ADC_DMA example project
1.10

Features

- Project uses ADC with Default single ended mode
- Continuous conversion mode with 8-bit resolution
- ADC Reference used is internal reference
- ADC EOC signal is used as the Hardware request for DMA.
- VDAC is configured in default mode.

General Description

This example project demonstrates the usage of the DMA component to transfer the ADC output data to the VDAC input register.

Development kit configuration

1. This project is written for a 2X16 LCD display as the one available in the Cypress kit CY8CKIT-001.
2. Build the project and program the hex file on to CY8C3866AXI-040 using MiniProg3.
3. Connect pins as described below and power cycle the device.
4. Observe the ADC output on the LCD and VDAC output using a multi-meter.

Project configuration

The example project consists of ADC_DelSig, DMA, VDAC and Char LCD components. The top design schematic is shown in Figure 1. The Character LCD component is used for displaying the ADC output and the VDAC input register values. The DMA is used to transfer the converted digital value from ADC component to the VDAC which then converts this digital value to analog voltage.

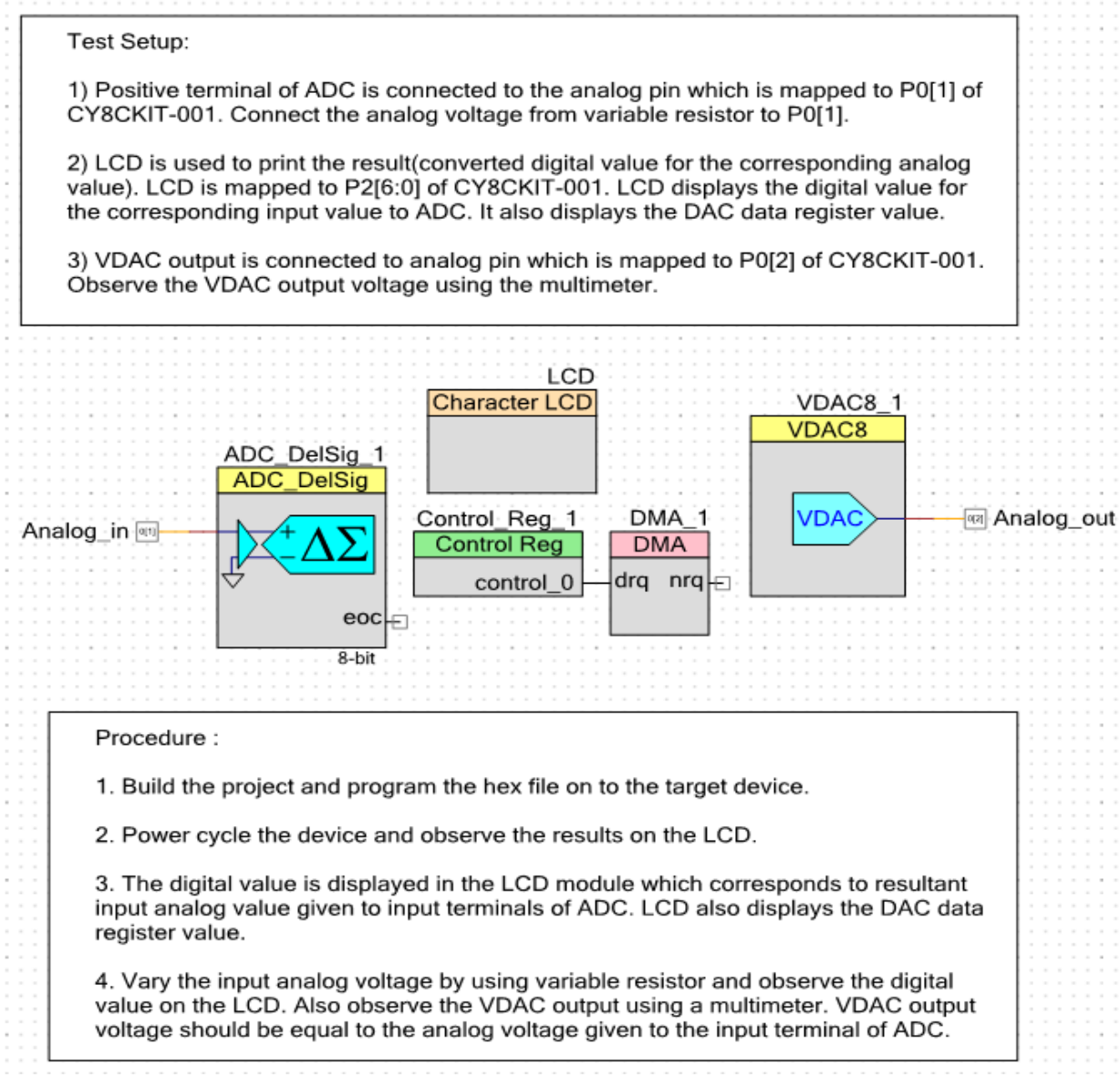

Figure 1. Top design schematic.

The Character LCD is configured in its default configuration. The ADC is configured in the default single ended mode with 8-bit Continuous conversion mode. The ADC_DelSig component configuration window is shown below in figure 2.

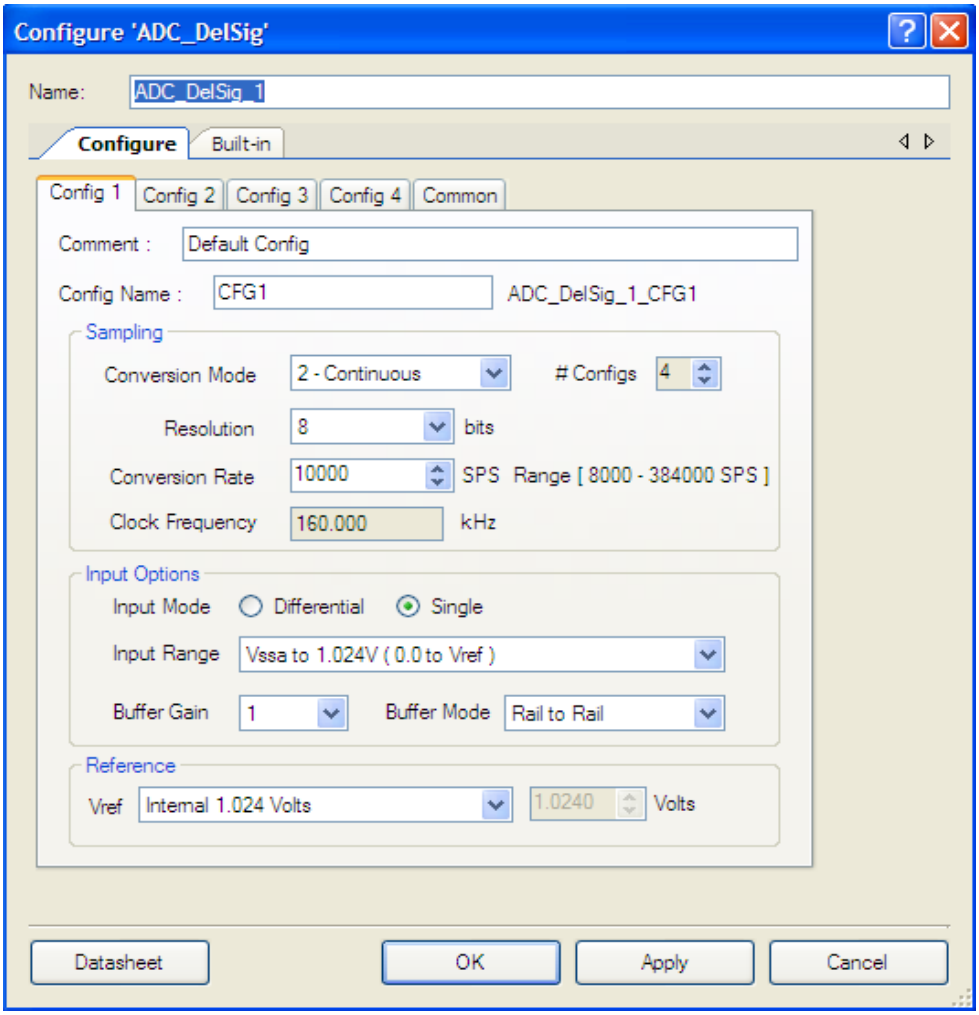

Figure 2. ADC_DelSig Component Configuration.

Project description

In the main function all components are started. Also, the DMA is configured to transfer the ADC output to the VDAC data register. For the proper usage of the Character LCD and VDAC components, please refer to the corresponding component datasheets.

In this project, ADC_DelSig component is configured in default single ended mode with 8-bit resolution. Continuous conversion mode is used to convert the input analog voltage. ADC_DelSig_IsEndConversion() API is used to check the successful completion of each conversion. After completing the conversion, a pulse is generated using control register which is used as the data ready signal for DMA. On each rising edge of the pulse signal from control register, DMA transfers the ADC output to VDAC data register. VDAC then converts this digital

value to corresponding analog voltage. VDAC output is mapped to port P0[2] of CY8CKIT-001. VDAC output can be measured using a multi-meter. This project also display the ADC output on the LCD.

Expected Results

The VDAC output voltage measured using a multi-meter should be equal to the analog input voltage given to the input terminal of the ADC component.