**GUI - Setup and Use**

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### Abstract

The TI Microcontroller TMS320F28379D is a powerful 32-bit floating-point microcontroller unit (MCU) designed for advanced closed-loop control applications such as industrial motor drives; solar inverters and digital power; electrical vehicles and transportation; and sensing and signal processing.

For our project, we are using this TI Microcontroller for hardware in the loop with the OPAL-RT system. Throughout this document, we will explain the processes and helpful tips for the setup and use of this board and how we accomplished our goals by interfacing with this board.

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# Section 1.0 - Equipment Requirements

Hardware:

* TI Microcontroller – TMS320F28379D
* 1 Micro USB and 1 Mini USB B or 2 Micro USB cables

Optional Hardware:

* Analog Discovery Kit
* Jumper Cables

Note: This document is under the assumption that the user has a functional Windows OS and machine. Steps for Mac and Linux are not documented here.

Software:

* Code Composter Studio – Version 10 or higher

Optional Software:

* Waveforms

# Section 1.1 - Initial Hardware Setup

The process of setting up the TI Microcontroller can be done by using one of the following:

1. One Micro USB and one USB Mini B connector
2. One Micro USB and one DC Power Jack (5V)



#### Figure 1 – TI Microcontroller (Vertical) and Development Board (Horizontal)

As shown in Figure 1, we can see the proper connection of the TI Microcontroller and the Development Board. By carefully connecting the two boards, and latching the two tiny, white latches into place, the board is ready to be plugged in.

Taking the wires that you have chosen for your boards, follow the same numbers that correspond from your choice above:

1. Plug the Micro USB into the top of the TI Microcontroller (Labeled as 1 in Figure 1). Next, plug the Mini USB B into the side of the TI Microcontroller (Labeled as 2 in Figure 1).
2. Plug the Micro USB into the top of the TI Microcontroller (Labeled as 1 in Figure 1). Next, plug the DC Power Jack rated for 5V in the side of the Development Board into the barrel connector (Labeled as 3 in Figure 1). Then flip the switch next to the barrel connector so that the lights on the Development Board turn on.

# Section 1.2 - Initial Software Setup

A picture containing graphical user interface

Description automatically generatedThe first step in setting up your software is to download a program called Code Composter Studio. The download for the CCS IDE can be found here: <https://www.ti.com/tool/CCSTUDIO>

After navigating to the link above, click on , and download the proper OS and version.

**Note**: Please keep in mind that CCS is a large program, so be sure that you have the space for it.

Upon installation of CCS, launch the newly installed program.

**Note**: Any of these steps can be clarified and followed by the setup tutorial created by TI which is found here: <https://training.ti.com/c2000-f2837xd-microcontroller-one-day-workshop-series?context=1134645>

It is highly recommended to use this workshop link and follow the tutorials and labs.

Upon launching Code Composer, you can set up

# Section 2 - Input and Output Operations

The

# Section 3 – Resources

Code Composer Studio: <https://www.ti.com/tool/CCSTUDIO>

TI C2000-F2837xD Microcontroller One Day Workshop: <https://training.ti.com/c2000-f2837xd-microcontroller-one-day-workshop-series?context=1134645>