# Lab 4 DLA : User Manual

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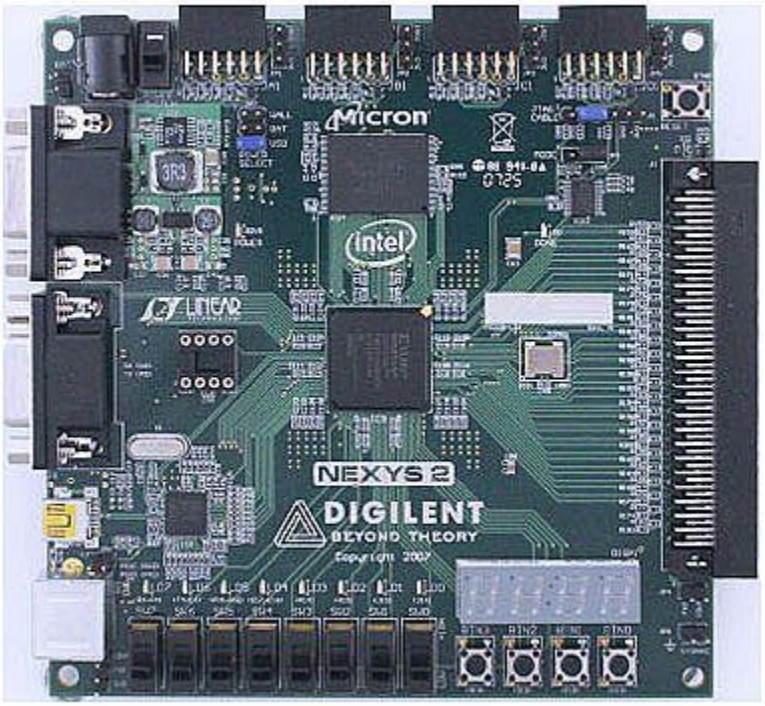
**Setup**

To setup the device connect the FPGA to the computer with the serial connection. when using the nexys2 board connect pin JA1 to the transmit pin of the serial connection and pin JA2 to the receive pin of the serial connection. As in the illustration below, oins JA1 and pin JA2 are the top two pins that are furthest to the left of the board.

After connecting the serial port to the bard and the computer, open a serial terminal on the computer to start communicating to the DLA.




**Post - Pre Trigger:**

The DLA can be configured to respond to a specific signal. It can either start capturing data after it sees a giving signal and finish capturing after 1024 samples, or can continuously capture data in a round Robin fashion and stop when it see a specific signal where by you can inspect all the values it captured before the signal.

Pre trigger: capture 1024 samples after seeing a specific signal.
To set the DLA to pre trigger, press 't' or 'T' and then type '0'.

Post trigger: continually capture and stop after seeing the specific signal.
This is the default state of the DLA, but to set the DLA to pre trigger, press 't' or 'T' and then type '1'.

In Post trigger the DLA will not stop at a random address in it Memory. in the print messages in the beginning of the DLA response it will indicate at what address the data capture ended.

**Signal Trigger Masks:**

There are several masks that can be program to either start the DLA when it see a specific signal or stop the DLA when it sees a specific signal, this is pre or post trigger. The are 5 masks HI, Low, pos edge, neg edge and don't care. The default for the mask is all don't cares so that it will trigger right away.

To program the mask type 'm' or 'M' in the serial connection to the DLA. This will Promote a series of messages instruction you to type in the desired Mask.

**Starting the Capture**

To start the capture type 's' .

After every time the DLA runs and outputs the data it will need to be started.

After the DLA is reconfigure either the masks or the pre and post trigger is changed it will need to be started.

**Using The Sample Signal:**

The sample signal is a continuous 64bit counter that counts up 1 very clock.

The easiest way to test the sample signal is to change to trigger for post to pre trigger and than starting the capture.

Steps :

connect DLA to computer and start the serial connection

type 't' followed by '0' to put the DLA in pre trigger mode

type 's' to start the DLA Capture

It will then print out 1024 values that it captured.

Next you can next change the Masks to find a specific value , for a signal that has the first two bytes HI and the rest don't care

steps:

type 'm' . it will then prompt several messages to configure each mask

for the "Hi" mask type "ZZZZZZXX"
for the "Low" mask type "ZZZZZZZZ"( 'z'*8 )
for the "neg" mask type "ZZZZZZZZ" ('z' *8)
for the "pos" mask type "ZZZZZZZZ" ('z' *8)
for the "don't care " mask type "XXXXXXZZ"

type 's' to start the capture.

This will cause the DLA to start capturing after it sees a signal will the first two bytes zero, so the first number printed will be the value right after the signal occurred.