Pulse Converter Example Project
1.0

Features

- Two Basic Counter components count the number of DMA nrq pulses.
- A Pulse Converter component ensures that no nrq pulses are missed.

General Description

This example project demonstrates the usage of the Pulse Converter component to interface a fast domain to a slow domain.

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. Observe the count values on the LCD.

Project configuration

The example project consists of Basic Counter, Pulse Converter, DMA, Status Register, and Char LCD components. The top design schematic is shown in Figure 1. The Character LCD component is used for displaying the count value.

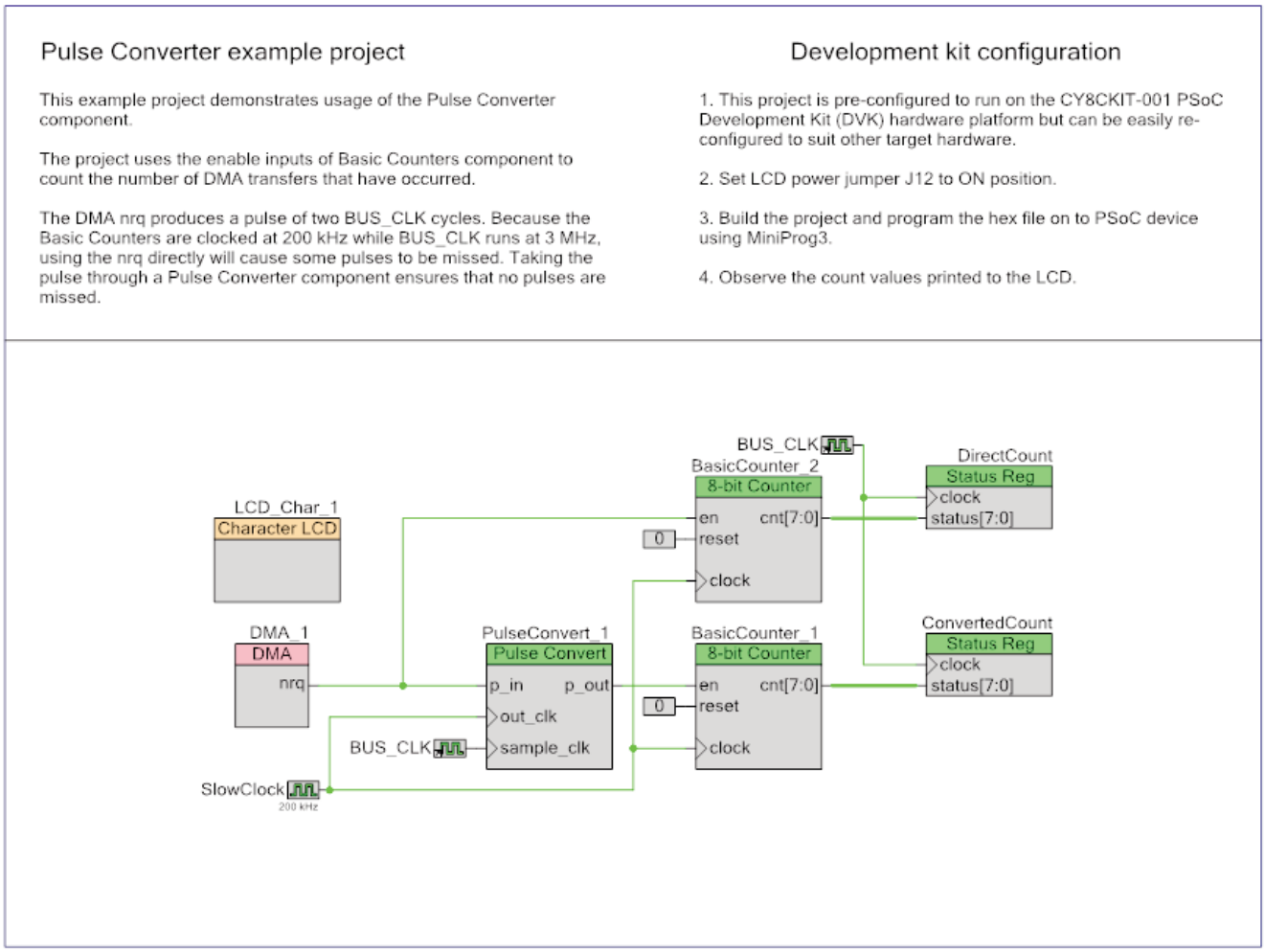

Figure 1. Top design schematic.

The Character LCD and Status Registers are configured in their default configurations. Both Basic Counters are configured with Width == 8. The DMA is configured in main.c to repeatedly copy all values from one SRAM buffer to another.

Project description

The main function starts the DMA and Character LCD, and continually prints the value from the Status Registers to the LCD.

The two Basic Counter components count the number of transfers the DMA completes. The DMA transfer is large, and BUS_CLK is configured to run at 3 MHz, causing a transfer to complete about every 9 ms. A counter running at 200 kHz should be sufficiently fast to count the DMA transfers. However, the nrq pulse is only 667 ns long, so BasicCounter_2 will miss pulses

because it samples the nrq directly. The Pulse Converter ensures that BasicCounter_1 does not miss any pulses.

Expected Results

The “Direct” count value should increment at a much slower rate than the “Converted” count value. This is due to pulses being missed by BasicCounter_2.

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