Connecting MSP430 MCU to AD5941 Electrochemical Front End

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The code included in this repository was flashed to the MSP430 MCU to perform Open Circuit Potential (OCP) and amperometric measurements.

The MSP430 microcontroller was connected to the AD5941 Electrochemical Front End (EFE) via SPI connection; the exact pins used in this connection are listed in Table 1.

Table 1: SPI connections (pins and functionalities)

|  |  |
| --- | --- |
| MSP430 MCU | AD5941 EFE |
| P2.2 (UCB0CLK) | CLK (SPI Clock) |
| P1.7 (UCB0SOMI) | MISO (SPI Output) |
| P1.6 (UCB0SIMO) | MOSI (SPI Input) |
| P3.0 (Digital Output) | RST (Reset) |
| P4.7 (Digital Output) | CS (Chip Select) |
| P4.3 (Digital Input) | D0 (Interrupt Output) |

The two modules are powered by a DC power supply of 3.3 V.

The flashing of the MSP430 microcontroller and the reporting of the results were done through the MSP-FET430 Flash Emulation Tool (FET) provided by Texas Instruments (TI) as shown in the photo below. The MCU was progreammed to write the measurements to its UART port which was connected to the TX/RX pins in the FET device.

![A circuit board with wires connected to it

Description automatically generated]()

Figure 1: MSP-FET Flash Emulation Tool used to report measurements via USB port