Introduction to EZ430-RF2500

ECE480 Design Team 8

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![EZ430-RF2500 Kit](image)

**Figure 1:** EZ430-RF2500

Introduction

The EZ430-RF2500 is an TI product that allows the user to practice real-time control programming on the microcontrollers. A programmer comes along with each kit that is ordered. There are two boards provided and thus two microcontrollers on each board. The features of this microcontroller is that it has a built in wireless communication which the two boards could communicate with each other wirelessly with the program. This EZ430-RF2500 kit is easy to program and debug and also on each of the boards there are 18 pins for the user to use. Therefore the EZ430-RF2500...
is a very user friendly kit and has many utilities to it that further enhances the objectives of our project.

**Objective**

To help an individual how to program, debug, and communicate with real-world using the C2000 Piccolo Launchpad. The main focuses are on using IDE (Integrated Development Environment), programming methods, and access to helpful information.

**Overview**

The first step to understanding and integrating the EZ430-RF2500 is to become proficient with IDE. Ide is the interface that allows the user to program and debug the Launchpad. Second step is to determine which way to communicate with the Launchpad. For example there are different programming languages and structures and that is also very important in utilizing the microcontroller to its full potential and what this project needs to accomplish. Lastly it is very important for users to understand where to look for helpful resources such as: data sheets, guidelines, register maps and sample codes.

**Recommendation**

**Integrated Development Environment (IDE)**

Code Composer Studio (CCS) is a common IDE that supports many Texas Instruments’ Microcontroller and processors. It contains tools that can be used to
develop and debug codes. CCS includes optimizing C++ compilers, debugger, profiler, project build environment, and source code editor.

Here are some of the advantages of developing a code and implementing it with Code Composer Studio:

- Many tools to be utilized for EZ430-RF2500 such as Real-time operation system, flash programmer, programming pins
- Step by step by debugging to make sure that the system is working the way it should work such as register changing values for different LEDs to light up.
- Different Panels for different purposes. For example creating buttons for cycles to be pressed and delivering what needs to be done through those cycles
- Real-time debugging circuitry on EZ430-RF2500 devices

Apart from the programming portion EZ430-RF2500 also gives the wireless communication. There are two motherboards that come with this kit and they have built in wireless communication on both boards to communicate with each other. This part was very essential part to our project as we needed to wireless communicate between our system and the washing machine main system. Therefore this was one of the criteria that we cannot miss out on.

**Programming the EZ430-RF2500**
**Programming Language**

The programming of EZ430-RF2500 can be done either using C or C++ language. The selection is based on the preference of the user and the confidence level of the user. There will be table below showing the comparisons between the two programming languages and it is upon the user to determine the best way to program the microcontrollers for maximum performance.

<table>
<thead>
<tr>
<th></th>
<th>C</th>
<th>C++</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Typing Discipline</strong></td>
<td>Weak, Static</td>
<td>Strong, Unsafe, Nominative</td>
</tr>
<tr>
<td><strong>Paradigms</strong></td>
<td>Imperative Systems</td>
<td>Objected-Oriented</td>
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<tr>
<td>implementation</td>
<td>language</td>
<td>programming</td>
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<tr>
<td><strong>Garbage Collection</strong></td>
<td>Allows better management of memory manually</td>
<td>None Available</td>
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<tr>
<td><strong>Speed</strong></td>
<td>Faster to compile and execute</td>
<td>Slightly slower if not proficient with the language</td>
</tr>
</tbody>
</table>

**Resources for optimal experiences**

Throughout any programming it is always useful to have the most information available. Therefore having resources as to which pins direct to which registers and specific microcontroller’s driver, peripheral datasheet, sample codes, and training tutorial could be extremely useful in the development process of the system. The references that are listed at the bottom of this document is where the useful information is located.
References

- [http://www.ti.com/lit/ug/slau227e/slau227e.pd](http://www.ti.com/lit/ug/slau227e/slau227e.pd)