MSP430 Programming Instructions

PMEL's Engineering Development Division uses MSP430 microcontrollers in many of the custom circuits. The following is the procedure for generating and programming the microcontrollers, also known as "Flashing".

Requirements

The following are the basic hardware and software requirements for generating and loading binary files onto the microcontroller. ### Hardware * Texas Instruments MSP-FET Flash Emulation Tool

Software

- IAR Embedded Workbench for MSP430
- Elprotronic, Inc. FET-Pro-430-LITE
- Free download from www.elprotronic.com

Generating "Binary" files

This is adapted from the T.I. wiki page http://processors.wiki.ti.com/index.php/Generating_and_Loading_MSP

The IAR integrated development environment (IDE) and compiler do not generate a typical binary file during compilation. Therefore downloads to the microcontroller normally require interfacing the programmer (MSP-FET) to the IDE.

Elprotronic, Inc. makes a program that will download the images to the microcontroller by using an output file that can be generated at compilation time. In order to generate this file, complete the following: 1. In **Projects->Options** select the **Linker** tab (Figure 1). In the **Output** tab, select "Allow C-SPY-specific extra output file"

2. In the **Extra Output** tab of the same **Linker** Menu, select "Generate extra output file".
   Under "Format", select Output Format: "msp430-txt"

- The output file will be found in the project directory, in Debug->Exe->Projectname.txt

Loading "Binary" files to target

1. Open the FET-Pro-430 program

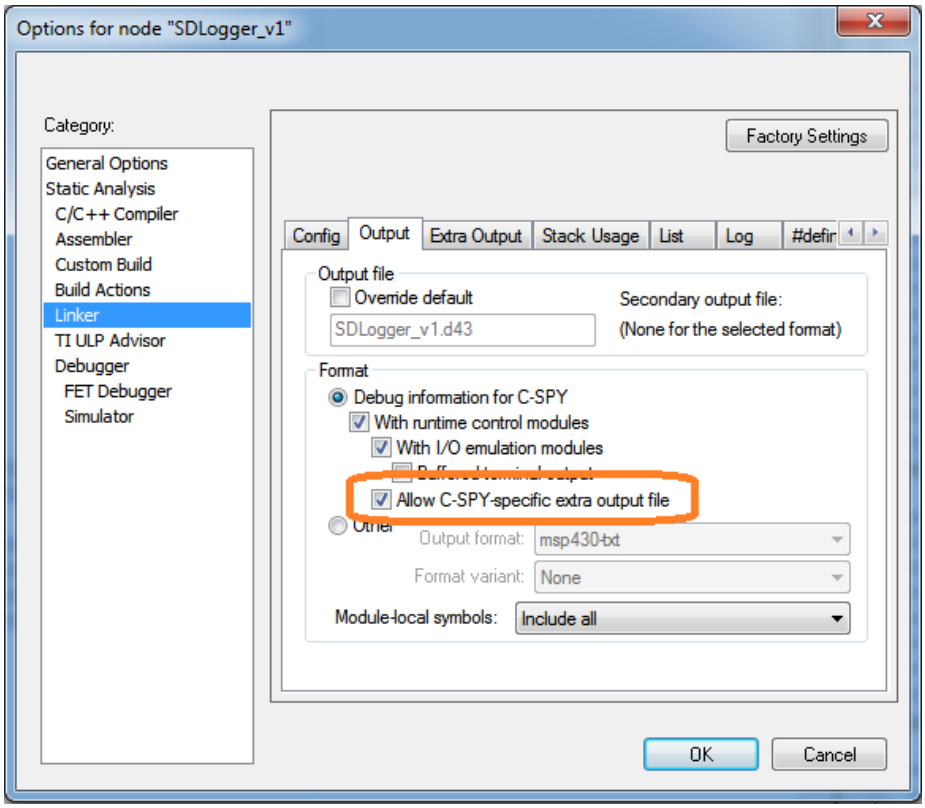


Figure 1: Linker_1

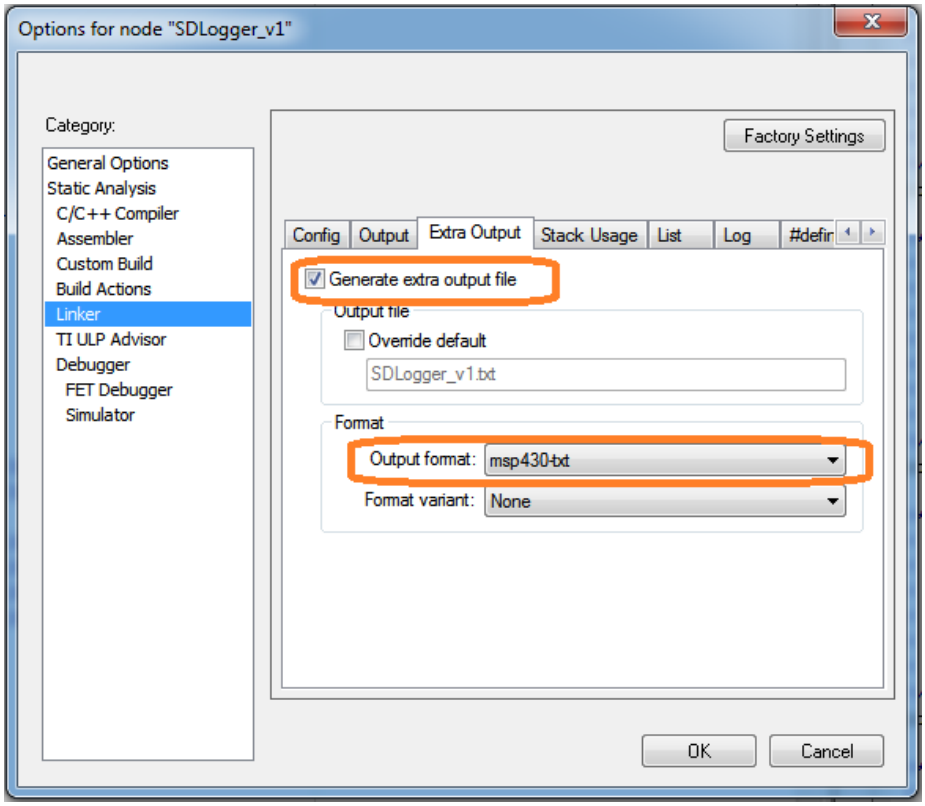


Figure 2: Linker_2

2. Press the button “Open Code File ->”, navigate to the location of the “binary” file (ProjectName.txt)

- In the source code project folder, this is found in Debug->Exe->Projectname.txt

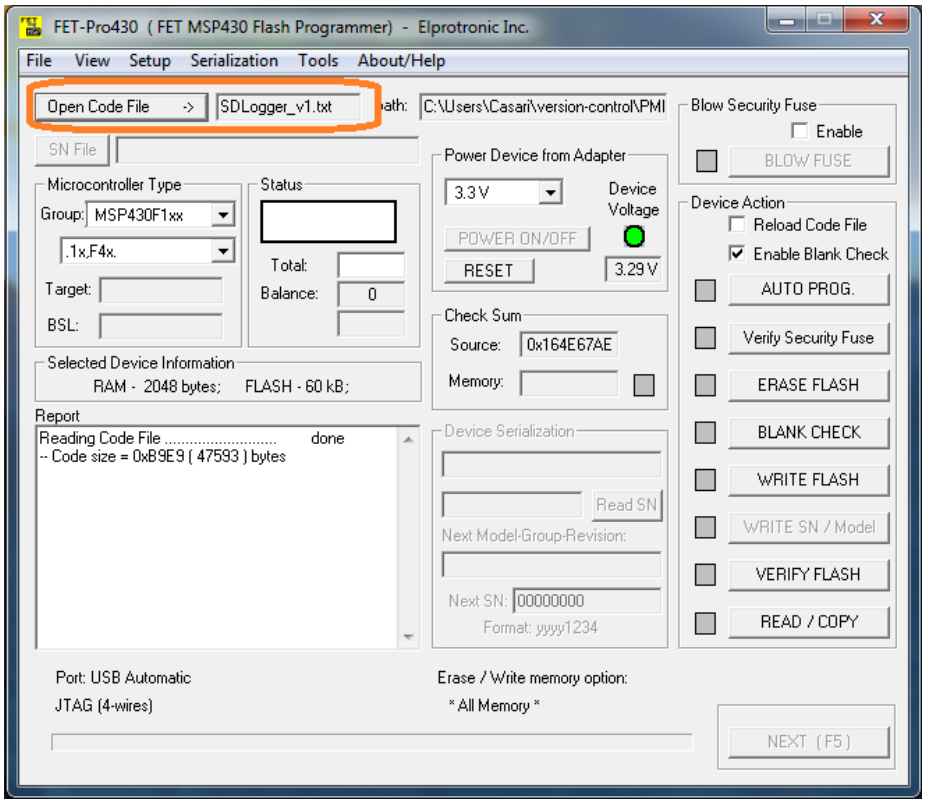


Figure 3: Step_2

3. In the Microcontroller Type block

- In “Group”, select the general type of MSP430 used.
- On the next line, select the specific type of MSP430 used.

4. In the “Device Action” block, press “AUTO PROG.”

- If successfull, the “Status” block should show **“Pass”**
- If unsuccessfull, press “ERASE FLASH” and try step 4 again.

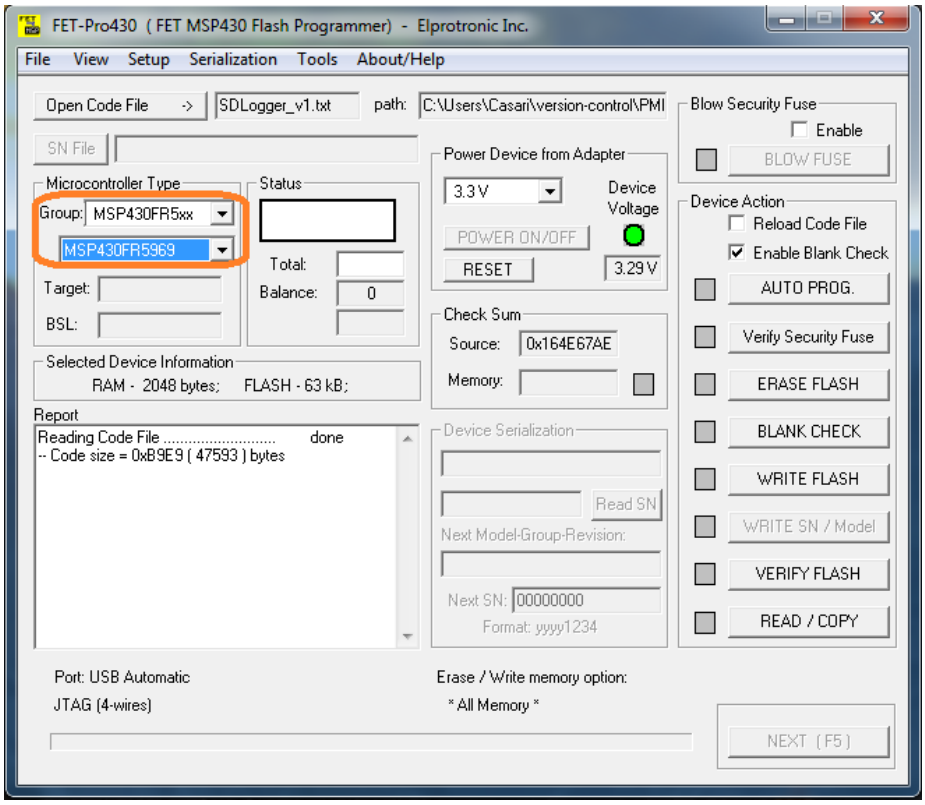
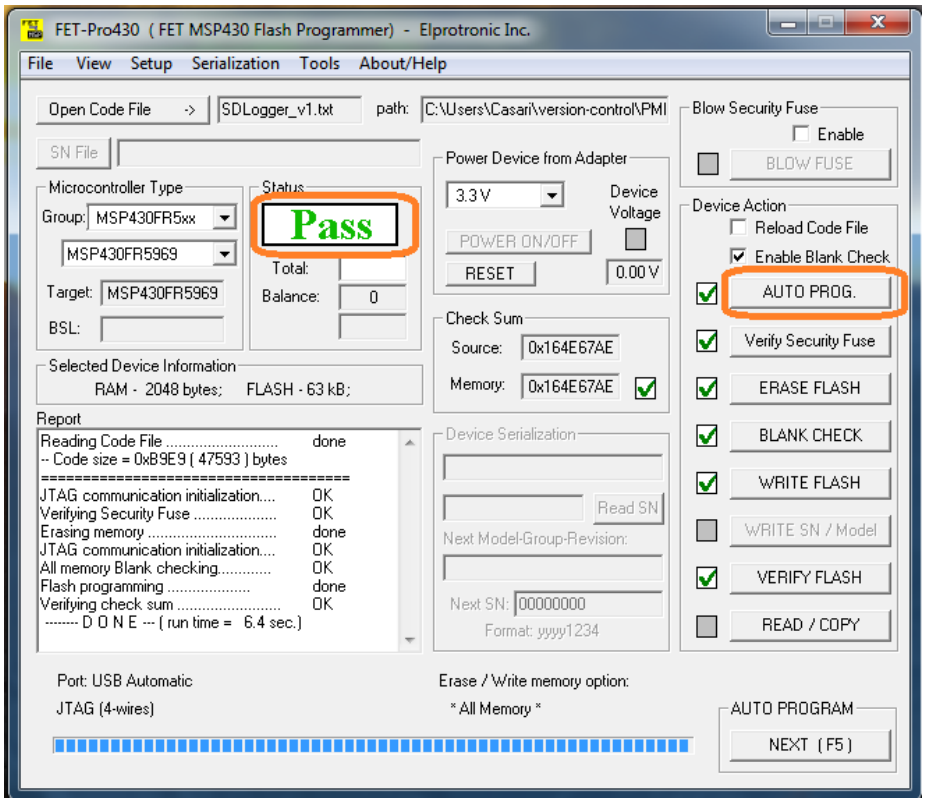


Figure 4: Step_3



5. The device is now programmed