EXAMPLE NAME: PWM_EXAMPLE_XMC13

OVERVIEW: This example demonstrates how use the APP to generate PWM signal and update the frequency periodically. Using a CCU4 Low Level Driver (LLD), the period value of the PWM is also updated.

DESCRIPTION:

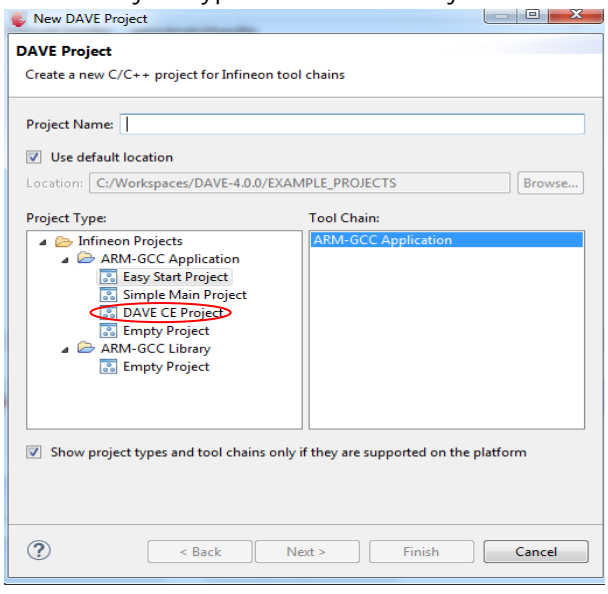
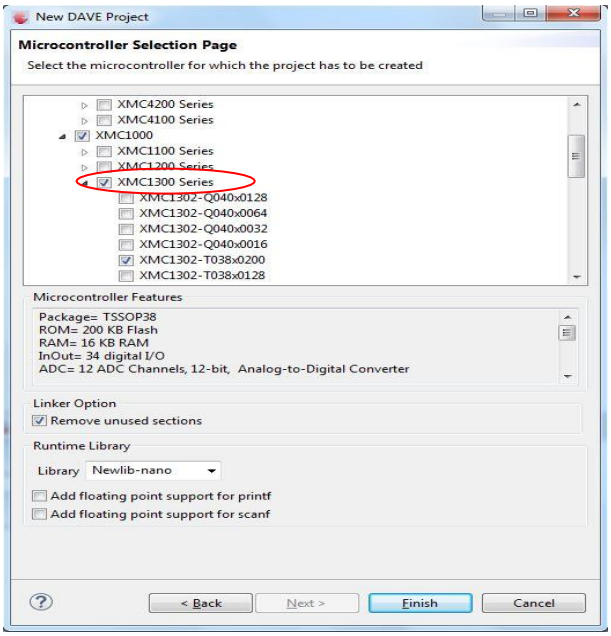
- PWM APP toggles an LED connected to P0.0 at 1 Hz frequency. Using the CCU4 LLD, the speed of toggling is changed to 10Hz using a pre-calculated value.
- INTERRUPT APP is used to control the LEDs and the speed of toggling is updated every 10 seconds.

REQUIRMENTS:

Boards Required: XMC1300 Boot Kit (Order Nr: KIT_XMC13_BOOT_001)

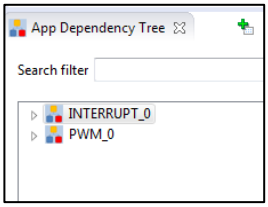
HOW TO CREATE THE PROJECT:

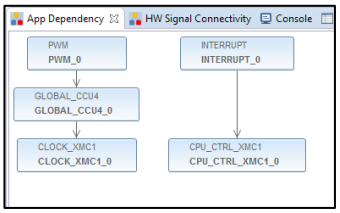
1. Open the DAVE CE and use  "Add IDE New Project Wizard" on the toolbar to add a new DAVE Project.

Enter Project Name Select "Project Type ➔ DAVE CE Project"	Select Microcontroller ➔XMC1300 Series ➔ XMC1302-T038X0200
	

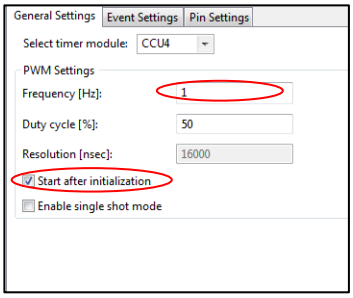
2. Use the "Add New APP" in the toolbar to add 1 instance of PWM and INTERRUPT APP. Configure the APP instances with the following configurations.

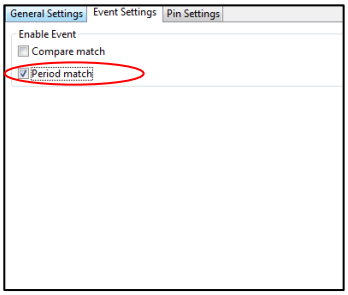
Views: APP Dependency Tree and APP Dependency

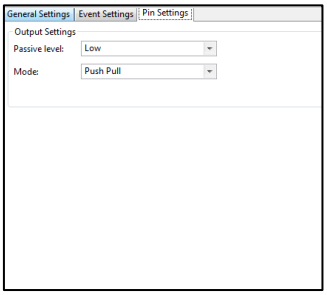




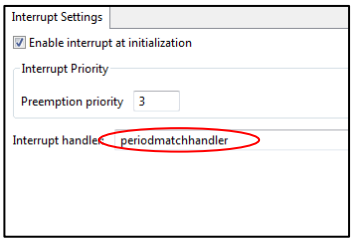
PWM_0:



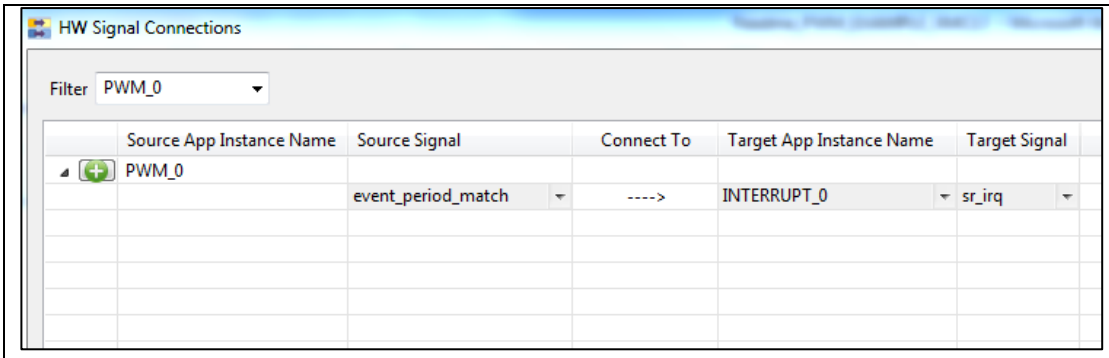




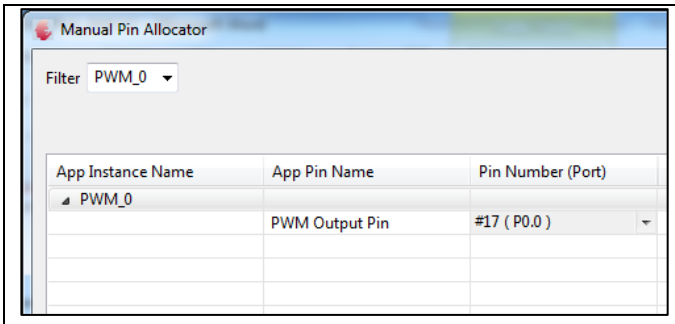
INTERRUPT_0:



3. Use the "Hardware Signal Connections" found at the bottom right of the APP UI window, to configure the signal connections.



4. Use the  "Manual Pin Allocator" found in the toolbar, configure the output pins for the PWM.



5. Generate the code for configurations made and change main.c accordingly.
6. Build and download to the microcontroller.

HOW TO USE THE XMC CCU4 LLD IN THE PROJECT:

1. Calculated setting for 0.1 second is made on for the XMC1000 device. The SFR (period and prescaler) settings are the following:
    - MCLK = 32MHz, PCLK = 64MHz, f_{ccu4} = 64MHz, Prescaler= 2^7 = 128
    - Resulting clock resolution for CCU4 = 2000nsec

    For a period of 0.1 second, the corresponding settings for Period and Prescaler are:
    - Period, PRS = 50000 = 0xC350
    - Prescaler, PSIV = 7

2. Refer to LLD documentation for complete API definition

HOW TO TEST:

Download and run the demo in the uC.

OBSERVATIONS:

- For every 10 seconds, the LED toggles every 0.1 second and for next 10 seconds, it toggles every 1 seconds. This toggling pattern repeats.

HINTS WHEN MIGRATING EXAMPLE TO OTHER DEVICES IN THE SAME XMC FAMILY:

- This (PWM) APP supports both CCU4 and CCU8 peripheral. Only XMC1300 and XMC1400 devices supports CCU8 peripheral module.