



# Installing the Keil MDK for STMicroelectronics Edition

Version 1.2.0

## Application Note

### Non-Confidential

Copyright © 2023–2024 Arm Limited (or its affiliates).  
All rights reserved.

### Issue

kan344\_1.2.0\_en



# Installing the Keil MDK for STMicroelectronics Edition Application Note

This document is Non-Confidential.

Copyright © 2023–2024 Arm Limited (or its affiliates). All rights reserved.

This document is protected by copyright and other intellectual property rights.

Arm only permits use of this document if you have reviewed and accepted [Arm's Proprietary Notice](#) found at the end of this document.

This document (kan344\_1.2.0\_en) was issued on 2024-08-16. There might be a later issue at <http://developer.arm.com/documentation/kan344>

The product version is 1.2.0.

See also: [Proprietary notice](#) | [Product and document information](#) | [Useful resources](#)

## Start reading

If you prefer, you can skip to [the start of the content](#).

## Intended audience

Embedded Software and Firmware Developers.

## Inclusive language commitment

Arm values inclusive communities. Arm recognizes that we and our industry have used language that can be offensive. Arm strives to lead the industry and create change.

We believe that this document contains no offensive language. To report offensive language in this document, email [terms@arm.com](mailto:terms@arm.com).

## Feedback

Arm welcomes feedback on this product and its documentation. To provide feedback on the product, create a ticket on <https://support.developer.arm.com>.

To provide feedback on the document, fill the following survey: <https://developer.arm.com/documentation-feedback-survey>.

# Contents

1. Abstract..... 4

2. Installation.....5

3. Activation..... 7

4. Example Projects..... 10

Proprietary notice..... 15

Product and document information.....17

Product status..... 17

Revision history.....17

Conventions..... 18

Useful resources.....20

# 1. Abstract

Arm offers software developers working with STMicroelectronics devices a free-to-use Keil MDK v6 tool suite.

It only works with the following STMicroelectronics device families based on the Arm Cortex-M0/M0+ cores:

- STM32C0
- STM32F0
- STM32G0
- STM32L0
- STM32U0
- STM32WL
- BlueNRG-1
- BlueNRG-2
- BlueNRG-LP
- BlueNRG-LPS

**Figure 1-1: Keil MDK is made for STM32**



This edition includes all tools and software components delivered with Keil MDK v6. It uses STM32CubeMX to configure peripherals and other device settings.

This application note explains how to download, install, and use MDK with STMicroelectronics devices based on the Cortex-M0/M0+ cores.

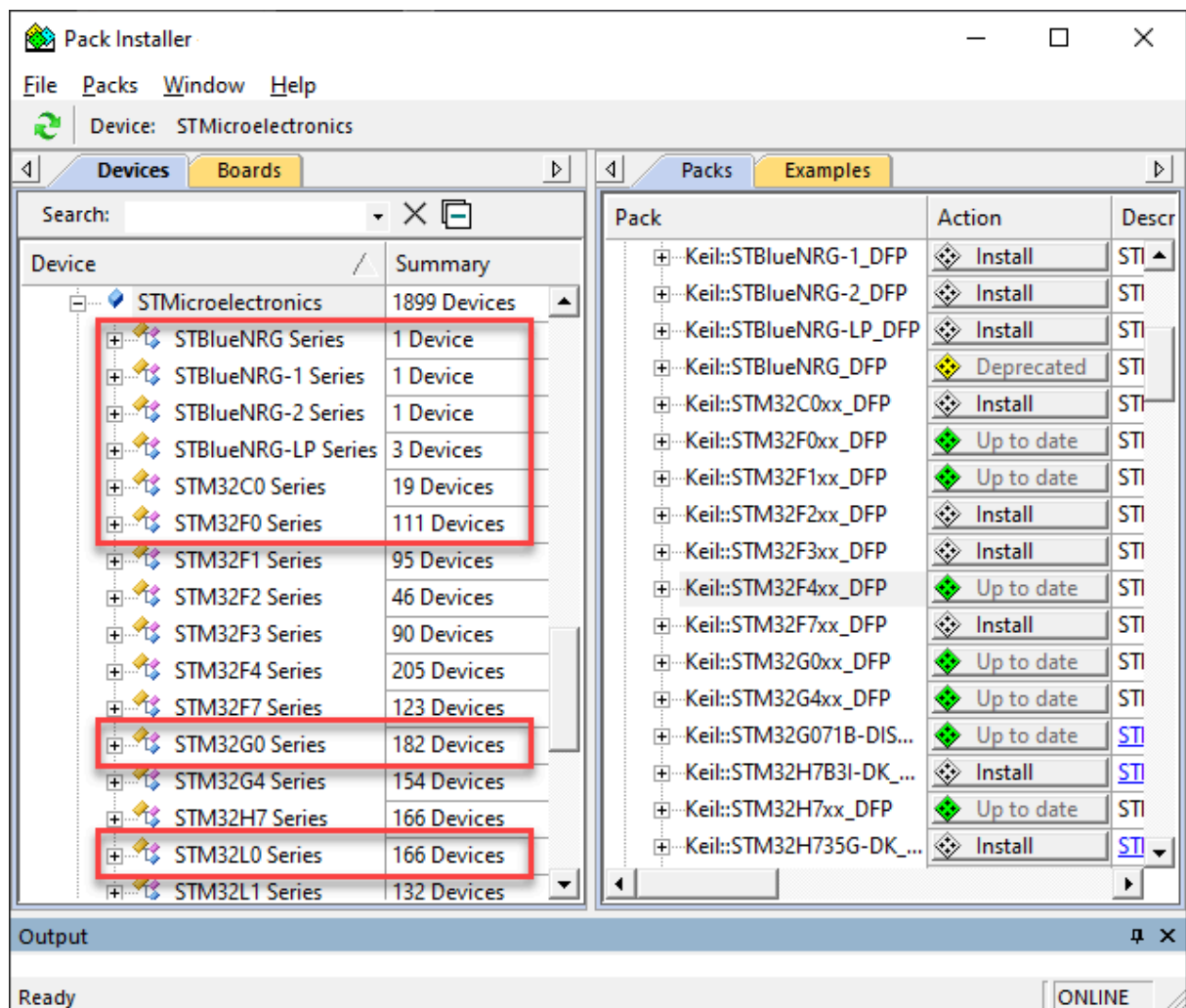
## 2. Installation

This chapter explains how to download and install Keil MDK on your local computer.

### Keil uVision (Windows only)

1. [Download](#) the installer.
2. Run the downloaded MDK5xx.exe installer.
3. Select your installation location. If you have existing MDK installations that you want to keep, select a new folder. Once the installation has finished, Pack Installer opens.
4. In Pack Installer, click **Install** to download and install the device family packs supplied by STMicroelectronics.

**Figure 2-1: Install STMicroelectronics CMSIS-Packs**



Next, you need to [activate](#) your product.

## Keil Studio

1. Download and install [Microsoft Visual Studio Code](#) on your computer.
2. Once installed, open the **Extensions** in the activity bar.

**Figure 2-2: Open the extensions**



3. Search for `keil studio pack` and install the extension.

Next, you need to [activate](#) your product.

## 3. Activation

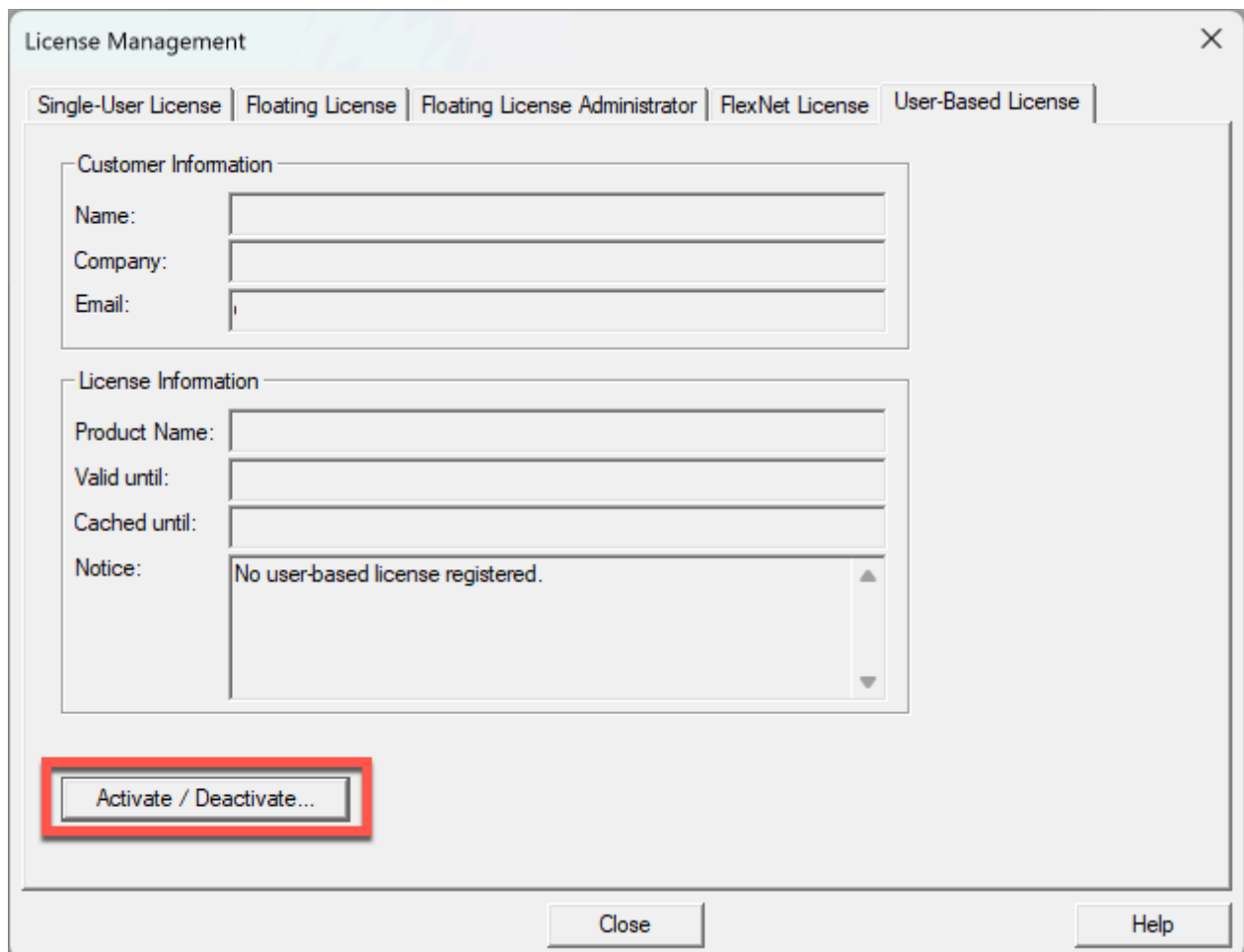
This chapter explains how to activate your product.

### Keil uVision

Open uVision and go to **File – License Management...** and select the **User-Based License** tab.

Click the button **Activate / Deactivate**.

**Figure 3-1: License Management - User-Based License**



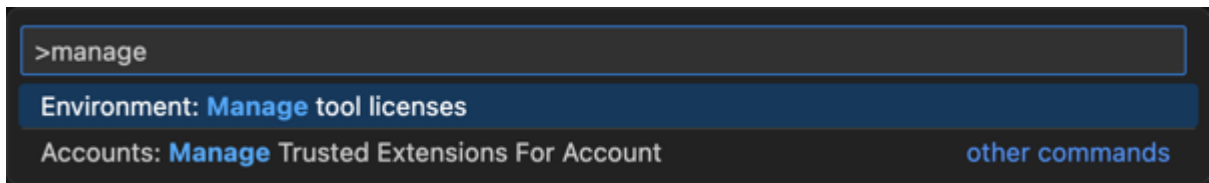
The screenshot shows the 'License Management' dialog box with the 'User-Based License' tab selected. The dialog has a title bar with a close button (X). Below the title bar are five tabs: 'Single-User License', 'Floating License', 'Floating License Administrator', 'FlexNet License', and 'User-Based License'. The 'User-Based License' tab is active. It contains two main sections: 'Customer Information' and 'License Information'. The 'Customer Information' section has three text input fields: 'Name:', 'Company:', and 'Email:'. The 'License Information' section has four text input fields: 'Product Name:', 'Valid until:', 'Cached until:', and 'Notice:'. The 'Notice' field contains the text 'No user-based license registered.' and has a scroll bar. At the bottom left of the dialog, there is a button labeled 'Activate / Deactivate...' which is highlighted with a red rectangular box. At the bottom right, there are two buttons: 'Close' and 'Help'.

Continue in the [Arm License Management Tool](#).

### Keil Studio

Open Visual Studio Code and press Ctrl + Shift + p (Cmd + Shift + p on macOS). In the command box, enter `manage` and select **Environment: Manage tools licenses**:

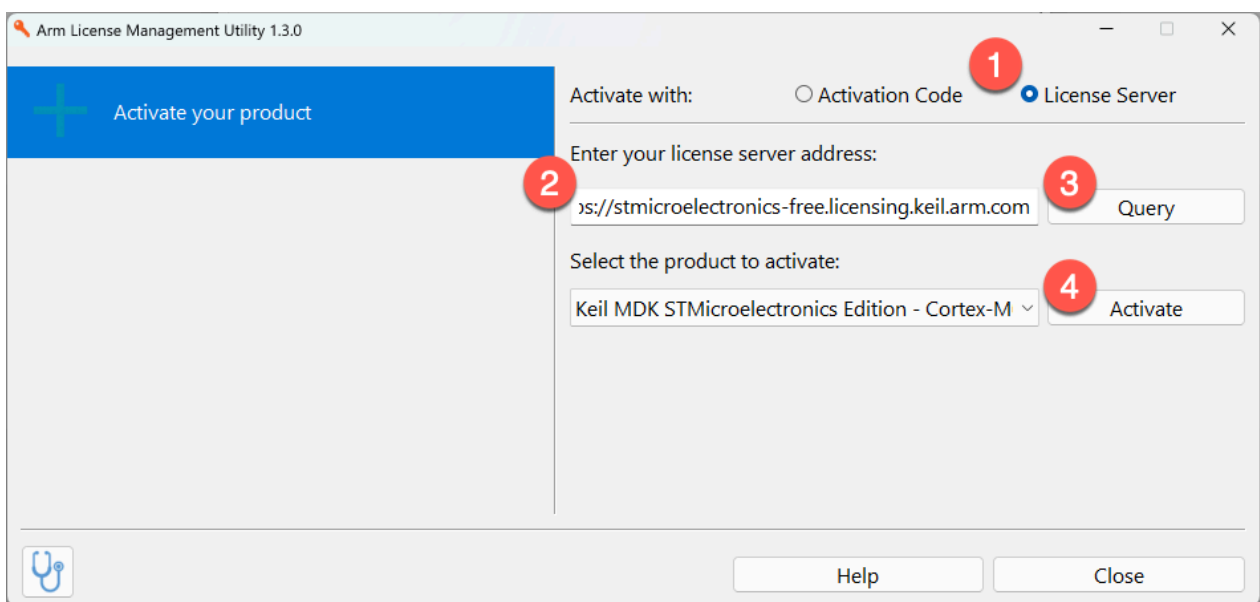
**Figure 3-2: Run the manage tools licenses command**



Continue in the [Arm License Management Tool](#).

## Arm License Management Tool

**Figure 3-3: Arm License Management Utility**

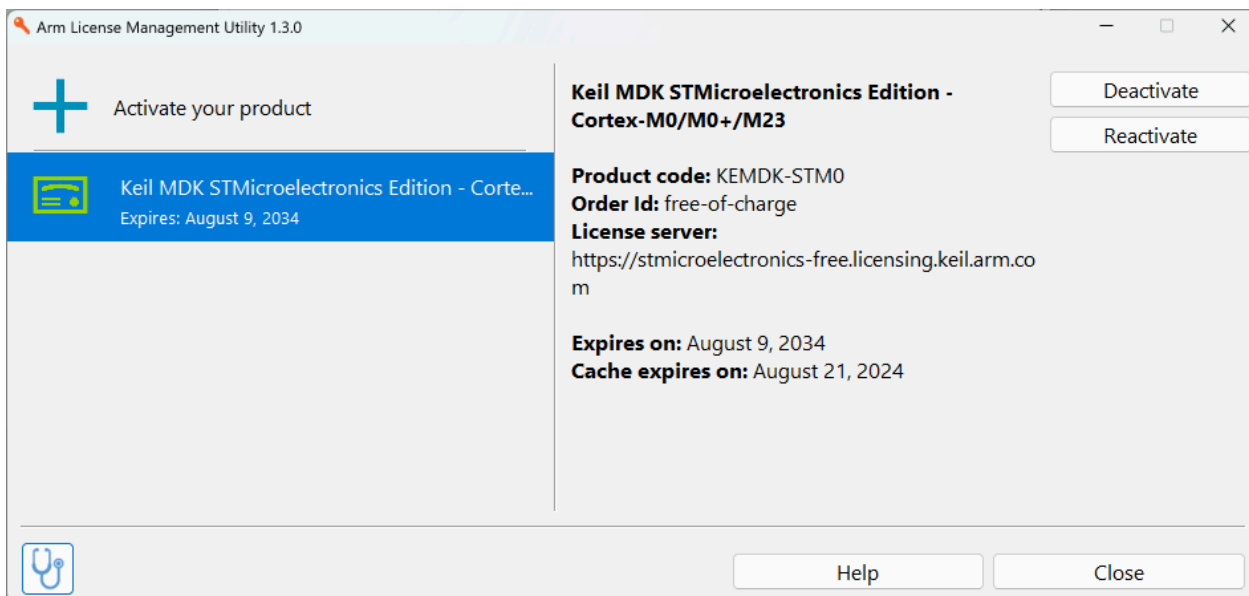


1. Enable **License Server**.
2. Enter the following license server address: `https://stmicroelectronics-free.licensing.keil.arm.com`.
3. Click the **Query** button.
4. Click on **Activate**.

The window changes and shows the information of the activated license.



**Figure 3-4: Arm License Activated**



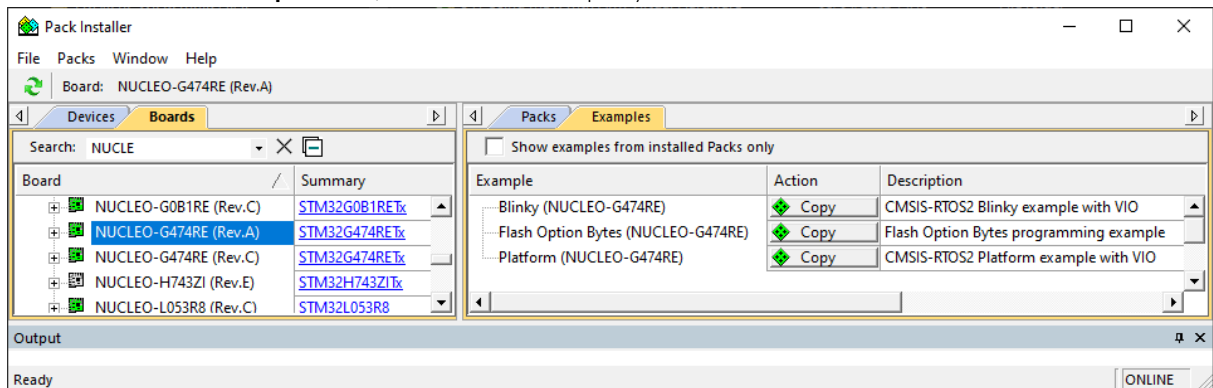
Next, test your set up using an [example project](#).

## 4. Example Projects

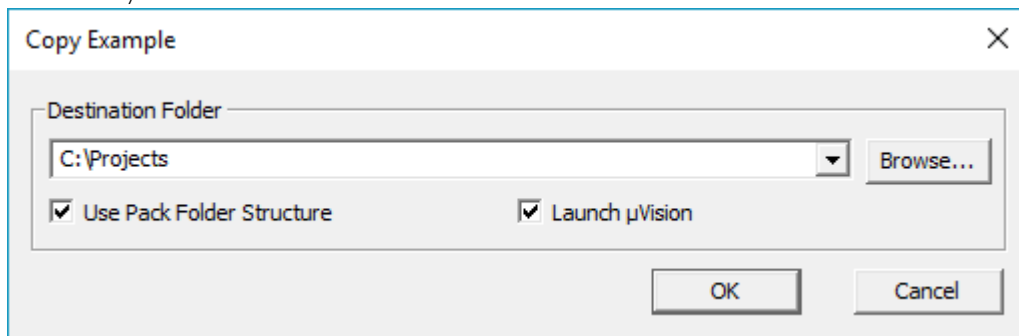
This chapter shows how to use example projects from the STMicroelectronics CMSIS-Packs to check the correct set up of the hardware and software.

### Keil uVision

1. Open the Pack Installer from the uVision toolbar.
2. Switch to the **Boards** tab which allows to filter for specific development boards. On the **Examples** tab, select the example you want to install.



3. When pressing **Copy**, a dialog box will ask for the desired destination. The example will be directly installed into this folder. Folders that do not exist will be created automatically.

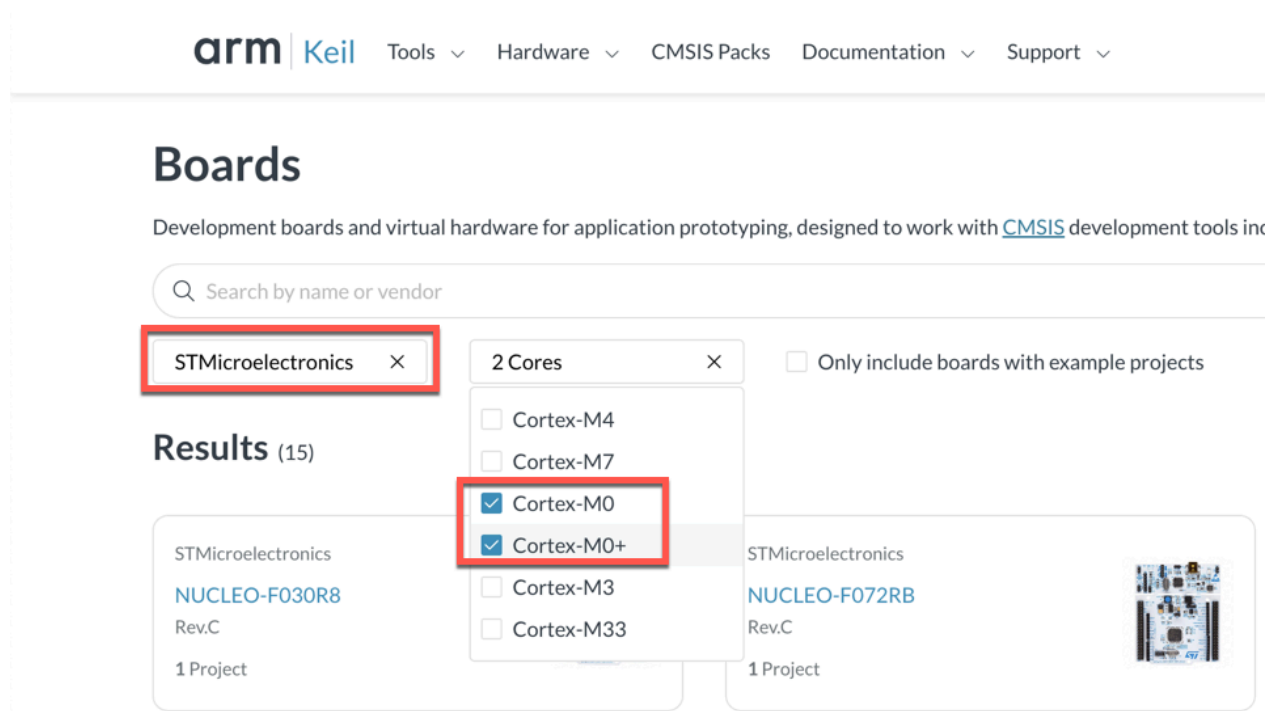


4. Tick **Launch uVision** to open the project immediately.

### Keil Studio

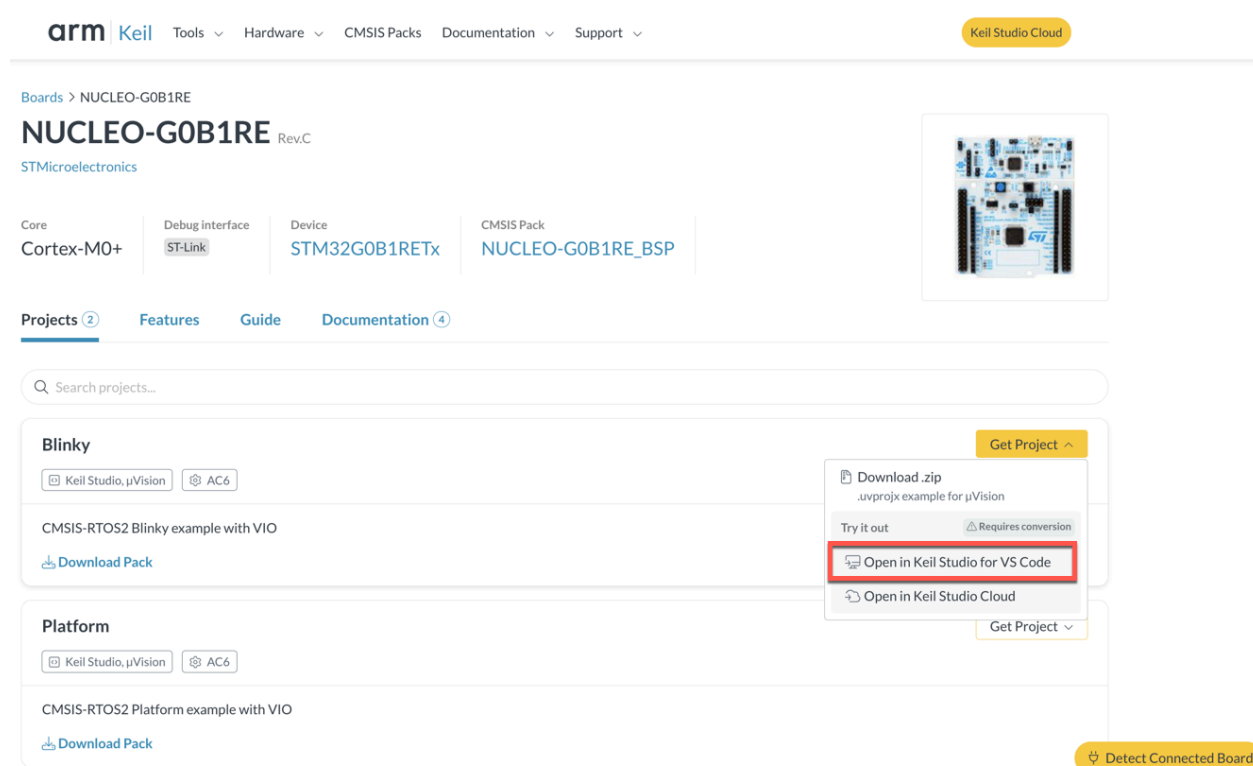
Open a web-browser and go to the [CMSIS-Pack boards list](#). Narrow down your search by selecting **STMicroelectronics** as the *Vendor* and **Cortex-M0** and **Cortex-M0+** as the *Core*:

**Figure 4-1: Find an example on keil.arm.com/boards**



In the results, select the board you are interested in (for example, NUCLEO-G0B1RE). The board page opens with the **Projects** tab open:

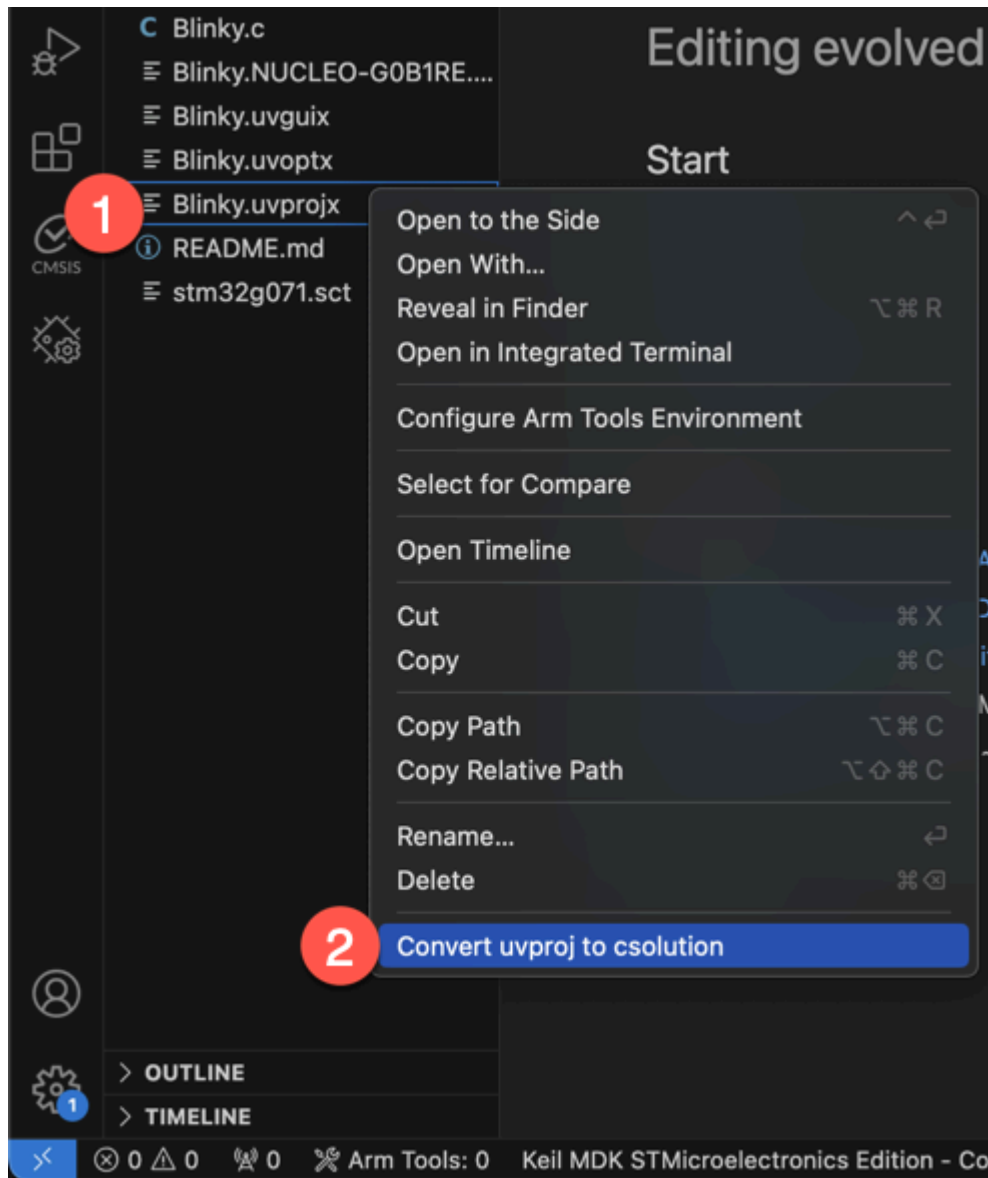
Figure 4-2: NUCLEO-G0B1RE's board page



On the right, click on **Get Project** and select **Open in Keil Studio for VS Code** to download and open the project in Keil Studio (you'll be asked to specify a download and unzip location).

If the project is in `uvprojx` format, you need to convert it to `csolution` first:

**Figure 4-3: Converting a uvprojx file**



1. Right-click the uvprojx file.
2. Select **Convert uvproj to csolution**.

The project will be converted and a `vcpkg_configuration.json` file will be created automatically. This file contains information about the additional Arm tools required to build and debug the project. Refer to the [Keil Studio documentation](#) for more information.

### Further reading

Congratulations! You can now start working on embedded software development for STMicroelectronics devices!

If you want to learn more about Keil MDK, download the [Getting Started Guide](#).

Learn how to [create projects with Keil MDK and STM32CubeMX](#).

# Proprietary Notice

This document is protected by copyright and other related rights and the use or implementation of the information contained in this document may be protected by one or more patents or pending patent applications. No part of this document may be reproduced in any form by any means without the express prior written permission of Arm Limited ("Arm"). No license, express or implied, by estoppel or otherwise to any intellectual property rights is granted by this document unless specifically stated.

Your access to the information in this document is conditional upon your acceptance that you will not use or permit others to use the information for the purposes of determining whether the subject matter of this document infringes any third party patents.

The content of this document is informational only. Any solutions presented herein are subject to changing conditions, information, scope, and data. This document was produced using reasonable efforts based on information available as of the date of issue of this document. The scope of information in this document may exceed that which Arm is required to provide, and such additional information is merely intended to further assist the recipient and does not represent Arm's view of the scope of its obligations. You acknowledge and agree that you possess the necessary expertise in system security and functional safety and that you shall be solely responsible for compliance with all legal, regulatory, safety and security related requirements concerning your products, notwithstanding any information or support that may be provided by Arm herein. In addition, you are responsible for any applications which are used in conjunction with any Arm technology described in this document, and to minimize risks, adequate design and operating safeguards should be provided for by you.

This document may include technical inaccuracies or typographical errors. THIS DOCUMENT IS PROVIDED "AS IS". ARM PROVIDES NO REPRESENTATIONS AND NO WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY, SATISFACTORY QUALITY, NON-INFRINGEMENT OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE DOCUMENT. For the avoidance of doubt, Arm makes no representation with respect to, and has undertaken no analysis to identify or understand the scope and content of, any patents, copyrights, trade secrets, trademarks, or other rights.

TO THE EXTENT NOT PROHIBITED BY LAW, IN NO EVENT WILL ARM BE LIABLE FOR ANY DAMAGES, INCLUDING WITHOUT LIMITATION ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES, HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY, ARISING OUT OF ANY USE OF THIS DOCUMENT, EVEN IF ARM HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Reference by Arm to any third party's products or services within this document is not an express or implied approval or endorsement of the use thereof.

This document consists solely of commercial items. You shall be responsible for ensuring that any permitted use, duplication, or disclosure of this document complies fully with any relevant

export laws and regulations to assure that this document or any portion thereof is not exported, directly or indirectly, in violation of such export laws. Use of the word “partner” in reference to Arm’s customers is not intended to create or refer to any partnership relationship with any other company. Arm may make changes to this document at any time and without notice.

This document may be translated into other languages for convenience, and you agree that if there is any conflict between the English version of this document and any translation, the terms of the English version of this document shall prevail.

The validity, construction and performance of this notice shall be governed by English Law.

The Arm corporate logo and words marked with ® or ™ are registered trademarks or trademarks of Arm Limited (or its affiliates) in the US and/or elsewhere. Please follow Arm’s trademark usage guidelines at <https://www.arm.com/company/policies/trademarks>. All rights reserved. Other brands and names mentioned in this document may be the trademarks of their respective owners.

Arm Limited. Company 02557590 registered in England.

110 Fulbourn Road, Cambridge, England CB1 9NJ.

PRE-1121-V1.0



# Product and document information

Read the information in these sections to understand the release status of the product and documentation, and the conventions used in Arm documents.

## Product status

All products and services provided by Arm require deliverables to be prepared and made available at different levels of completeness. The information in this document indicates the appropriate level of completeness for the associated deliverables.

### Product completeness status

The information in this document is Final, that is for a developed product.

## Revision history

These sections can help you understand how the document has changed over time.

### Document release information

The Document history table gives the issue number and the released date for each released issue of this document.

#### Document history

Issue	Date	Confidentiality	Change
1.2.0	16 August 2024	Non-Confidential	Updates for user-based licensing
1.2.0	12 January 2023	Non-Confidential	Added STM32C0
1.0.0	11 January 2023	Non-Confidential	Initial release

### Change history

The revisions tables describe the technical changes between released issues of this document.

## Conventions

The following subsections describe conventions used in Arm documents.

### Glossary

The Arm Glossary is a list of terms used in Arm documentation, together with definitions for those terms. The Arm Glossary does not contain terms that are industry standard unless the Arm meaning differs from the generally accepted meaning.

See the Arm Glossary for more information: [developer.arm.com/glossary](https://developer.arm.com/glossary).

### Typographic conventions

Arm documentation uses typographical conventions to convey specific meaning.

Convention	Use
<i>italic</i>	Citations.
<b>bold</b>	Interface elements, such as menu names.  Terms in descriptive lists, where appropriate.
monospace	Text that you can enter at the keyboard, such as commands, file and program names, and source code.
monospace <u>underline</u>	A permitted abbreviation for a command or option. You can enter the underlined text instead of the full command or option name.
<and>	Encloses replaceable terms for assembler syntax where they appear in code or code fragments.  For example:  <pre>MRC p15, 0, &lt;Rd&gt;, &lt;CRn&gt;, &lt;CRm&gt;, &lt;Opcode_2&gt;</pre>
<b>SMALL CAPITALS</b>	Terms that have specific technical meanings as defined in the <i>Arm® Glossary</i> . For example, <b>IMPLEMENTATION DEFINED</b> , <b>IMPLEMENTATION SPECIFIC</b> , <b>UNKNOWN</b> , and <b>UNPREDICTABLE</b> .



We recommend the following. If you do not follow these recommendations your system might not work.



Your system requires the following. If you do not follow these requirements your system will not work.



You are at risk of causing permanent damage to your system or your equipment, or harming yourself.

---



This information is important and needs your attention.

---



A useful tip that might make it easier, better or faster to perform a task.

---



A reminder of something important that relates to the information you are reading.

---

## Useful resources

This document contains information that is specific to this product. See the following resources for other useful information.

Access to Arm documents depends on their confidentiality:

- Non-Confidential documents are available at [developer.arm.com/documentation](https://developer.arm.com/documentation). Each document link in the following tables goes to the online version of the document.
- Confidential documents are available to licensees only through the product package.