Reading MSP430 Documentation

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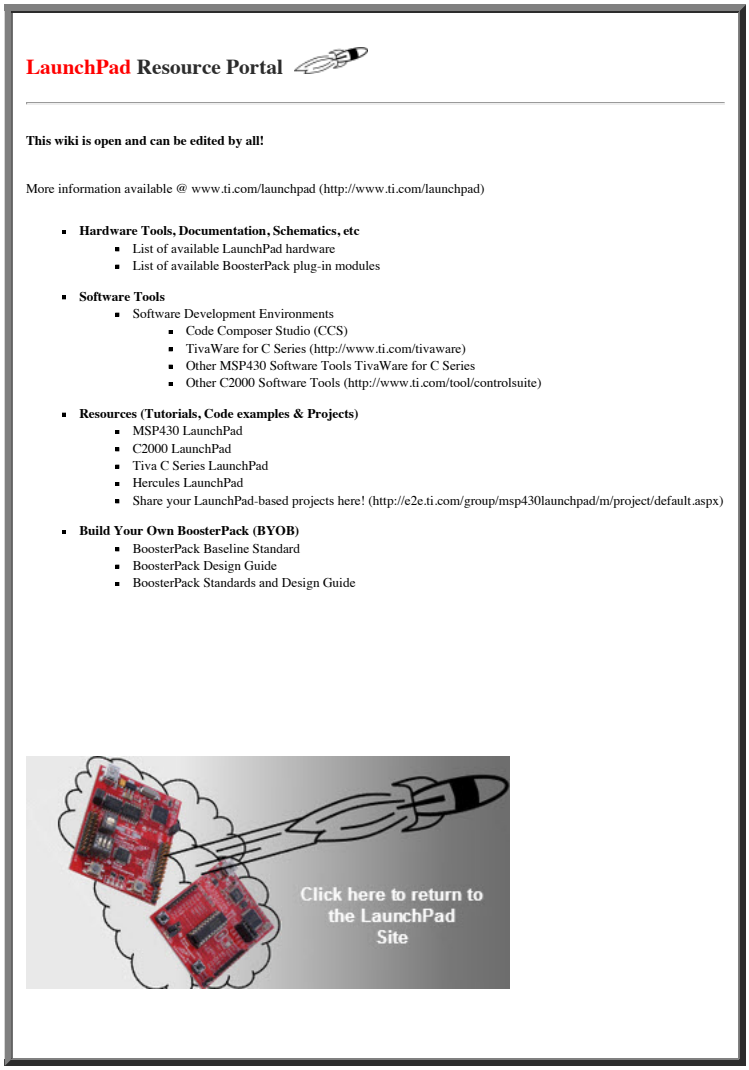
Contents



Introduction

Now that you have blinked your first LED, it's time to step it up a notch! In order to become an MSP430 expert, we will have to spend some time with some MSP430 documentation. The most important of these documents are the **MSP430 Family User's Guides**.

MSP430 Family User's Guides

The MSP430 offers a portfolio of over 400+ microcontroller devices. However, this portfolio is broken up into several "Families". The MSP-EXP430G2 LaunchPad kit supports one of those familes, which is our MSP430G2xx1, G2xx2 and G2xx3 Value Line family of microcontrollers. *See the full compatibility list here*.

Each of these MSP430 Families have their own User's Guide. Within the User's Guide, you will find information on the microcontroller's clocking system, the different Ultra-Low Power modes, as well as details on each of the integrated peripherals found inside of the microcontroller including the ADC, timers, serial communication modules & others.

Meet your new best friend = **MSP430G2xx Family User's Guide** (http://www.ti.com/lit/pdf/slau144)

Upon first glance, the User's Guide may be an intimidating document. However, with some practice the User's Guide will be a handy resource during your coding adventures!

User's Guides vs Datasheets?

So what's the difference between a specific MSP430 device's datasheet and the MSP430G2xx Family User's Guide? Simply put, the datasheet is primarily a "hardware-centric" document, which goes into detail regarding a specific MSP430's electrical and physical characteristics. Alternatively, the User's Guide is focused more towards firmware/software programmers & does a great job explaining how to do things with your microcontroller and integrated peripherals.

The MSP430G2xx Family User's Guide is shared for all of the MSP430 devices in the MSP430G2xx1, G2xx2 & G2xx3 families.

Alternatively, each MSP430 device has it's own unique datasheet. To find a specific devices datasheet, simply go to your specific device's TI Product Folder. Since the MSP-EXP430G2 LaunchPad includes the MSP430G2553, here's a link to the MSP430G2553 product folder (http://www.ti.com/product/msp430g2553) on ti.com

MSP430 Peripherals & the User's Guide

Each MSP430 is integrated with various peripherals such as ADCs, timers, serial communication modules & more. In order to use these peripherals within your application, each peripheral needs to be properly configured, enabled and used within your firmware.

Each of these peripherals are defined by a set of registers. As the microcontroller programmer, we can control these peripherals by populating 1's and 0's into the individual bits of these various registers. The MSP430G2xx Family User's Guide is a great resource for understanding each of the registers that are associated to every MSP430 peripheral. The User's Guide also details what a '1' or a '0' means when populated into a specific bit in a specific register.

To learn more about these Peripherals, TI offers code examples for each peripheral. Every MSP430 device has a zip file filled with several code examples for each of the integrated peripherals that are available in that device.

For example, here are the zip files for the MSP430 devices that the MSP-EXP430G2 LaunchPad supports:

- MSP430G2xx1 | http://www.ti.com/lit/zip/slac463
- MSP430G2xx2 | http://www.ti.com/lit/zip/slac467
- MSP430G2xx3 | http://www.ti.com/lit/zip/slac485

Looking at a specific peripherals code examples while having the User's Guide handy is a great way to learn the ins-and-outs of your MSP430 microcontroller!

Supplemental content

- **Learn about the MSP430 Registers** (http://mspsci.blogspot.com/2010/07/tutorial-02-msp430-township-and.html) *An introduction to the MSP430 architecture*
- **How to flip bits within MSP430 Registers** (http://mspsci.blogspot.com/2010/07/tutorial-03-flipping-bits.html) *Now that we know what Registers are, here are ways we can modify them*

*For technical support please post your questions at http://e2e.ti.com. Please post only comments about the article **Reading MSP430 Documentation** here.*

Links

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