

Grabber Control from PLC Trigger

PLC programming for Grabber control

This describes one of methods of controlling grabber timing in PLC function. A typical method of grabbing asynchronous image is just using Async trigger mode while the grabber is kept as continuous. In the case, an async-trigger generates only one FVAL signal per trigger and the grabber captures the specific frame.

However, if images are captured independently from the trigger pulses, then the grabber must be programmed to do so. Here is one example of programming PLC for grabber control.

Step 1

Assuming TTL input and output are used for normal trigger operation and use Opto-IO for additional grabber control.

Make PLC LUT to select enable control.

In Signal routing Block and Lookup Table, set I0 with TTL Input 0 (default = TTL Trigger in) and Strobe out (Q1=I1).

Step 2

Let's make Opto D1 input for Grabber control.

The grabber control (Grabber trigger) is prefixed to Q14 as shown PLC input Configuration Value sheet.

Q14=I2

Q14 is active at rising edge. I2 is opto-isolator input and inverted. Negative edge of I2 will activate the grabber trigger. If positive edge is required, Q14=!I2.

Input	Description
I0	TTL Input 0
I1	TTL Input 1
I2	LVDS Input
I3	Optically-Isolated Input
I4	GPIO Control Bit 1
I5	GPIO Control Bit 0
I6	Pulse Generator 1 Output
I7	Pulse Generator 0 Output

Lookup Table

Q0 = I0
Q1 = I1
Q14 = I2

Name: I2
PLC: Signal Routing Block: I2. See #CY_GPIO_LUT_PARAM_INPUT_CONFIG0.
Identifier: 2 (Decimal), 00000002 (Hex)
Type: Enumeration
Possible values:
0 - LVDS Input (default)
1 - GPIO Control Bit 3

Step 3

Now we have LUT set.

The grabber function must be set for PLC control. Go to Coyote configuration and check PLC trigger pane.

Configuration - Advanced

IP Engine Port Communication Grabber Pixel Image Grabber Extensions RGB Filter

Acquisition configuration

Pixel shifting: No shifting

Memory water level: 75 %

Data port mapping: C B A (default)

Max pending resends: 32

Insert metadata in image Invert pixel data

Trigger configuration

Frames to skip: 0

Continuous pipe count: Two (default)

Force Single Shot

PLC Triggerable

Automatic Internal Retrigger

Medium configuration

Medium mode: Half-Frame (Engine 1: Top portion, Engine 2: Bottom portion)

You are ready to operate the camera with trigger input from TTL (pin 9) and Opto-isolator input (pin5+ and 11-) for grabber control.

If you want to monitor these signals, you can program pin 3 (strobe out as default) to monitor TTL input or Opto-isolator input.

In the LUT,

Type Q1=I0 for TTL input and Q1=I2 for opto-isolator input. The polarity is reversed.

If the grabber is controlled from the control bit 0, you can program Q14=I5 (control bit 0 default) and use IP Engine Control bit_0 control from Coyote application.

For writing SDK, please refer PLC Input Configuration value for input designation.