TELEDYNE DALSA
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Technical Note

Trigger Counting and Line Marking

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Overview

This technical note explains how to set-up an iPort engine so it will take an input (e.g. from an encoder), count the pulses and then insert the counter's data into the image data. This way we can mark each line and count how many lines there are in a frame, which is very useful when using the variable length frame trigger.

Pulse Counter

The first step to inserting counter data into an image is to set-up the counter. The steps below show how to set-up the counter which will be used to insert the data into the image.

In the example below we will be using the Line Valid signal as our input; we will also discuss how to modify the settings so an external signal can be used. We will be using Counter1.

In order to route the Line Valid signal to the Counter1 up signal we can take the Line Valid input to the PLC (A5) and route it to any input from PLC_I0 to PLC_I7. We will be using PLC_I0 in our setup example. We will then take PLC_I0, assign it to Q17 and use it as the input to Counter 1. If you want to use an external signal such as IN0, you can simply use a different input to PLC_I0.

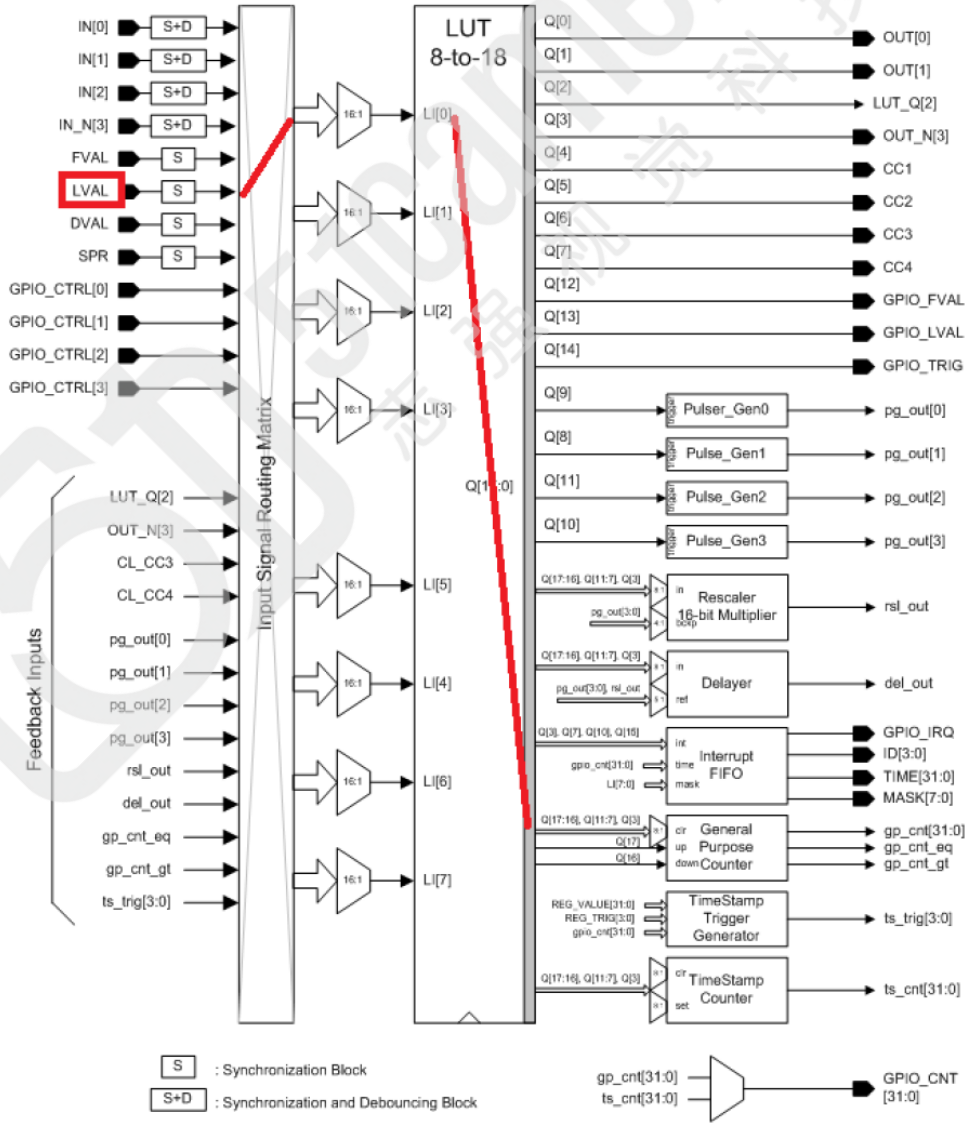
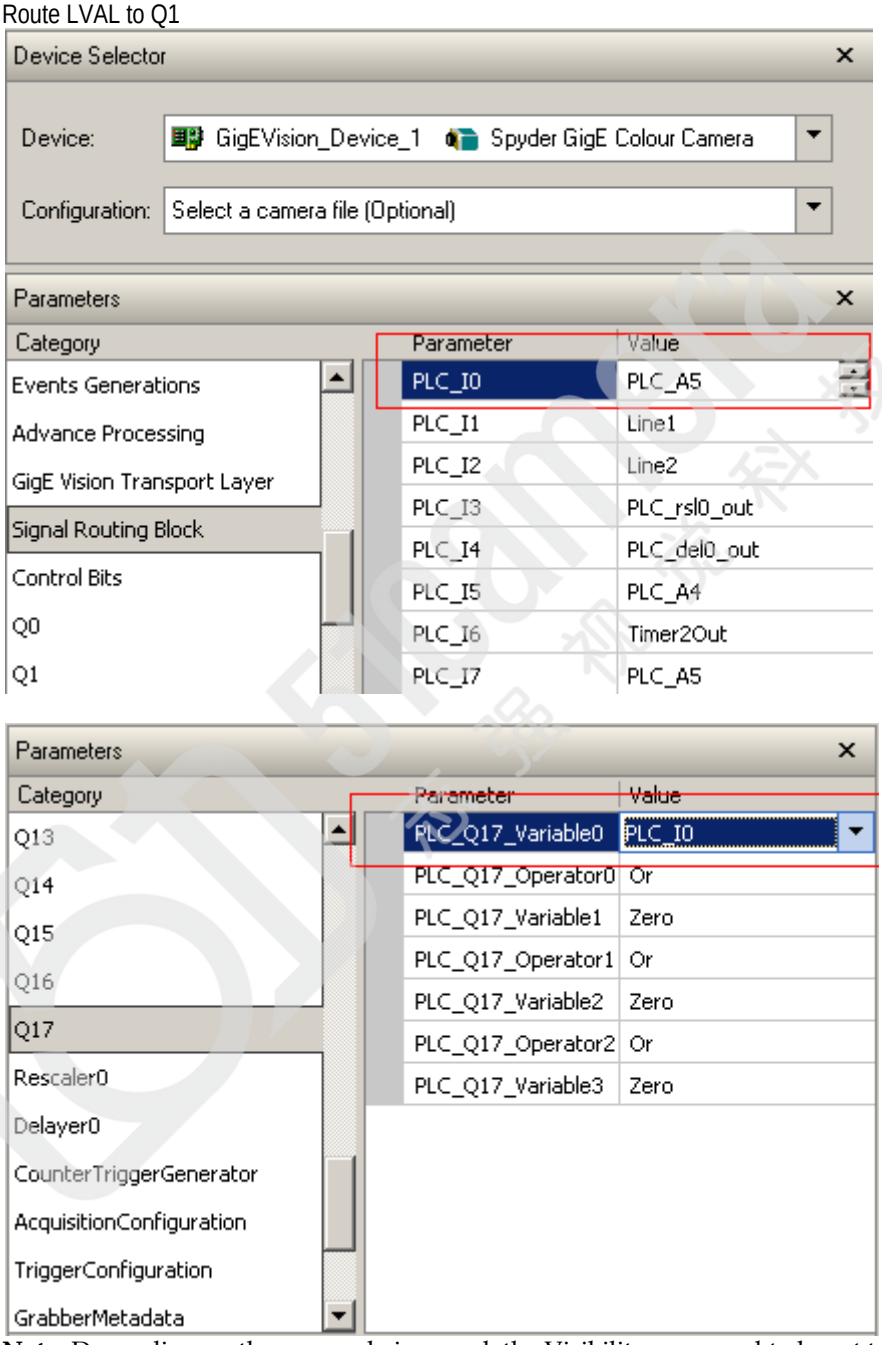


Figure 1: PLC_10 setup

Settings

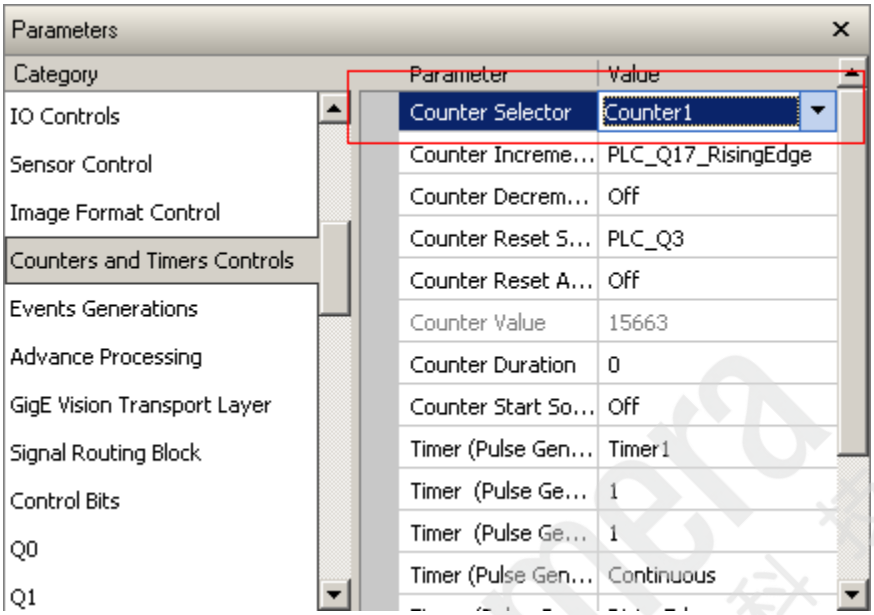
Below are the settings to route the Line Valid signal to Counter 1 and set the input of Counter 1 as the Line Valid signal.

Route LVAL to Q1



Note: Depending on the camera being used, the Visibility may need to be set to Guru

Set Counter1 Source to be Line Valid (Q17)



Inserting Counter into Image Data

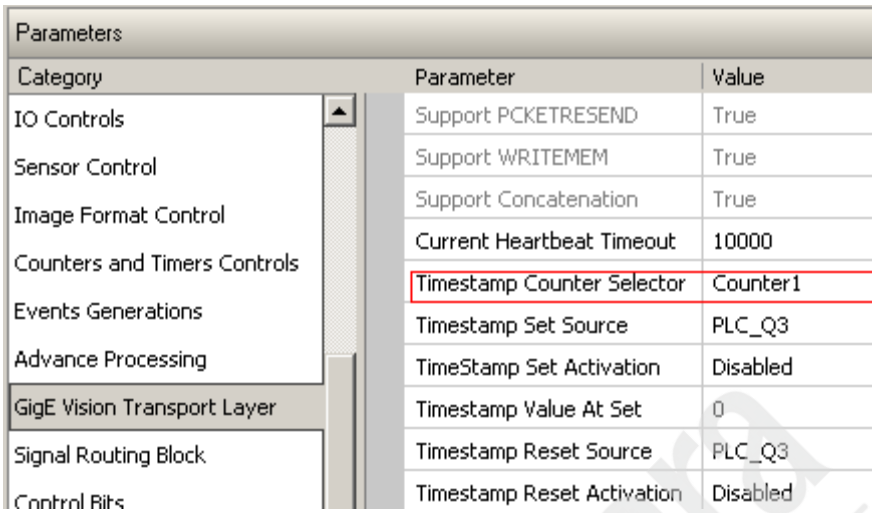
The second step to inserting counter data into an image is to set-up the insertion of the counter into the image. In the example below we will insert the counter data onto each Line of the image, however you can change GrbCh0MetadataInsertionMode to FirstFourBytesof FirstAcquiredLine in order to insert the counter only on the first line of the image.

Note: If the features listed below are not present in your camera please contact the camera manufacture to update the XML file present in the camera.

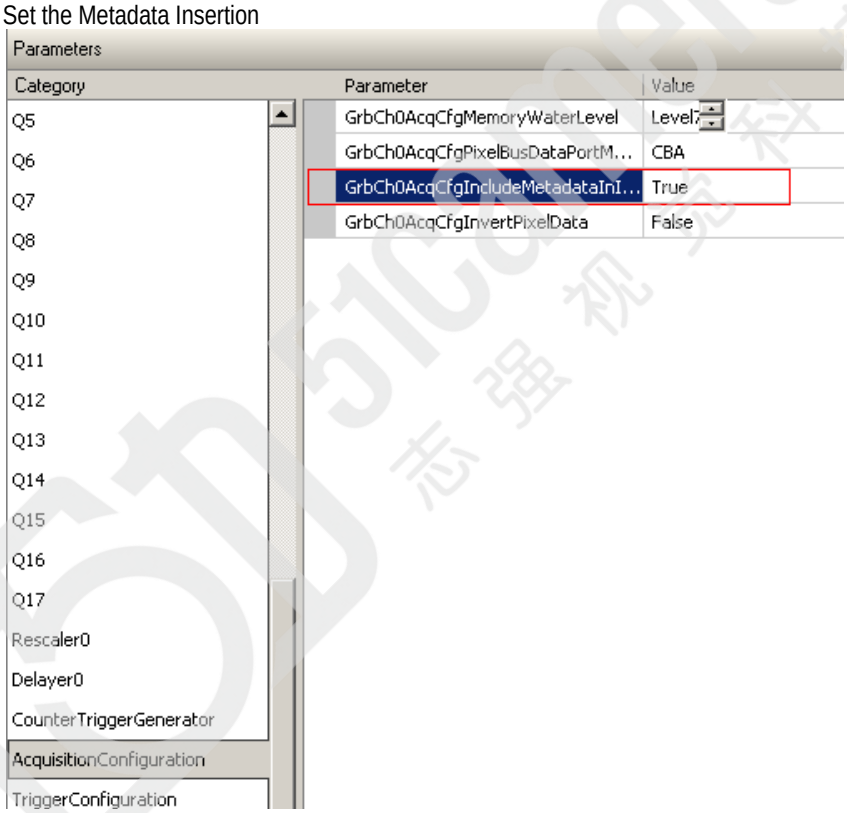
Settings

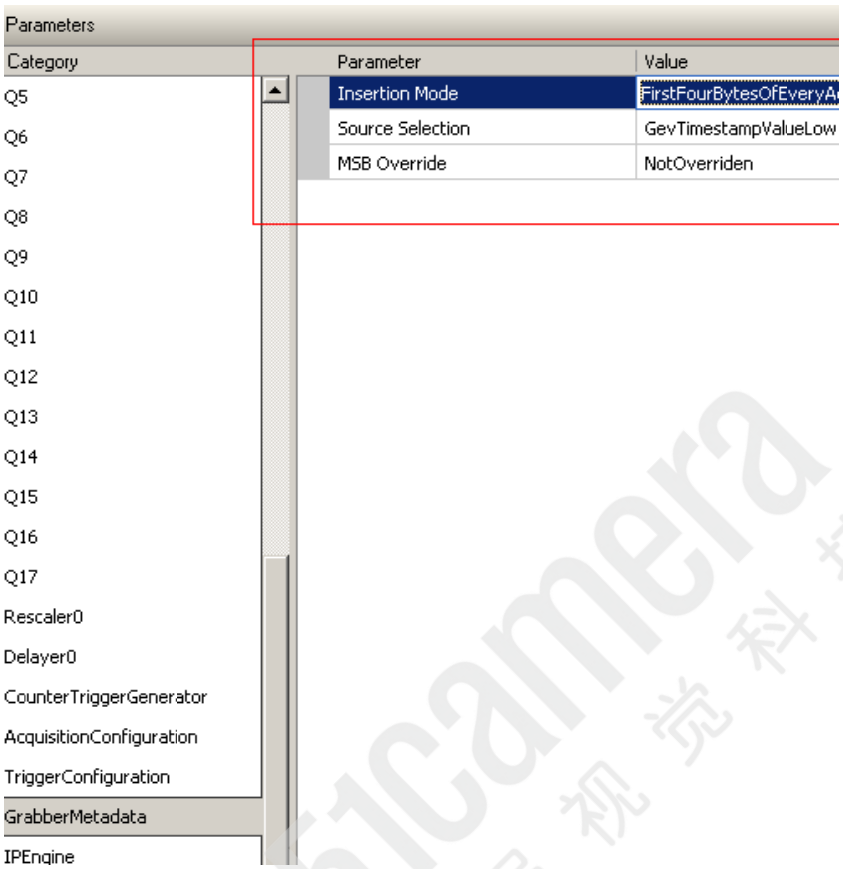
Below are the settings to inserting counter data into an image.

Set the GevTimestamp Counter Selector



Set the Metadata Insertion





Considerations

Considerations surrounding this method are as follows:

1) Counter1 value would be used as the GigE Vision timestamp of images and events.
2) Since Counter1 is added to the 4 first pixels of each line the user may lose up to 4 pixels per line depending on the number of bits per pixel.

Verifying your settings

You can easily verify your settings by simply viewing the image displayed – you will see that the new image will have the first pixel(s) of the original image (or lines) replaced with the counter. Below is an example showing the output of a Mono8 16x16 image. (16x16 mono8 allows for easy viewing of the raw data and image).

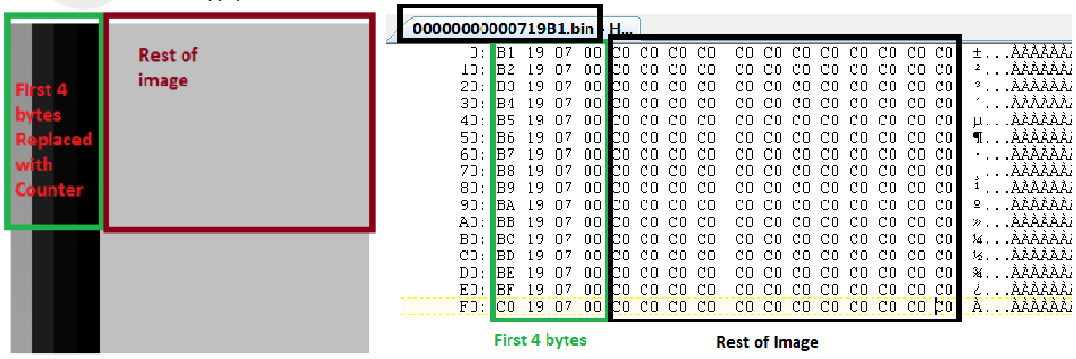


Figure 2: The image used above is a grey pattern, which is the portion in the brown square below

The pattern in the Green box is the counter – GEVPlayer treated the counter as the first 4 pixels of each line, which come out as a grey/black band. The raw image data is shown on the right (GEVPlayer Tools menu, Save images). The 4 byte counter data can be seen in the green box, with the rest of the image in the black box.

Below is a portion of the EventMonitor in GEVPlayer, looking at the Timestamp of each image (in green below) you can see that for each image it is incrementing by 16. It is increasing by 16 as GevTimestampCounterSelector was set to Counter1 which is counting the number of lines (16 per image).

0407.781 Width: 16
0407.797 PixelFormat: Mono8
0407.797 OffsetX: 0
0407.797 CounterEventSource: PLC_Q17_RisingEdge
0407.797 UserSetSelector: Default
0407.797 Height: 16
0407.797 FrameStartTriggerMode: Off
0407.797 AcquisitionStart:
0407.828 Result: OK BlockID: 0001 Timestamp: 00000000000719B1
0407.844 Result: OK BlockID: 0002 Timestamp: 00000000000719C1
0407.859 Result: OK BlockID: 0003 Timestamp: 00000000000719D1
0407.891 Result: OK BlockID: 0004 Timestamp: 00000000000719E1
0407.906 Result: OK BlockID: 0005 Timestamp: 00000000000719F1
0407.922 Result: OK BlockID: 0006 Timestamp: 0000000000071A01
0407.938 Result: OK BlockID: 0007 Timestamp: 0000000000071A11
0407.969 Result: OK BlockID: 0008 Timestamp: 0000000000071A21