Capacitive Touch MSP430FR2676 MCU Board

This getting started guide provides a brief overview of the CAPTIVATE-FR2676 capacitive touch processor MSP430FR2676 board. It describes the common use cases for this processor board, introduces the required tools and hardware that are needed to develop with it, and provides the relevant links to the detailed CAPTIVATE-FR2676 EVM chapter in the CapTIvate™ Technology Guide.

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1 Introduction

The CapTIvate MSP430FR2676 MCU board (CAPTIVATE-FR2676) is a simple evaluation board for evaluating capacitive touch and proximity sensors through the use of plug-in sensor boards (sold separately). The MCU board has a 20-pin female debug connector for debugging the on-board MSP430FR2676 CapTIvate MCU and a 48-pin sensor panel connector for connecting to external capacitive touch sensors. Also included on the MCU board is a partially filled BoosterPack™ plug-in module header, which enables limited support for the LaunchPad™ kit and BoosterPack module ecosystem.

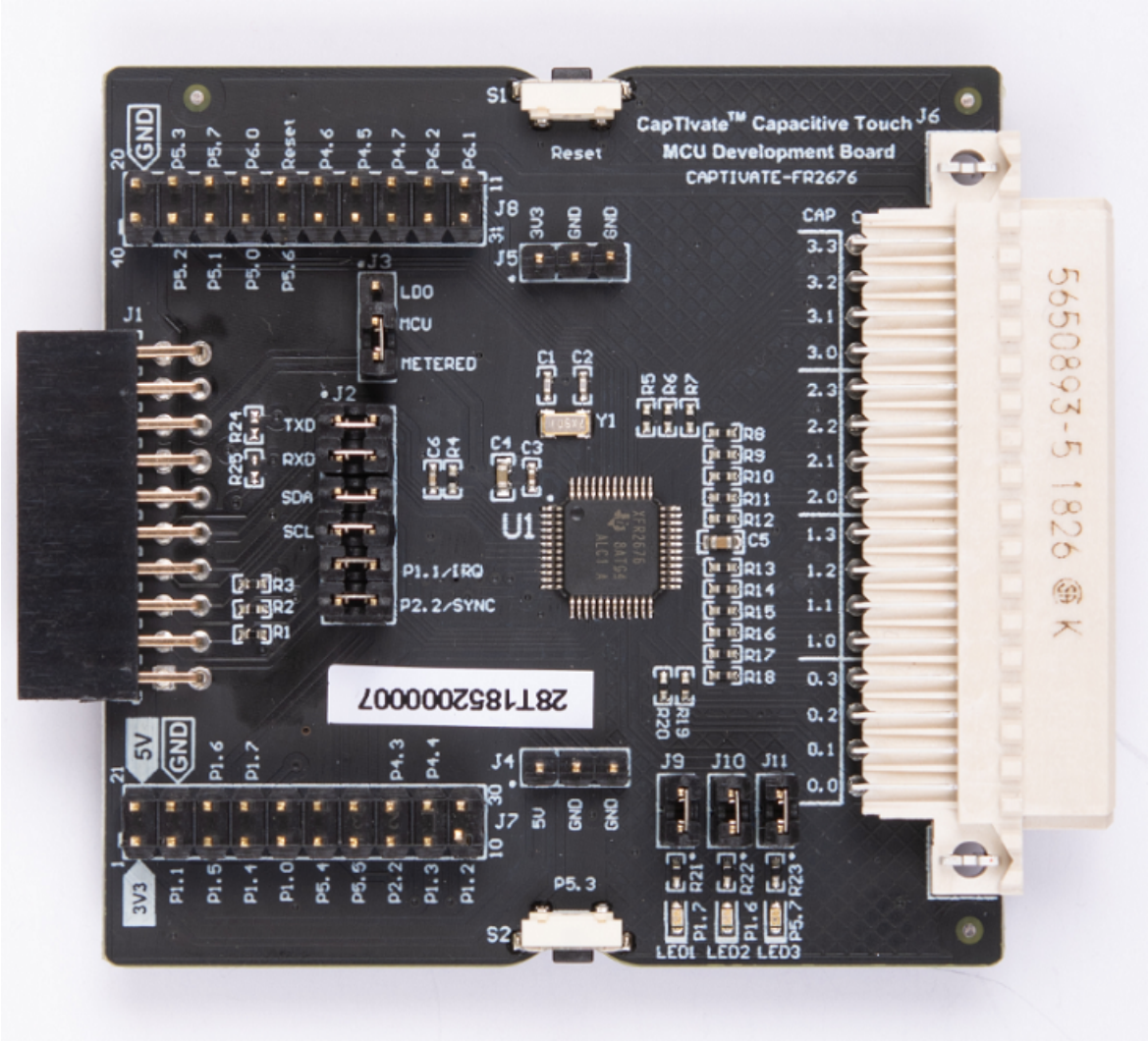


Figure 1. CAPTIVATE-FR2676 Board

1.1 Scope

This getting started guide provides a brief overview of the CAPTIVATE-FR2676 MCU board. The full detailed EVM user's guide is available within the CapTIvate Design Center integrated documentation. The latest version of the user's guide is also available online in the CapTIvate™ Technology Guide.

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2 Using the CAPTIVATE-FR2676

The CAPTIVATE-FR2676 MCU board is most commonly used with CAPTIVATE-PGMR module and sensor boards.

2.1 Required Tools and Hardware

The following tools and hardware are required to use the CAPTIVATE-FR2676.

2.1.1 Software

- CapTIvate Design Center tool

  The CapTIvate Design Center is the one-stop-shop development environment for CapTIvate touch-sensing MCUs. In addition to serving as the CapTIvate development graphical user interface, the design center also contains all of the CapTIvate software examples and relevant technical documentation. To get the most out of your CAPTIVATE-FR2676, download and install the latest version of the CapTIvate™ Design Center GUI for MSP430™ Capacitive Sensing MCUs. The CapTIvate Design Center supports Microsoft® Windows®, Apple® macOS®, and Linux® host environments. The minimum required CapTIvate Design Center version with CAPTIVATE-FR2676 support is version 1.80.00.00.

- Integrated development environment (IDE)

  To program a software example to either a host LaunchPad development kit or the CAPTIVATE-FR2676, an integrated development environment is required. CapTIvate software examples support TI Code Composer Studio™ IDE (CCS) and IAR Embedded Workbench® for MSP430 IDE (IAR EW). The minimum CCS version with support for the MSP430FR2676 MCU is version 8.3. The minimum IAR EW version is version 7.12.3.

2.1.2 Hardware

- CAPTIVATE-PGMR

  This board is required for connecting the CAPTIVATE-FR2676 to a host PC to enable communication with the CapTIvate Design Center and programming of the onboard MCU. The CAPTIVATE-PGMR is needed to load code examples other than the out-of-box experience example that comes preprogrammed on the CAPTIVATE-FR2676.

- CAPTIVATE-PHONE

  This board is a simple evaluation sensor board for mutual-capacitance capacitive touch sensors using a variety of configurations in a real-world application.

- CAPTIVATE-BSWP

  This board is a simple evaluation sensor board for self-capacitance capacitive touch sensors in a variety of configurations

2.2 Prerequisites

- Software Installation
  1. Install the CapTIvate Design Center GUI on a Windows, Linux, or macOS computer (note the requirements).
  2. Install a development environment (IDE).
- Hardware Setup
  1. Connect the CAPTIVATE-FR2676 MCU module to the CAPTIVATE-PGMR module.
  2. Connect the desired sensing panel board to the CAPTIVATE-FR2676 module. The out-of-box experience uses the CAPTIVATE-BSWP panel.
  3. Connect the micro-USB cable to the CAPTIVATE-PGMR programmer PCB and the computer.
  4. Verify that LED2 and LED5 (power good LEDs) on the CAPTIVATE-PGMR module illuminate and that LED4 (HID Bridge enumeration) blinks.

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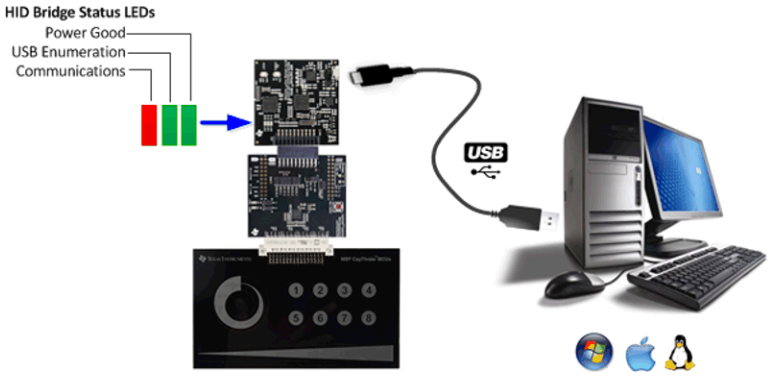


Figure 2. Hardware Setup

2.3 Out-of-Box Experience

The CAPTIVATE-FR2676 MCU board is factory-programed with out-of-box code that works with the CAPTIVATE-BSWP sensor panel board. For details on running the example code, refer to CAPTIVATE-BSWP Demonstration in the CapTIvate™ Technology Guide.

3 Hardware

For a detailed description of the CAPTIVATE-FR2676 hardware, see the CAPTIVATE-FR2676 hardware description in the CapTIvate™ Technology Guide.

3.1 Functional Block Diagram

Figure 3 shows the CAPTIVATE-FR2676 functional block diagram.

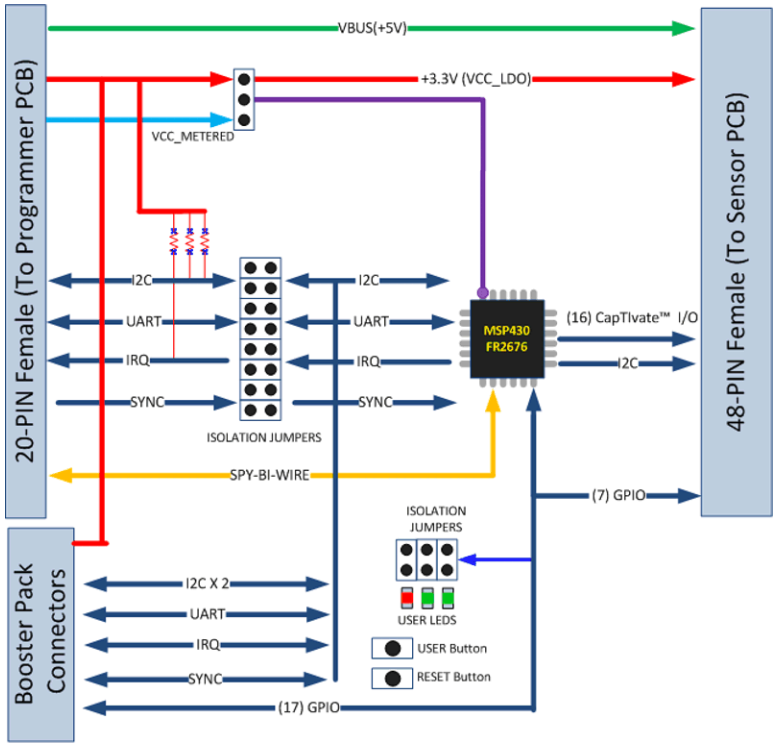


Figure 3. CAPTIVATE-FR2676 Block Diagram

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