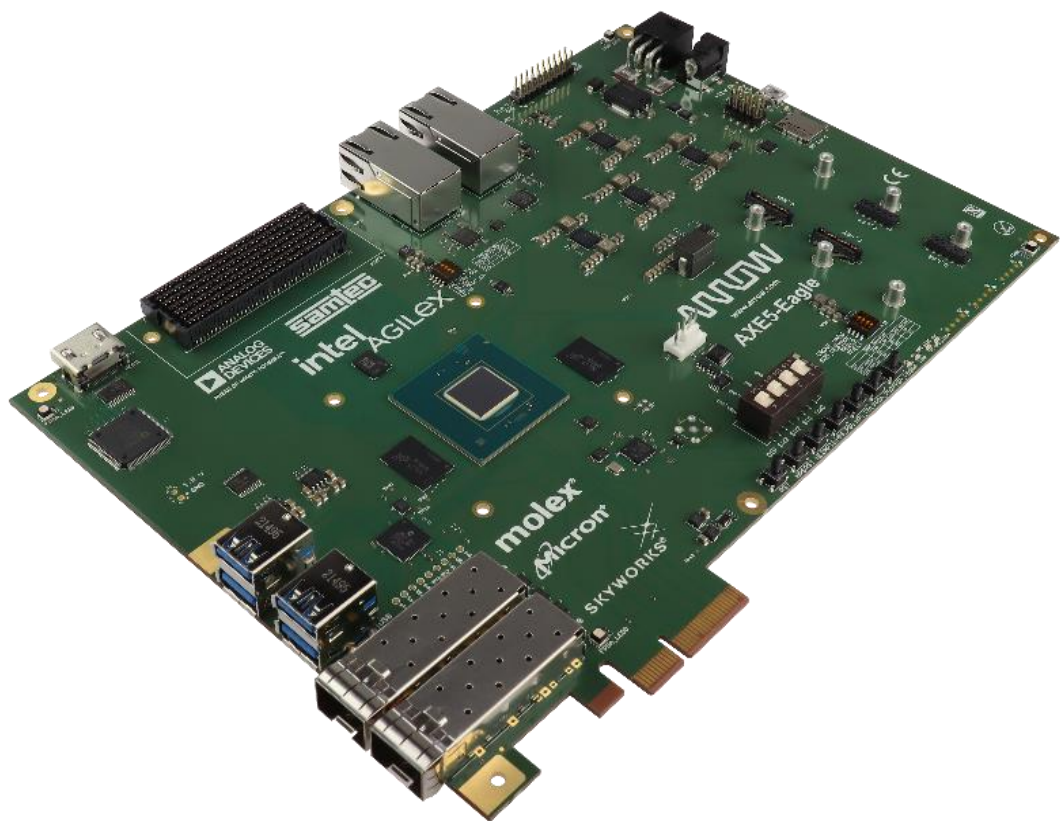




AXE5-Eagle Software Installation



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Document Author(s):	Steven Kravatsky, Erika Peter, Naji Naufel, ESC, Fue Xiong, Helmut Ploetz, Henry Alexander, Mark Travaglini
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Document Distribution:	This document is still under development. All specifications, procedures, and processes described in this document are subject to change without prior notice
Prior Version History:	None

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.

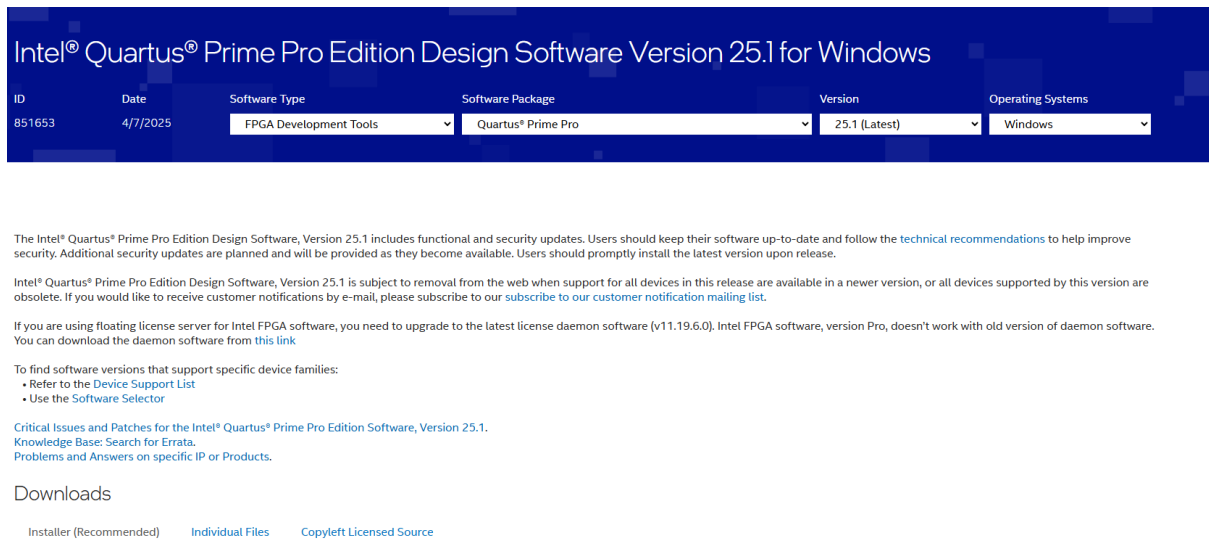
2.1 Software download

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:



Intel® Quartus® Prime Pro Edition Design Software Version 25.1 for Windows

ID	Date	Software Type	Software Package	Version	Operating Systems
851653	4/7/2025	FPGA Development Tools	Quartus® Prime Pro	25.1 (Latest)	Windows

The Intel® Quartus® Prime Pro Edition Design Software, Version 25.1 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.

Intel® Quartus® Prime Pro Edition Design Software, Version 25.1 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](#).

If you are using floating license server for Intel FPGA software, you need to upgrade to the latest license daemon software (v11.19.6.0). Intel FPGA software, version Pro, doesn't work with old version of daemon software. You can download the daemon software from [this link](#).

To find software versions that support specific device families:

- Refer to the [Device Support List](#)
- Use the [Software Selector](#)

Critical Issues and Patches for the Intel® Quartus® Prime Pro Edition Software, Version 25.1.
[Knowledge Base: Search for Errata.](#)
[Problems and Answers on specific IP or Products.](#)

Downloads

[Installer \(Recommended\)](#) [Individual Files](#) [Copyleft Licensed Source](#)

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.)

Downloads

[Installer \(Recommended\)](#)

[Individual Files](#)

[Copyleft Licensed Source](#)

2.1.2 Select the Quartus Prime Pro Edition Part 1 as



Intel® Quartus® Prime Pro Edition Part 1

Name	Size	SHA1
QuartusProSetup-24.2.0.40-windows.exe	3.1 GB	fd535d3b88d8eacc839c440036225ab9b49265b7

Download

[Installer \(Recommended\)](#) [Individual Files](#) [Copyleft Licensed Source](#)

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



Software License Agreement

Legal Disclaimer

PLEASE NOTE: This version of software ("Software") does not contain the latest functional and security updates. In order to use this version, you must first acknowledge the following term, which supplements and supersedes any inconsistent provision in the version of the Intel® FPGA Software License Subscription Agreement for the product (e.g., Intel® Quartus® Prime Software, Intel® HLS Compiler, Intel® FPGA SDK for OpenCL™, DSP Builder for Intel® FPGAs, or Advanced Link Analyzer) with which you use the Software:

Intel does not give or enter into any condition, warranty, or other term:

- i. with respect to any malfunctions or other errors in its Software caused by virus, infection, worm or similar malicious code not developed or introduced by Intel; or
- ii. to the effect that any Software will protect against all possible security threats, including intentional misconduct by third parties. Intel is not liable for any downtime or service interruption, for any lost or stolen data or systems, or for any other damages arising out of or relating to any such actions or intrusions or resulting from use of Software. Intel does not give or enter into any condition, warranty, or other term with respect to interoperability.

Intel does not warrant or assume responsibility for the accuracy or completeness of any information, text, graphics, links or other items within the Software. Please click "Accept" below to continue the download process.

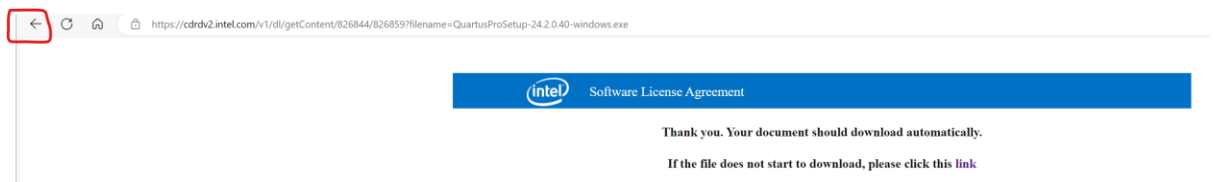
Accept

Reject

[Terms of Use](#) | [Privacy](#) | [Legal Information](#) | © Intel Corporation

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
Downloads

Installer (Recommended)

Individual Files

Copyleft Licensed Source

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

Intel® Quartus® Prime Pro Edition Part 2	
Download QuartusProSetup-part2-24.2.0.40-windows.qdz	Size: 12.2 GB SHA1: 74fe87ec9223424e2389e665429b21f100c8a3a4
Questa*-Intel® FPGA and Starter Editions	
Download QuestaSetup-24.2.0.40-windows.exe	Size: 2.2 GB SHA1: 9d67fbabee4f76d81d550684993a16ea816858511
Intel Agilex® 5 device support (Requires Intel Agilex® common files)	
Download agilex5-24.2.0.40.qdz	Size: 2.8 GB SHA1: f4ce890b1cf9805726f15c93f327e6c8f3ab9f2a
** Installation size: 5.88 GB	
Intel® Agilex® common files	
Download agilex_common-24.2.0.40.qdz	Size: 9.8 GB SHA1: 85771732b120d8c02de265f7cd9711c635cee7af
** Installation size: 10.74 GB	
Ashling RiscFree IDE for Intel® FPGAs	
Download RiscFreeSetup-24.2.0.40-windows.exe	Size: 628.1 MB SHA1: 33ba0cd62cf6207eb07b98dccab99b450be21aac
Intel® FPGA Power Thermal Calculator	
Download ptc-24.2.0.40-windows.exe	Size: 402.2 MB SHA1: a54a76342b31d3ec03a9cb34fbe5fea3ecfc9349

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

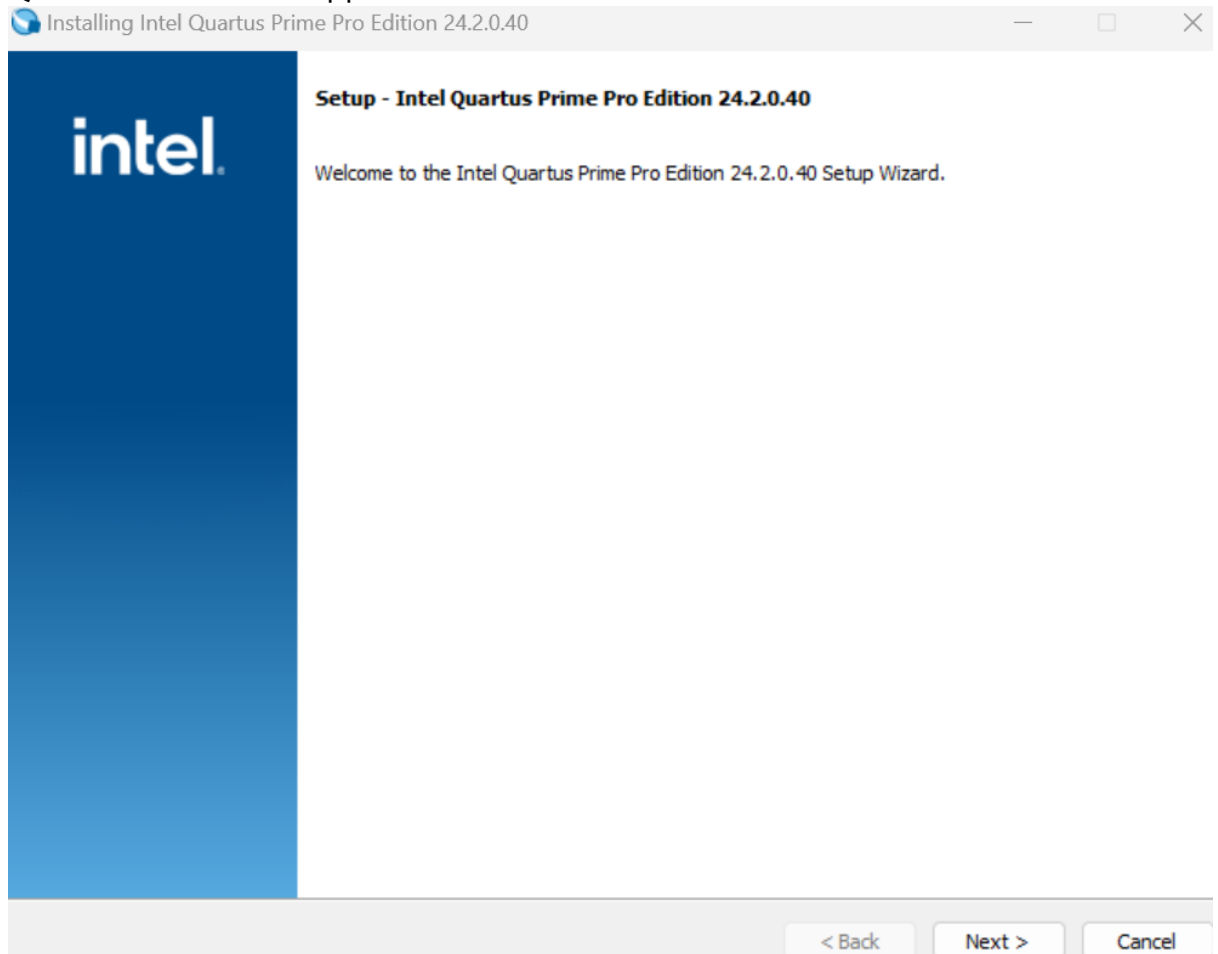
2.1.9 Move all the above files to this new directory. It will be easier to have the files in a directory to keep better track of the file such various versions of Quartus can be installed on a computer.

This PC > Local Disk (C:) > Quartus_download242				
Name	Date modified	Type	Size	
QuestaSetup-24.2.0.40-windows	7/25/2024 1:55 PM	Application	2,329,658 KB	
QuartusProSetup-part2-24.2.0.40-windows.qdz	7/25/2024 2:06 PM	QDZ File	12,834,091 KB	
agilex_common-24.2.0.40.qdz	7/25/2024 2:05 PM	QDZ File	10,226,662 KB	
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 KB	
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 KB	

2.1.10 Select QuartusProSetup-25.1.0.129-windows

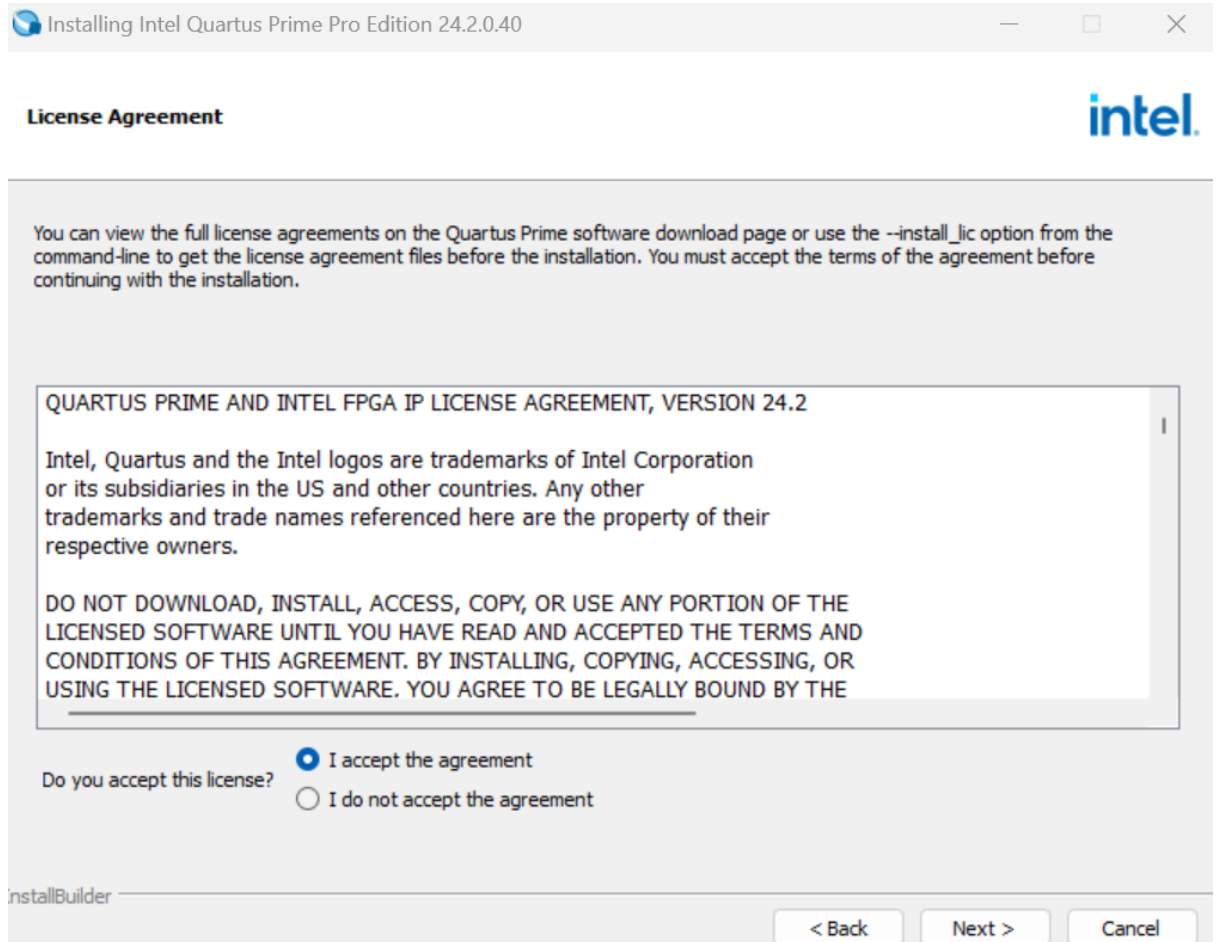
2.1.11 On some computers, it may be possible that you need to sign in for admin access in order to install software. It may be a while for the Quartus to appear.

2.1.12 Quartus window will appear as



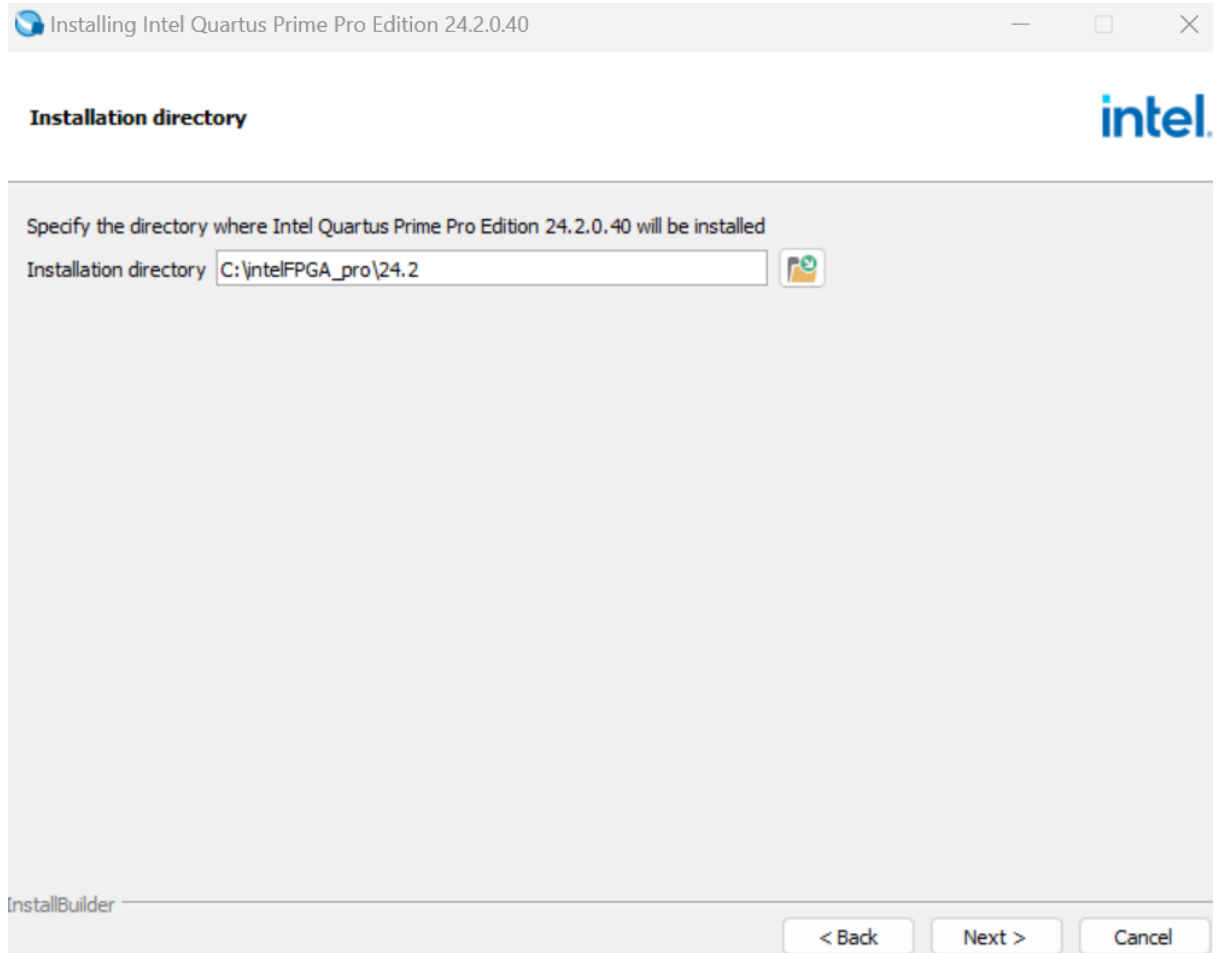
2.1.13 Select **Next**

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



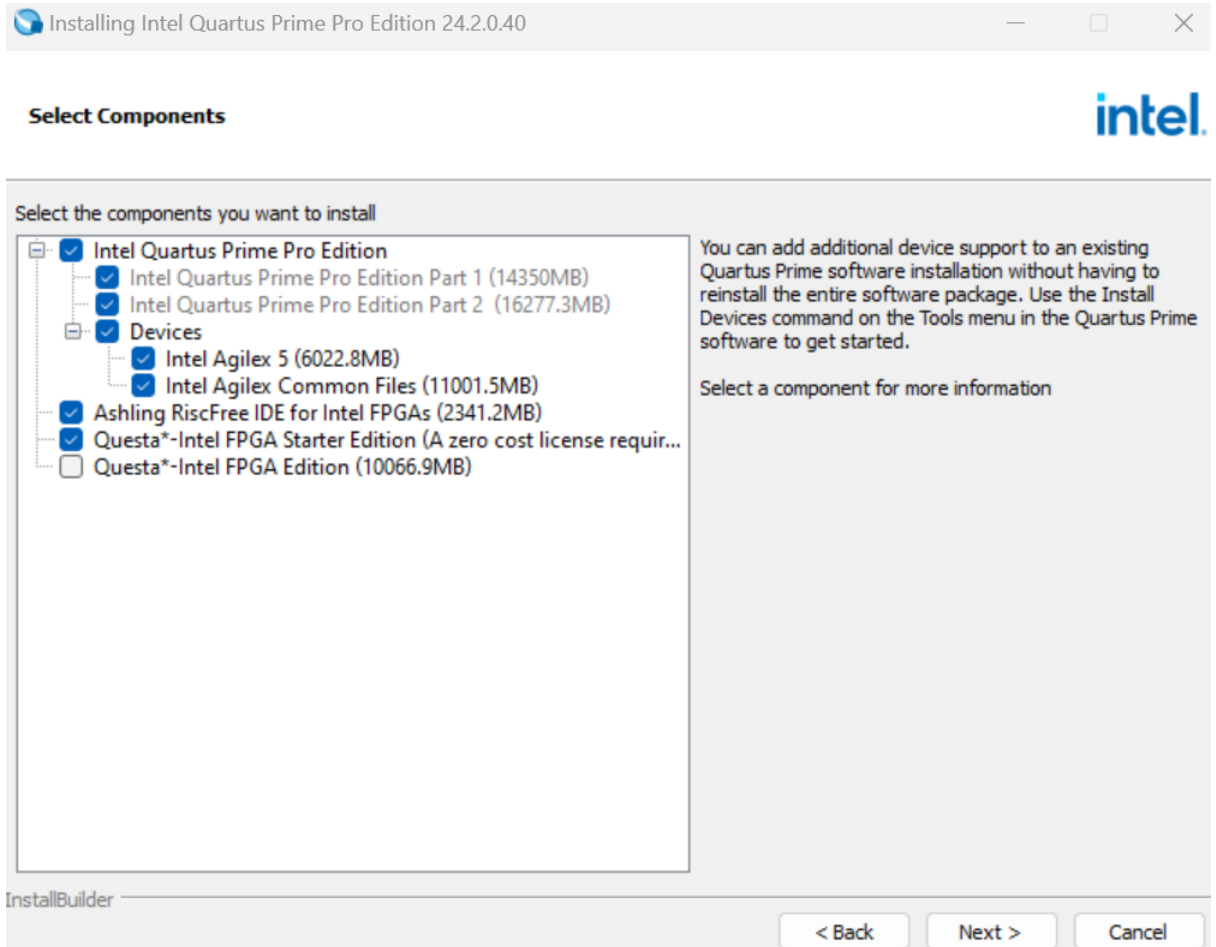
2.1.15 Select **Next**

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



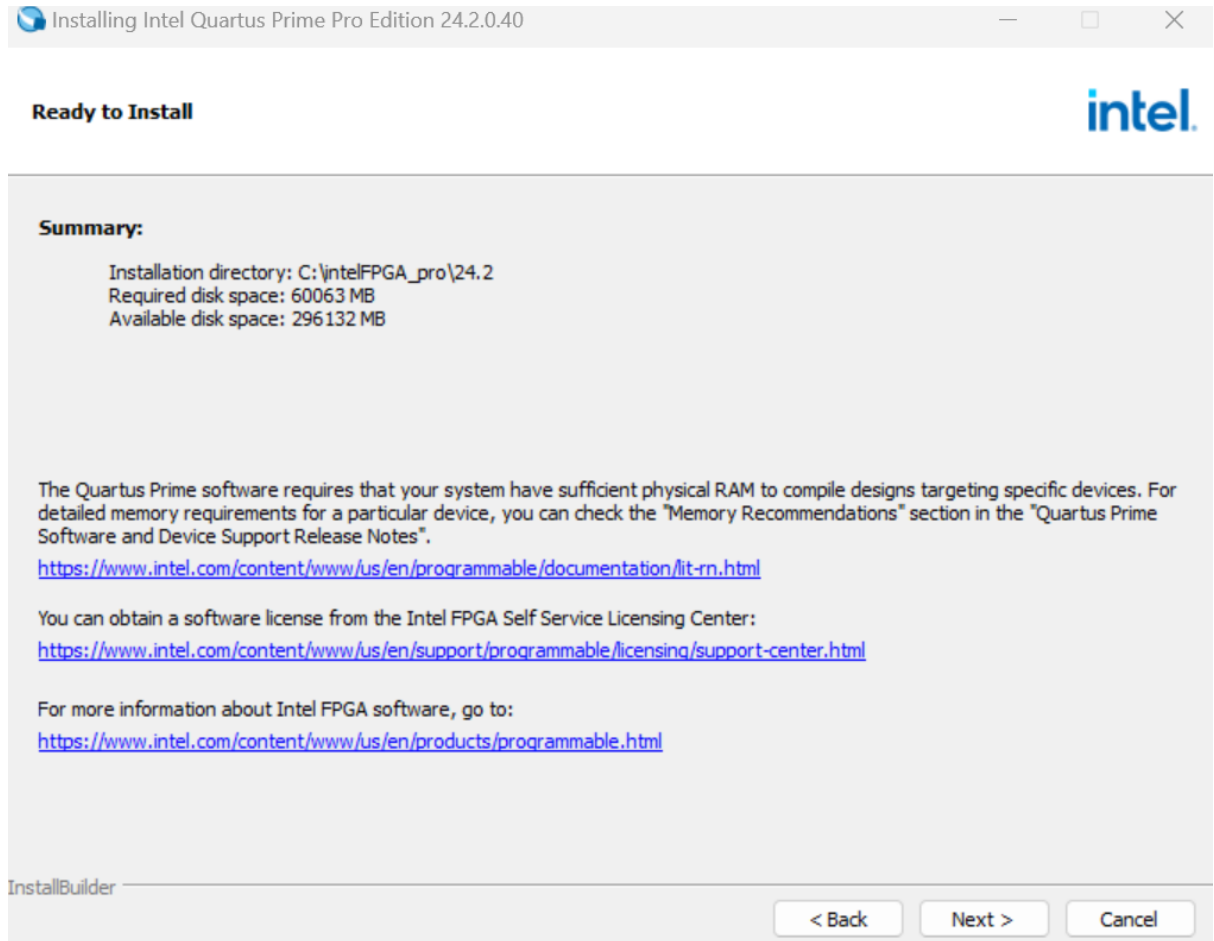
2.1.17 Select **Next**

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

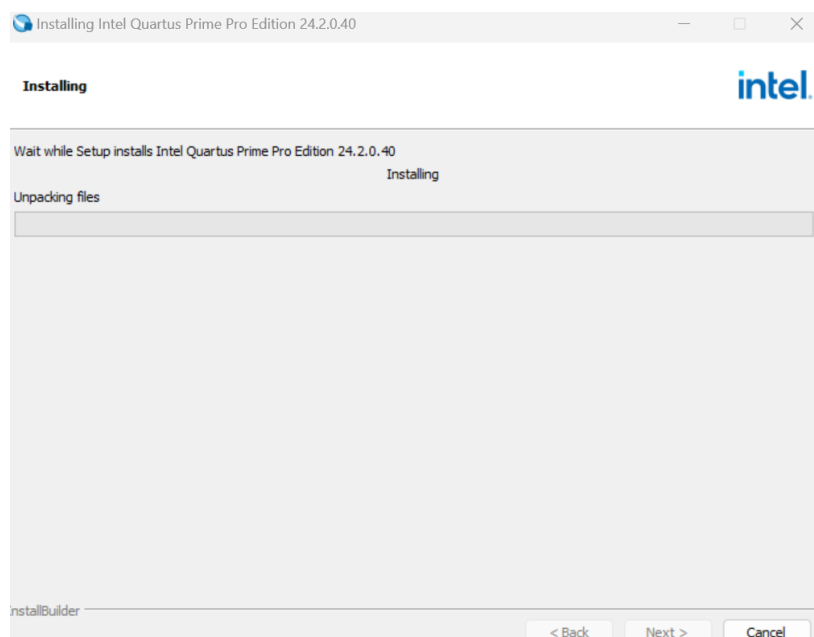


2.1.19 Select **Next**

2.1.20 The Summary window will appear as

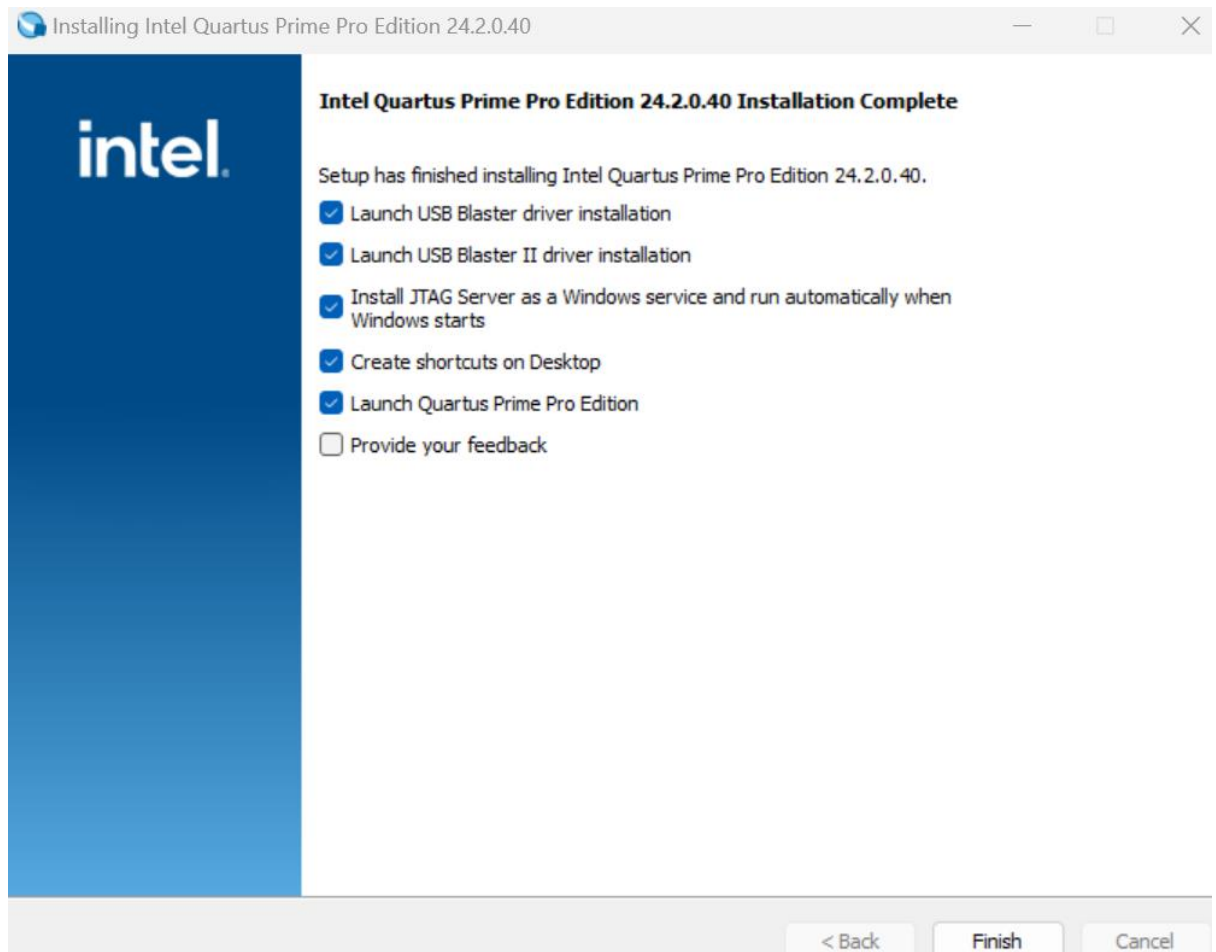


2.1.21 It will then install as:



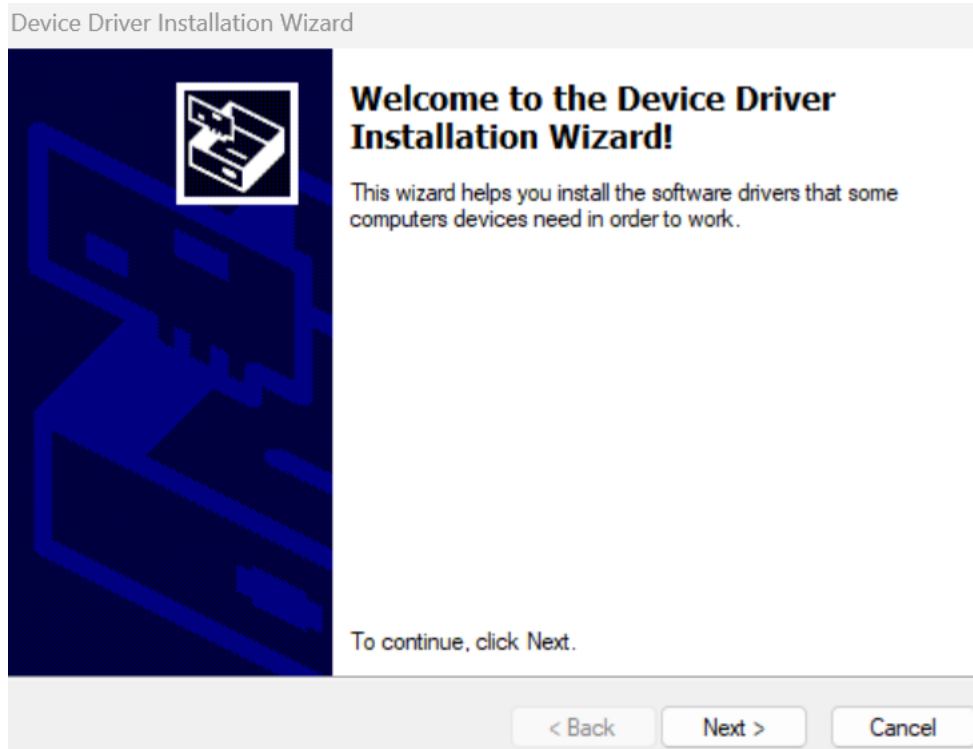
2.1.22 The install can take a while. (Time depends on the computer being used).

2.1.23 It will then show the following:



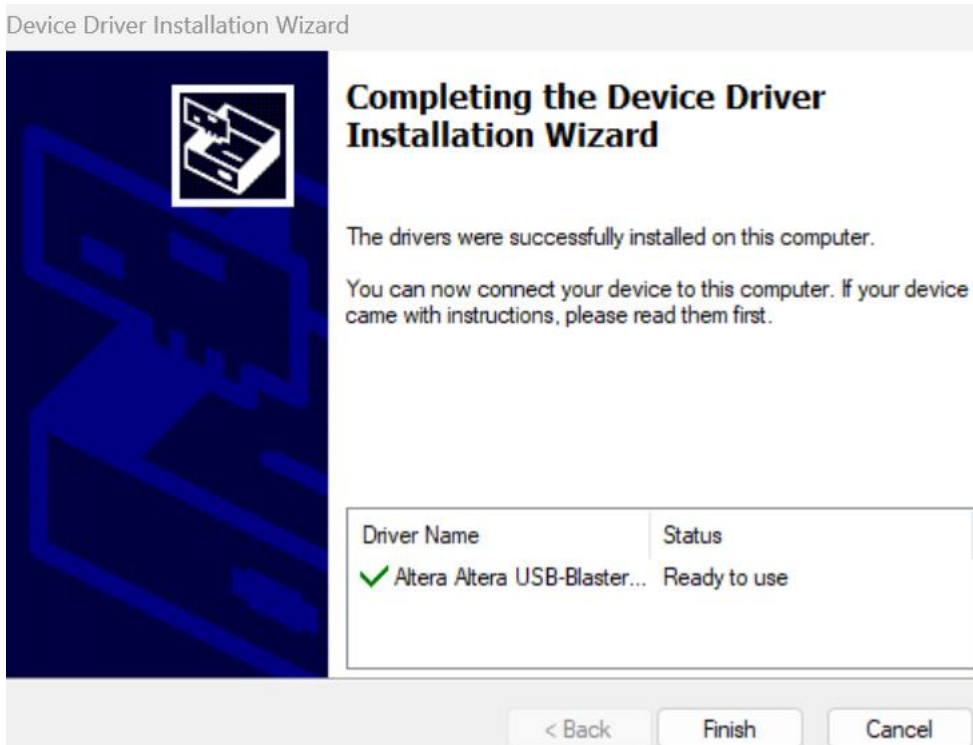
2.1.24 Select **Finish**

2.1.25 When the window of

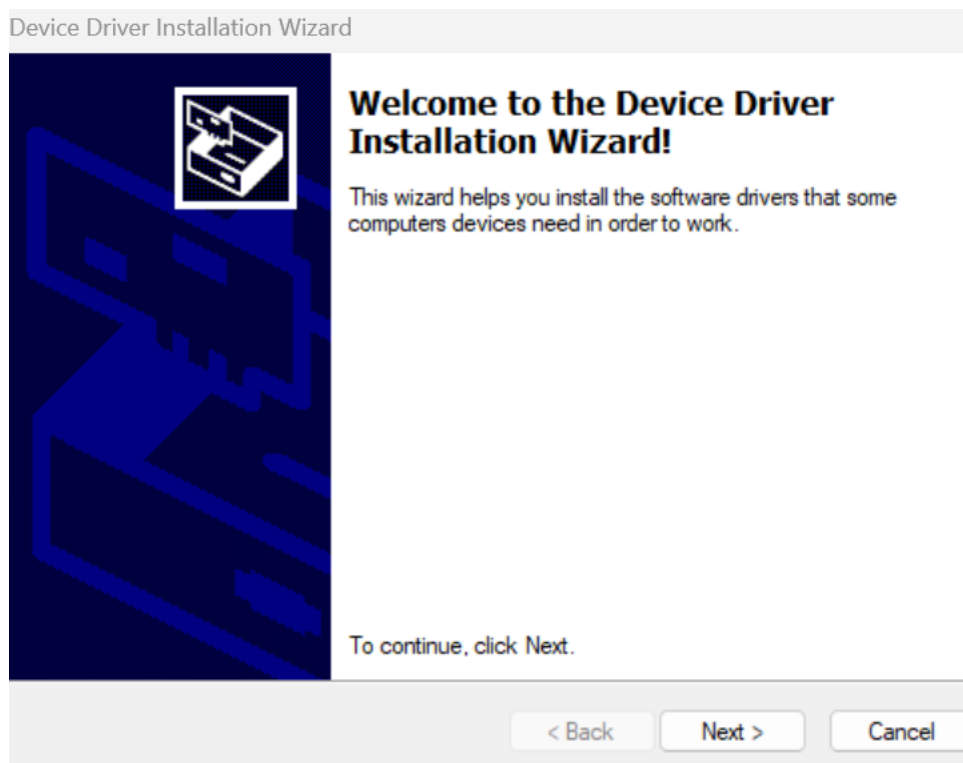


Appears, select **Next**

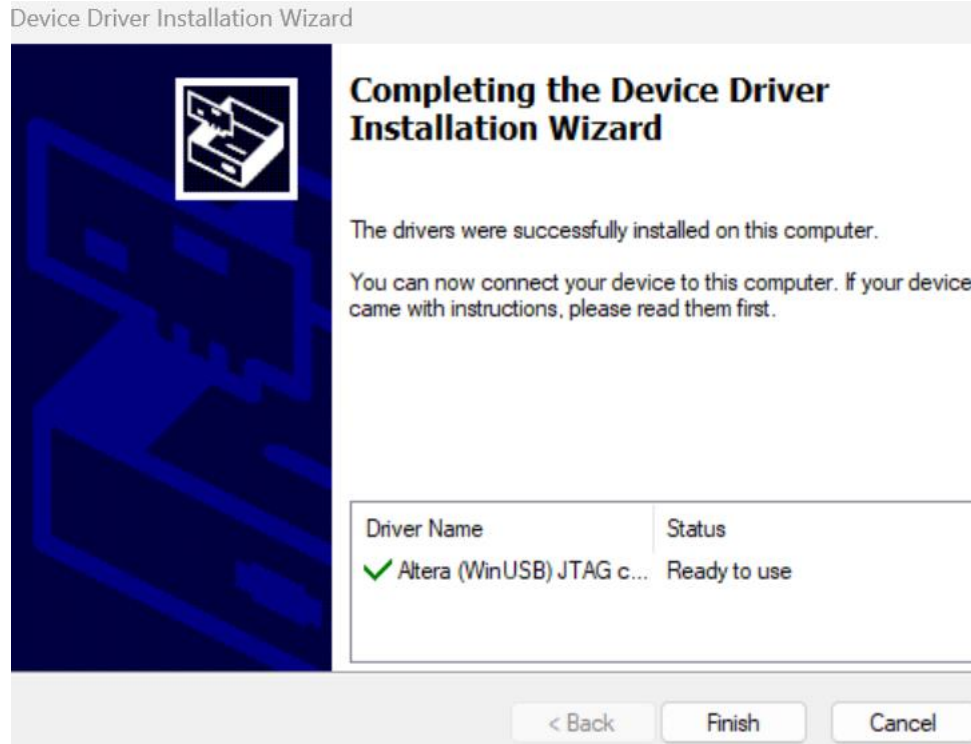
2.1.26 Select **Finish** for the window of



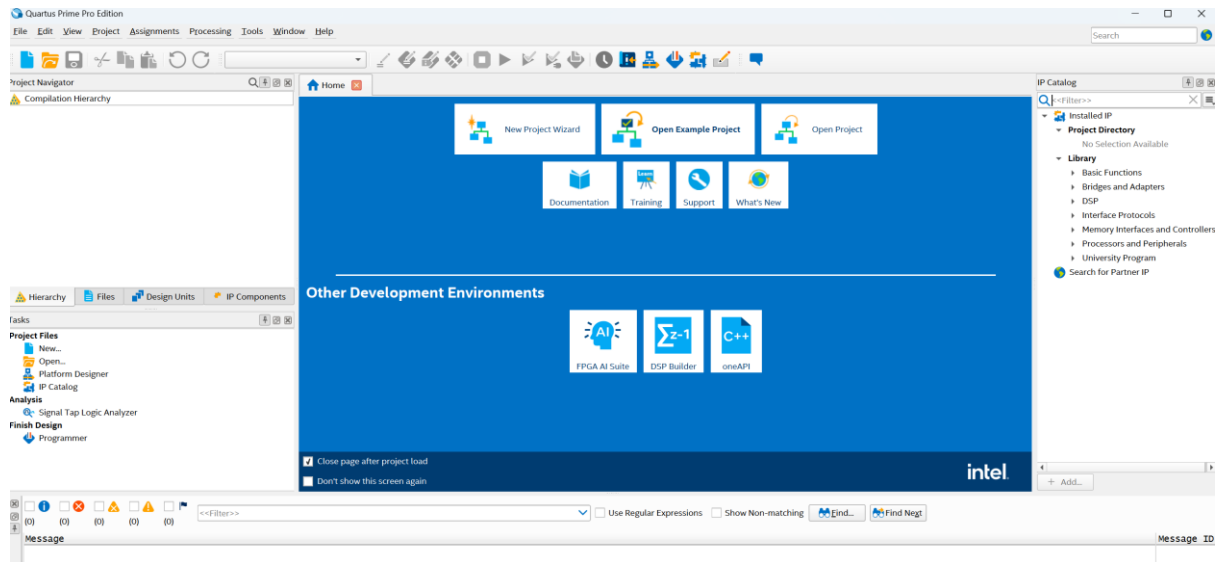
2.1.27 There are two device drivers so another Device Driver window will appear.
Select **Next**



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

Downloads

Installer (Recommended)

Individual Files

Copyright Licensed Source

2.1.34 Scroll down the webpage to Power Thermal Calculator

Intel® FPGA Power Thermal Calculator	
Download ptc-24.2.0.40-windows.exe	Size: 402.2 MB SHA1: a54a76342b31d3ec03a9cb34fbe5fea3ecfc9349

2.1.35 Double Click on the Download for the Power Thermal Calculator

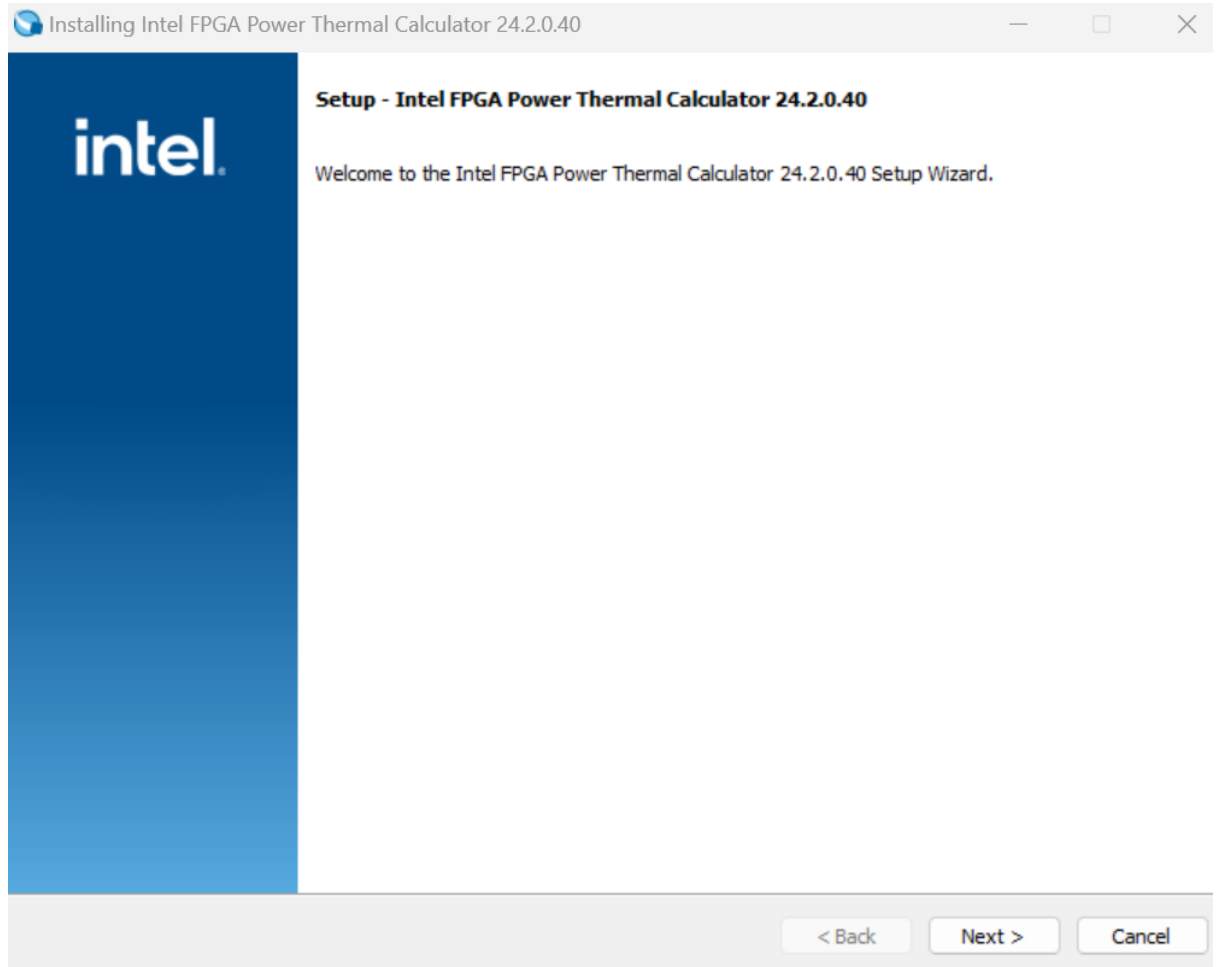
Intel® FPGA Power Thermal Calculator	
Download ptc-24.2.0.40-windows.exe	Size: 402.2 MB SHA1: a54a76342b31d3ec03a9cb34fbe5fea3ecfc9349

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

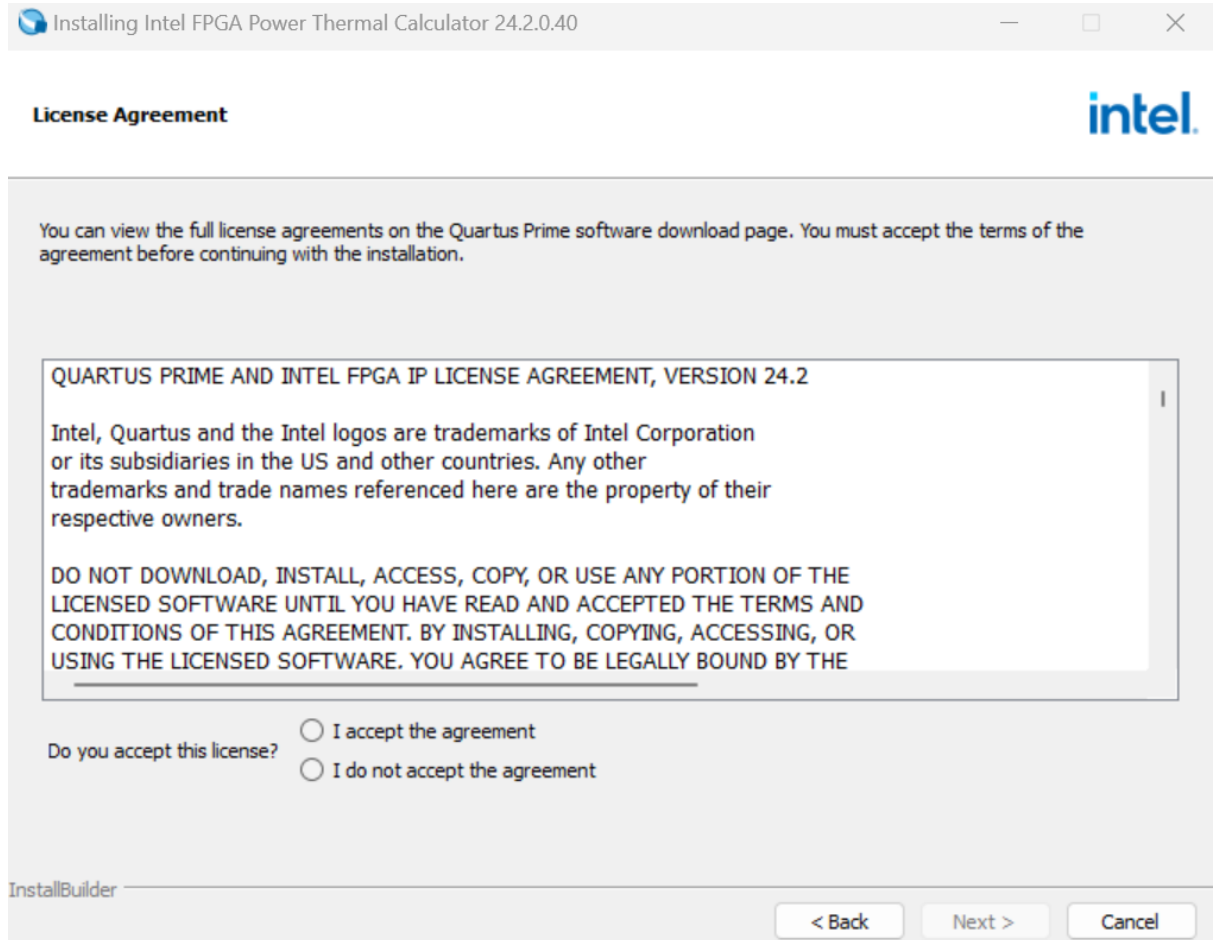
 ptc-24.2.0.40-windows	8/1/2024 9:09 AM	Application	411,839 KB
---	------------------	-------------	------------

2.1.38 The window will appear



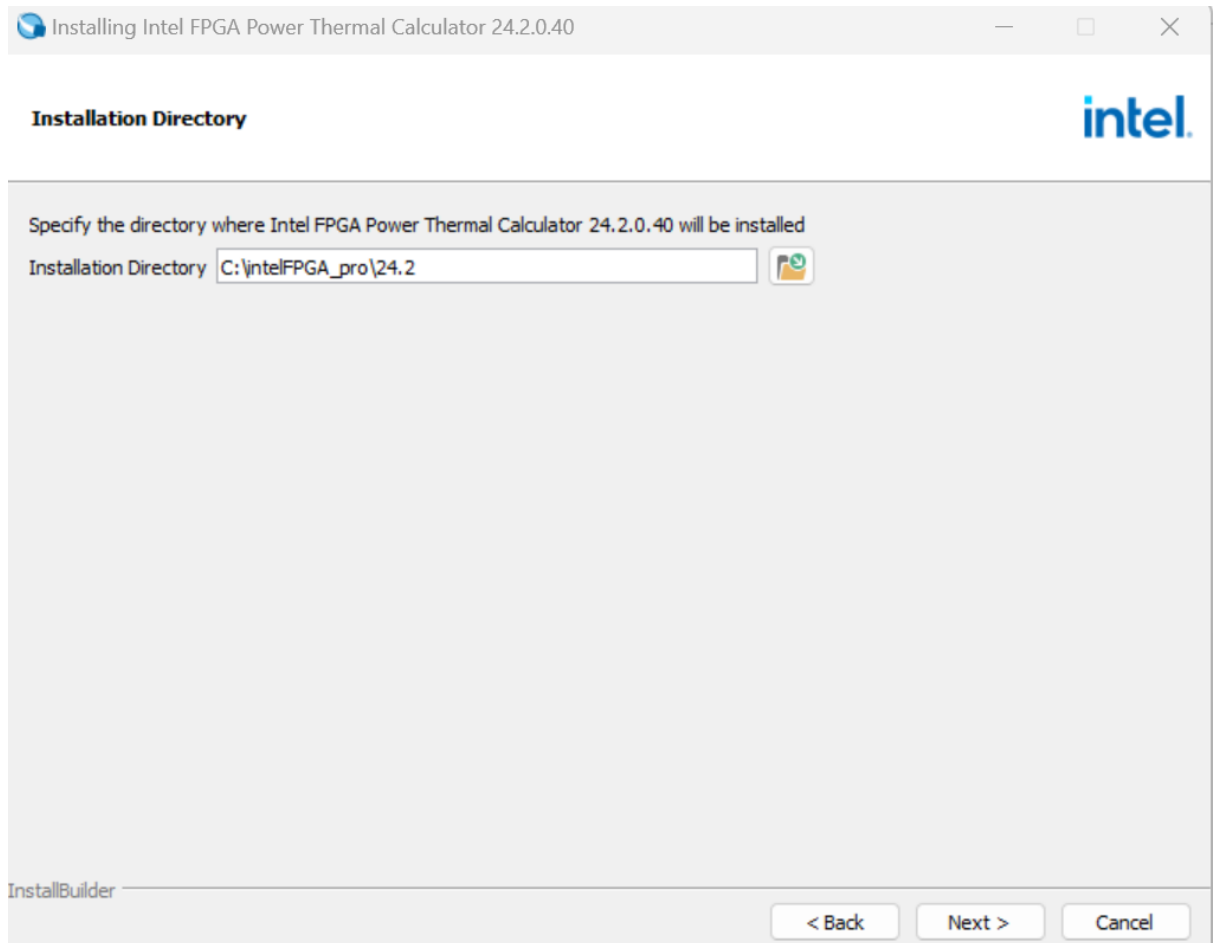
2.1.39 Select **Next**

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



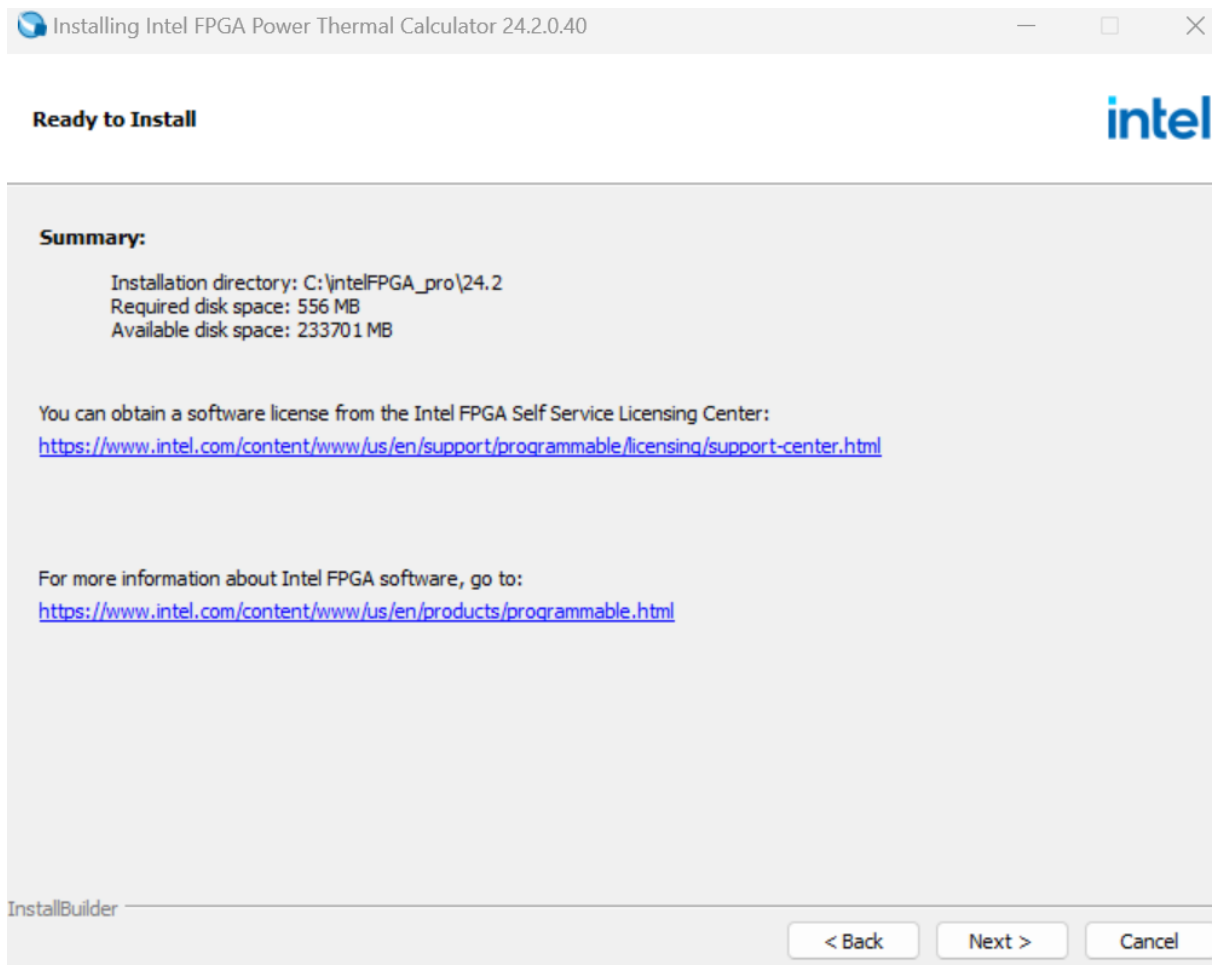
2.1.41 Select **Next**

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



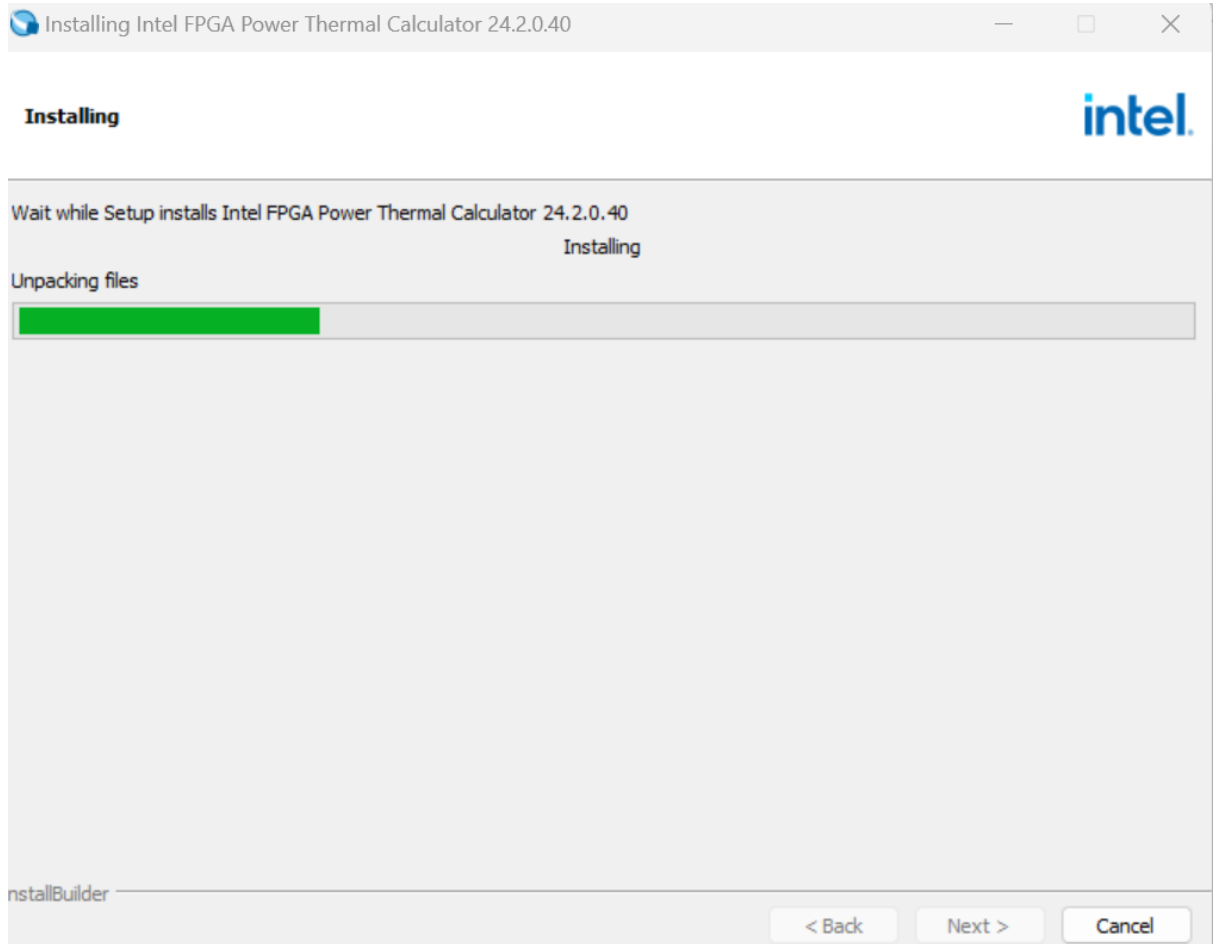
2.1.43 Select **Next**

2.1.44 The summary page will appear

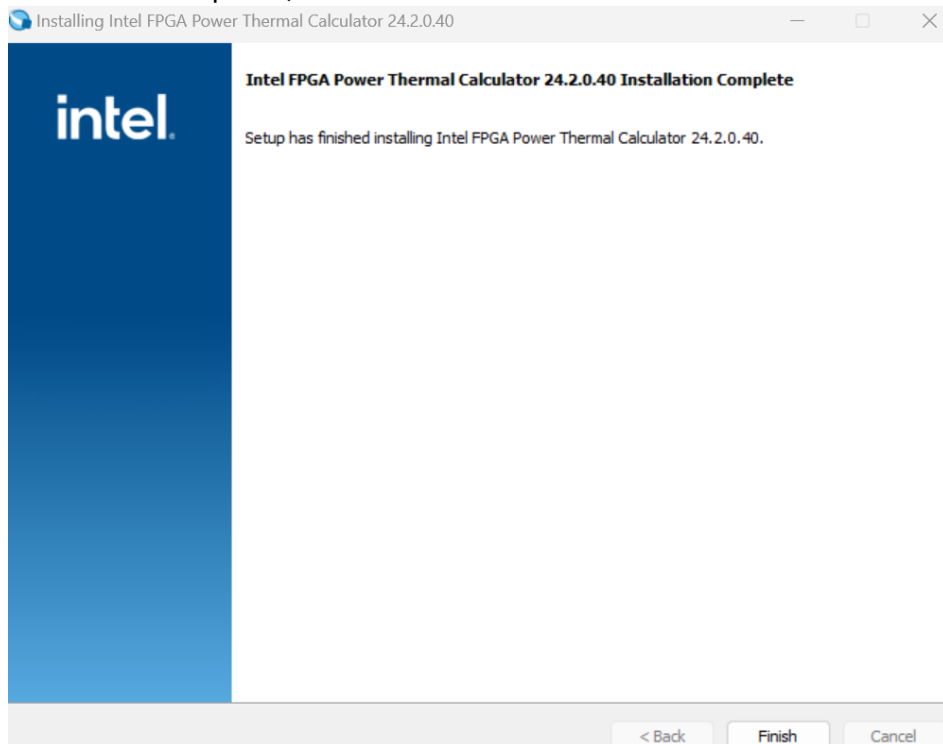


2.1.45 Select **Next**

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.**

Step 2: License Generation

Generate a license file from the [Intel® FPGA Self-Service Licensing Center](#).

[Get Started](#)[FAQs](#)[Quick Links](#)[NIC/Host/Guard ID](#)

Get Started

Thank you for choosing Intel® as your technology partner. We are here to guide you through the licensing process and help you make the most of your FPGA experience. Whether you are new or an existing user, this page will provide you with all the essential information to get started quickly.

Step 1: License Key Required?
Check the software tool license requirement.

Step 2: License Generation
Generate a license file from the [Intel® FPGA Self-Service Licensing Center](#).

Step 3: License Setup
Set up the license depending on the type of license used.

Step 4: Debugging
Troubleshoot and debug any licensing issues.

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

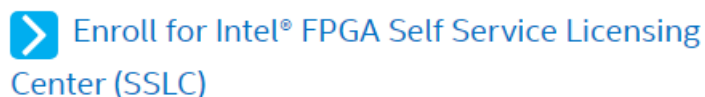
Sign In

 [Already enrolled ? - Sign In here](#)

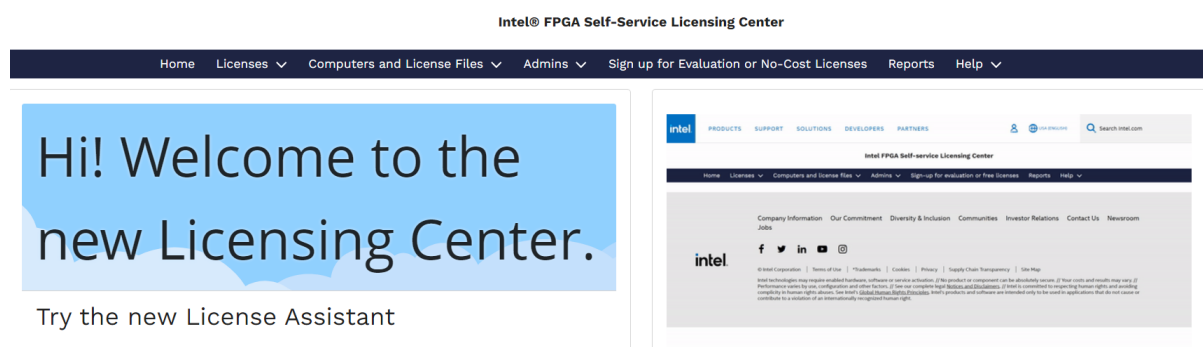
If you are not enrolled in:

Enroll

If you don't already have access to the Intel® FPGA Self Service Licensing Center (SSLC), **enroll** to get an account.



Sign up for Evaluation or No-Cost Licenses:



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

	Agilex™ 5 E-Series FPGA Software Enablement (License: SW-AGILEX-5E)	2025-09-23
	Questa*-Intel® FPGA Starter Edition (License: SW-QUESTA)	2025-09-23
	Nios® V/m Microcontroller Intel® FPGA IP (License: IP-NIOSVM)	2025-09-23

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:

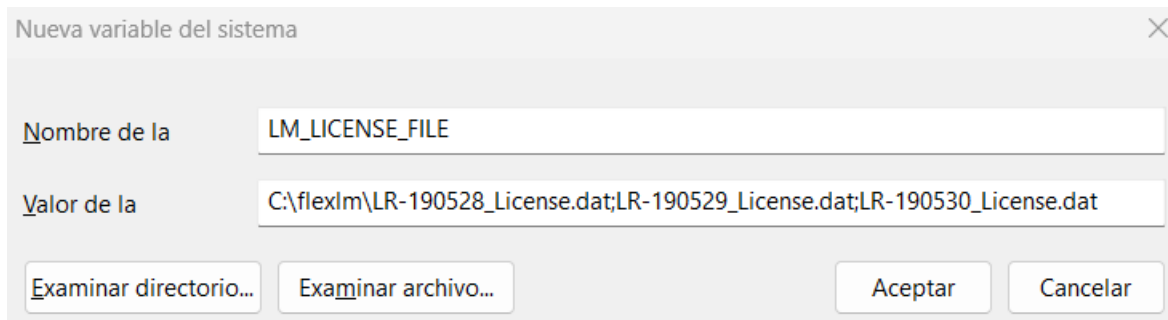
SystemPropertiesAdvanced

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:

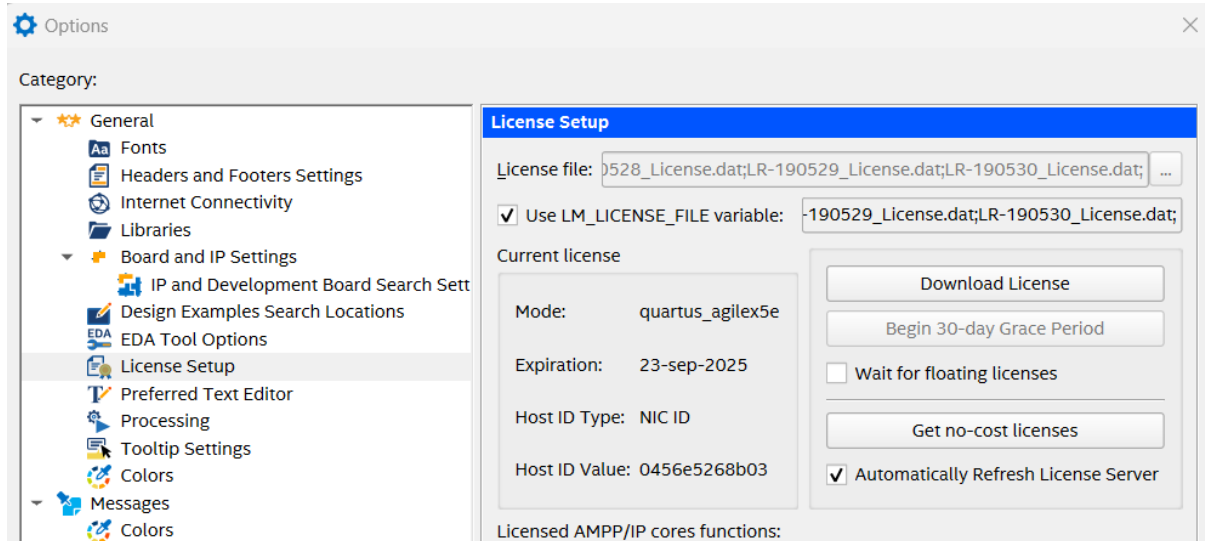


Nueva variable del sistema

Nombre de la

Valor de la

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

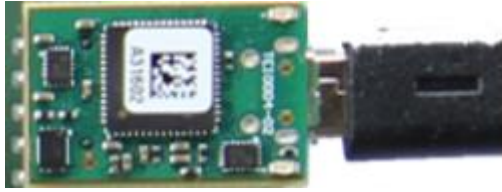
[Download | Trenz Electronic GmbH Online Shop \(DE\) \(trenz-electronic.de\)](https://www.trenz-electronic.de)

And selecting the following (The website can be translated to English)



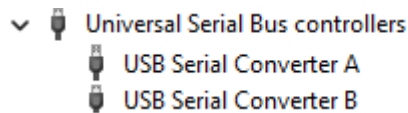
4.2 Verify the installation was successful.

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.

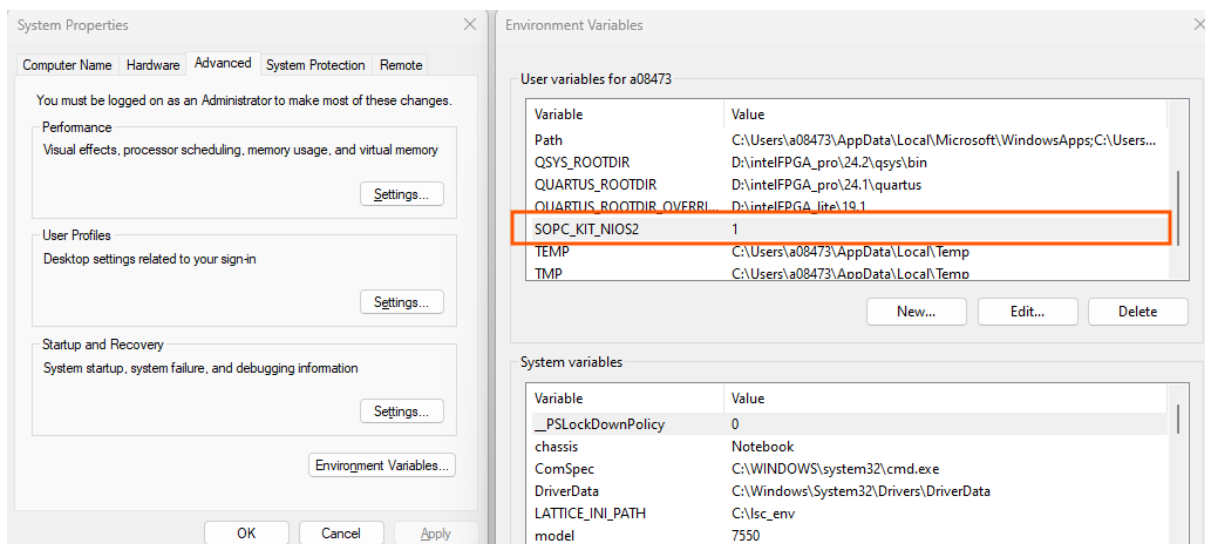


However, if there are two entries under Other Devices then **an additional driver installation is required.**

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

EVALUATION BOARD LICENSE AGREEMENT

By using this evaluation board or kit (together with all related software, firmware, components, and documentation provided by Arrow, "Evaluation Board"), You ("You") are agreeing to be bound by the terms and conditions of this Evaluation Board License Agreement ("Agreement"). Do not use the Evaluation Board until You have read and agreed to this Agreement. Your use of the Evaluation Board constitutes Your acceptance of this Agreement.

PURPOSE

The purpose of this evaluation board is solely intended for evaluation purposes. Any use of the Board beyond these purposes is on your own risk. Furthermore, according the applicable law, the offering Arrow entity explicitly does not warrant, guarantee or provide any remedies to you with regard to the board.

LICENSE

Arrow grants You a non-exclusive, limited right to use the enclosed Evaluation Board offering limited features only for Your evaluation and testing purposes in a research and development setting. Usage in a live environment is prohibited. The Evaluation Board shall not be, in any case, directly or indirectly assembled as a part in any production of Yours as it is solely developed to serve evaluation purposes and has no direct function and is not a finished product.

EVALUATION BOARD STATUS

The Evaluation Board offers limited features allowing You only to evaluate and test purposes. The Evaluation Board is not intended for consumer or household use. You are not authorized to use the Evaluation Board in any production system, and it may not be offered for sale or lease, or sold, leased or otherwise distributed for commercial purposes.

OWNERSHIP AND COPYRIGHT

Title to the Evaluation Board remains with Arrow and/or its licensors. This Agreement does not involve any transfer of intellectual property rights ("IPR") for evaluation board. You may not remove any copyright or other proprietary rights notices without prior written authorization from Arrow or its licensors.

RESTRICTIONS AND WARNINGS

Before You handle or use the Evaluation Board, You shall comply with all such warnings and other instructions and employ reasonable safety precautions in using the Evaluation Board. Failure to do so may result in death, personal injury, or property damage.

You shall not use the Evaluation Board in any safety critical or functional safety testing, including but not limited to testing of life supporting, military or nuclear applications. Arrow expressly disclaims any responsibility for such usage which shall be made at Your sole risk.

WARRANTY

Arrow warrants that it has the right to provide the evaluation board to you. This warranty is provided by Arrow in lieu of all other warranties, written or oral, statutory, express or implied, including any warranty as to merchantability, non-infringement, fitness for any particular

purpose, or uninterrupted or error-free operation, all of which are expressly disclaimed. The evaluation board is provided "as is" without any other rights or warranties, directly or indirectly.

You warrant to Arrow that the evaluation board is used only by electronics experts who understand the dangers of handling and using such items, you assume all responsibility and liability for any improper or unsafe handling or use of the evaluation board by you, your employees, affiliates, contractors, and designees.

LIMITATION OF LIABILITIES

In no event shall Arrow be liable to you, whether in contract, tort (including negligence), strict liability, or any other legal theory, for any direct, indirect, special, consequential, incidental, punitive, or exemplary damages with respect to any matters relating to this agreement. In no event shall arrow's liability arising out of this agreement in the aggregate exceed the amount paid by you under this agreement for the purchase of the evaluation board.

IDENTIFICATION

You shall, at Your expense, defend Arrow and its Affiliates and Licensors against a claim or action brought by a third party for infringement or misappropriation of any patent, copyright, trade secret or other intellectual property right of a third party to the extent resulting from (1) Your combination of the Evaluation Board with any other component, system, software, or firmware, (2) Your modification of the Evaluation Board, or (3) Your use of the Evaluation Board in a manner not permitted under this Agreement. You shall indemnify Arrow and its Affiliates and Licensors against and pay any resulting costs and damages finally awarded against Arrow and its Affiliates and Licensors or agreed to in any settlement, provided that You have sole control of the defense and settlement of the claim or action, and Arrow cooperates in the defense and furnishes all related evidence under its control at Your expense. Arrow will be entitled to participate in the defense of such claim or action and to employ counsel at its own expense.

RECYCLING

The Evaluation Board is not to be disposed as an urban waste. At the end of its life cycle, differentiated waste collection must be followed, as stated in the directive 2002/96/EC. In all the countries belonging to the European Union (EU Dir. 2002/96/EC) and those following differentiated recycling, the Evaluation Board is subject to differentiated recycling at the end of its life cycle, therefore: It is forbidden to dispose the Evaluation Board as an undifferentiated waste or with other domestic wastes. Consult the local authorities for more information on the proper disposal channels. An incorrect Evaluation Board disposal may cause damage to the environment and is punishable by the law.

