Programming Flash Memory

Introduction

The Embedded Coder software includes a feature for programming Flash memory on the target processor. You can configure this feature to automatically program Flash memory when you build and execute models for DSP boards. You can also use the Flash programming feature to selectively erase, program, or verify specific sectors of Flash memory.

> **Note** Reprogramming Flash memory thousands of times may deplete its ability to hold data. Consult the manufacturer's documentation for specifications.

Requirements:

- A F2812, F2808, or F28335 eZdsp board
- A working model that includes a Target Preferences block for "**Stand alone code using Flash Memory** "
- The TI Flash API for your specific target

🔺 Back to Top

Installing TI Flash APIs

1. Visit the Texas Instruments Web site and download the TI Flash API installation software for your target:
    - F281x: http://focus.ti.com/docs/toolsw/folders/print/sprc125.html
    - F280x: http://focus.ti.com/docs/toolsw/folders/print/sprc193.html
    - F2802x: http://focus.ti.com/docs/toolsw/folders/print/sprc848.html
    - F2804x: http://focus.ti.com/docs/toolsw/folders/print/sprc325.html
    - F2823x: http://focus.ti.com/docs/toolsw/folders/print/sprc665.html
    - F2833x: http://focus.ti.com/docs/toolsw/folders/print/sprc539.html
2. Start the TI Flash API installation software (.exe) contained in the ZIP file.
3. During installation, *use the default folder location* for **Location to Save Files** . Otherwise, each time you create a model, you must configure **Specify API Location**, located under the **Peripherals** tab of the Target Preferences block.
4. Complete the installation process.

Configuring the DSP Board Bootloader

Configure the bootloader switch or jumper on the DSP board so that, upon startup, the DSP board executes the program from Flash memory. Consult the manufacturer's hardware documentation to identify the specific switch and settings.

Typically, you can enable the bootloader switch or jumper by moving it from the factory default position (Flash disabled) to the opposite position (enabled). For example:

- On the F2812 eZdsp, change jumper JP7 from the factory default setting.
- On the F2808 eZdsp, change switches 1 and 3 on bank SW1 from the factory default settings.
- On F28335 eZdsp, change switch 3 on bank SW1 from the factory default setting.

Configuring the Software for Automatic Flash Programming

Configure Embedded Coder software to program Flash memory on the target board when you build and execute a model.

1. On your keyboard, press Ctrl+E to open the Configuration Parameters dialog box, select *Code Generation* and *IDE Link*, and confirm **Build Action** is set to **Build_and_execute**.
2. Open the Target Preferences block in your model, select the **Peripherals** tab, and then select **Flash_loader**.
3. Set **Enable flash programmer** to **Erase, Program, Verify**.
4. Click **OK** to save and close the new configuration.

When you build the model, the software automatically erases, programs, and verifies Flash memory. When the DSP board restarts, it loads and executes the program from Flash memory.

Selectively Erase, Program, or Verify Specific Flash Sectors

You can manually erase, program, and verify specific sectors of Flash memory:

1. Open the Target Preferences block in your model, and select the **Peripherals** tab.
2. Select **Flash_loader** from the **Peripherals** list.
3. Set **Enable flash programmer** to erase, program, or verify flash.
4. (Optional) To protect specific Flash sectors:
   a. Disable **Detect Flash sectors to erase from COFF file**.
   b. Clear the flash sectors you want to protect.
5. Click **Execute**. The software performs the action you specified upon the unprotected flash sectors.

> **Note** Erase Flash sectors before programming them.

Placing Additional Code or Data on Unused Flash Sectors

To place additional code or data on unused Flash sectors:

1. Determine the address and length of the individual Flash sectors. You may need to refer to the manufacturer's specifications.
2. Determine the size of the primary C code program and the number of Flash sectors it occupies.
3. Determine the size of the additional code or data and the number of Flash sectors it will occupy.
4. Under the Target Preferences **Memory** tab, click **Add** to create two or more new memory banks; one for the primary C code program (e.g., FLASH_AB) and one or more for the additional code or data (e.g., FLASH_CD). The address and length of each memory bank must align with those of the flash sectors.
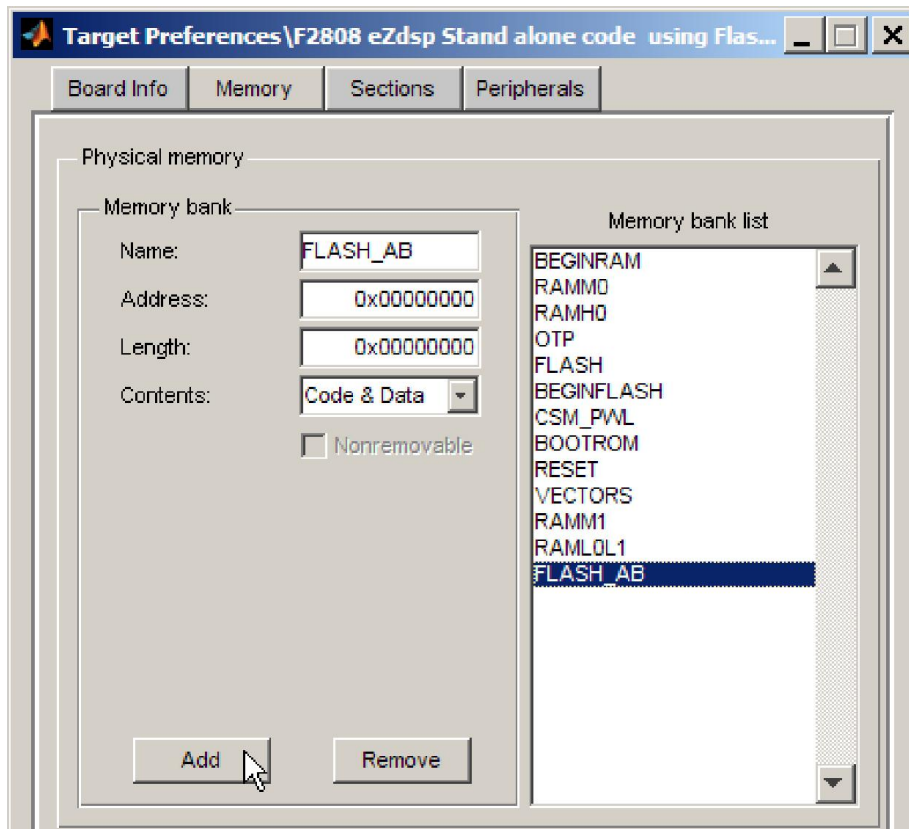
5. Under the **Sections** tab, under **Default sections**, select **.text**. Then, under **Placement** , select the new memory bank (e.g., FLASH_AB) you created for the primary C code program. The next time you program the Flash memory, the software places the **.text** C code file in the new memory bank.
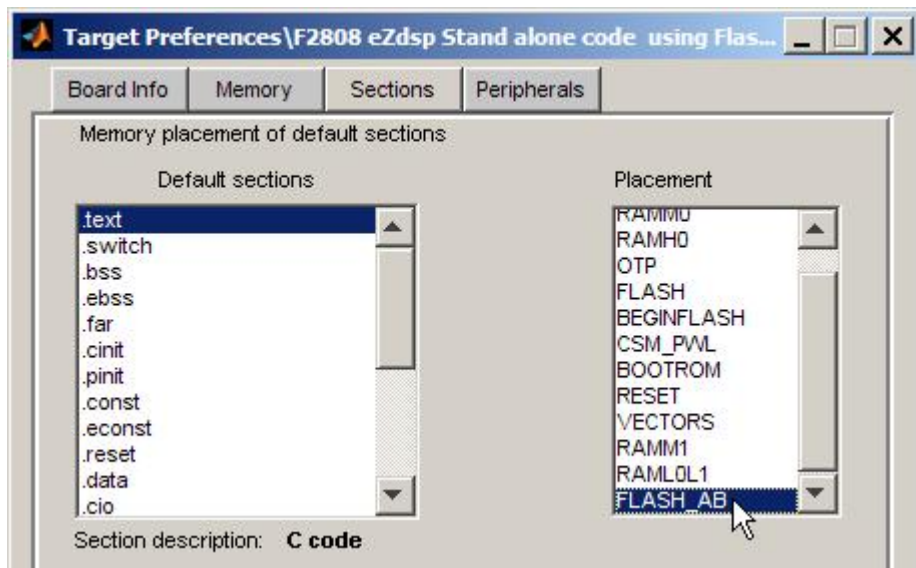
6. Similarly, select items from the **Default sections** or **Custom sections list**, and place them in the new memory banks (e.g., FLASH_CD) for the previously unoccupied Flash sectors.

Was this topic helpful?   [Yes]   [No]