EXAMPLE NAME: PDM_DIMMED_LED_LAMP_DIRECT_PDM_3RGB_EXAMPLE_XMC12

OVERVIEW: This example demonstrates how use the PDM_DIMMED_LED_LAMP APP to control three 3-channel RGB lamps using external linear drivers.

DESCRIPTION:

- PDM_DIMMED_LED_LAMP APP drives an RGB lamp each using 3 PDM_BCCU APP and a DIM_BCCU APP.
- SYSTIMER APP provides a periodic 1s interrupt for changing lamp color and dim level.

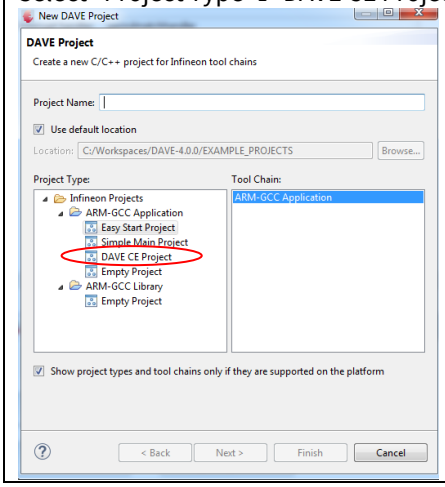
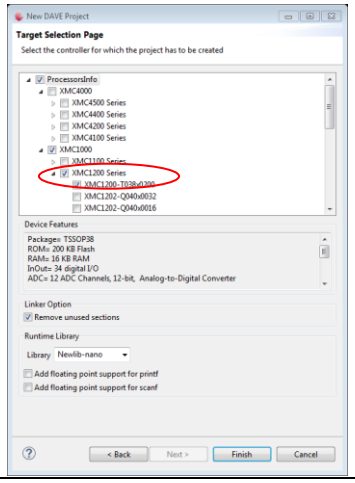
REQUIREMENTS:

Boards Required: XMC1200 CPU Board (Order Nr: KIT_XMC12_BOOT_001), Color LED Card (Part of the LED Lighting Application Kit, Order Nr: KIT_XMC1X_AK_LED_001)

DAVE Version: 4.1.4

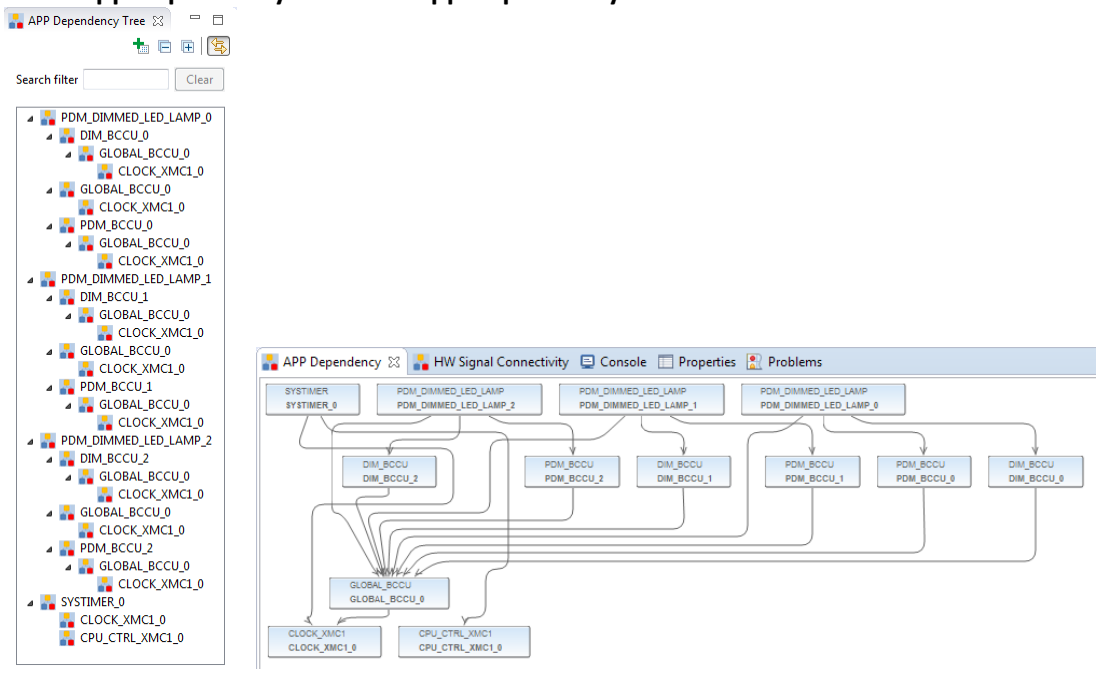
HOW TO CREATE THE PROJECT:

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

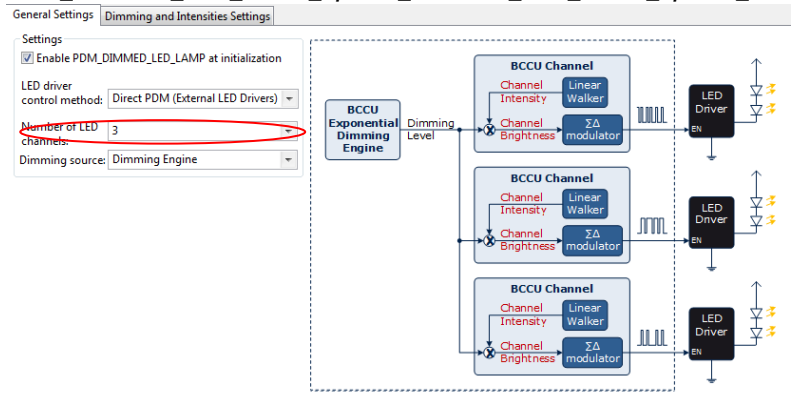
Enter Project Name Select "Project Type ➔ DAVE CE Project"	Select Processors Info ➔XMC1200 Series ➔ XMC1200-T038x0200
	

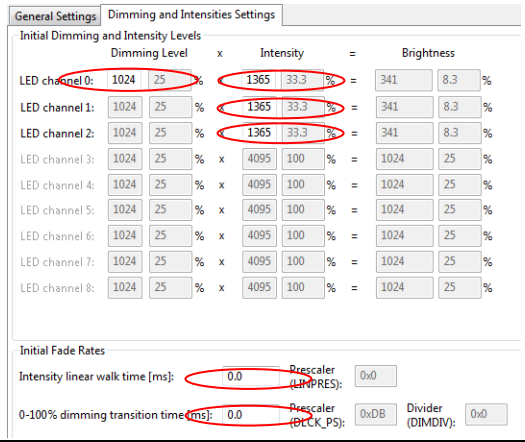
2. Use the  "Add New App" shortcut in the toolbar to add 3 instances of PDM_DIMMED_LED_LAMP and 1 instance of SYSTIMER APPs. Configure the APP instances with the following configurations.

Views: App Dependency Tree and App Dependency

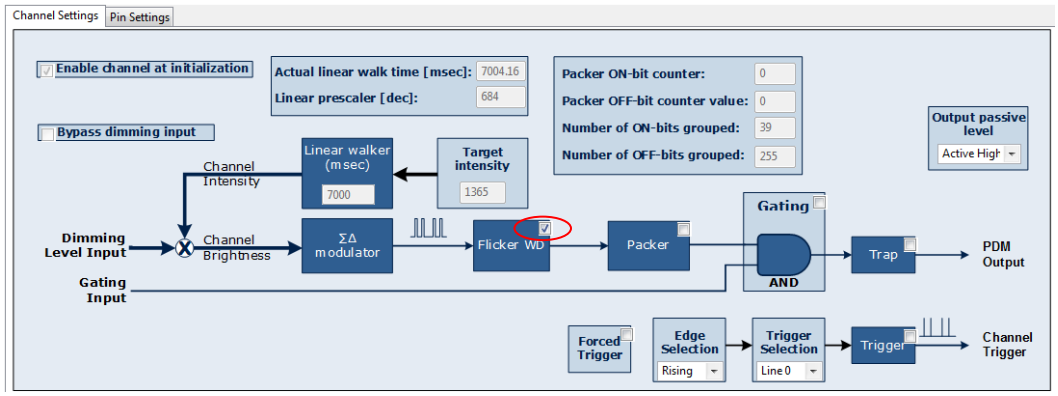


PDM_DIMMED_LED_LAMP_0/PDM_DIMMED_LED_LAMP_1/PDM_DIMMED_LED_LAMP_2:

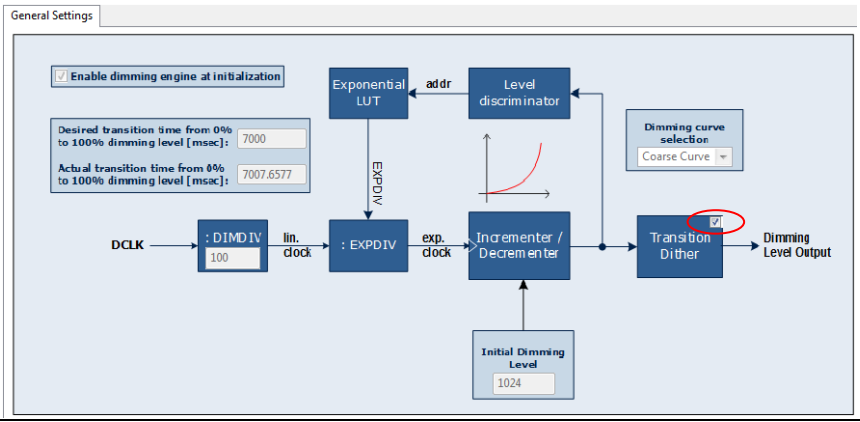




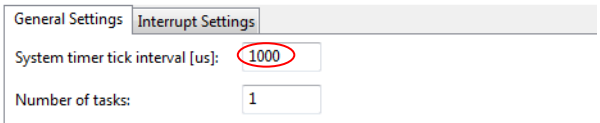
PDM_BCCU_0/PDM_BCCU_1/PDM_BCCU_2/ PDM_BCCU_3/PDM_BCCU_4/PDM_BCCU_5/ PDM_BCCU_6/PDM_BCCU_7/PDM_BCCU_8:



DIM_BCCU_0/DIM_BCCU_1/DIM_BCCU_2:

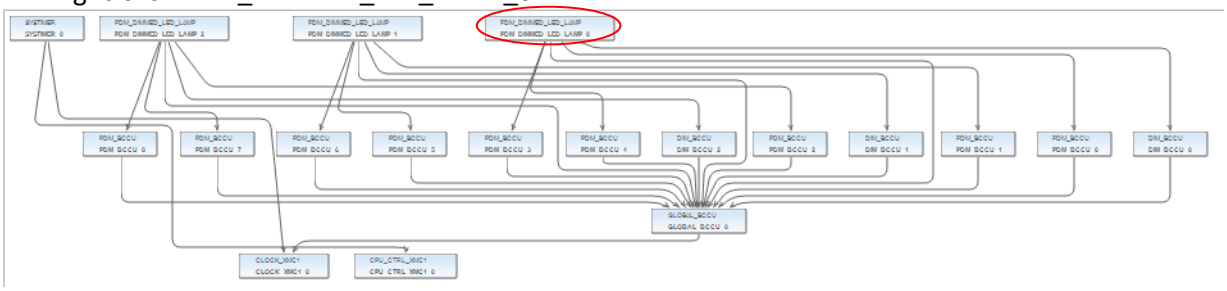


SYSTIMER_0:

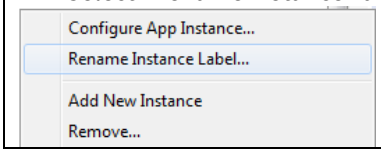


3. Rename the instance label for PDM_DIMMED_LED_LAMP APPs.

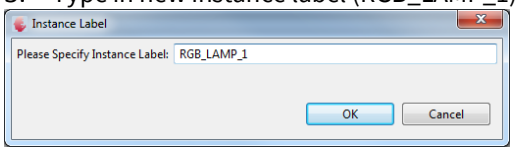
1. Right-click PDM_DIMMED_LED_LAMP_0.



2. Select “Rename Instance Label”.



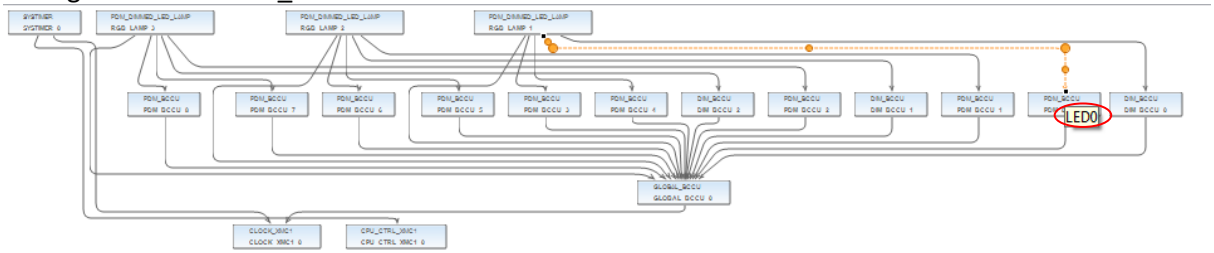
3. Type in new instance label (RGB_LAMP_1).



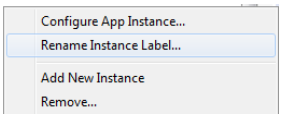
4. Repeat steps 1 to 3 for PDM_DIMMED_LED_LAMP_1 (RGB_LAMP_2) and PDM_DIMMED_LED_LAMP_2 (RGB_LAMP_3).

4. Rename the instance labels for PDM_BCCU APPs.

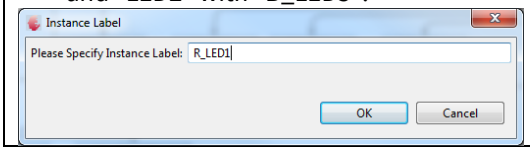
1. Hover your mouse cursor over the connecting arrow to a PDM_BCCU APP. A label will appear momentarily e.g. LED0.
2. Right-click the PDM_BCCU APP.



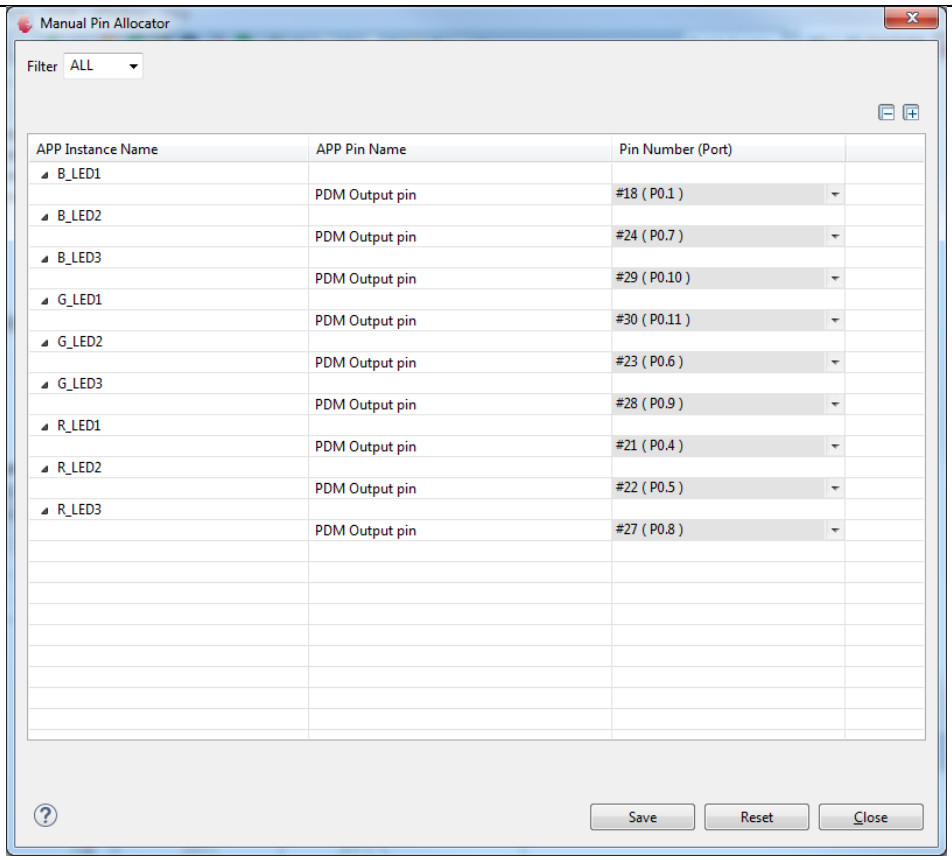
3. Select “Rename Instance Label”.



4. Type in new instance label. Repeat steps 1 to 4 for other PDM_BCCU APP instances.
   For PDM_BCCU APPs connected to RGB_LAMP_1, replace “LED0” with “R_LED1”, “LED1” with “G_LED1” and “LED2” with “B_LED1”.
   For PDM_BCCU APPs connected to RGB_LAMP_2, replace “LED0” with “R_LED2”, “LED1” with “G_LED2” and “LED2” with “B_LED2”.
   For PDM_BCCU APPs connected to RGB_LAMP_3, replace “LED0” with “R_LED3”, “LED1” with “G_LED3” and “LED2” with “B_LED3”.



5. Use the  "Manual Pin Allocator" found in the toolbar, configure the output pins for the channels of the RGB LED and the unused LEDs.



6. Generate the code for configurations made using  shortcut in the toolbar.
7. Change main.c accordingly.
    a. Create periodic software timer using SYSTIMER API.
    b. Define interrupt handler for software timer i.e. change LED color or brightness
8. Build and download to the microcontroller using  shortcut in the toolbar.

HOW TO TEST:

Download and run the demo in the uC.

OBSERVATIONS:

- LED1 color slowly changes to red, LED2 color slowly changes to green, LED3 color slowly changes to blue
- LED1 color slowly changes to green, LED2 color slowly changes to blue, LED3 color slowly changes to white
- LED1 color slowly changes to blue, LED2 color slowly changes to white, LED3 color slowly dims down to 0%
- LED1 color slowly changes to white, LED2 color slowly dims down to 0%, LED3 color slowly dims up to 25%
- LED1 color slowly dims down to 0%, LED2 color slowly dims down to 25%, LED3 color slowly changes to red
- LED1 color slowly dims down to 25%, LED2 color slowly changes to red, LED3 color slowly changes to green
- Sequence repeats itself.

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

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