TCPWM (Timer / Counter mode) example project

2.0

Features

- Project uses TCPWM component with Capture Timer/Counter mode configuration
- Indicate the Underflow and Capture signal interrupts on different color LEDs

General Description

This example project demonstrates the TCPWM component usage in the Capture Timer/Counter mode.

Development kit configuration

1. Use the CY8CKIT-042 Kit with the default configuration and the CY8CKIT-040 Kit with changed project configuration settings.
2. Connect P2[0] to P0[1].
3. Build the project and program the hex file on to the target device.
4. Power cycle the device and observe the results on the LEDs.

In order to configure the project for CY8CKIT-040 the following steps should be performed:

1. Change the project's device from PSoC 4200 to PSoC 4000.

   Use Device Selector from the project's context menu.

2. Change assignment of the pins component to physical pins.

   In the Workspace Explorer window, double-click the project's design-wide resource file and assign the pins LED_GREEN, LED_BLUE accordingly to Table 1.

   Table 1. Pin assignment of TimerExample project

Pin Name	Development Kit	
	CY8CKIT-042	CY8CKIT-040
LED_GREEN	P0[2]	P1[1]
LED_BLUE	P0[3]	P0[2]
Capture_Out	P2[0]	P2[0]
Capture_In	P0[1]	P0[1]

Project configuration

The example project consists of the following components: TCPWM, Clock, three digital output pins, digital input pin, and Interrupt. The TCPWM is used as the Down Timer with the Capture mode in the Continuous Run mode. One output pin is used for the Capture signal generation. Two output pins are used to reflect the underflow and capture events when interrupts happen. The top design schematic is shown in Figure 1.

Parameters used:

- Timer/Counter Compare mode
- Period = 65535u
- Counter mode = Down
- Prescaler = 1x
- Capture signal is present in Rising Edge trigger Mode
- Interrupt mode = Capture or Terminal count

The TCPWM (Timer / Counter mode) datasheet example project

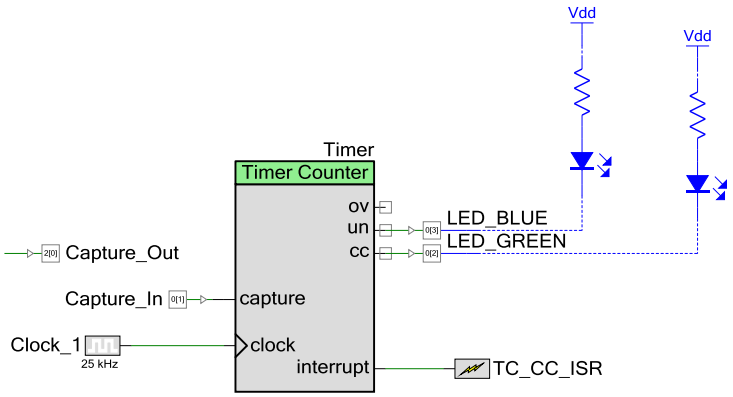

Figure 1. Top design schematic.

The TCPWM component GUI configuration (Figure 2, Figure 3):

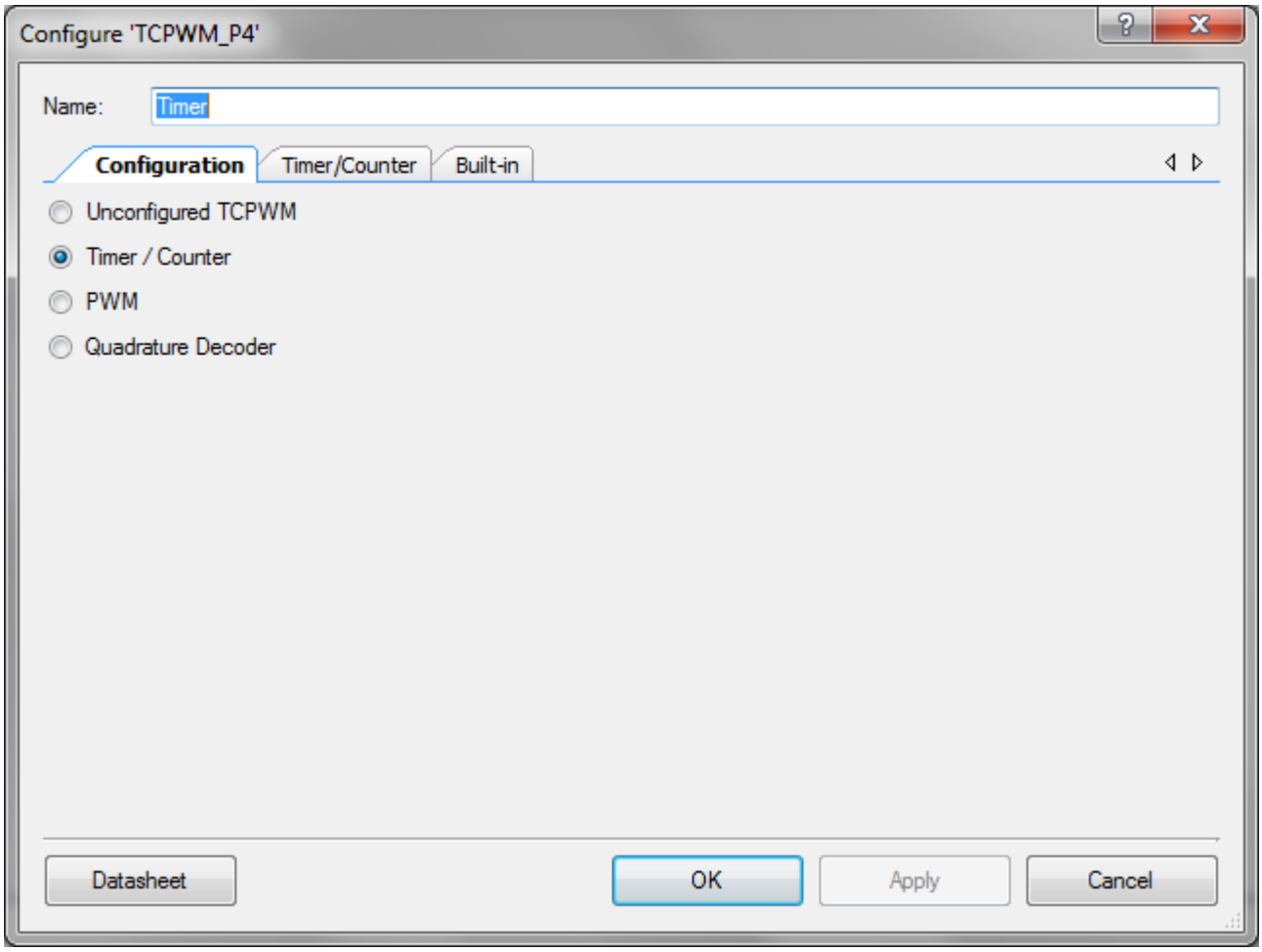

Figure 2. TCPWM Component Configuration Tab

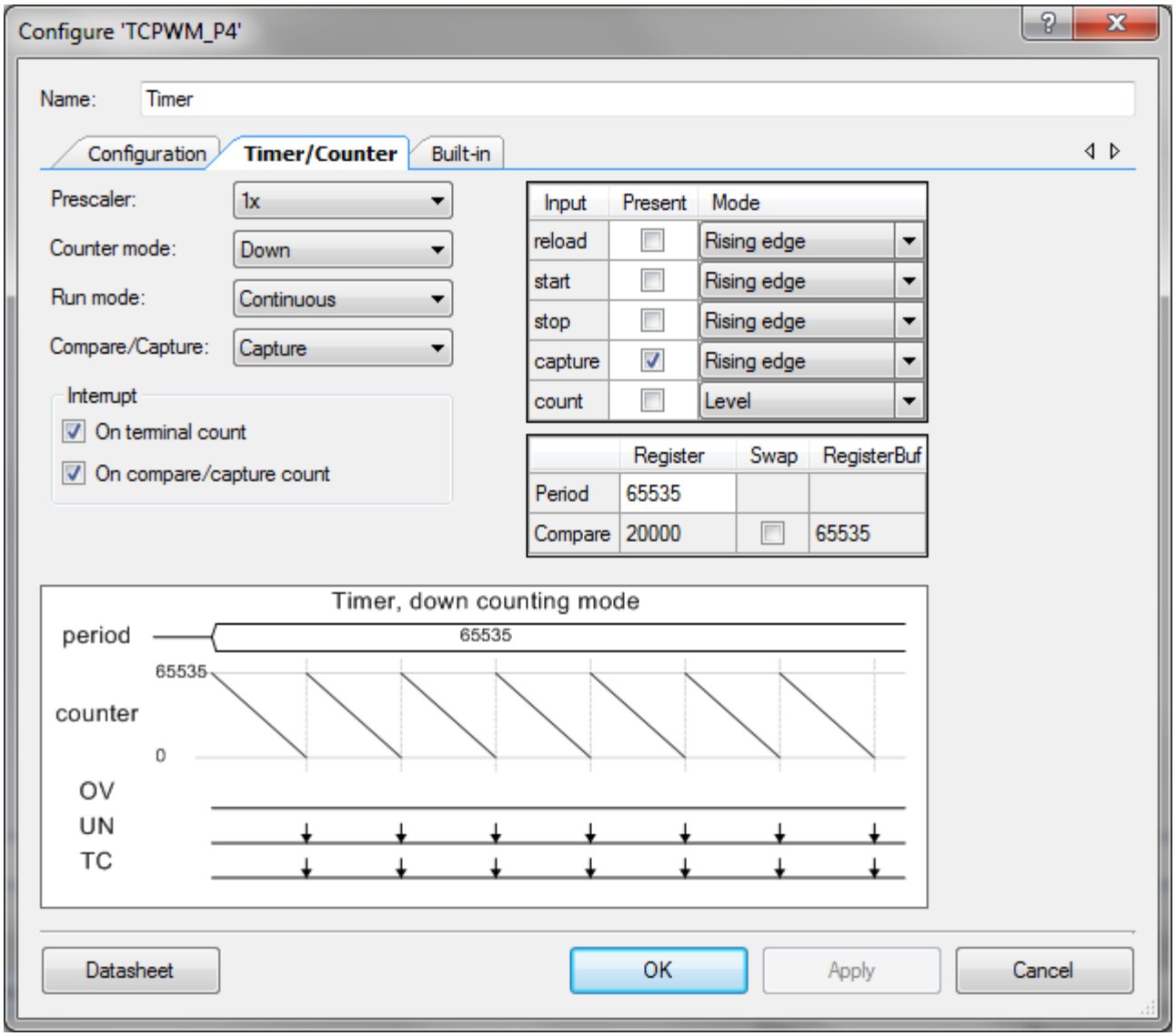

Figure 3. TCPWM Component Timer/Counter Tab

Project description

In the project, TCPWM counts the value from 65535u down to 0u. Every 5 seconds the Capture_out signal generates capture pulses. When the counter reaches the period value, the interrupt happens and the blue color LED flashes on for 200ms. When the capture signal is generated, an interrupt happens and the green color LED flashes on for 200ms.

Expected results

The blue color LED flashes on when a TC interrupt is caused by the Overflow signal. The green color LED flashes on when a CC interrupt is caused by the Capture signal.