

# Einstellung und Konfiguration der STM32CUBE-IDE

Aufbau und Nutzung der mehrstufigen Library-Struktur

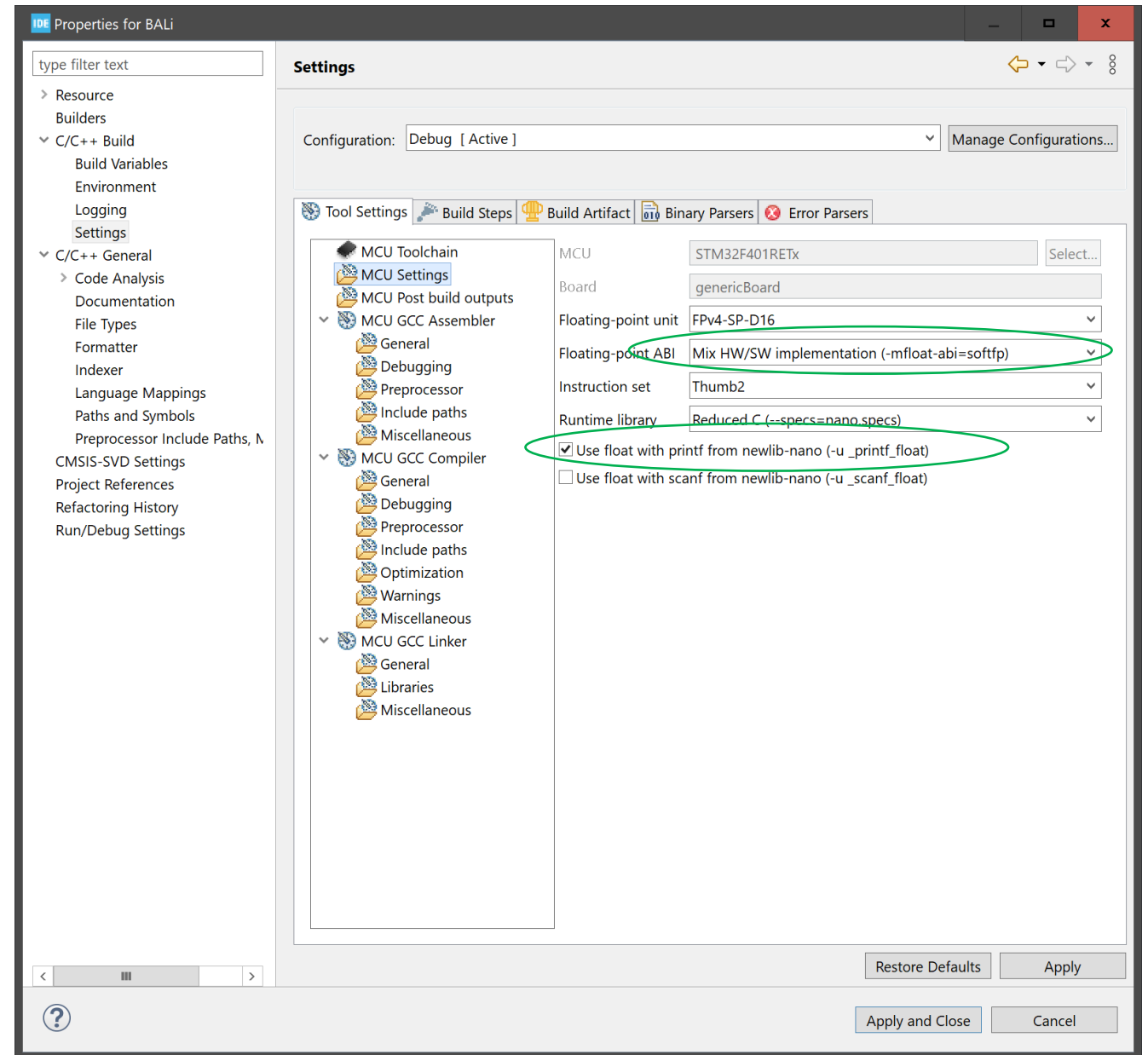
<Balancer> Softwaretreiber für Komponenten (z.B. Sensoren, Display, Schalter...)

<MCAL> Funktionsgruppen und Schnittstellen des STM32

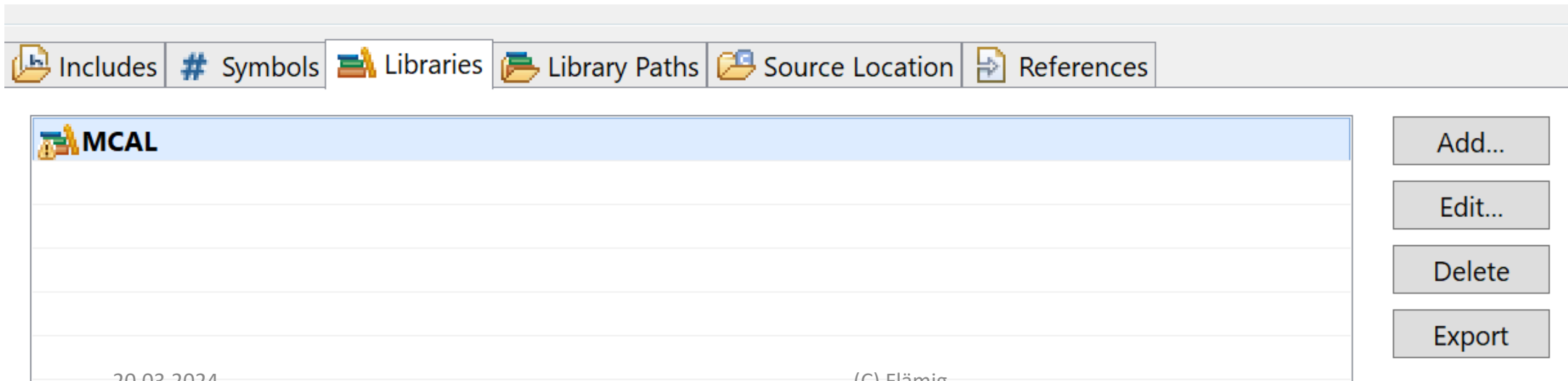
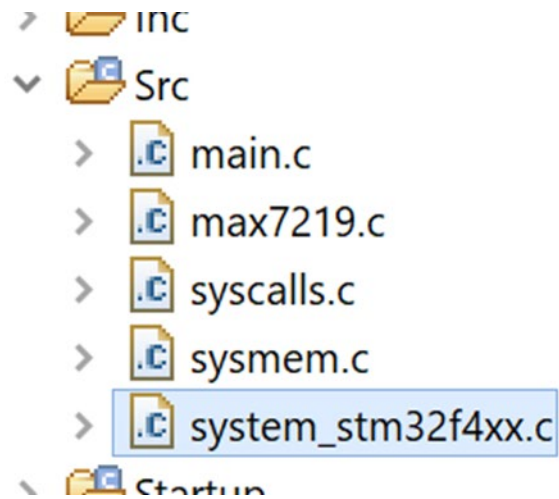
<CMSIS> Übersetzung der Reg.-Adressen auf symbolische Registernamen

Einstellung FPU (floating-Point Unit) MIX  
HW/SW

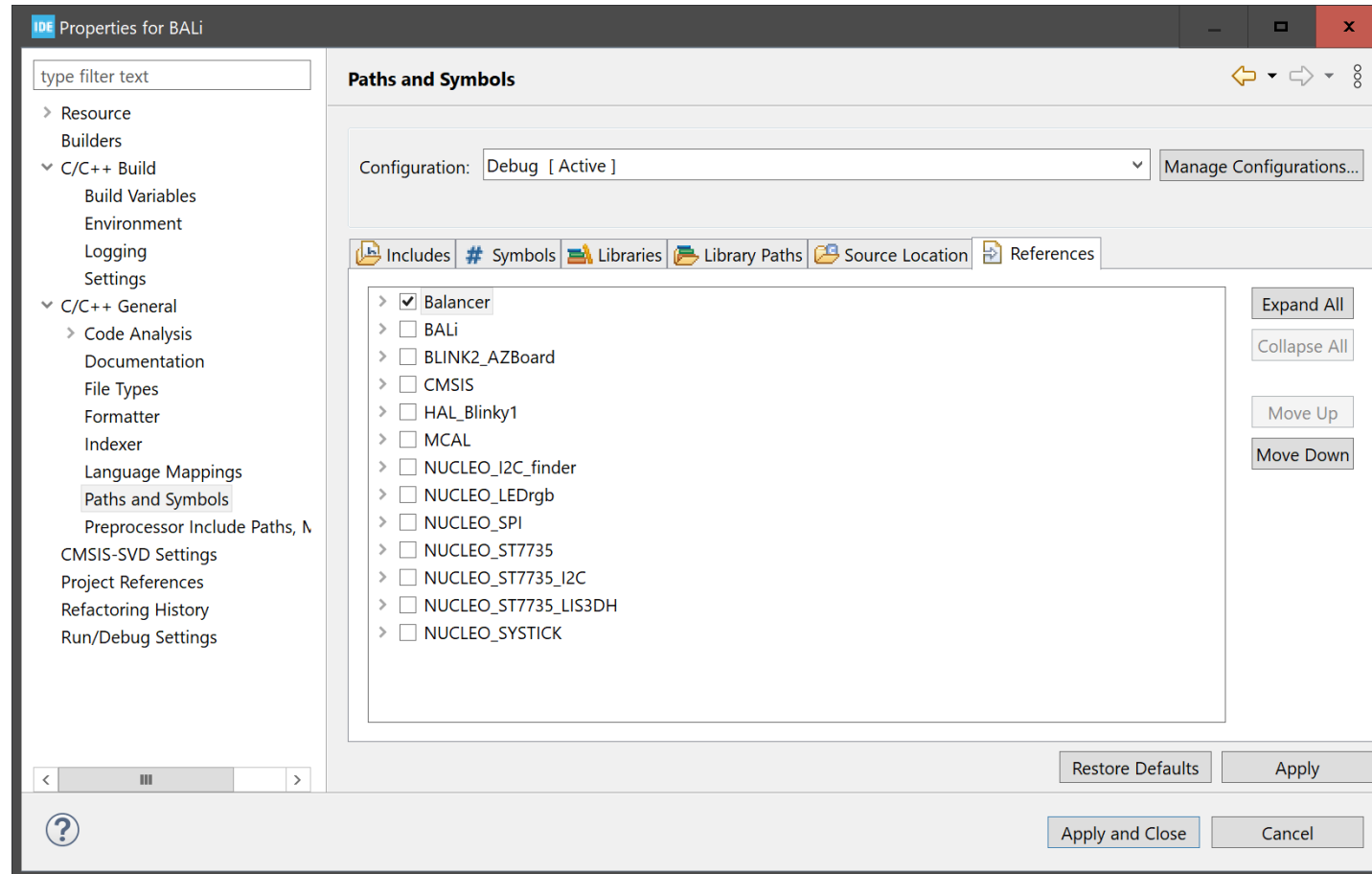
Die object-files aller Libraries (CMSIS, MCAL, Balancer...) und auch das main Projekt müssen mit der gleichen Konfiguration erstellt worden sein.



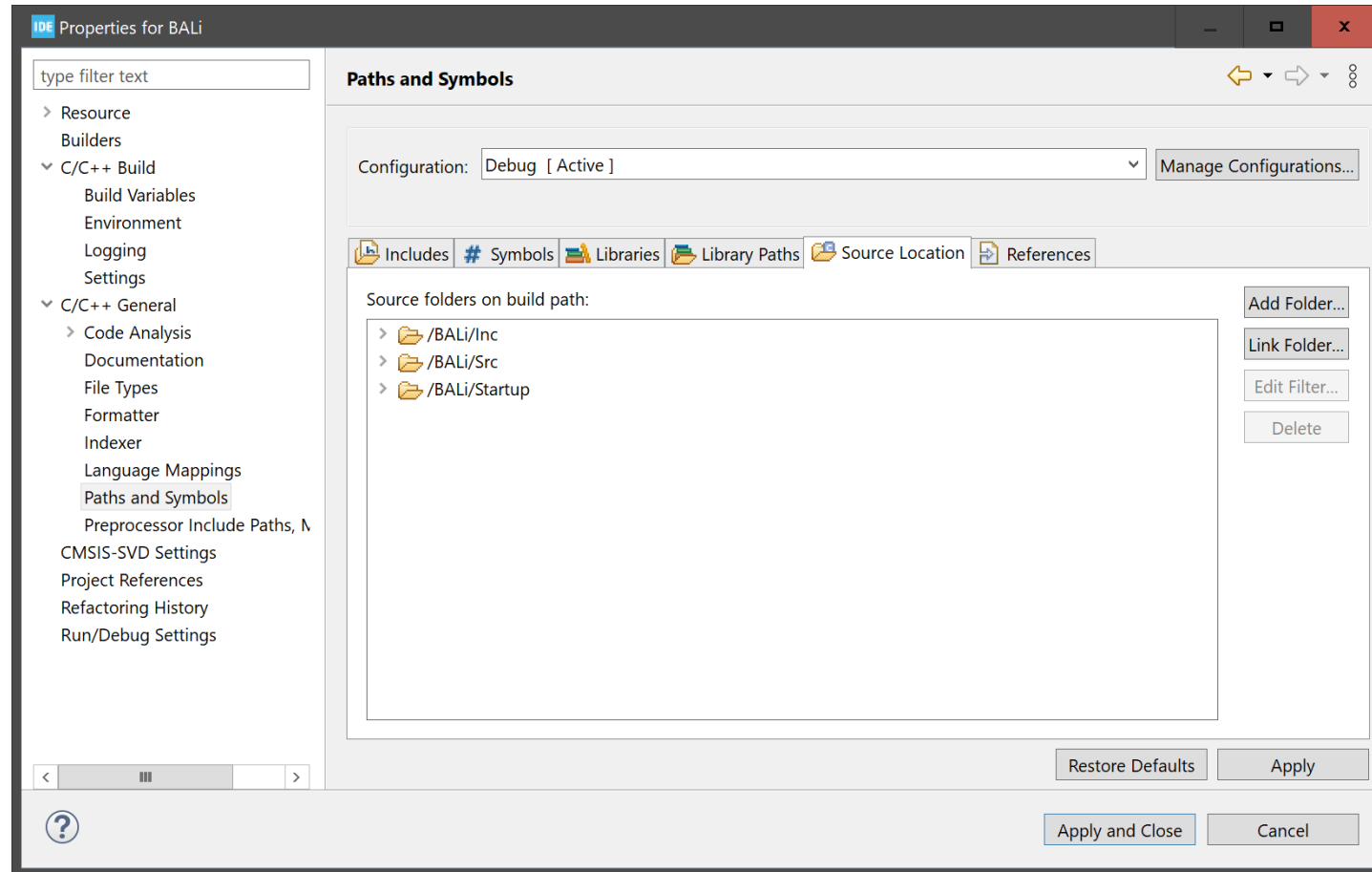
system\_..c Datei ins Projekt Src kopieren  
und „MCAL“ als Libraries eintragen



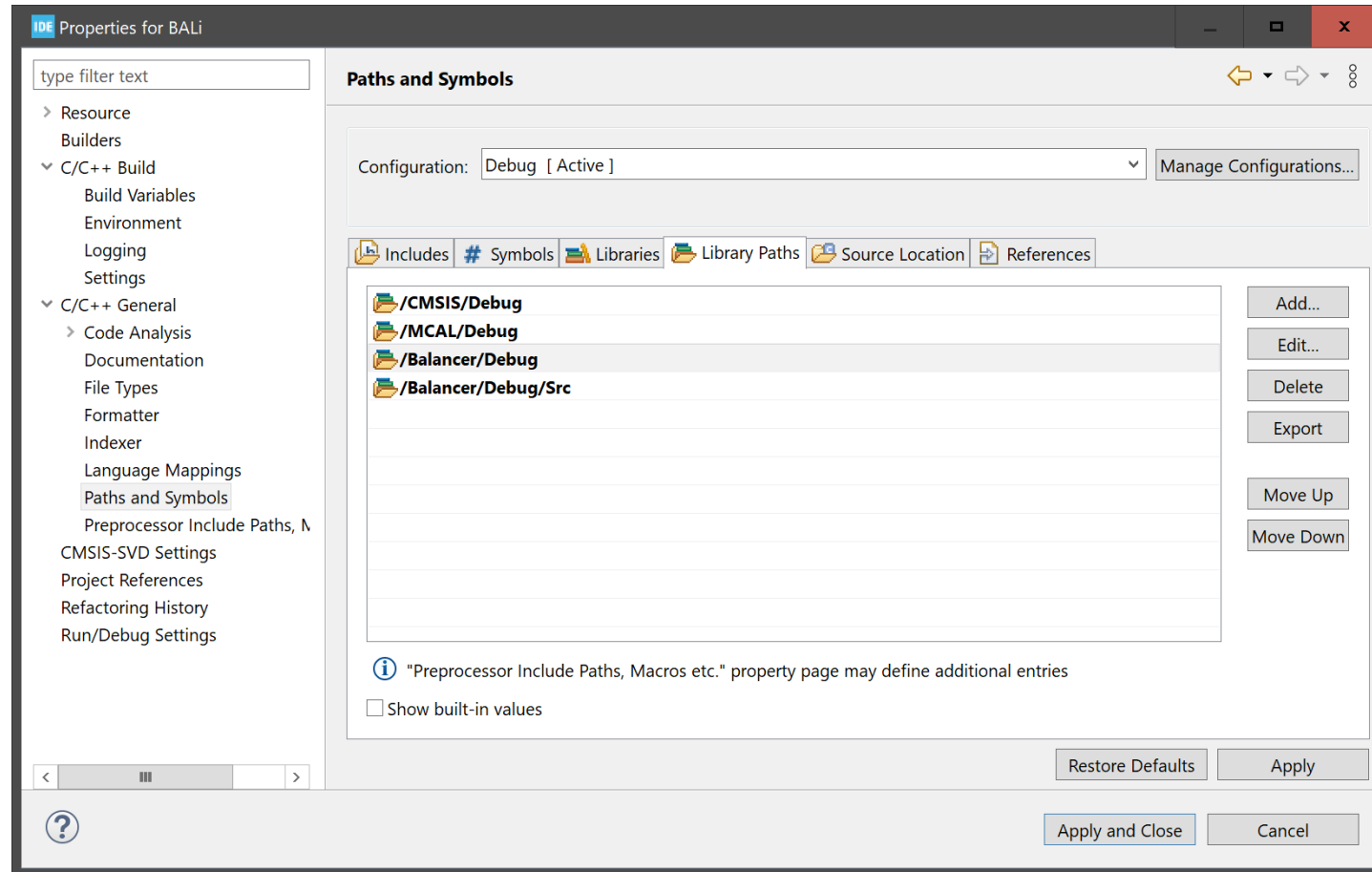
# Properties - Path and Symbols [Reference]



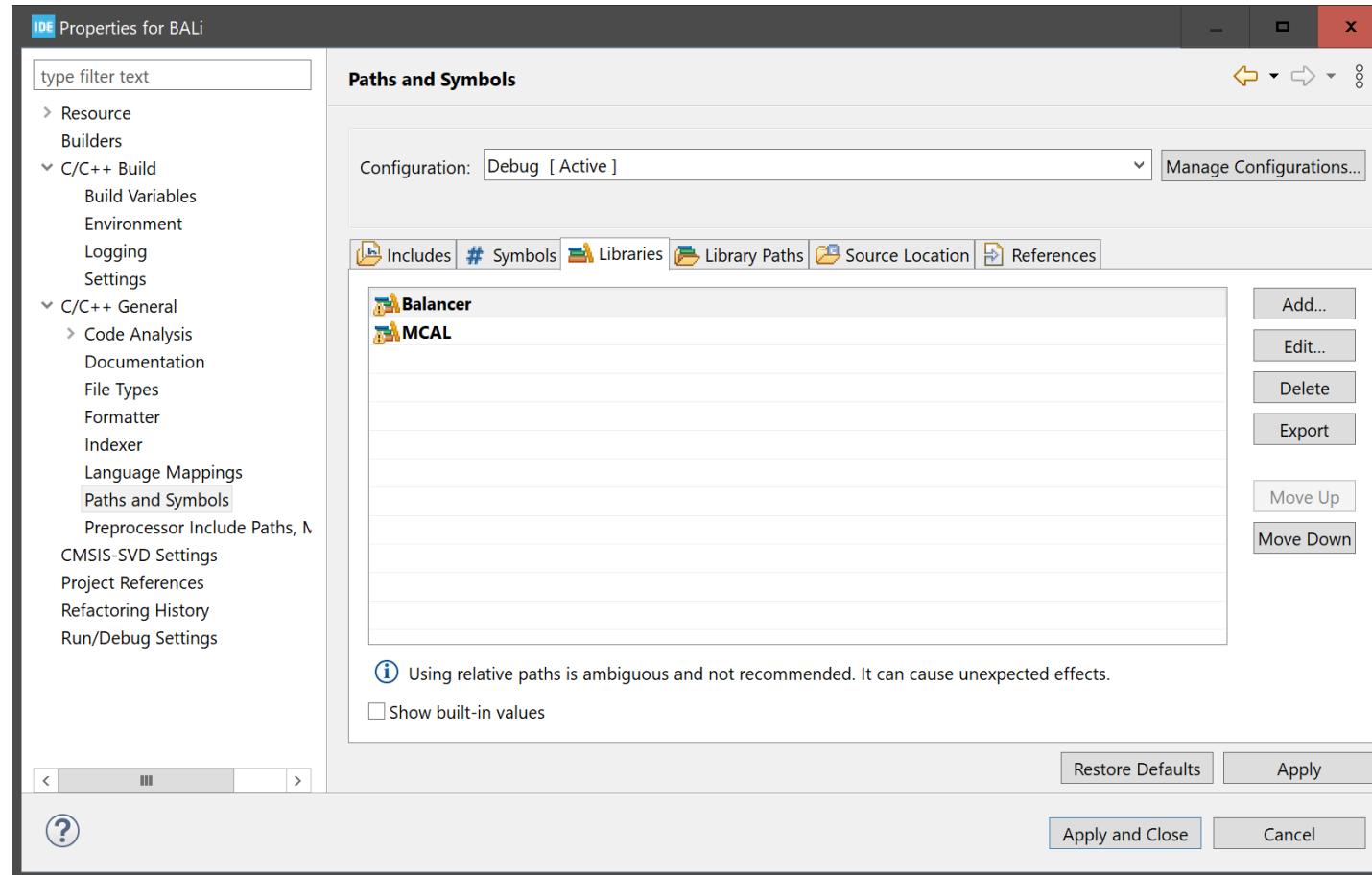
# Properties - Path and Symbols [SourceLocation]



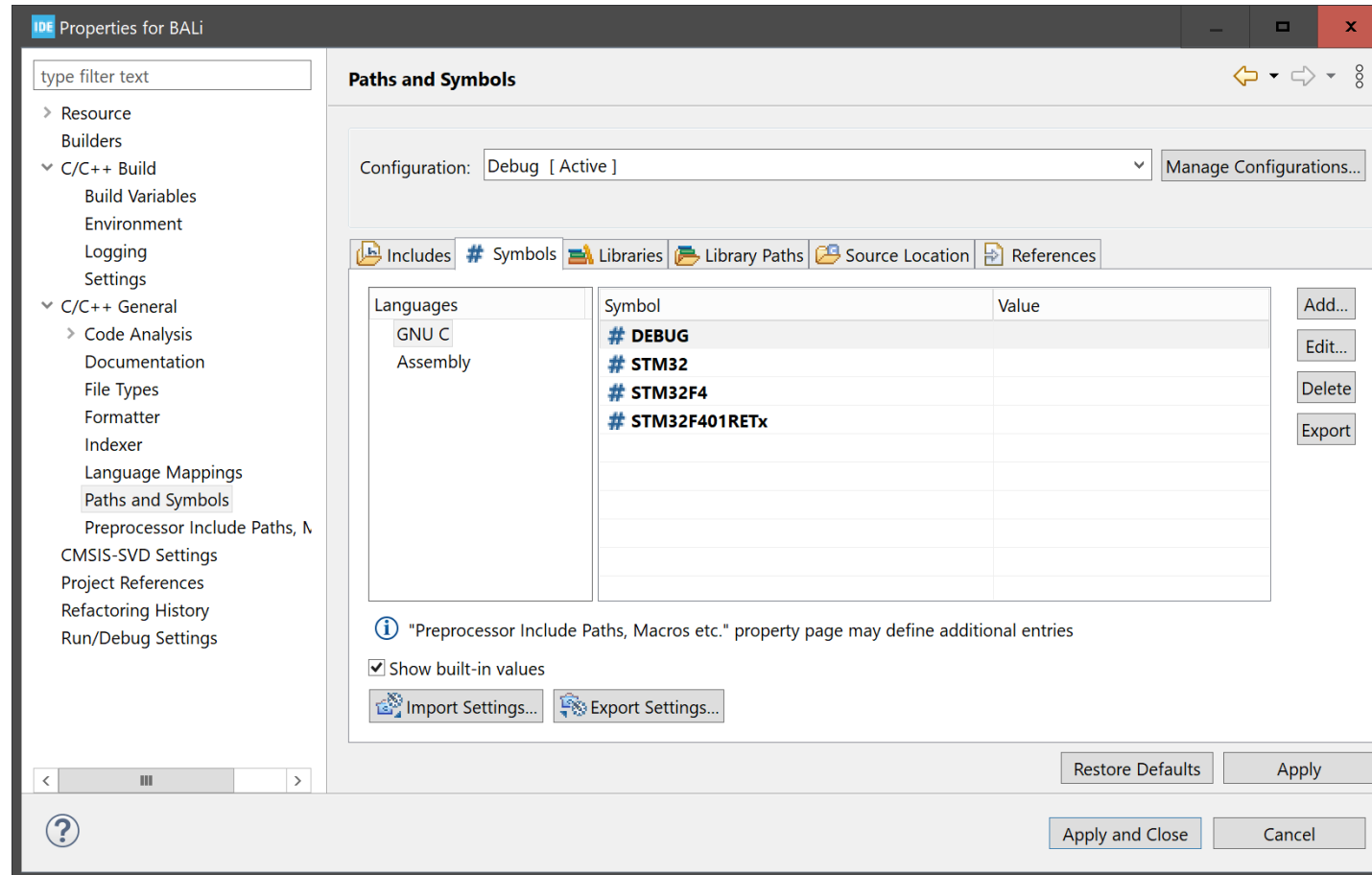
# Properties - Path and Symbols [Library Path]



# Properties - Path and Symbols [Libraries]

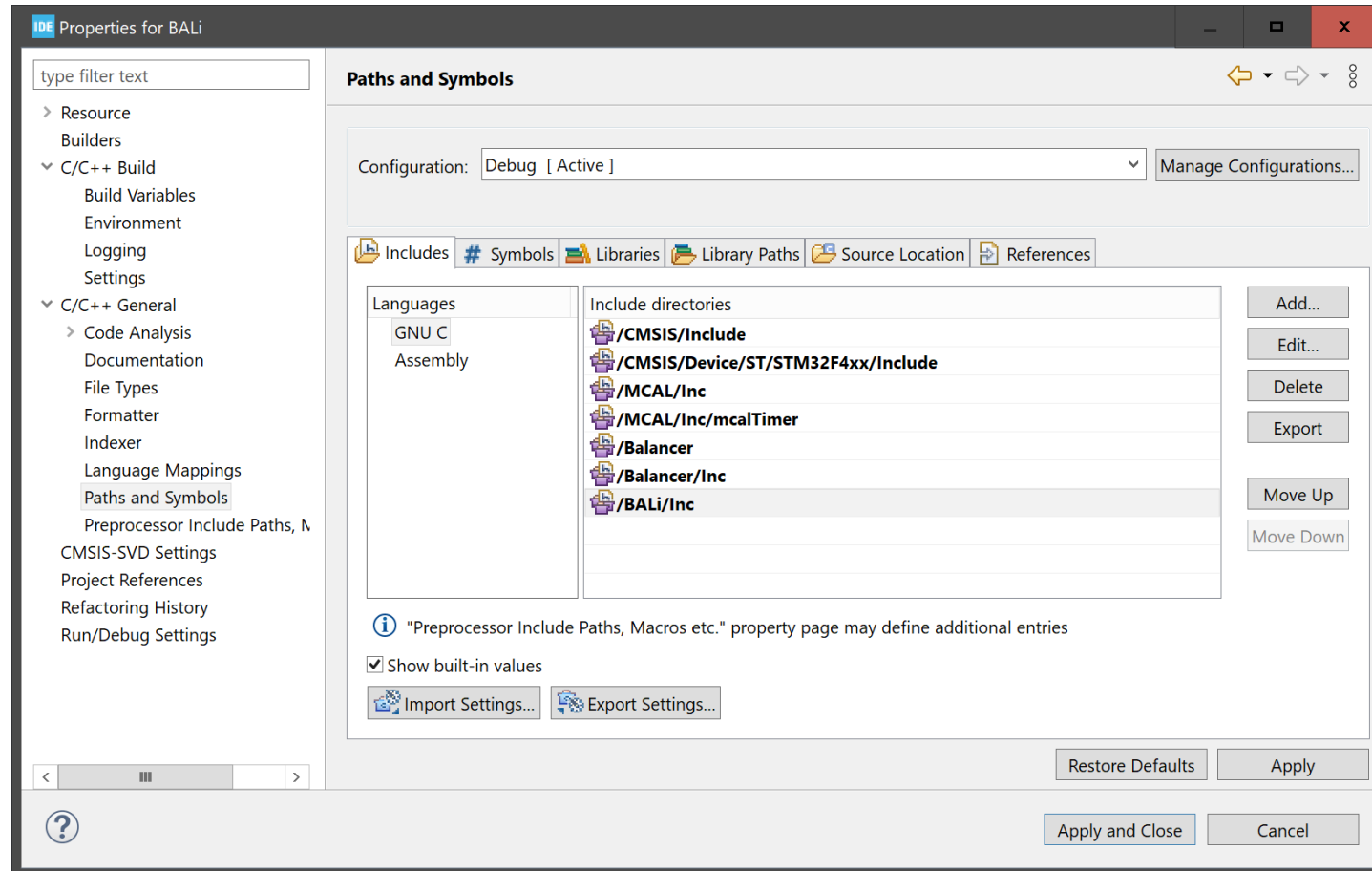


# Properties - Path and Symbols [Symbols]





# Properties - Path and Symbols [Includes]



# Projekt-Bsp für Nutzung von CMSIS und MCAL

The image displays three screenshots of the STM32CubeIDE interface, illustrating the configuration of include directories for a project named NUCLEO\_SYSTICK.

**Top Left Screenshot:** The 'Includes' tab is selected. The 'Languages' list on the left shows 'GNU C' and 'Assembly'. The 'Include directories' list on the right contains the following paths:

- /NUCLEO\_SYSTICK/Inc
- /CMSIS/Device/ST/STM32F4xx/Include
- /MCAL/Inc
- /MCAL/Inc/mcalTimer
- /CMSIS/Include
- /CMSIS
- /MCAL

**Top Right Screenshot:** The 'Includes' tab is selected. The 'Include directories' list on the right contains the following paths:

- /MCAL/Debug
- /CMSIS/Debug
- /MCAL/Debug/Src
- /MCAL/Debug/Src/mcalTimer
- /CMSIS/Device/ST/STM32F4xx/Source/Templates/

**Bottom Left Screenshot:** The 'Includes' tab is selected. The 'Languages' list on the left shows 'GNU C' and 'Assembly'. The 'Include directories' list on the right contains the following paths:

- /CMSIS
- /MCAL

**Bottom Right Screenshot:** The 'IDE NUCLEO\_SYSTICK' project tree is expanded. The 'Includes' folder is selected, showing the following paths:

- C:/ST/STM32CubeIDE\_1.12.0/STM32CubeIDE/plugins/com.st.stm32cube.ide.mcu.externaltools.gnu-tools-for-stm32.10.3-202...
- C:/ST/STM32CubeIDE\_1.12.0/STM32CubeIDE/plugins/com.st.stm32cube.ide.mcu.externaltools.gnu-tools-for-stm32.10.3-202...
- C:/ST/STM32CubeIDE\_1.12.0/STM32CubeIDE/plugins/com.st.stm32cube.ide.mcu.externaltools.gnu-tools-for-stm32.10.3-202...
- C:/ST/STM32CubeIDE\_1.12.0/STM32CubeIDE/plugins/com.st.stm32cube.ide.mcu.externaltools.gnu-tools-for-stm32.10.3-202...
- CMSIS
- CMSIS/Device/ST/STM32F4xx/Include
- CMSIS/Include
- MCAL
- MCAL/Inc
- MCAL/Inc/mcalTimer
- NUCLEO\_SYSTICK/Inc

# CMSIS - Properties

The screenshot displays the 'CMSIS - Properties' dialog box, specifically the 'Source Location' tab. The dialog is divided into two main sections: 'Languages' and 'Source Location'.

**Languages:** The 'GNU C' language is selected, and the 'Assembly' language is also listed.

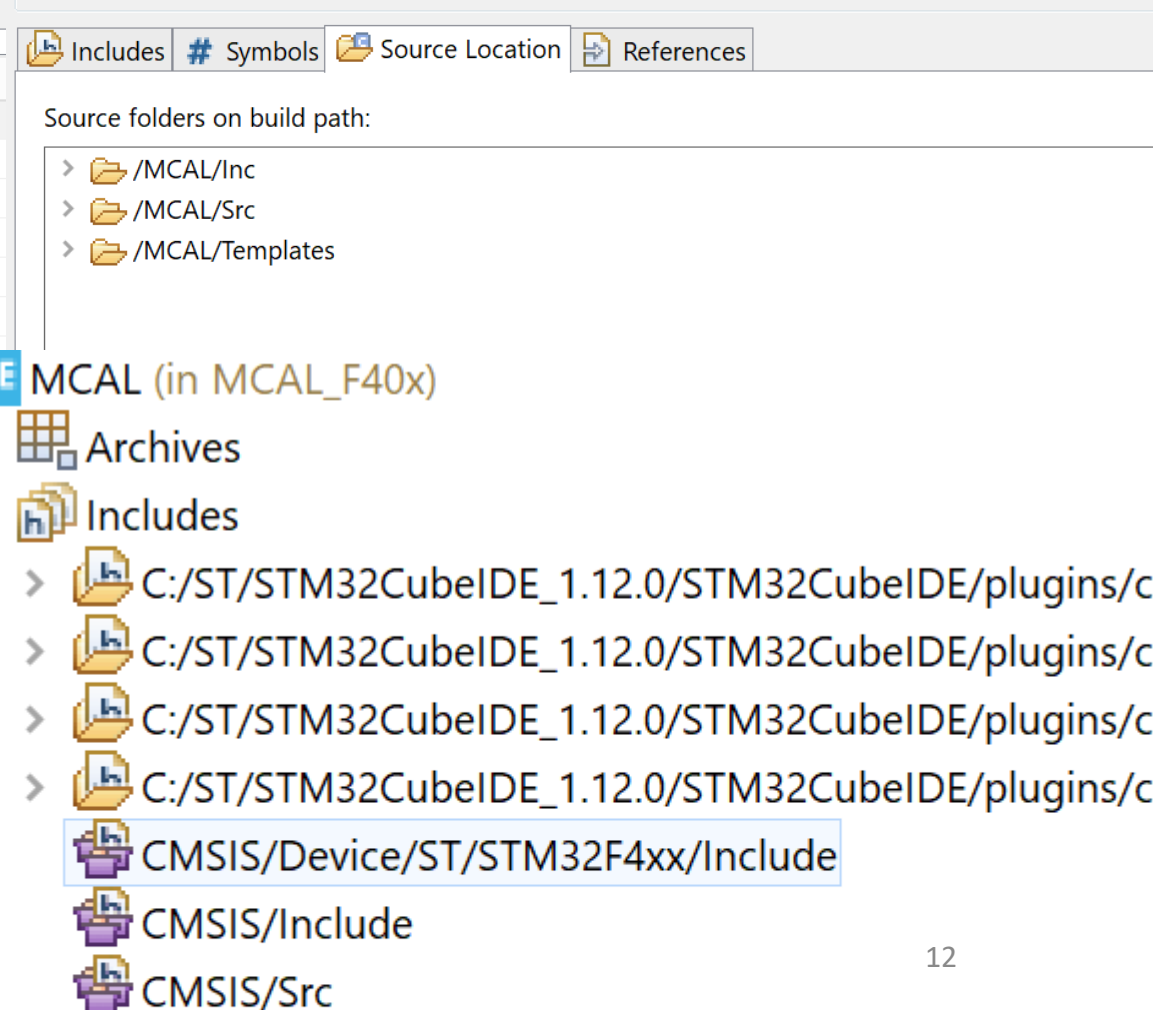
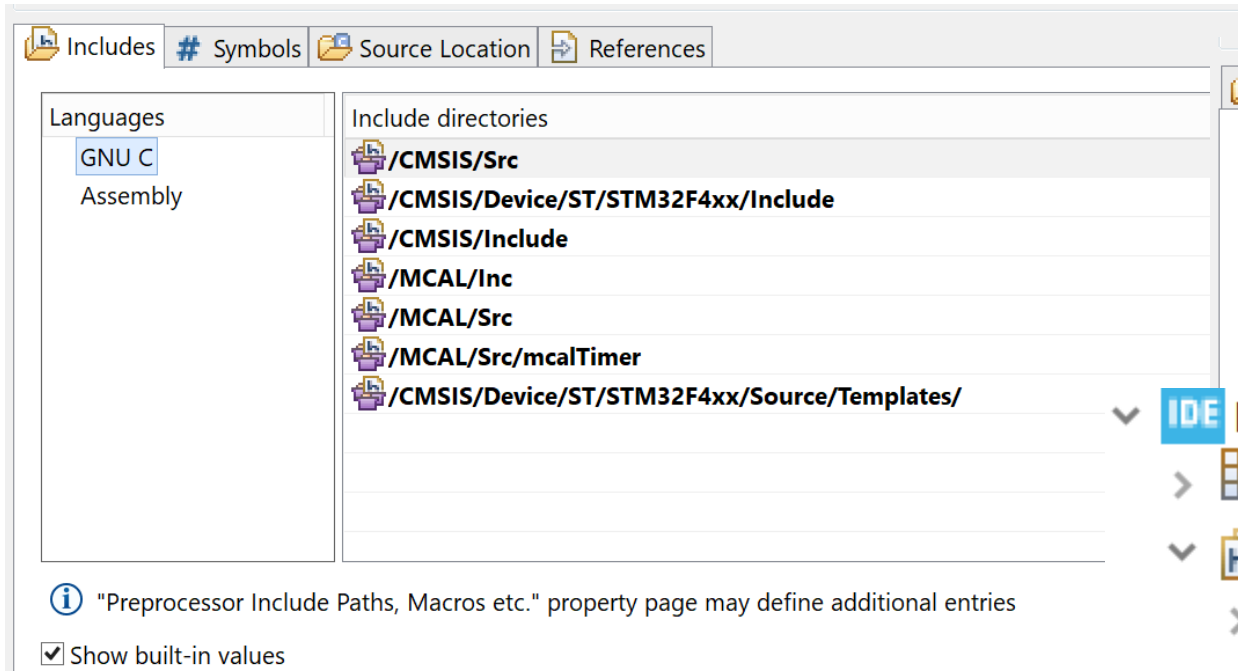
**Source Location:** This section contains two lists:

- Include directories:** This list contains two entries:
  - /CMSIS/Include**
  - /CMSIS/Device/ST/STM32F4xx/Include**
- Source folders on build path:** This list contains three entries:
  - /CMSIS**
  - /CMSIS/Debug/Device/ST/STM32F4xx/Source/Templates**
  - /CMSIS/Device/ST/STM32F4xx/Source**

The left sidebar of the IDE shows the project structure. The 'CMSIS' folder is expanded, revealing the following structure:

- Archives**
- Includes**
  - C:/ST/STM32CubeIDE\_1.12.0/STM32Cube**
  - C:/ST/STM32CubeIDE\_1.12.0/STM32Cube**
  - C:/ST/STM32CubeIDE\_1.12.0/STM32Cube**
  - C:/ST/STM32CubeIDE\_1.12.0/STM32Cube**
  - CMSIS/Device/ST/STM32F4xx/Include**
  - CMSIS/Include**

# MCAL - Properties



# Arbeitsschritte für einen Wechsel auf eine andere MCU (Bsp. STM32F446 auf STM32F401)

- STM32F446RETX\_FLASH.ld und STM32F446RETX\_FLASH.ld Datei austauschen gegen STM32F401RETX\_????.ld
- In der .cproject die MCU suchen und ersetzen von *STM32F446* mit *STM32F401*
- Datei \*.launch löschen
- Startup Datei startup\_stm32f446retx.s austauschen
- Import des Verzeichnisses als Projekt
- CMSIS im File stm32F4xx.h die richtige MCU auskommentieren

