GigaDevice Semiconductor Inc.

Using the EIDE Plugin in VS Code to Develop GD32 MCU

Application Note
AN264

Revision 1.0

(Mar. 2025)

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1. Introduction

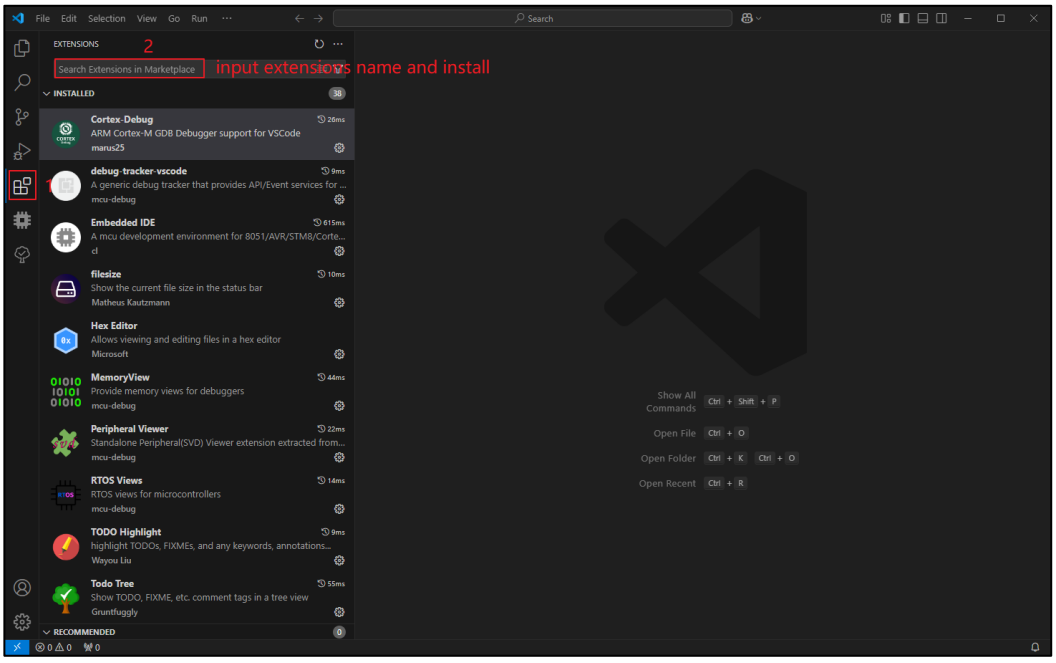
This application note aims to guide developers in using Visual Studio Code (VS Code) with the EIDE (Embedded IDE) and Cortex-Debug plugins for embedded microcontroller (MCU) development and debugging. Through this note, developers will learn how to configure the development environment, manage projects, write code, and debug embedded programs. The goal of this note is to help developers fully utilize the powerful features of VS Code, enhance development efficiency, and streamline the MCU development process.

2. Development environment

- Development board: GD32W515P-EVAL-V1.1
- Hardware debugger: J-Link V11 / GD_Link V2
- Development environment: VS Code + EIDE + Cortex-Debug
- Operating system: WIN10 64-bit OS

EIDE and Cortex-Debug plugins can be installed via the VS Code extensions panel, which refers to ***Figure 2-1. Plugin installation steps***.

Figure 2-1. Plugin installation steps



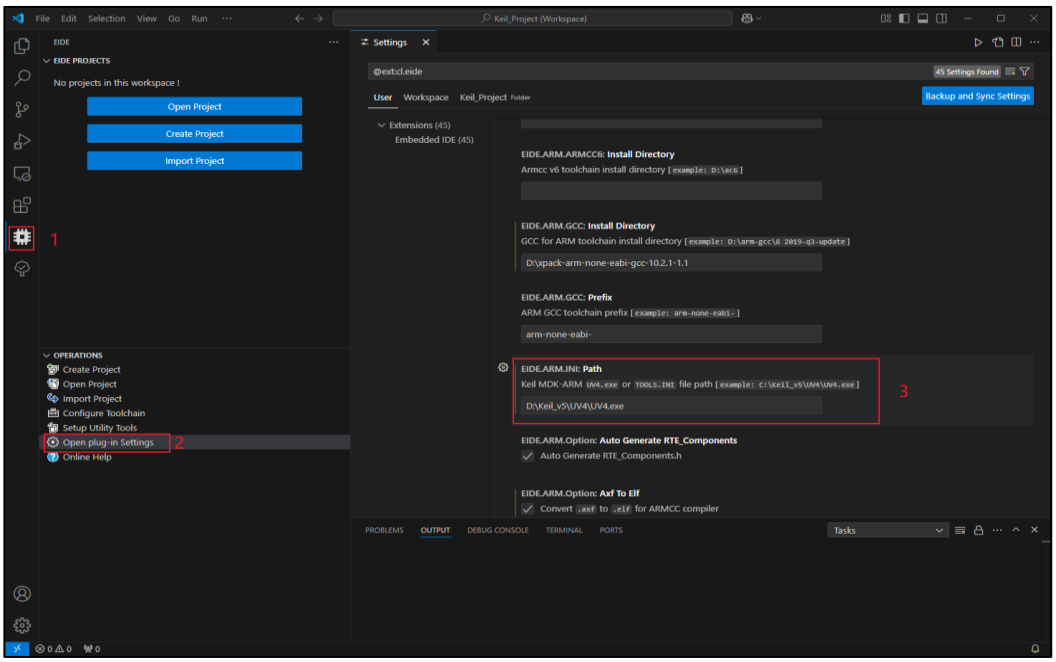
3. Environment configuration

Environment configuration includes project compilation environment and download environment. The EIDE plugin supports project development using Keil5, IAR, and GCC environments, which can be configured as needed by the user.

3.1. Keil5 compilation environment configuration

Open EIDE plugin settings and modify the Keil5 environment installation path to the local path, which refers to ***Figure 3-1. Keil5 environment toolchain installation path configuration***.

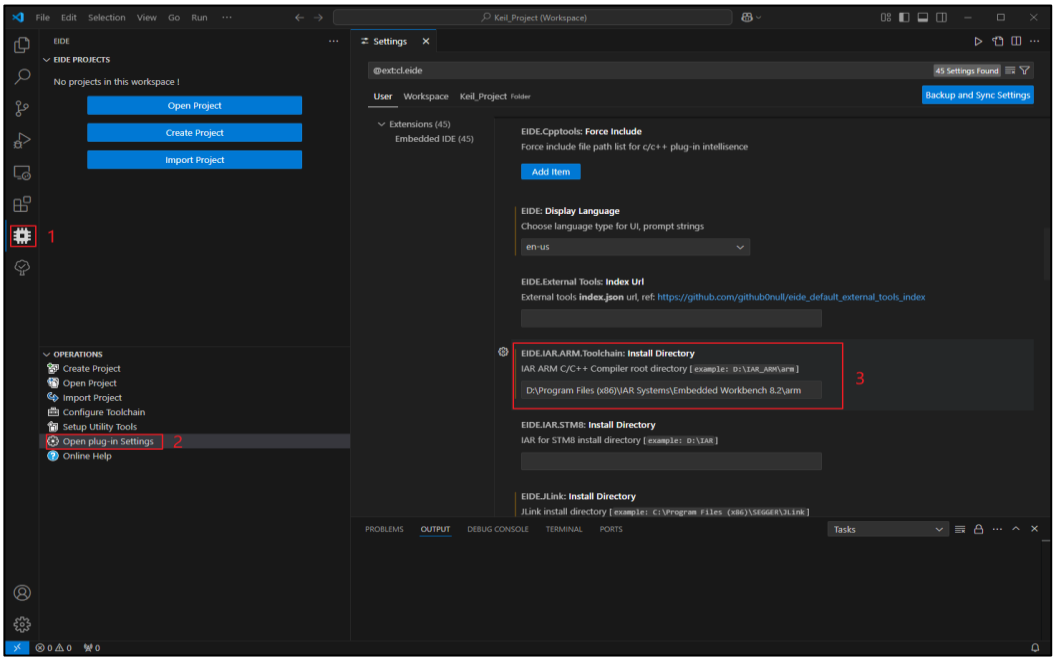
Figure 3-1. Keil5 environment toolchain installation path configuration



3.2. IAR compilation environment configuration

Open EIDE plugin settings and modify the IAR environment installation path to the local path, which refers to ***Figure 3-2. IAR environment toolchain installation path configuration***.

Figure 3-2. IAR environment toolchain installation path configuration



3.3. GCC compilation environment configuration

Open EIDE plugin settings and modify the GCC toolchain installation path to the local path, which refers to ***Figure 3-3. ARM GCC toolchain installation path configuration*** and ***Figure 3-4. RISCV GCC toolchain installation path configuration***.

Figure 3-3. ARM GCC toolchain installation path configuration

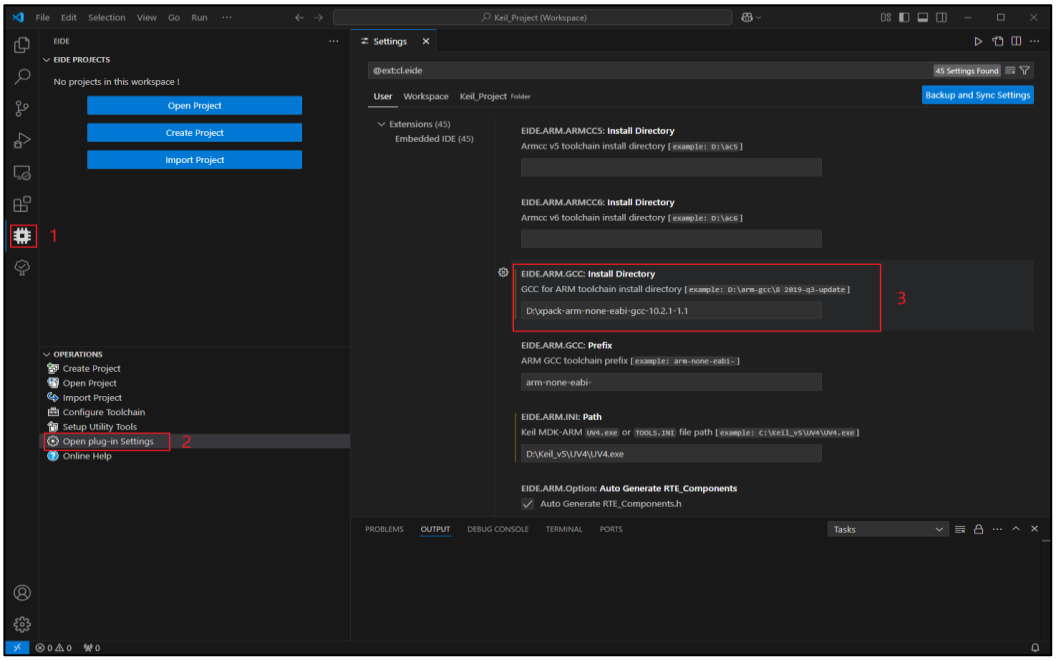
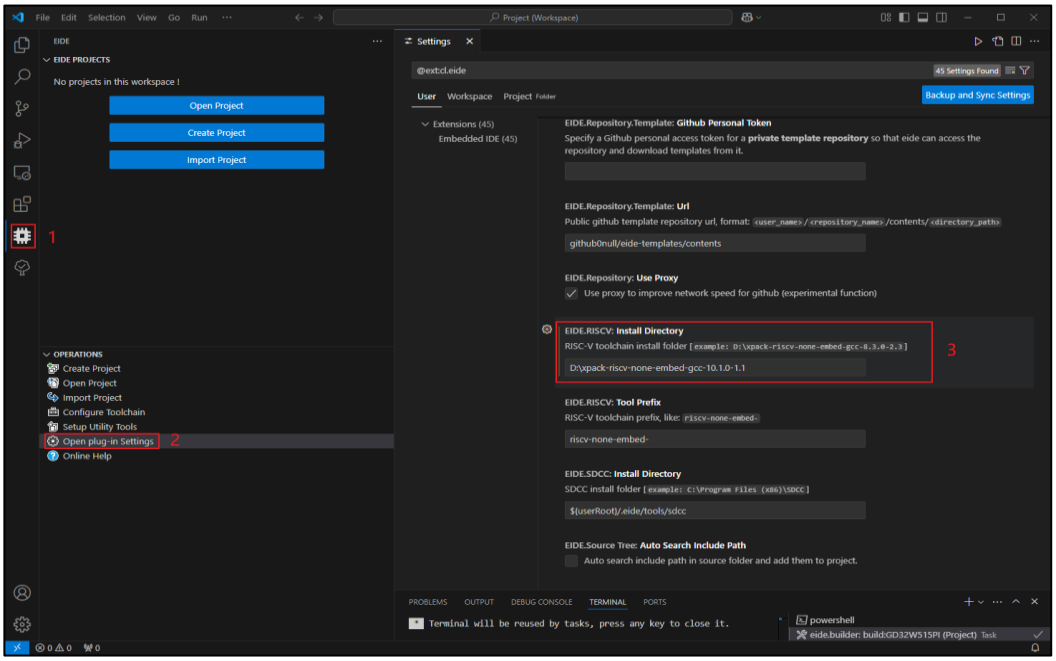


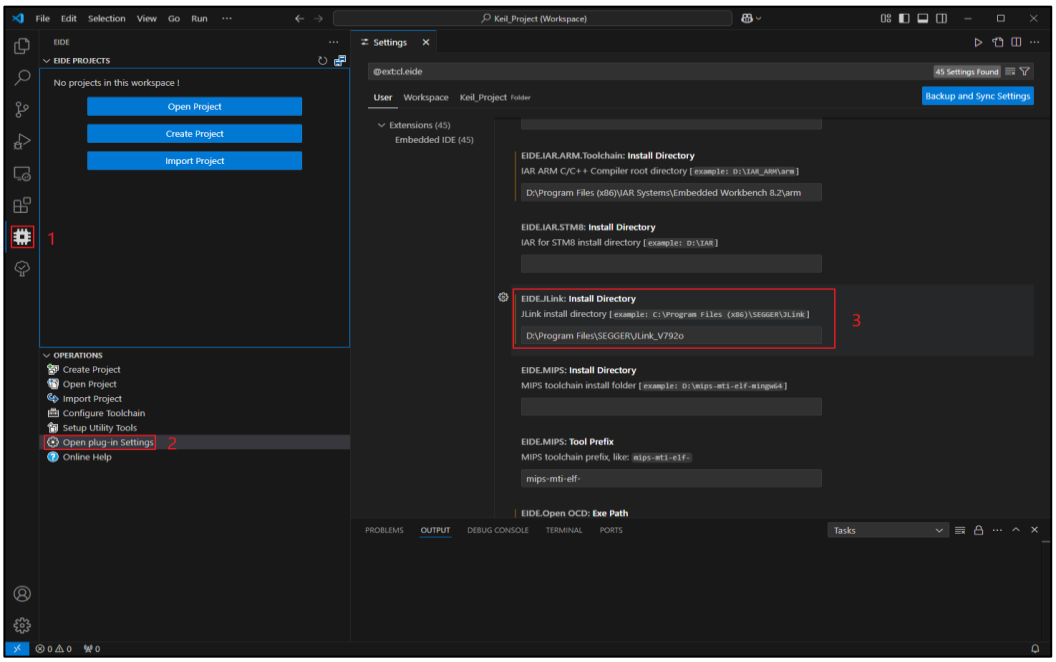
Figure 3-4. RISCV GCC toolchain installation path configuration



3.4. SEGGER Jlink environment configuration

Open the EIDE plugin settings and modify the SEGGER Jlink environment installation path to the local path, which refers to ***Figure 3-5. Jlink tool installation path configuration***.

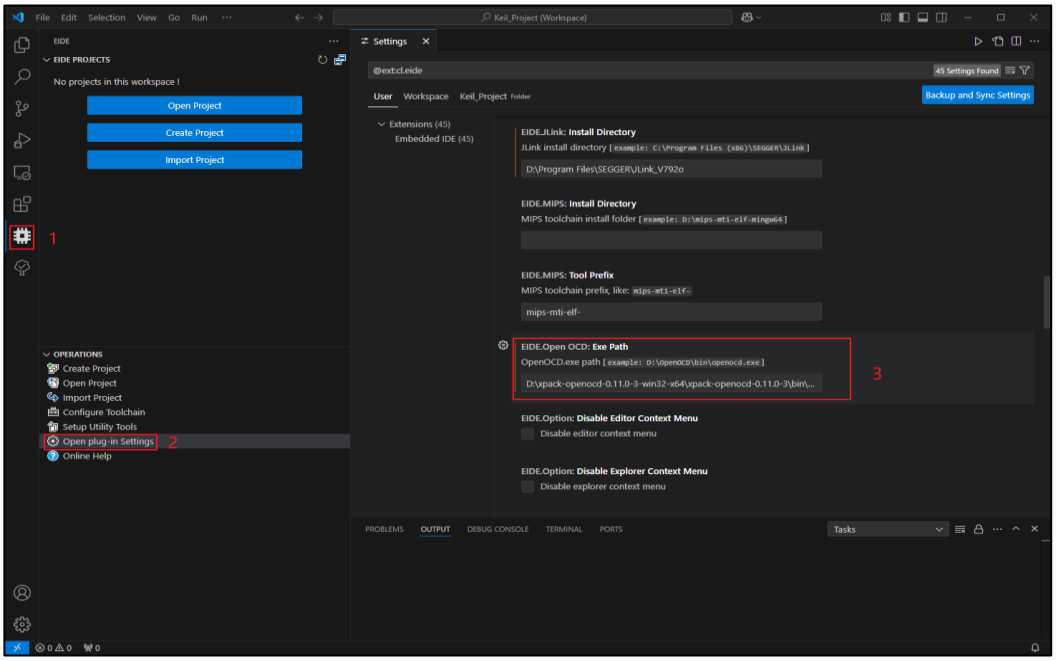
Figure 3-5. Jlink tool installation path configuration



3.5. OpenOCD environment configuration

Open the EIDE plugin settings and modify the OpenOCD environment installation path to the local path, which refers to ***Figure 3-6. OpenOCD tool installation path configuration***.

Figure 3-6. OpenOCD tool installation path configuration



3.6. Debug environment configuration

After installing the Cortex-Debug plugin, debug tool configuration is required, including GDB Server and GDB settings. Using the ARM GCC environment as an example, which refers to ***Figure 3-7. Debug environment configuration step 1*** and ***Figure 3-8. Debug environment configuration step 2***.

Figure 3-7. Debug environment configuration step 1

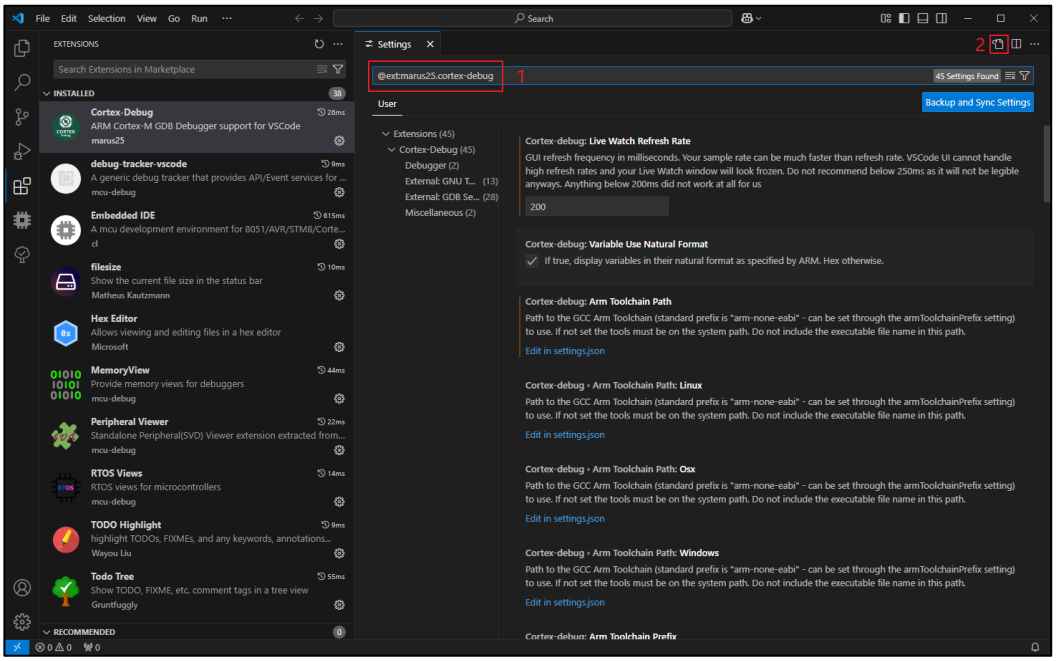
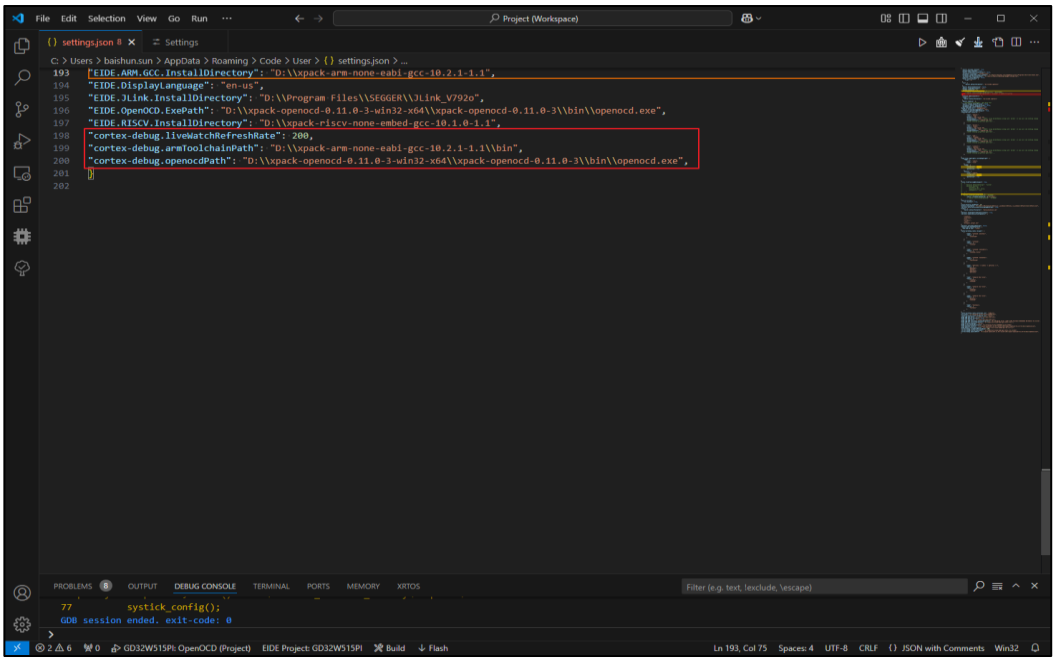


Figure 3-8. Debug environment configuration step 2



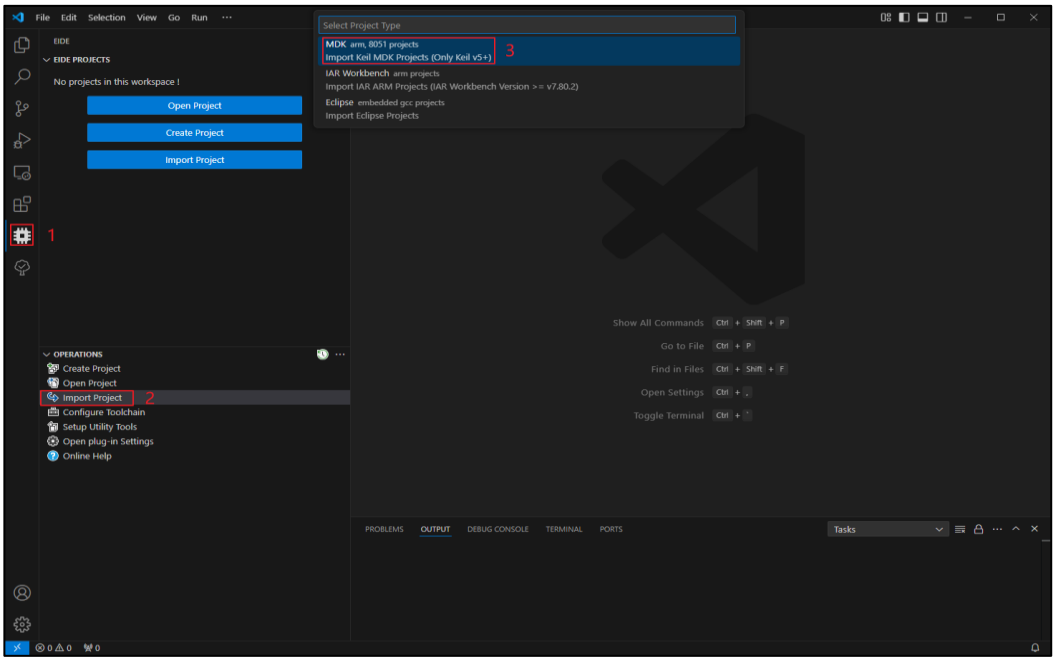
4. Project development

4.1. Project import

Using Keil5 project import as an example, the steps are as follows:

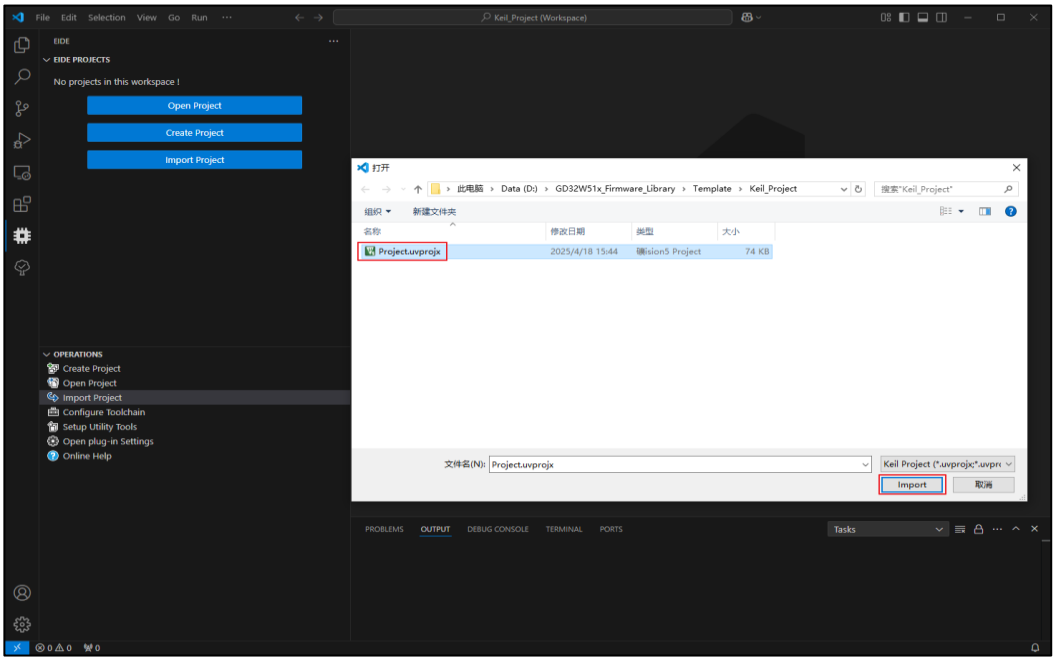
Step 1: Import the project, select MDK, then select ARM, which refers to ***Figure 4-1. Keil5 project import configuration 1***.

Figure 4-1. Keil5 project import configuration 1



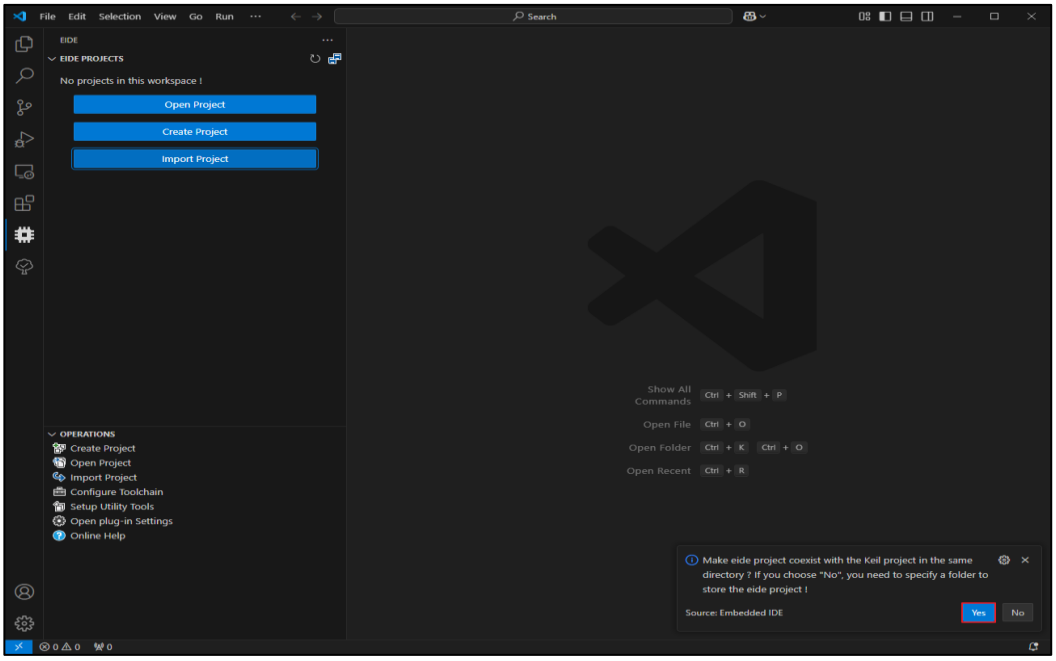
Step 2: Select the local Keil5 project and import it, which refers to ***Figure 4-2. Keil5 project Import configuration 2***.

Figure 4-2. Keil5 project Import configuration 2



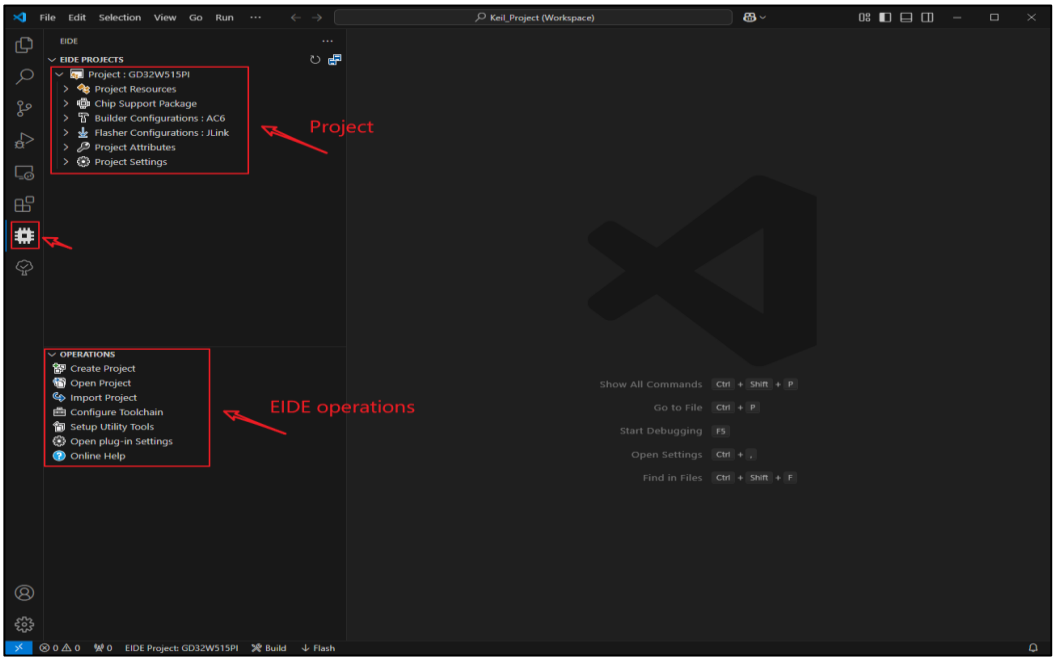
Step 3: Follow the instructions to select the EIDE project generation directory, which refers to ***Figure 4-3. Keil5 project import configuration 3***.

Figure 4-3. Keil5 project import configuration 3



Step 4: Project imported successfully, which refers to ***Figure 4-4. Keil5 project import success***.

Figure 4-4. Keil5 project import success

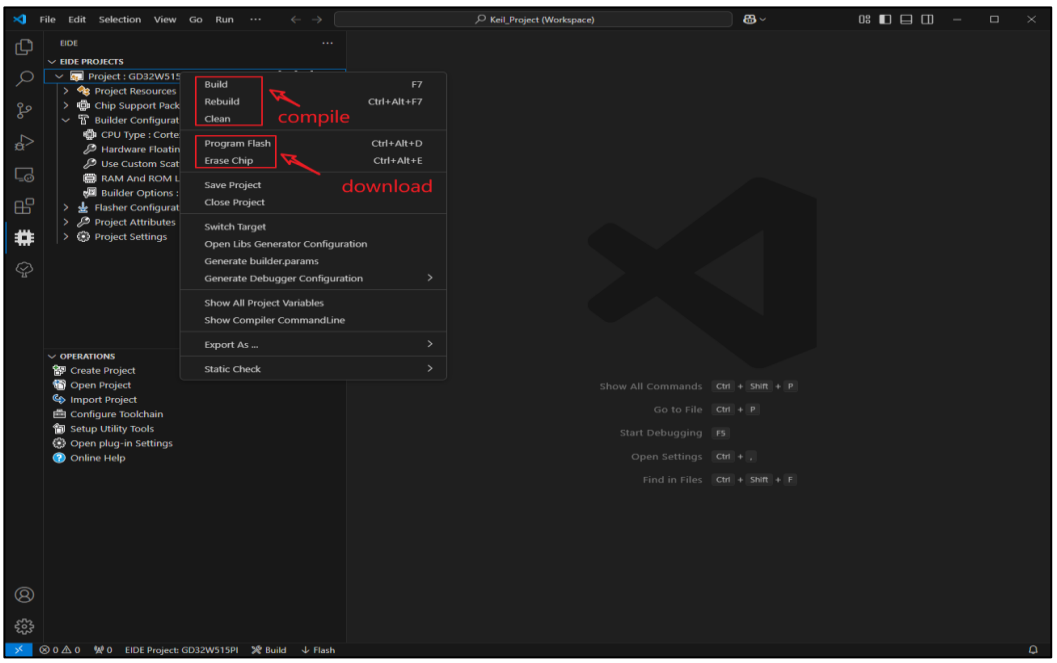


4.2. Project compilation and download

4.2.1. Project compilation and download options

Right-click the project name to perform project compilation and download operations, which refers to ***Figure 4-5. Project operation options***.

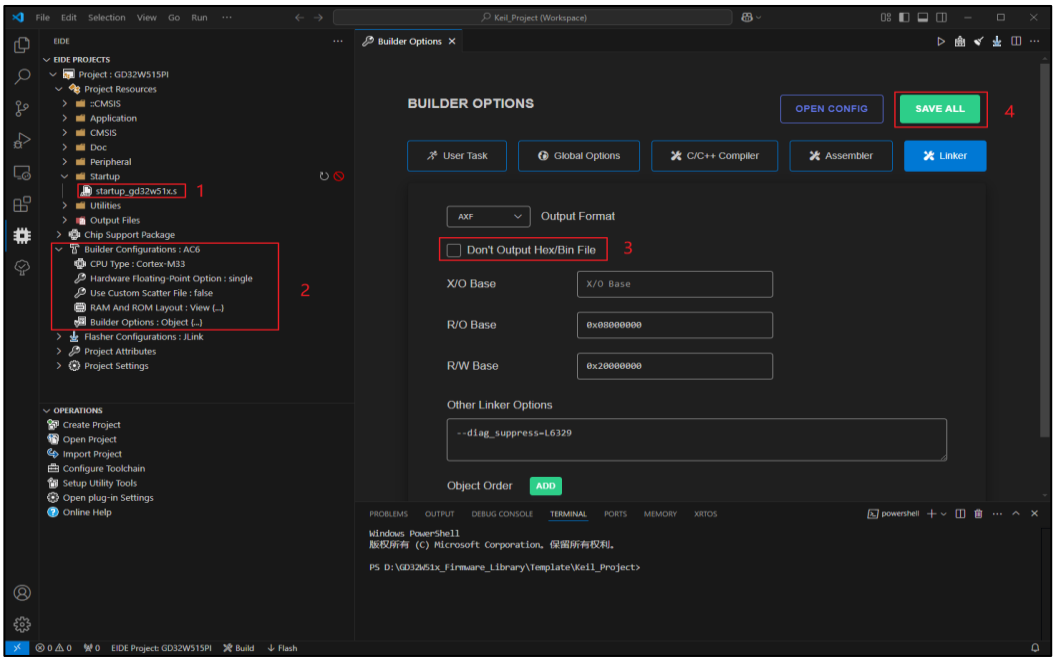
Figure 4-5. Project operation options



4.2.2. Use Keil compiler for project compilation

Before using the Keil compiler for project compilation, ensure the correct compiler version, startup file, and linker file are properly configured, which refers to ***Figure 4-6. Keil5 compiler for project compilation***. The Keil compiler includes AC5 and AC6.

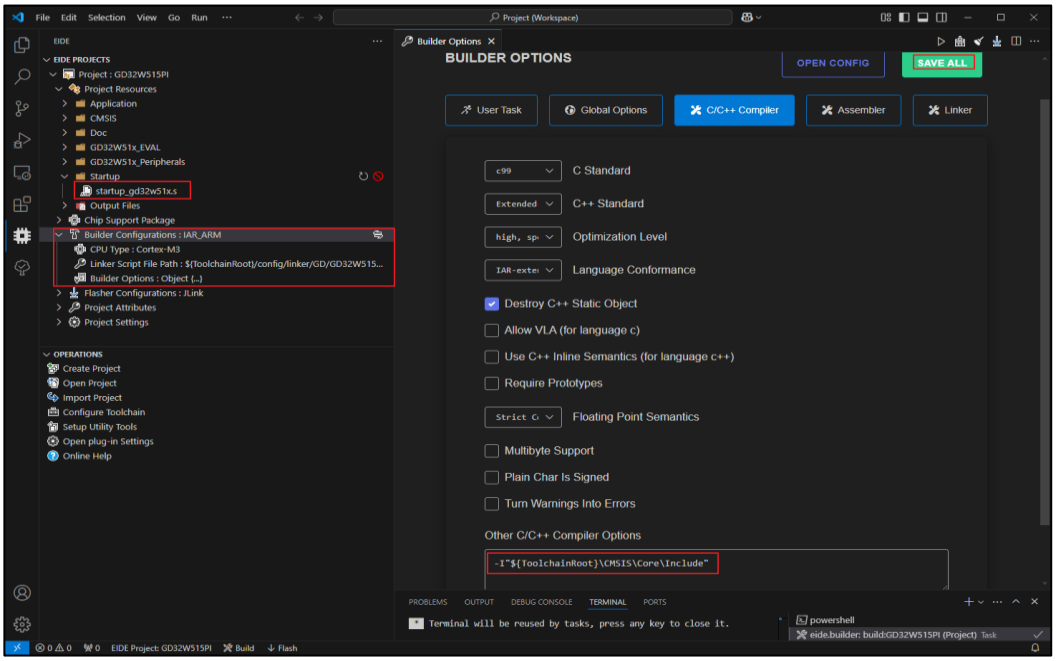
Figure 4-6. Keil5 compiler for project compilation



4.2.3. Use IAR for project compilation

Before using the IAR compiler for project compilation, ensure the correct startup file is used, and the linker file and compiler options are properly configured, which refers to ***Figure 4-7. IAR compiler performs project compilation***.

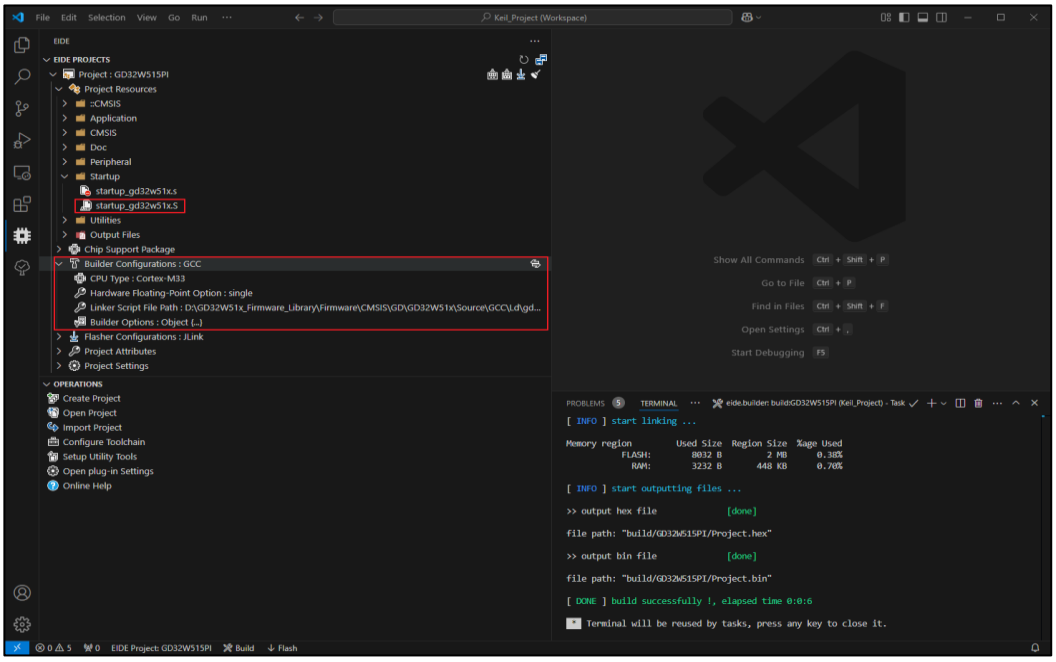
Figure 4-7. IAR compiler performs project compilation



4.2.4. Use GCC for project compilation

Before using the GCC compiler for project compilation, ensure the correct startup file is used and the linker file is properly configured, which refers to ***Figure 4-8. GCC compiler performs project compilation***.

Figure 4-8. GCC compiler performs project compilation

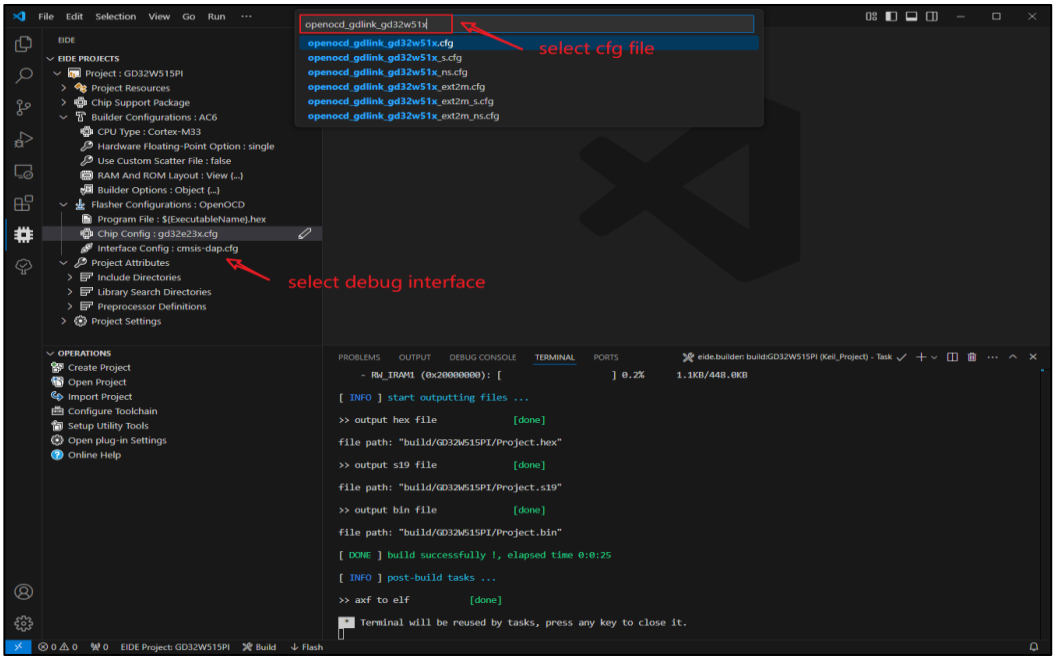


4.2.5. Use OpenOCD for programming

Before using OpenOCD for programming, specify the debugger interface and MCU

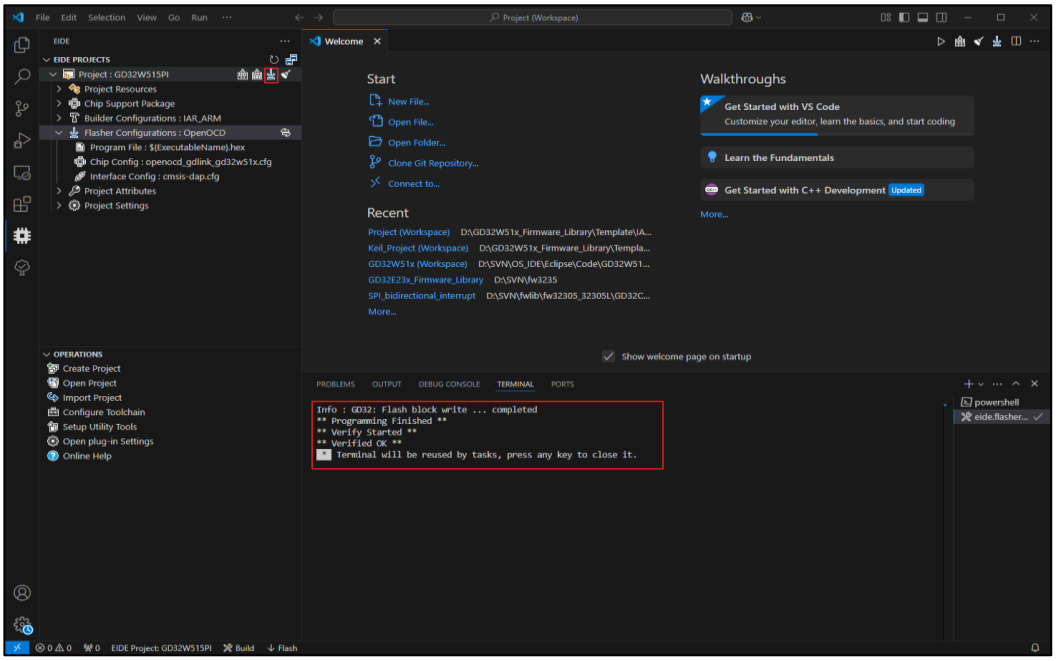
configuration file, which refers to ***Figure 4-9. OpenOCD pre-programming configuration***.

Figure 4-9. OpenOCD pre-programming configuration



Click the download button to execute the programming operation, which refers to ***Figure 4-10. OpenOCD programming***.

Figure 4-10. OpenOCD programming



4.3. Project debugging

4.3.1. Create debug configuration options

Use EIDE to create debug configuration for the project, which refers to ***Figure 4-11. Debug configuration file generation step 1*** and ***Figure 4-12. Debug configuration file generation step 2***.

Figure 4-11. Debug configuration file generation step 1

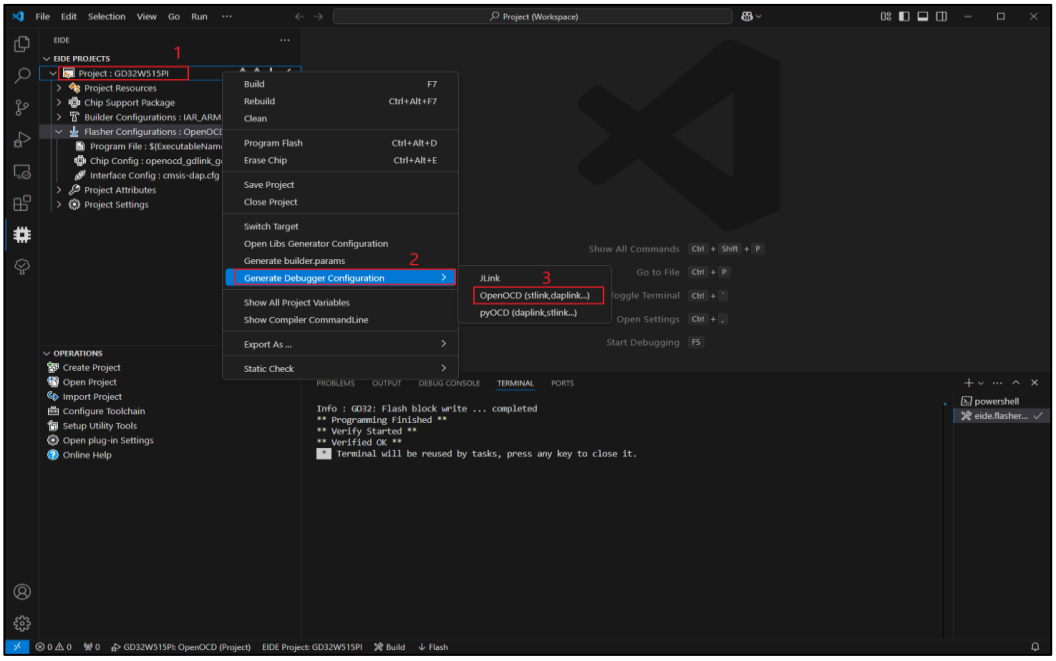
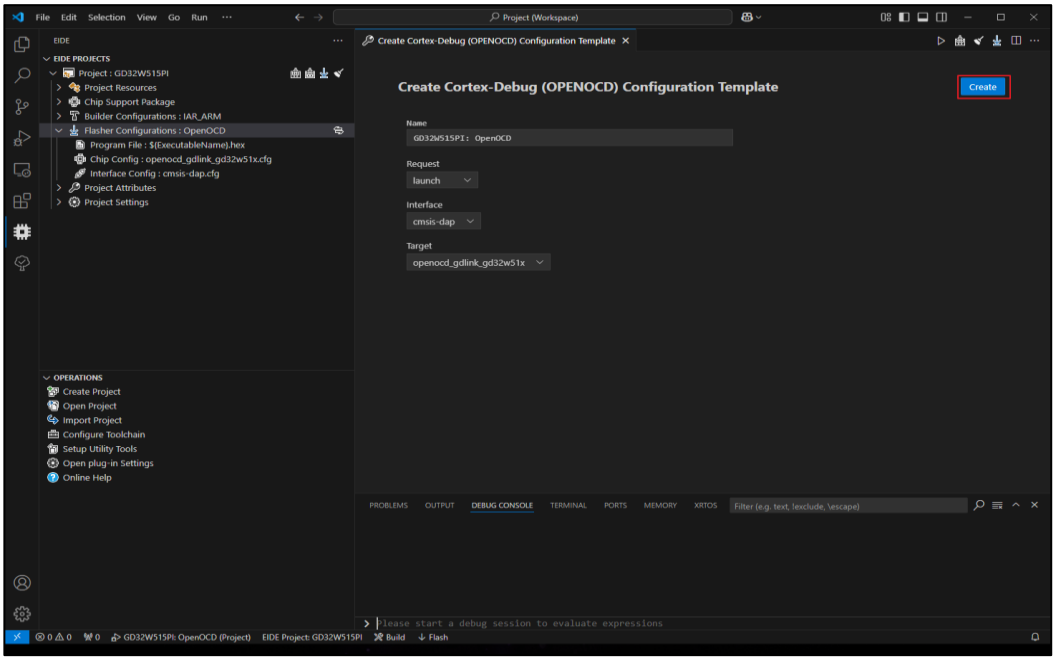
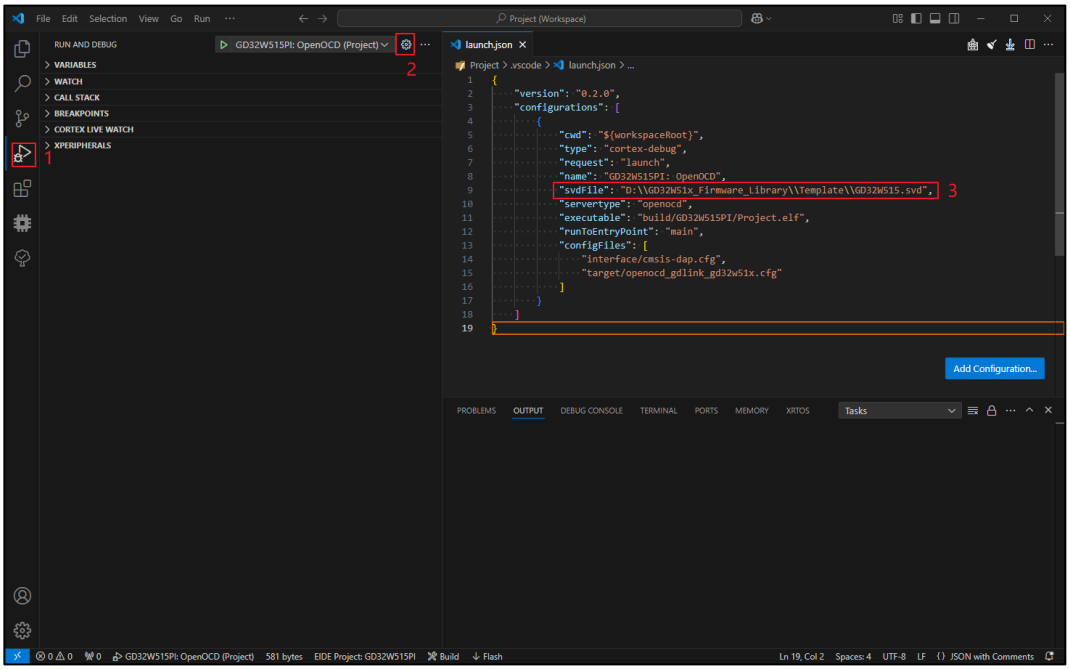


Figure 4-12. Debug configuration file generation step 2



According to the generated launch.json file, add the peripheral Register Description file (SVD), which refers to ***Figure 4-13. Add SVD file***.

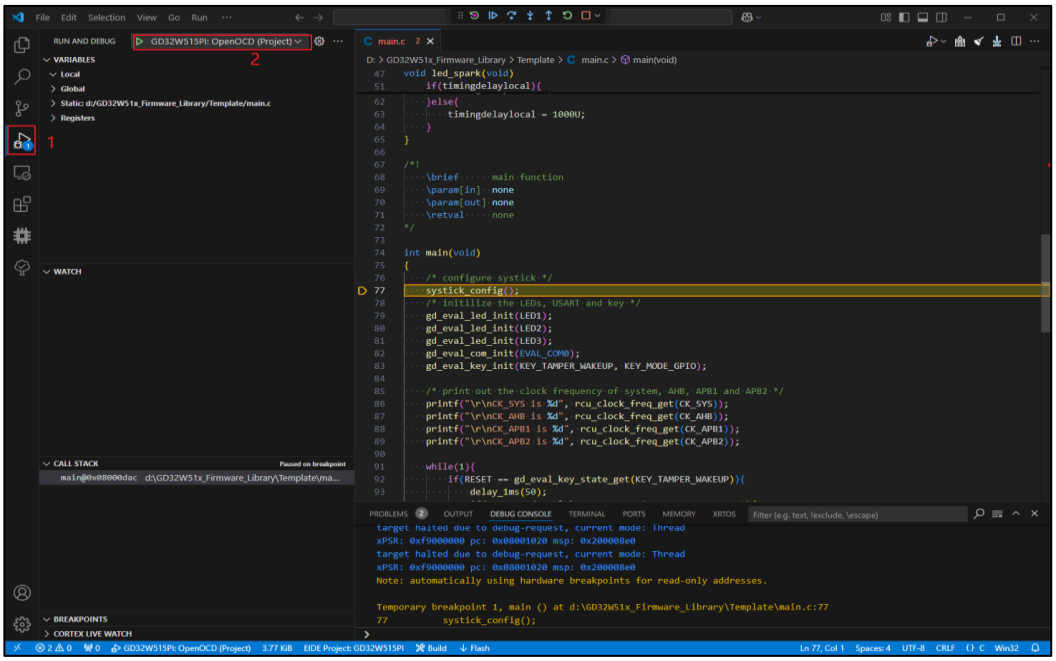
Figure 4-13. Add SVD file



4.3.2. Use Cortex-Debug for debugging

Use Open OCD for debugging, which refers to ***Figure 4-14. Use Cortex-Debug to start debugging***.

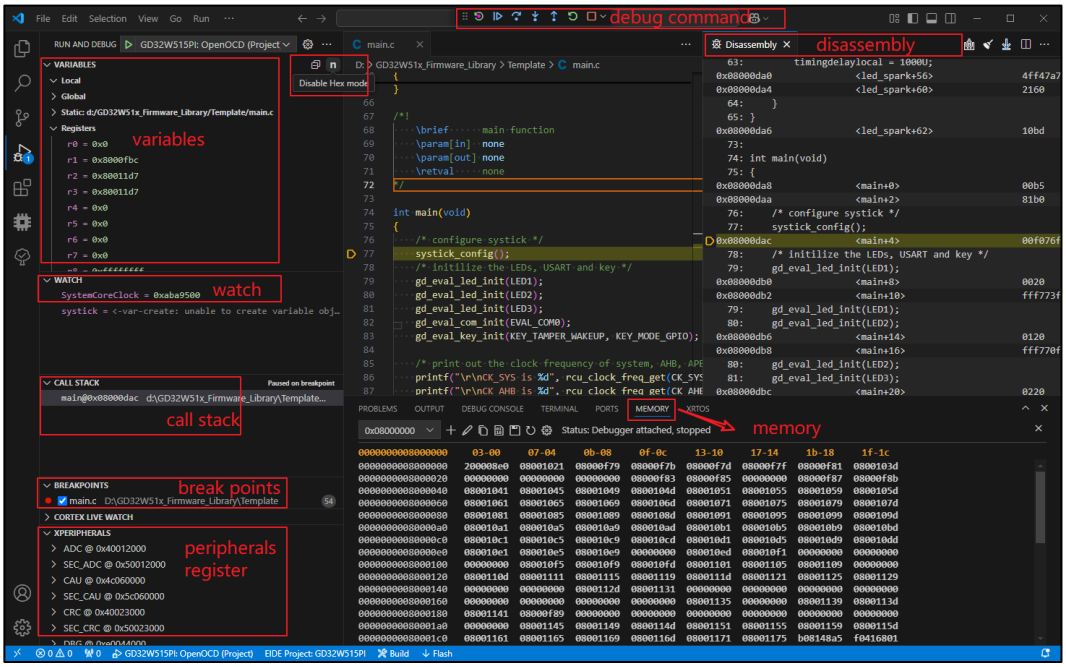
Figure 4-14. Use Cortex-Debug to start debugging



Through the Cortex-Debug plugin, users can perform basic debugging commands (run, step, stop), disassembly code viewing, memory window viewing, CPU register viewing, variable

viewing, and call stack viewing, which refers to ***Figure 4-15. Use Cortex-Debug for debugging***.

Figure 4-15. Use Cortex-Debug for debugging



5. Revision history

Table 5-1. Revision history

Revision No.	Description	Date
1.0	Initial Release	Apr.18 2021

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