



Installing the Keil MDK for Holtek Edition

Version 1.1.0

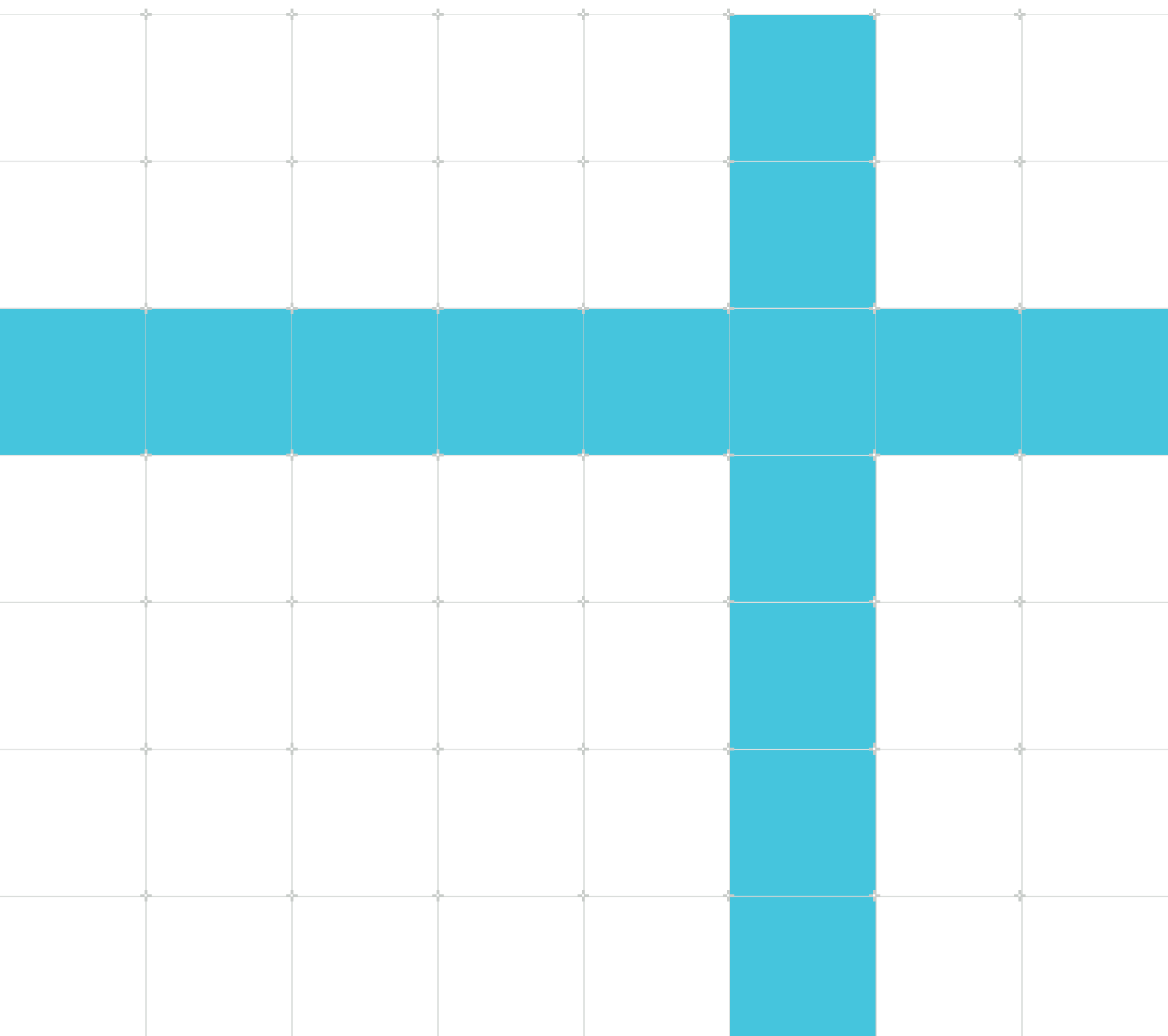
Application Note

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Issue

kan343_1.1.0_en



Installing the Keil MDK for Holtek Edition Application Note

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This document (kan343_1.1.0_en) was issued on 2024-08-21. There might be a later issue at <http://developer.arm.com/documentation/kan343>

The product version is 1.1.0.

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

Start reading

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

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Embedded Software and Firmware Developers.

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1. Abstract

Arm offers software developers working with Holtek devices based on the Arm Cortex-M0+ processor a free-to-use professional Keil MDK v6 tool suite.

This edition includes all tools and software components delivered with Keil MDK v6.

If you wish to program all Holtek's Arm Cortex-M based devices, [purchase the Keil MDK Holtek Edition](#) online.

This application note explains how to download, install, and use MDK with Holtek devices.



Keil MDK v6 with user-based licensing only supports Arm Compiler 6 and onwards. If you need to take care of a legacy project requiring Arm Compiler 5, please contact [support](#) for help.

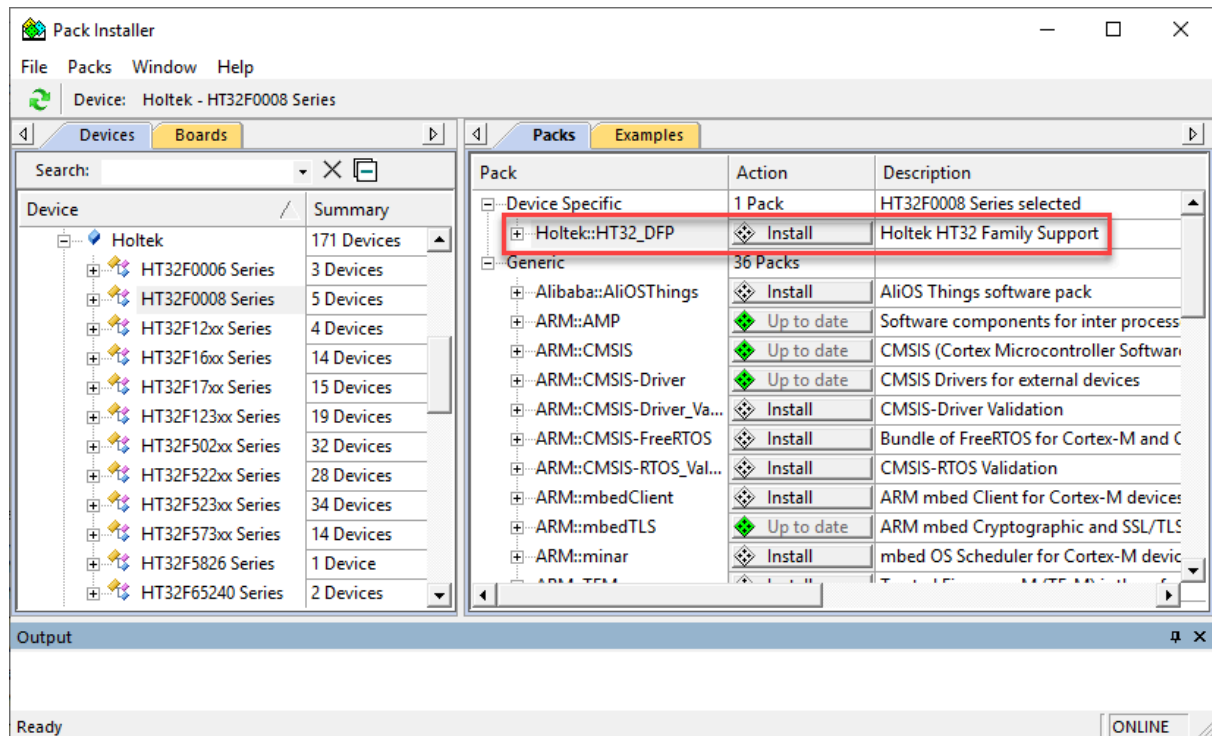
2. Installation

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 Holtek HT32 device family packs.

Figure 2-1: Install Holtek 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**.

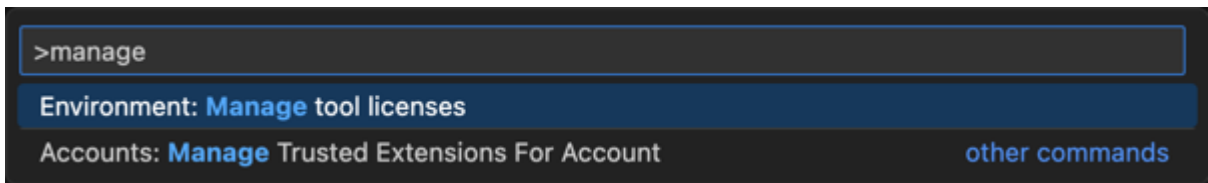
Figure 3-1: License Management - User-Based License

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 boxes for 'Name:', 'Company:', and 'Email:'. The 'License Information' section has four text boxes for 'Product Name:', 'Valid until:', 'Cached until:', and 'Notice:'. The 'Notice' box contains the text 'No user-based license registered.' and has a vertical scrollbar. 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](#).

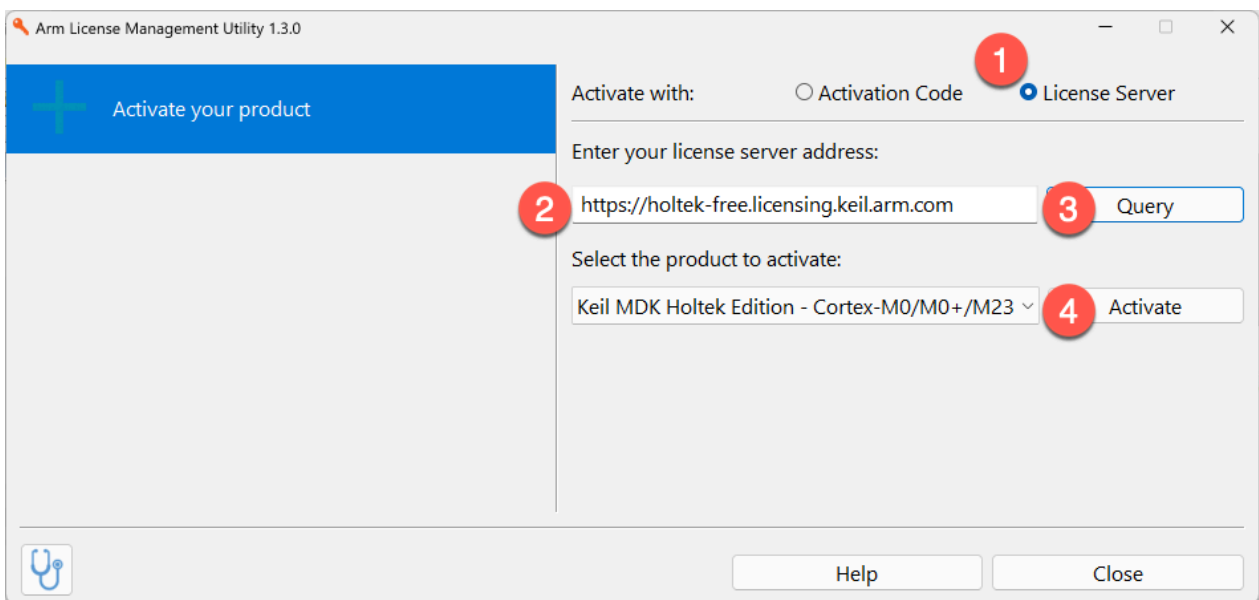
Keil Studio

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**:

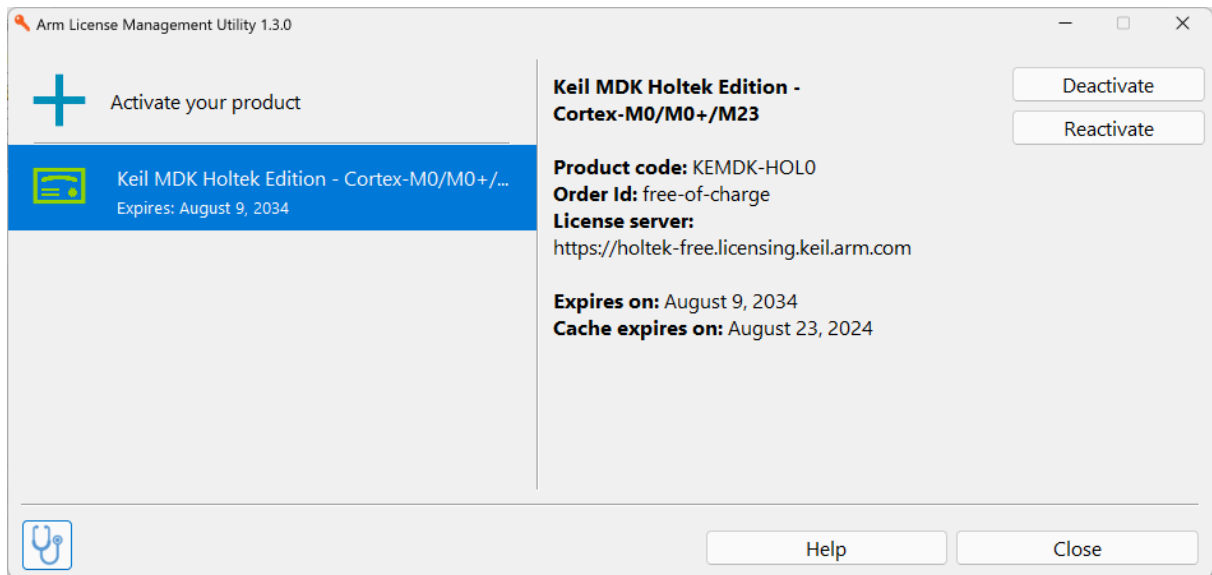
Figure 3-2: Run the manage tools licenses command

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://holtek-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**Note**

If you have purchased the MDK edition for Holtek supporting all Cortex-M devices, you will have received an activation code. The [user-based licensing documentation](#) explains how to use this code.

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

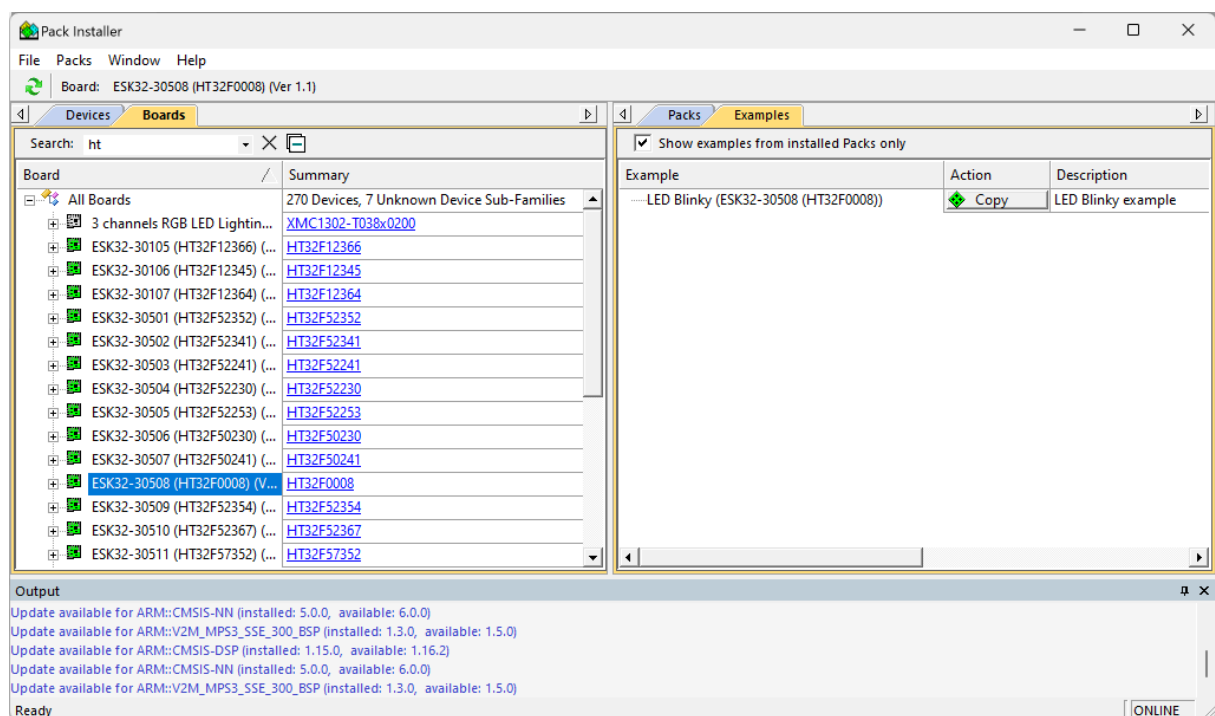
4. Example Projects

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

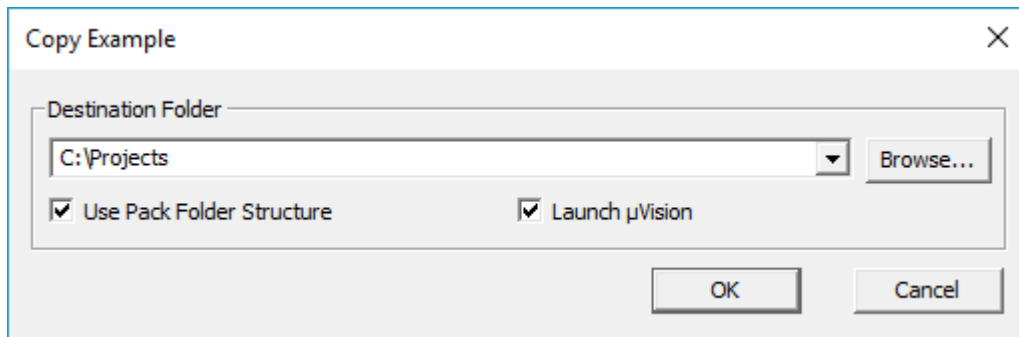
Keil uVision

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:

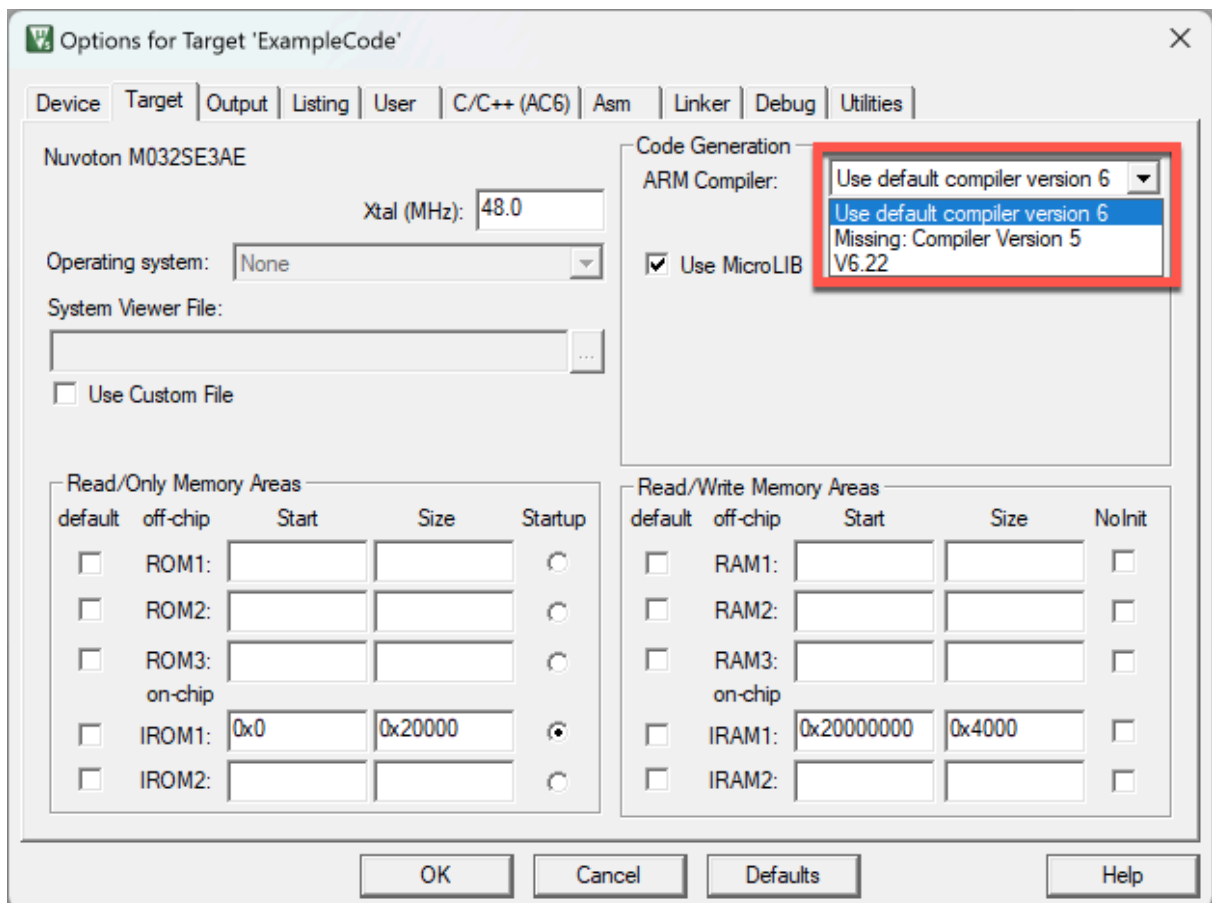
Figure 4-1: Find an example project



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:

Figure 4-2: Copy an example project

4. Tick **Launch uVision** to open the project immediately.
5. Before you can build the project, press **Alt+F7** to open the **Options for Target** dialog. Make sure to set the compiler version to "Use default compiler version 6":

Figure 4-3: Set default compiler

Keil Studio

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

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

The screenshot shows the 'Boards' section of the Keil Studio website. The navigation bar includes 'arm | Keil' and links for 'Tools', 'Hardware', 'CMSIS Packs', 'Documentation', and 'Support'. A 'Keil Studio Cloud' button is on the right. Below the navigation bar, the 'Boards' section is titled, followed by a description: 'Development boards and virtual hardware for application prototyping, designed to work with CMSIS development tools including Keil MDK and Keil Studio.' A search bar is present with the placeholder text 'Search by name or vendor'. Below the search bar, two filter boxes are highlighted with red rectangles: 'Holtek' and 'Cortex-M0+'. To the right of these filters is a checkbox labeled 'Only include boards with example projects'. Below the filters, the results are displayed as a grid of 12 board cards. Each card shows the board name (e.g., ESK32-30501), the HT32F52352 core, the version (e.g., Ver 2.0), and the number of projects (e.g., 1 Project). A small image of the board is shown on the right of each card. The results are sorted by 'Relevance'.

Board Name	Core	Version	Projects
ESK32-30501	HT32F52352	Ver 2.0	1 Project
ESK32-30502	HT32F52341	Ver 2.0	1 Project
ESK32-30503	HT32F52241	Ver 2.0	1 Project
ESK32-30504	HT32F52230	Ver 2.0	1 Project
ESK32-30505	HT32F52253	Ver 1.0	1 Project
ESK32-30506	HT32F50230	Ver 1.1a	1 Project
ESK32-30507	HT32F50241	Ver 1.0	1 Project
ESK32-30508	HT32F0008	Ver 1.1	1 Project
ESK32-30509	HT32F52354	Ver 1.0	1 Project
ESK32-30510	HT32F52367	Ver 1.0	1 Project
ESK32-30511	HT32F57352	Ver 1.0	1 Project
ESK32-30512	HT32F57341	Ver 1.0	1 Project

In the results, select the board you are interested in (for example, ESK32-30508). The board page opens with the **Projects** tab open:

Figure 4-5: ESK32-30508's board page

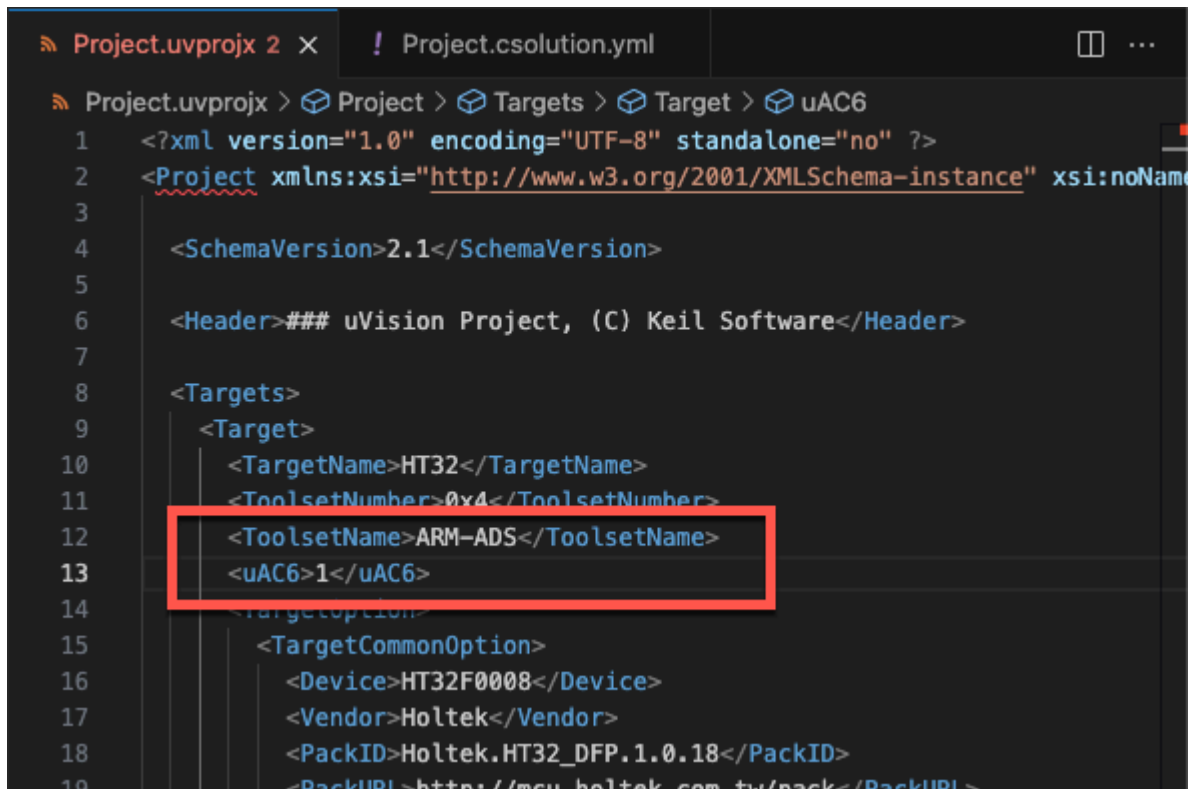
The screenshot displays the product page for the ESK32-30508 (HT32F0008) board. The header includes navigation links for Tools, Hardware, CMSIS Packs, Documentation, and Support, along with a 'Keil Studio Cloud' button. The main content area features the board name and version, the manufacturer 'Holtek', and a table of specifications: Core (Cortex-M0+), Debug interfaces (SWD, e-Link32 Pro), Device (HT32F0008), and CMSIS Pack (HT32_DFP). Below this, there is a 'Projects' section with a search bar and a list of projects. The 'LED Blinky example' project is highlighted, showing a 'Download Pack' link. A 'Get Project' button is located in the top right corner of the project list, and a 'Download .zip' button is also present.

1. On the right, click on **Get Project** and select **Download .zip**.
2. Unzip the project to your PC.
3. Open Keil Studio and go to **File - Open Folder**.
4. Use your file manager to browse to the unzipped directory. Open the folder "MDK_ARMv5".

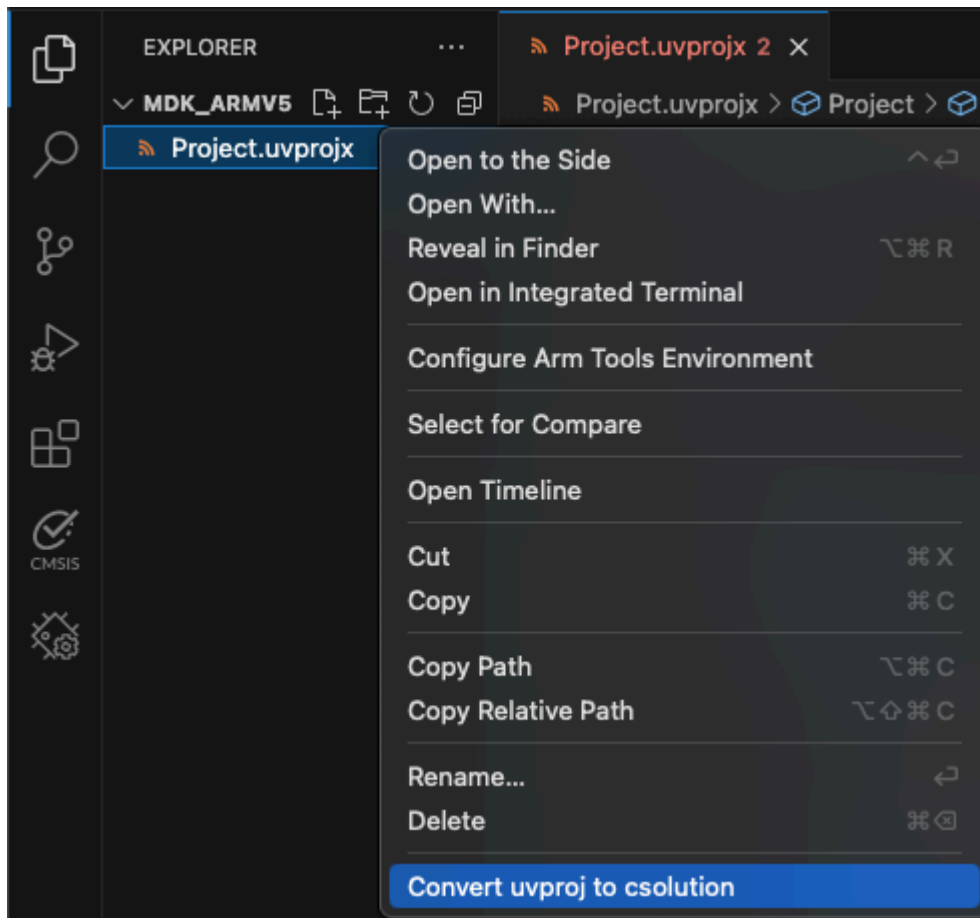


Holtek example projects for uVision are set to Arm Compiler 5. Before you can convert the project to CMSIS csolution format, you need to edit the uvprojx file and add Arm Compiler 6.

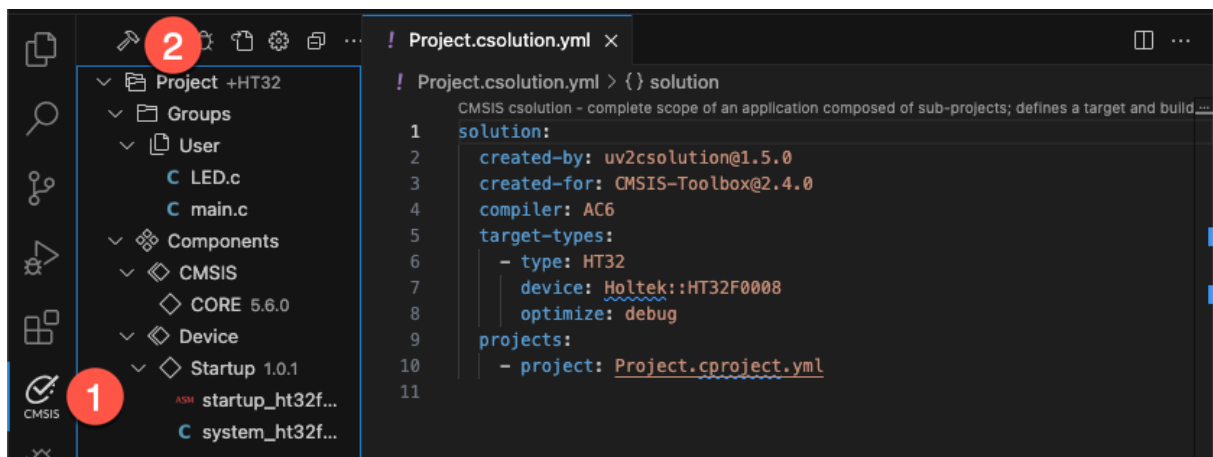
5. Open the `Project.uvprojx` file in Keil Studio.
6. Find the line with this code: `<ToolsetName>ARM-ADS</ToolsetName>`.
7. Add a new line after it and add this code: `<uAC6>1</uAC6>` (using the same indentation as in the line above):

Figure 4-6: Add Arm Compiler 6 to uvprojx file

8. Save the file.
9. Right-click the file and select **Convert uvproj to csolution**:

Figure 4-7: Convert uvprojx to csolution

10. Open the CMSIS extension (1) and use the hammer icon (2) to build the project:

Figure 4-8: Build the project

Further reading

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

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

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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
1.1.0	21 August 2024	Non-Confidential	Updates for user-based licensing
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.

Typographic conventions

Arm documentation uses typographical conventions to convey specific meaning.

Convention	Use
<i>italic</i>	Citations.
bold	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: <div>MRC p15, 0, <Rd>, <CRn>, <CRm>, <Opcode_2></div>
SMALL CAPITALS	Terms that have specific technical meanings as defined in the <i>Arm® Glossary</i> . For example, IMPLEMENTATION DEFINED , IMPLEMENTATION SPECIFIC , UNKNOWN , and UNPREDICTABLE .



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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.

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