

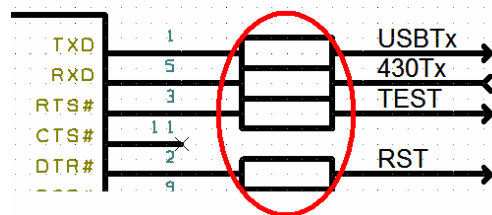
2.996 / 6.971 – MSP430 Bootloader Instructions

The MSP430x2xx series microcontrollers are equipped with a factory-installed bootloader, which allows programming the flash over the UART without a FET debugger. If you want to program your board from home, you can use this feature. Keep in mind the bootloader does not support the usual debugging options (breakpoints, watches, etc.). The following instructions describe how to set up the bootloader:

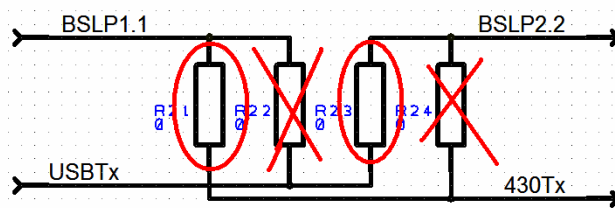
1 Configuring Your Lab Board

- The following resistors should be placed (your numbering scheme may be different):

Four 100Ω resistors here:



Two 0Ω resistors here (but not the other two):



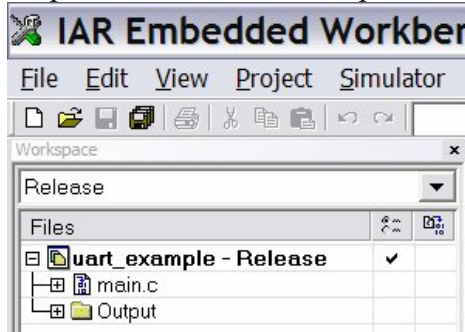
- The board needs to be powered externally (9V battery).

2 Configuring the FTDI USB Chip

- You need to install two drivers to talk to your FTDI USB interface:
<http://www.ftdichip.com/Drivers/VCP.htm>
<http://www.ftdichip.com/Drivers/D2XX.htm>
- Download and install FTDI's configuration tool, MProg, here:
<http://www.ftdichip.com/Resources/Utilities.htm#MProg>
- Download our FTDI configuration template from here:
<http://pergatory.mit.edu/biomed/files/wootstick.ept>
- With your board connected to USB, run MProg and open **wootstick.ept**.
- From the **Device** menu, select **Program** (or press **Ctrl+P**).
- The text box at the bottom of the MProg window will confirm that the new configuration template was loaded. You only need to do this once. You will need to disconnect and then reconnect your board for the changes to take effect.

3 Compiling MSP430 C Code for Bootloader in IAR

- Download IAR Embedded Workbench from here:
<http://focus.ti.com/docs/toolsw/folders/print/iar-kickstart.html>
- Start a new project or open an existing project. (From the **Project** menu, select **Create New Project**. Use the C project option with empty main.c.)
- From the **Project** menu, select **Options**. Under the **General Options** tab, set the Device to be the MSP430F2274 (or whichever microcontroller your board uses).
- Change the project configuration from “Debug” to “Release” by modifying the dropdown box in the workspace window:



- Write your code or copy in one of the example programs.
- From the **Project** menu, choose **Rebuild All** (or press **F7**). Ensure that the project builds successfully.

4 Running the Bootloader Interface

- You can use either our custom bootloader interface (preferred method) or one from the GCC toolchain for the MSP430.
- Download our custom bootloader interface here:
<http://pergatory.mit.edu/biomed/files/wootloader.exe>
- This requires the Microsoft .NET Framework, version 2.0 or later. Version 3.0 is available here:
<http://www.microsoft.com/downloads/details.aspx?FamilyID=10CC340B-F857-4A14-83F5-25634C3BF043&displaylang=en>
- Open **wootloader.exe**, select the COM port your board occupies (To find the COM port number, go to ‘Control Panel’, open the ‘Windows Device Manager’, the virtual COM port created by your FTDI chip will show up as a ‘USB Serial Port’).
- Load the output file, ending in **.txt**, from the “Release\Exe” subdirectory of your IAR project folder.
- With your board connected, click **Program Image**. Downloading should proceed automatically after a second or two. If it does not, check your connection settings.
- The GCC toolchain bootloader is command-line driven and works similarly to other GCC tools. It also supports multiple operating systems. If you are familiar with GCC or want to integrate a MSP430 compiler and bootloader into some other IDE, you can read up on and download the toolchain here:
<http://msp gcc.sourceforge.net/>