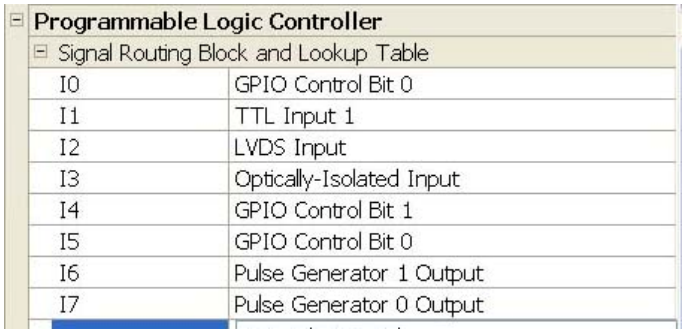
Creating Pulse Generator with Controlled Duration

PLC programming for multi pulse per trigger

This describes one method of generating multi-shot triggers to GP / GD series cameras with enable duration control.

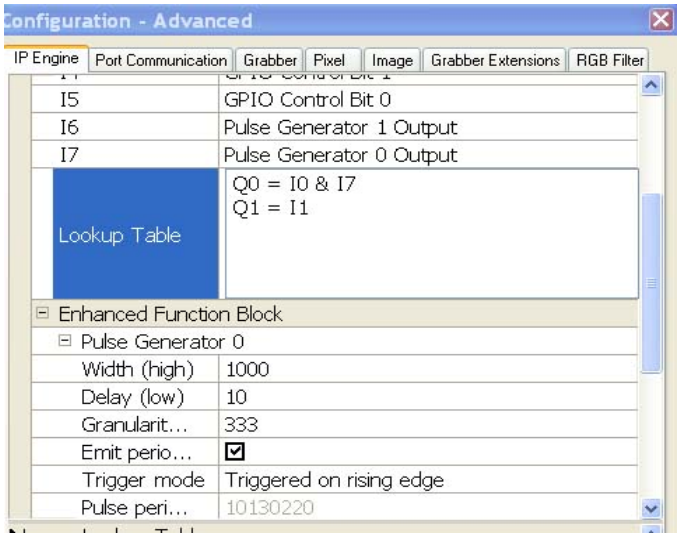
By using internal PLC functions, you can generate multiple pulses and only output is limited to enable period. If camera is set to async reset mode (0x00 23 00 00 00 01), it can generate number of images which is programmed from the multi-shot generator.

Step 1
Make PLC LUT to select enable control. This can be external TTL (TTL Input 0) or GPIO Control Bit (0).
In Signal routing Block and Lookup Table, set I0 with TTL Input 0 (default) or GPIO Control Bit 0.



The rest of Input will be set as the default as we can use the default nodes.

Step 2
Let's make pulse generator to create 10ms pulse per trigger. We need the first pulse immediately after the trigger. So delay is minimum and set width to be 10ms. If we make the granularity = 333, each count is 10µs. So, 10ms width is 1,000.



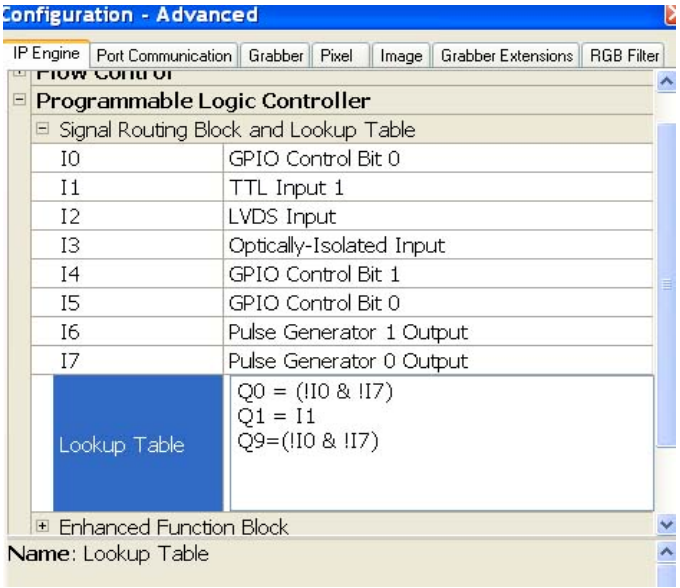
For this simple example, we keep the pulse generator with periodic (continuous) mode. Mark "Emit periodic …".

Step 3
Now we have to set LUT.
The inputs to the trigger is coming from pulse generator_0 output and trigger.

Q0 = I0 & I7

This logic generates trigger is enabled when I0 is active high. Q1 is output to monitor functions. I1 indicates default strobe output (exposure signal).

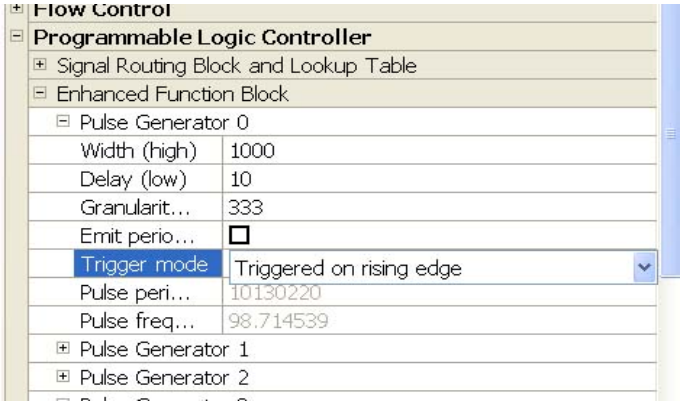
Optional LUT programming
Asynchronous trigger with Enable edge:
If pulse generator is required to reset at enable edge, we cannot use periodic mode of pulse generator and use rising edge trigger. To make feed back to repeat multiple pulse, the LUT is programmed to create the feedback from the Pulse generator output to input.
Q9 (input to pulse generator 0) is connected to the enable pulse and own inverted output.
In the example, the enable pulse is active low (pulses are output when I0 is low).



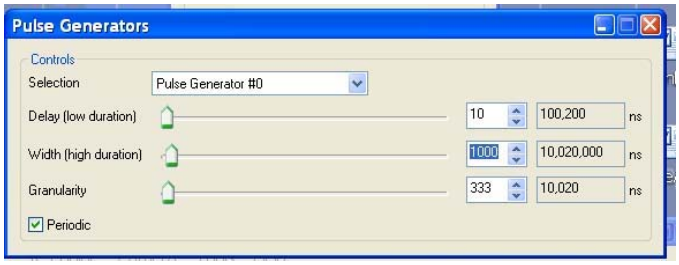
Creating Pulse Generator with Controlled Duration

Pulse Generator Control from Coyote:

Normal programming is shown in Enhanced Function Block.



In Coyote application, you can use another method in IPEngine tab.



In this application, the frame rate is controlled with three parameters. For the simplest use, you can choose Width variation as the variables. Since the Granularity is set at 10µs as unit, any multiple of Width dictates the frame rate. In the sample, 1000 represent 10ms of frame rate = 100 fps. If 25 fps is required, set the Width to 4000 (=40ms = 25fps).

GPIO Control Bit:
In IP Engine tab, the Control Bit is used.
By marking Set value, the GPIO Control goes to high. By demarking, it goes to low. In this application, pulses are output during high and disabled during low.