

### AT32 MCU Compile by MDK5+GCC

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## Introduction

This application note introduces how to compile AT32 MCU standard library by MDK5+GCC.

Applicable products:

Part number	AT32 MCU family
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# 1 Environment setup

## 1.1 GCC package

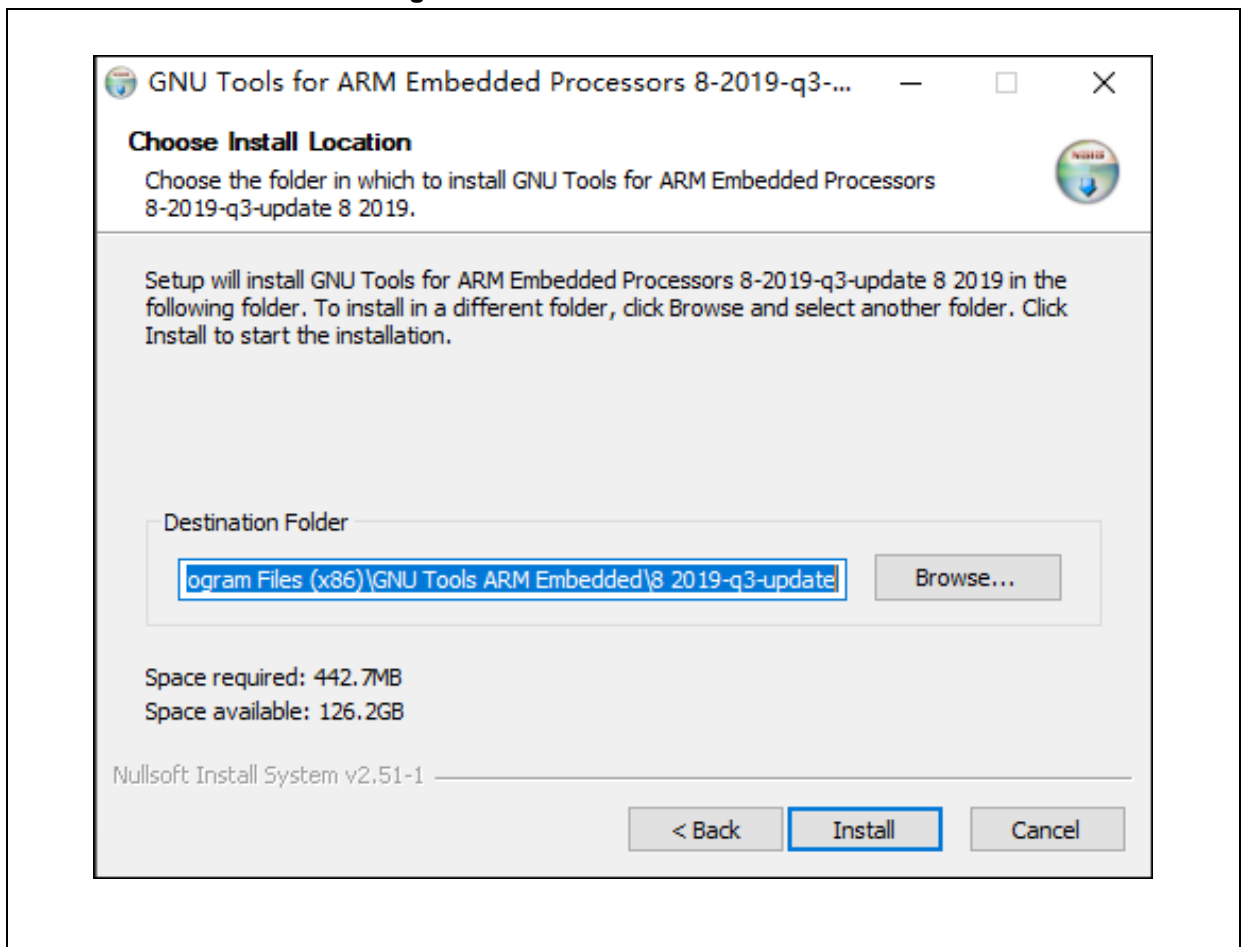
Download gcc-arm-none-eabi-8-2019-q3-update-win32-sha2.exe from ARM official website or update the version as needed.

For the convenience of demonstration, a GCC package is downloaded in advance and can be used directly.

## 1.2 GCC installation path

Select the default installation location “C:\Program Files (x86)\GNU Tools ARM Embedded\8 2019-q3-update”, as shown in Figure 1. Then click “Next” and record the installation path.

Figure 1 GCC installation location

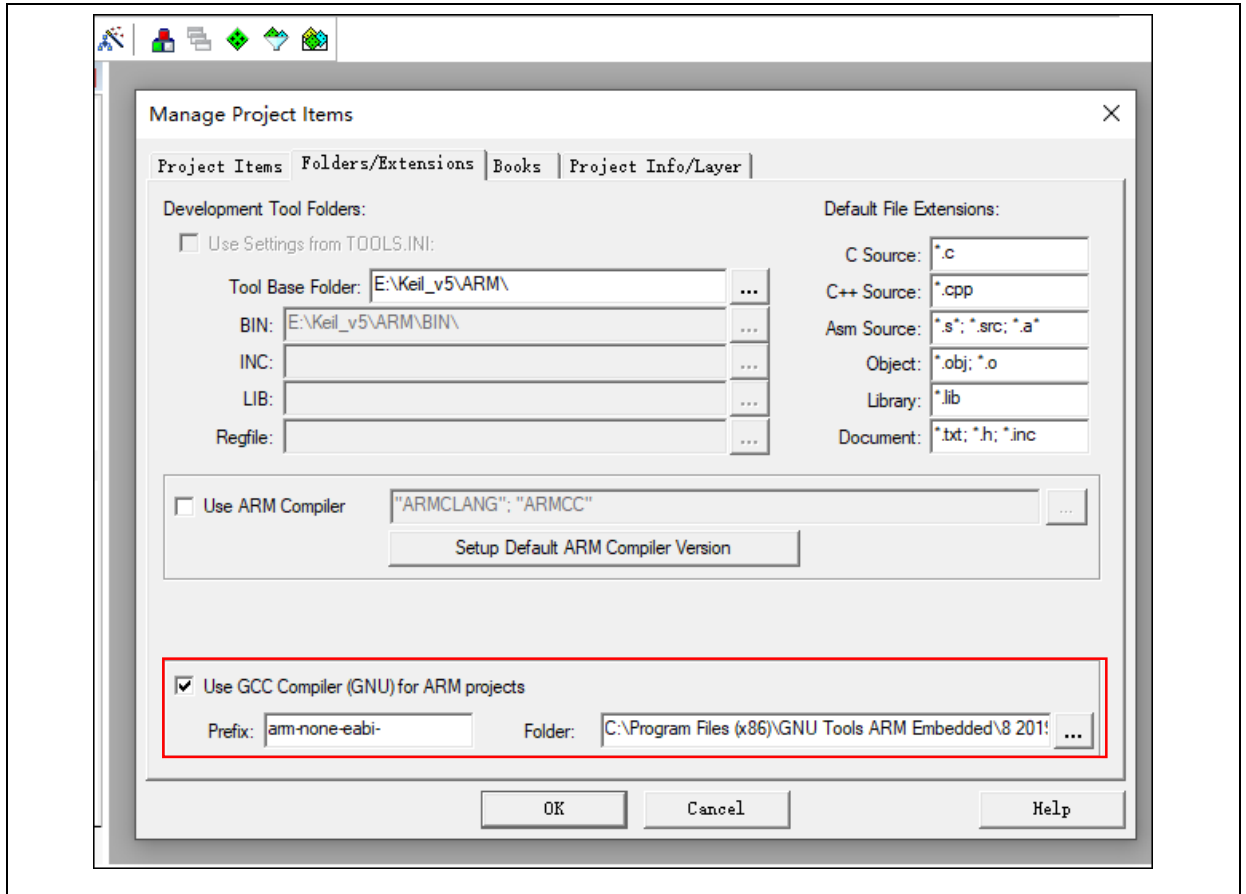


## 2 MDK project settings

### 2.1 GCC compiler

Tick "GCC Compiler" and select the installation path as mentioned in Section [1.2](#).

Figure 2 Use GCC compiler



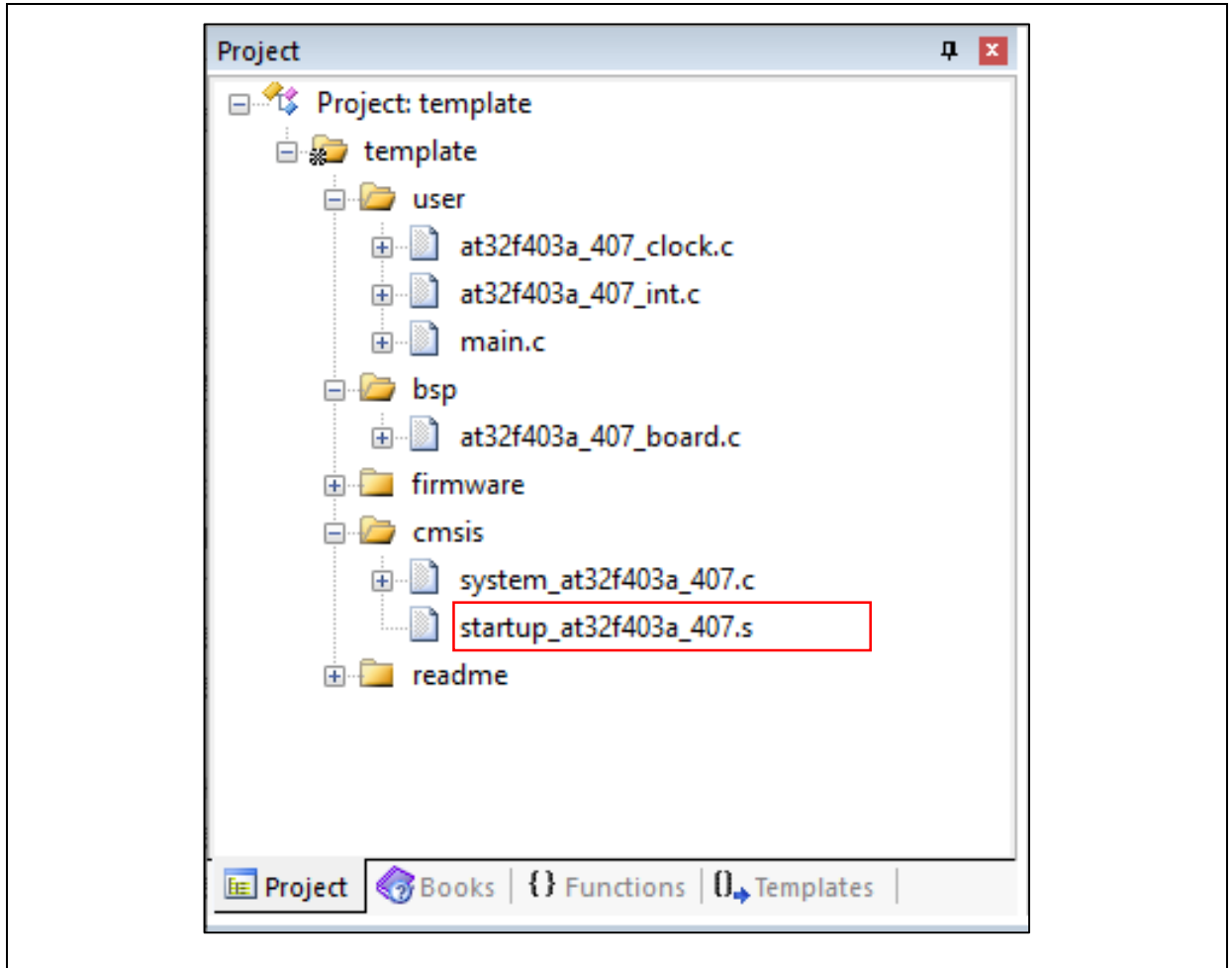
## 2.2 Add GCC startup file

The location of startup.s file in AT32 MCU standard library is as below:

AT32xxx\_Firmware\_Library\_V2.x.x\AT32F403A\_407\_Firmware\_Library\_V2.0.0\libraries\cmsis\cm4\device\_support\startup\gcc

Add GCC startup file to the project directory, as shown in Figure 3.

Figure 3 Add GCC startup file

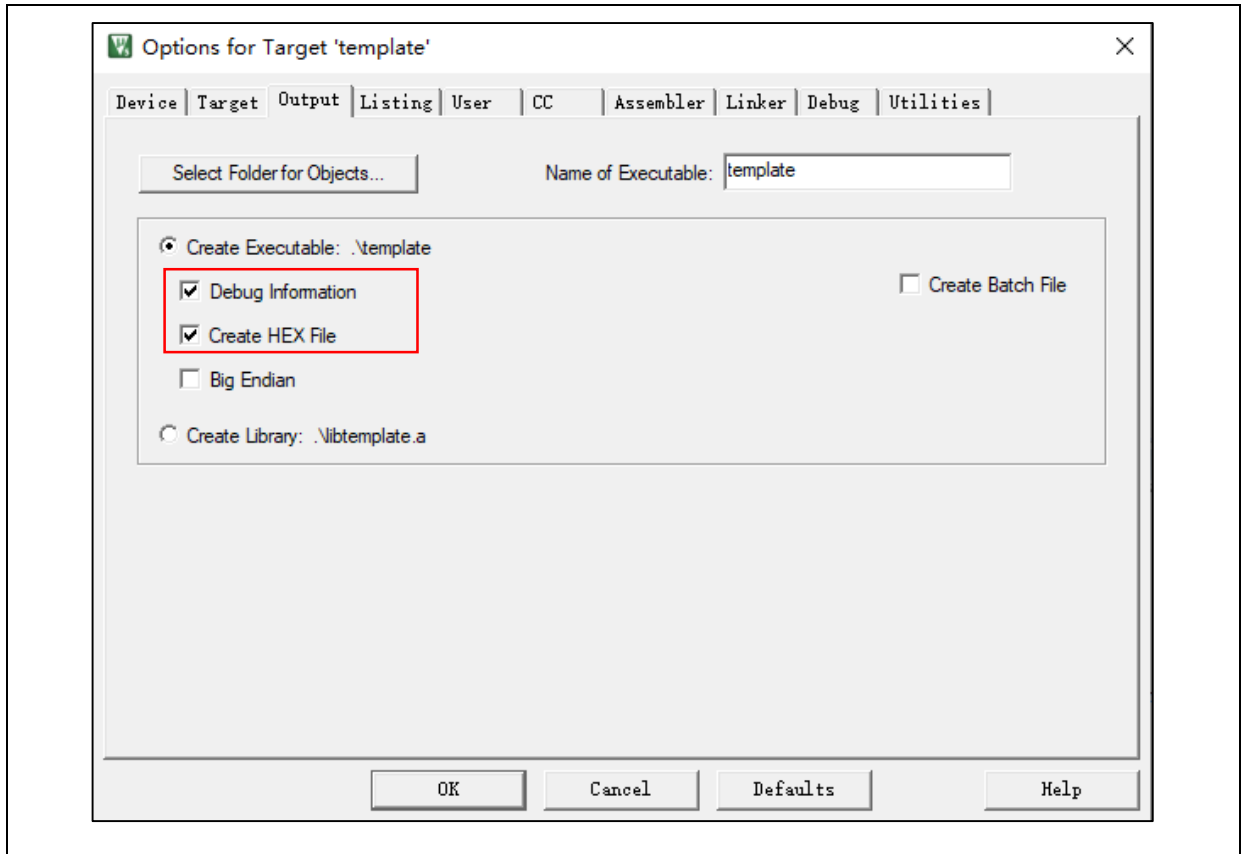


## 2.3 Output configuration

Tick "Debug Information" for MCU debugging.

Tick "Create HEX File" to generate a HEX file.

Figure 4 Output configuration



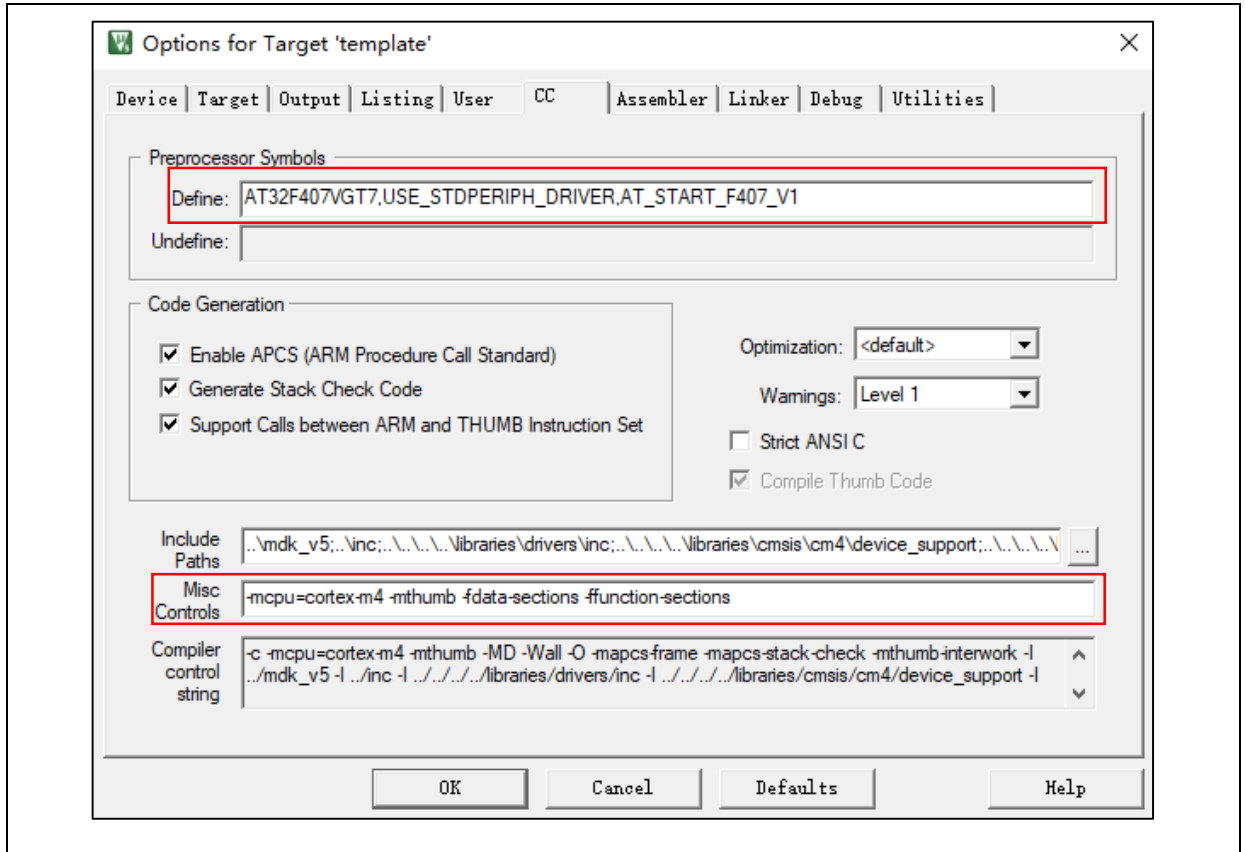


## 2.4 CC configuration

Select “CC” field, and add “-mcpu=cortex-m4 -mthumb -fdata-sections -ffunction-sections” to “Misc Controls”.

Add device-related macro definitions in “Define” field.

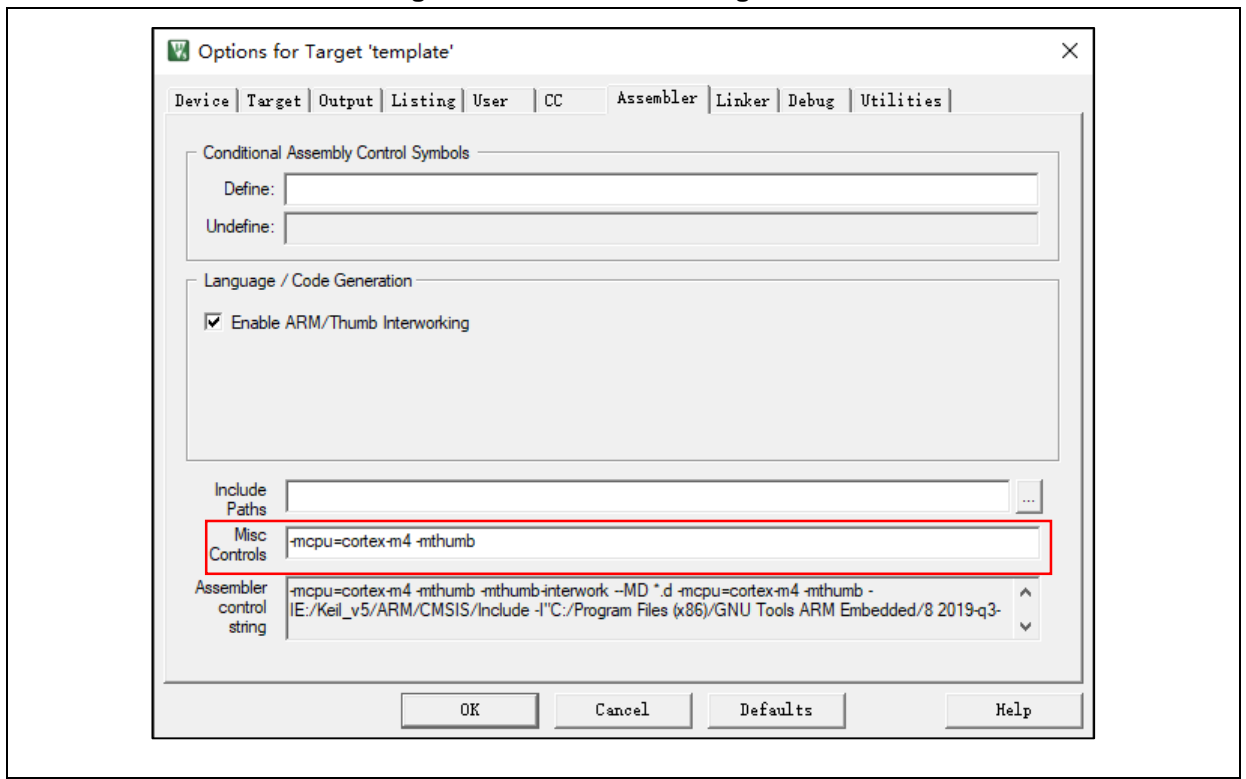
Figure 5 CC configuration



## 2.5 Assembler configuration

Select "Assembler" field and add "-mcpu=cortex-m4 -mthumb" to "Misc Controls":

Figure 6 Assembler configuration



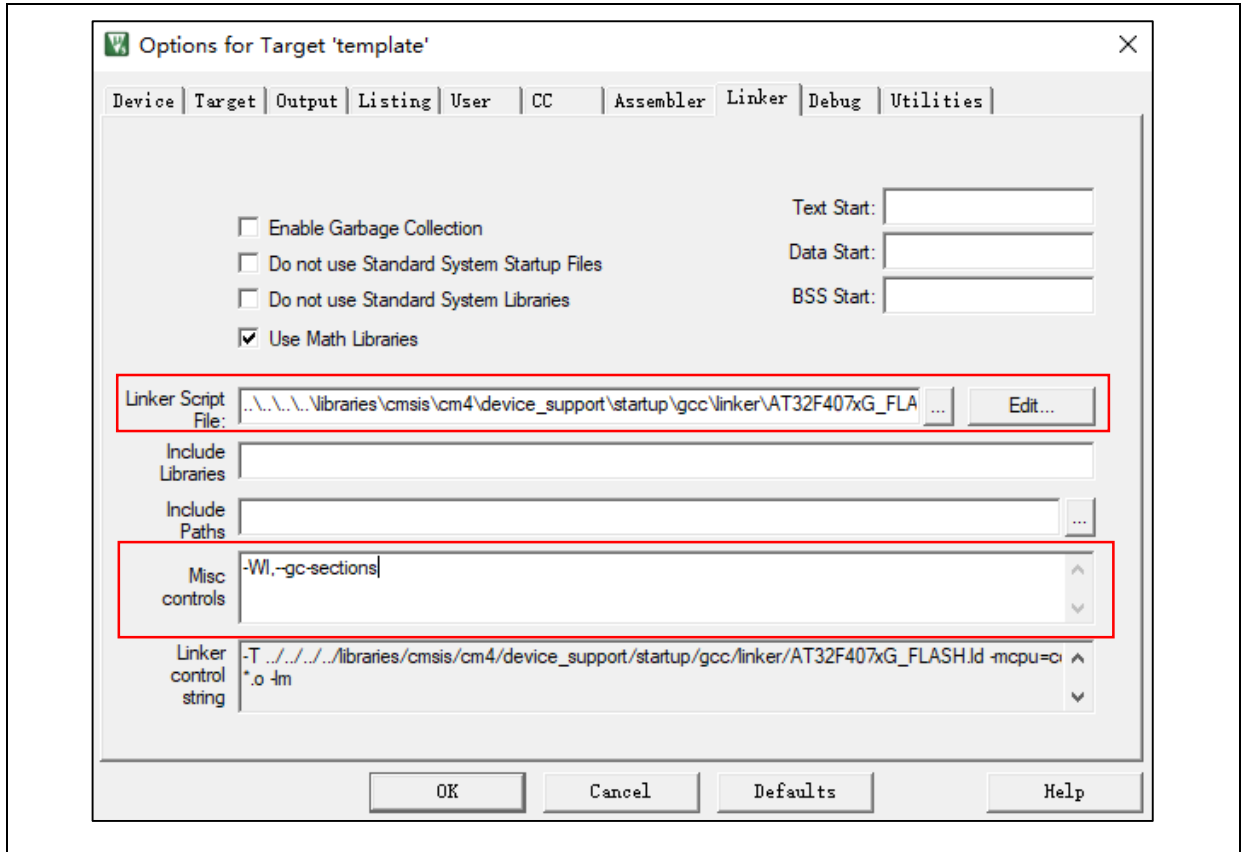
## 2.6 Linker configuration

Select "Linker" field and add "-Wl,--gc-sections" to "Misc Controls".

Ld file path:

..\..\..\libraries\cmsis\cm4\device\_support\startup\gcc\linker\AT32F407xG\_FLASH.ld

Figure 7 Linker field configuration



## 3 Project debugging

### 3.1 Compile

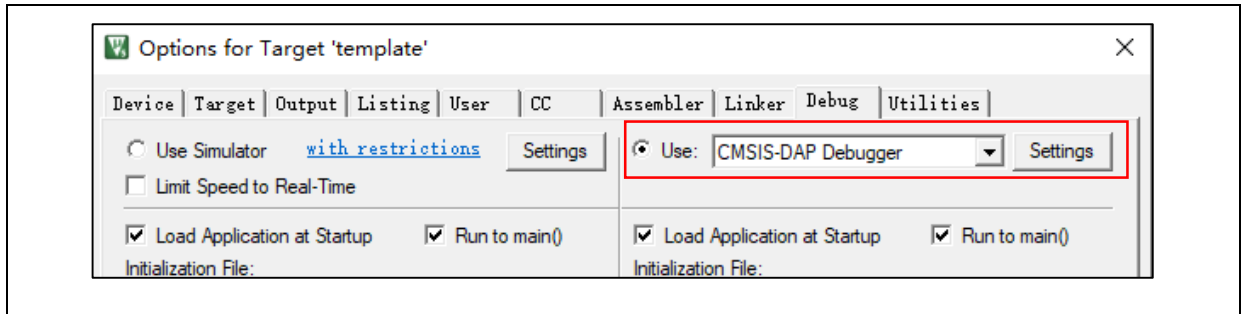
Click on Compile, and the generated .hex/.bin/.elf file can be found in the corresponding path.

### 3.2 Debug and download

Select AT-Link for debugging and download.

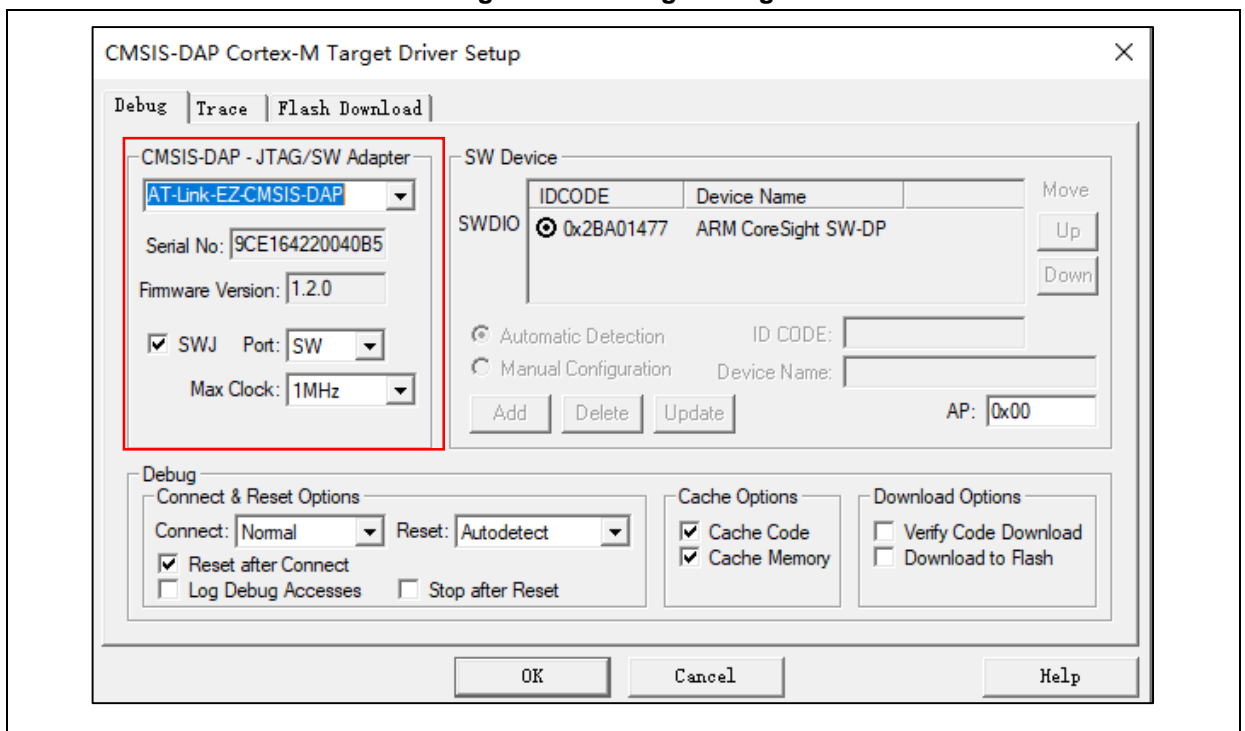
Open “Debug” field and select “CMSIS-DAP Debugger”, as shown in Figure 8.

**Figure 8 Debug configuration**



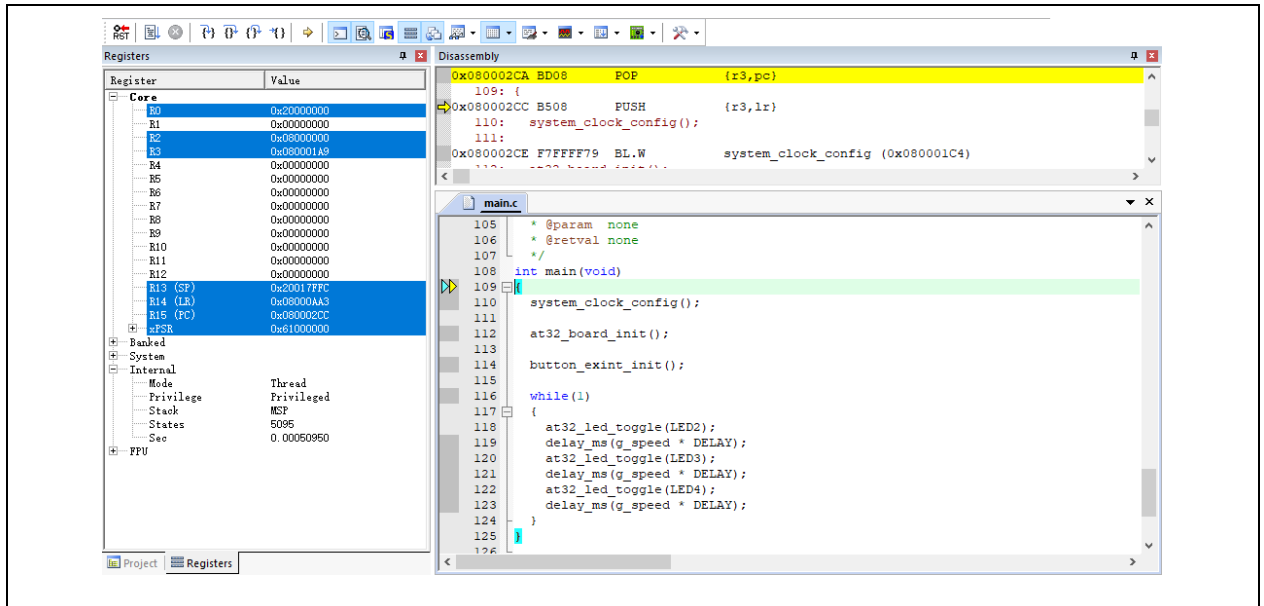
Click on “Setting” and select “AT-Link”, as shown in Figure 9.

**Figure 9 Debug Setting**



Finally, enter the debug interface, as shown in Figure 10.

Figure 10 Debug interface



## 4 Revision history

Table 1 Document revision history

Date	Version	Revision note
2021.09.18	2.0.0	Initial release.

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