# Application Note

**Document No.: AN1085**

**APM32F4xx_Download Application Note**

**Version: V1.1**

# 1 Introduction

This application note guides beginners to learn how APM32F4xx series products use the simulator to download programs to the development board.

It mainly contains:

The introduction to the simulator, the hardware connection method, and the description of simulator configuration and download in KEIL and IAR software.

All materials involved in this application note can be obtained and downloaded from the website of www.geehy.com.

# Contents

# 2    Use Geehy Simulator To Program

## 2.1    Introduction to simulator

### 2.1.1    Geehy-LINK

Geehy-LINK is a development tool integrating simulator and programmer, which can debug and simulate the APM32 full-range MCU products online in Keil, IAR and other integrated development environments. Support full-speed operation, single-step debugging, breakpoint setting and other debugging methods. Refer to the document of *GEEHY-LINK User Manual* on the official website.

### 2.1.2    DAP Debugger

DAP Debugger is a development tool integrating simulator and programmer, which can debug and simulate the APM32 full-range MCU products online in Keil, IAR and other integrated development environments. Support full-speed operation, single-step debugging, breakpoint setting and other debugging methods.

## 2.2    Hardware connection

### 2.2.1    Geehy-LINK

As shown in Figure 1, connect the interface 2 of the simulator to the USB interface of the computer through the USB cable. If the indicator light of the simulator is on and Geehy DAP USB Device appears on the device manager of the computer, as shown in Figure 2, the simulator is normal. Then connect the interface 1 at the other end of the simulator to the JTAG/SWD interface of the development board, and power on the development board through the external power supply. Or power the motherboard through Geehy-Link downloading. Press and hold the middle power supply button until the indicator light turns from green to orange, indicating that the motherboard has been powered by Geehy-Link. Finally, download the program to the development board through the software KEIL or IAR.
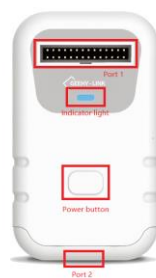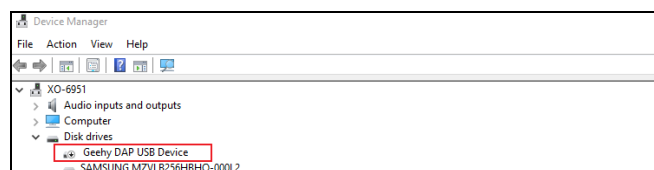


Figure 1



Figure 2

## 2.2.2 DAP Debugger

As shown in Figure 3, connect the USB interface to the USB interface of the computer through the USB cable. If the indicator light of the simulator is on (and it is blue) and USB Composite Device

(VID:0x314B PID:0x0101) appears on the device manager of the computer, as shown in Figure 4, the

simulator is normal. Then connect other interface of the simulator (upper side(support JTAG/SWD) or left side (support SWD) in Figure 3) to the JTAG/SWD interface of the development board, and power on the development board through the external power supply. Finally, download the program to the development board through the software KEIL or IAR.
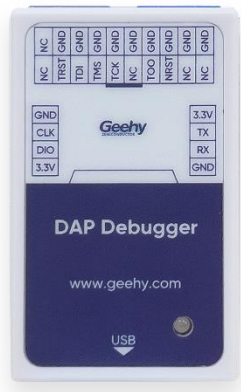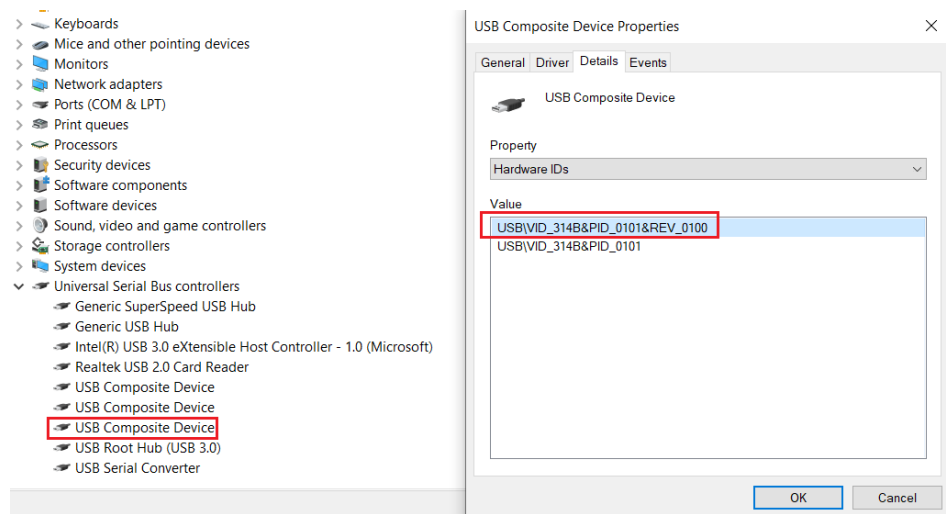


Figure 3                                   Figure 4

## 2.3 Configure and download the program

Keil MDK IDE：

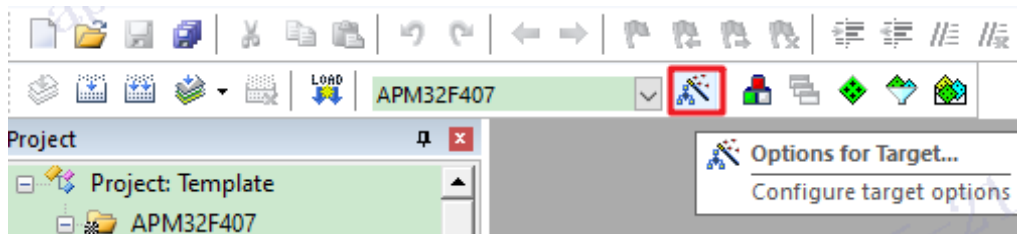a) As shown in Figure 5, open the project file and select "Options for Target" tab.



Figure5

b) As shown in Figure 6, in the "Debug" option, download and select the simulator as "CMSIS-DAP Debugger" and then select "Setting".
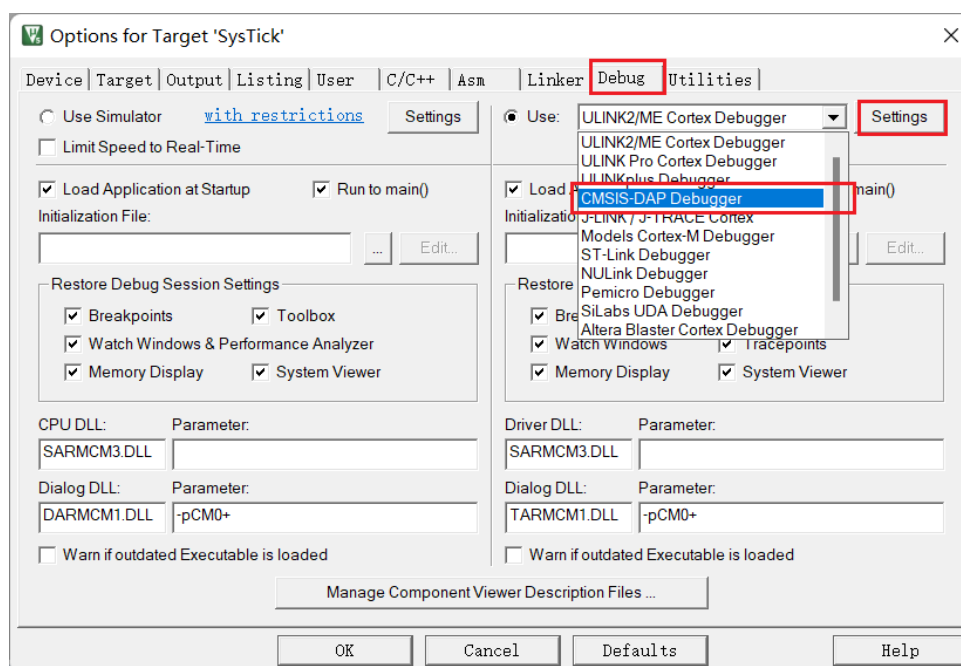


Figure 6

c) After entering the Settings option configuration, select Debug.

If the simulator used is Geehy-LINK,as shown in Figure 7 "Geehy CMSIS-DAP" (the old version is "Apex CMSIS-DAP") in the "CMSIS-DAP Cortex-M Driver Setup" interface, check SWJ, and select the SW interface. If the simulator is connected to the computer and the development board, and the development board has been powered on, the simulator will recognize the chip of the

development board and display it in SW Device.



Figure 7

If the simulator used is DAP Debugger,as shown in Figure 8 "Geehy CMSIS-DAP Debugger" in the "CMSIS-DAP Cortex-M Driver Setup" interface, select the SW interface. If the simulator is connected to the computer and the development board, and the development board has been powered on, the simulator will recognize the chip of the development board and display it in SW Device.
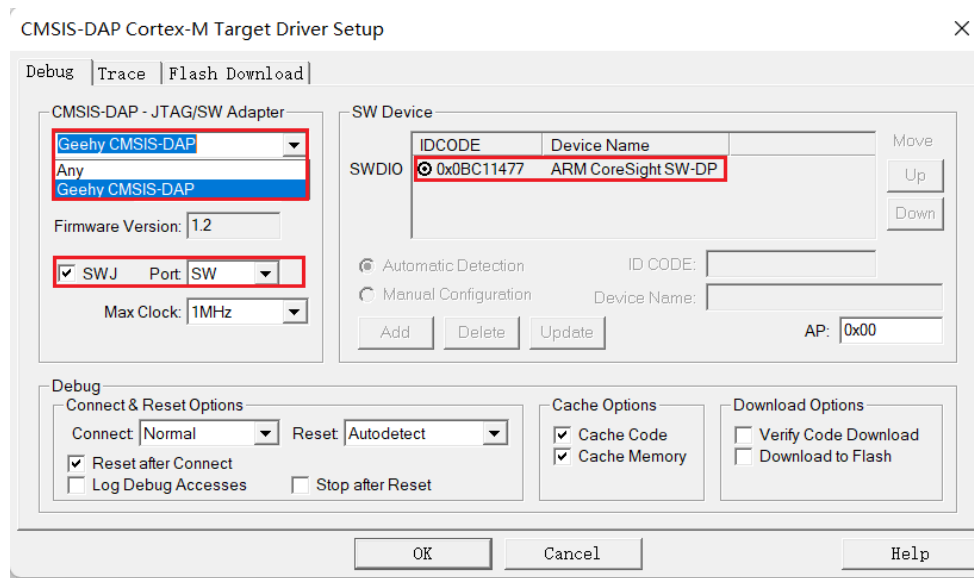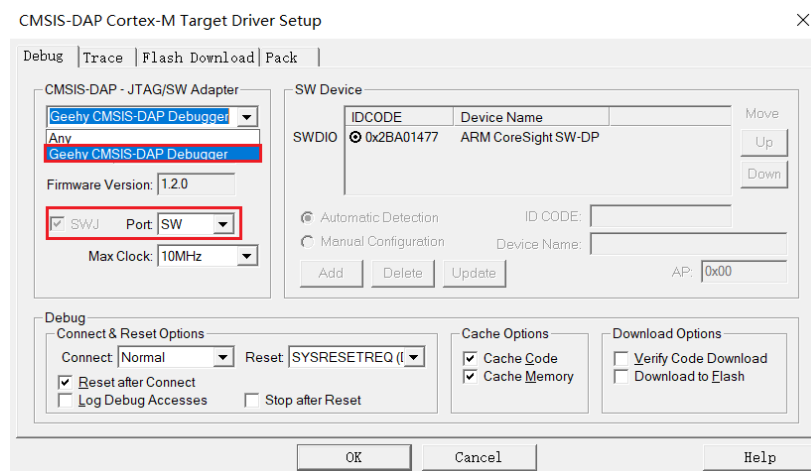


Figure 8

d) As shown in Figure 9, select the Flash Download tab and Erase Sectors. If you select Full Sectors, the erasing process will be slow. Check Reset and Run at the same time, so that the program can run automatically after downloading, not needing manual resetting. Finally, select in the "Programming Algorithm" interface according to the actual model, and click "OK".
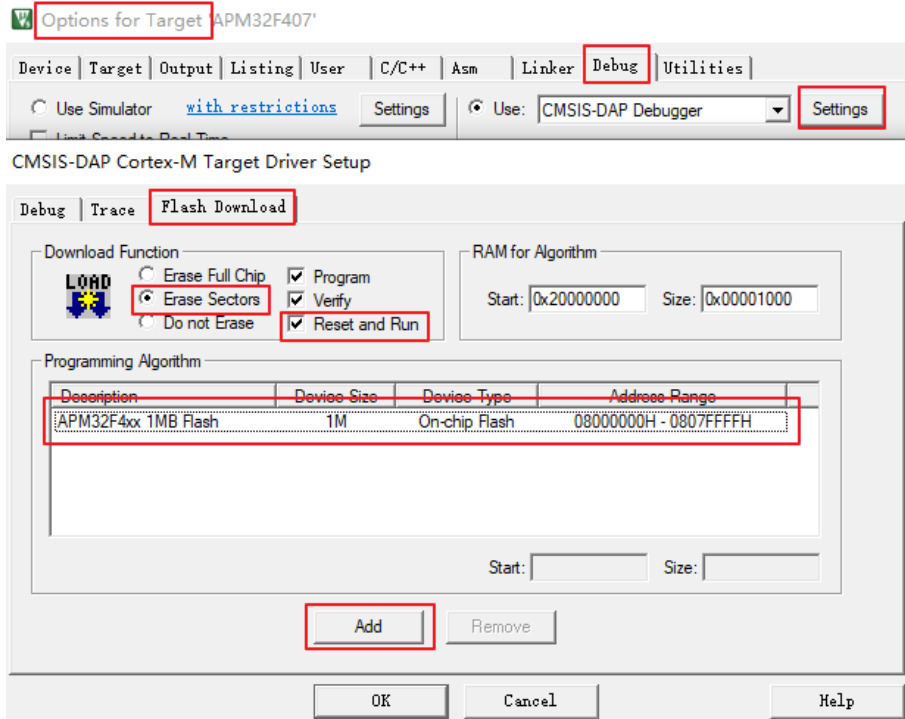
Figure 9

e) As shown in Figure 10, check the default configured simulator in the Utilities option configuration
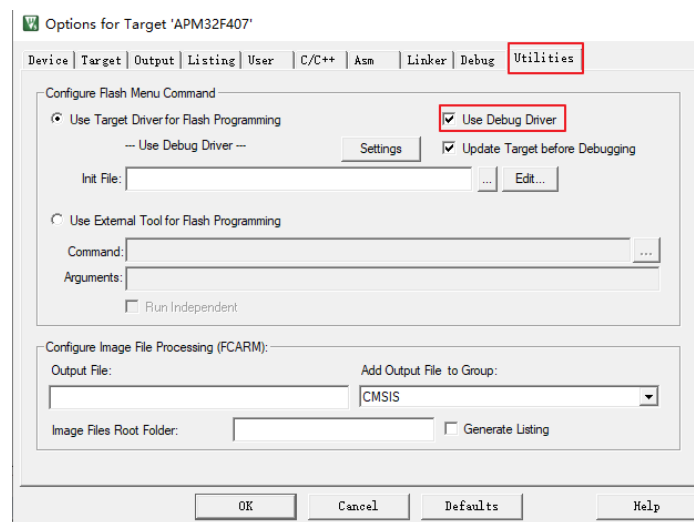


Figure 10

f) As shown in Figure 11, after the previous steps are completed, we can download the compiled program to the development board and run it. In the download process, you only need to directly click the LOAD button in KEIL.
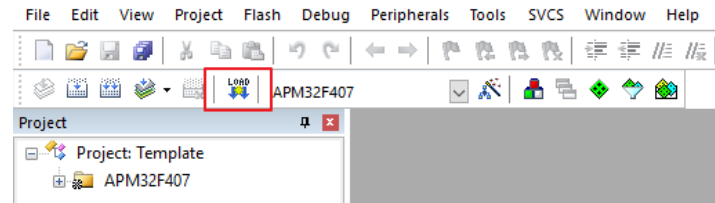
Figure 11

g) After downloading, as shown in Figure 12, you can see Programming Done in the Build Output tab. If "Reset and Run" is checked in the above steps, you will also see Application running... in the tab, which indicates that the program has been downloaded and is running automatically. Experimental phenomena can be observed on the development board. If Application running... does not appear, you need to manually reset the development board.



Figure 12

IAR EW for Arm IDE：

In this development environment, there is only one DAP simulator connected to the system(A Geehy LINK or DAP Debugger).

a) As shown in Figure 13, open the project file and select "Options" tab.
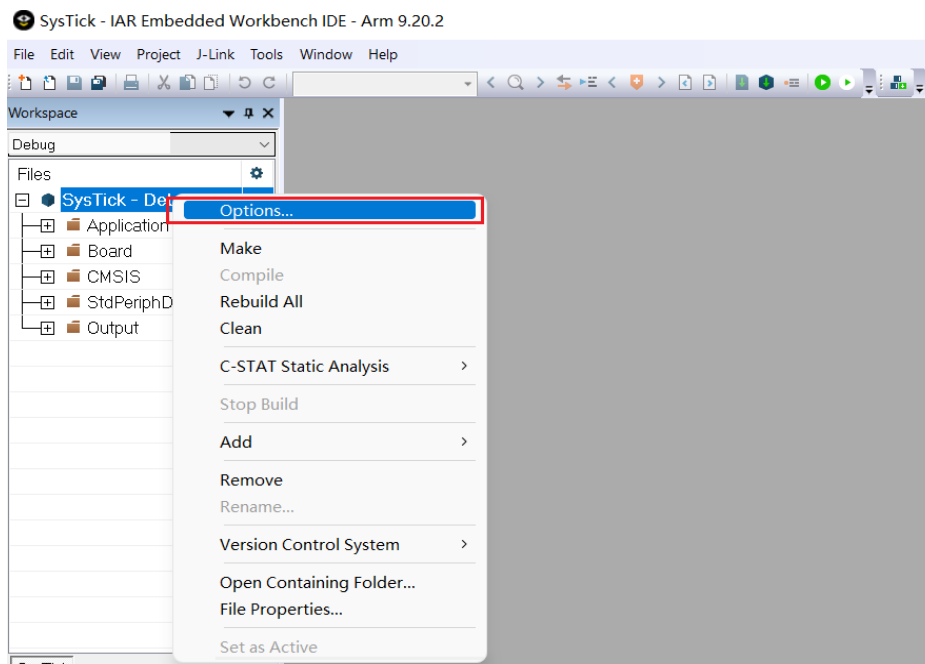


Figure 13

b) As shown in Figure 14, select "CMSIS DAP" simulator in "Debugger" and click "OK".
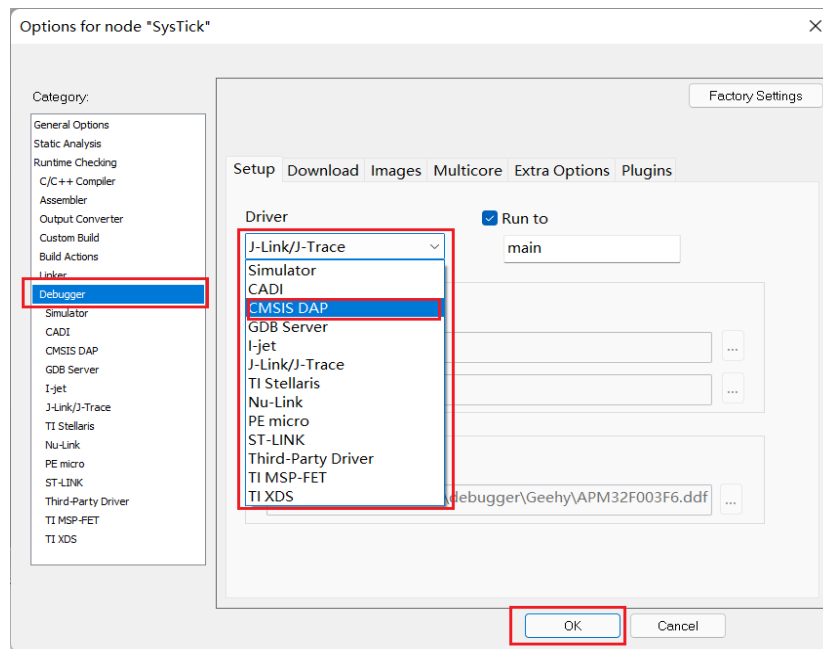
Figure 14

c) After the previous steps are completed, we can download the compiled program to the development board and run it. As shown in Figure 15, in the download process, you only need to select Download in the Project option of IAR and click the download active application button to download the program. After resetting the development board, you can see the experimental phenomenon of the routine.

Figure 15

# 3    Version History

Table 1 Document Version History

| Date | Version | Change History |
|------|---------|----------------|
| May 31, 2022 | 1.0 | New |
| March 9, 2023 | 1.1 | Add DAP Debugger simulator Description |

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This document is formulated and published by Geehy Semiconductor Co., Ltd. (hereinafter referred to as "Geehy"). The contents in this document are pro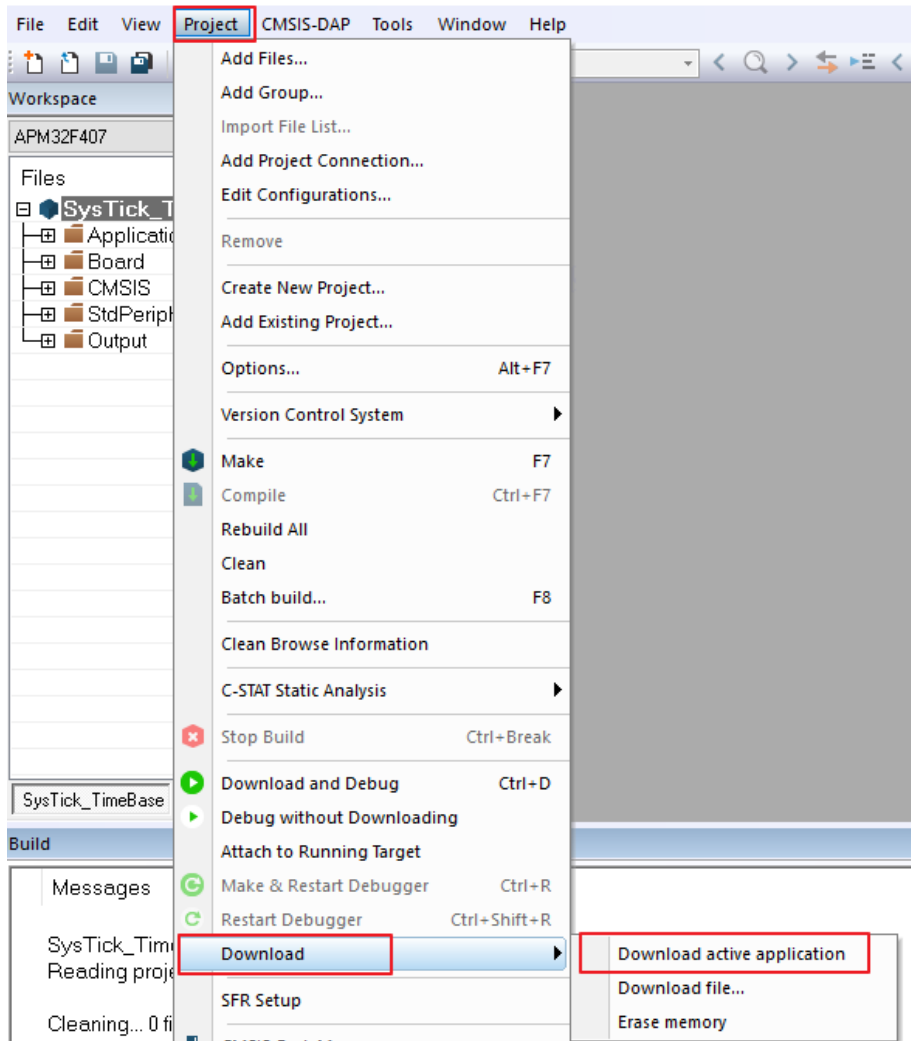tected by laws and regulations of trademark, copyright and software copyright. Geehy reserves the right to make corrections and modifications to this document at any time. Please read this document carefully before using Geehy products. Once you use the Geehy product, it means that you (hereinafter referred to as the "users") have known and accepted all the contents of this document. Users shall use the Geehy product in accordance with relevant laws and regulations and the requirements of this document.

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