

Measuring Trigger Accuracy with MiDAS DA and an Xcitex MkII LED Box

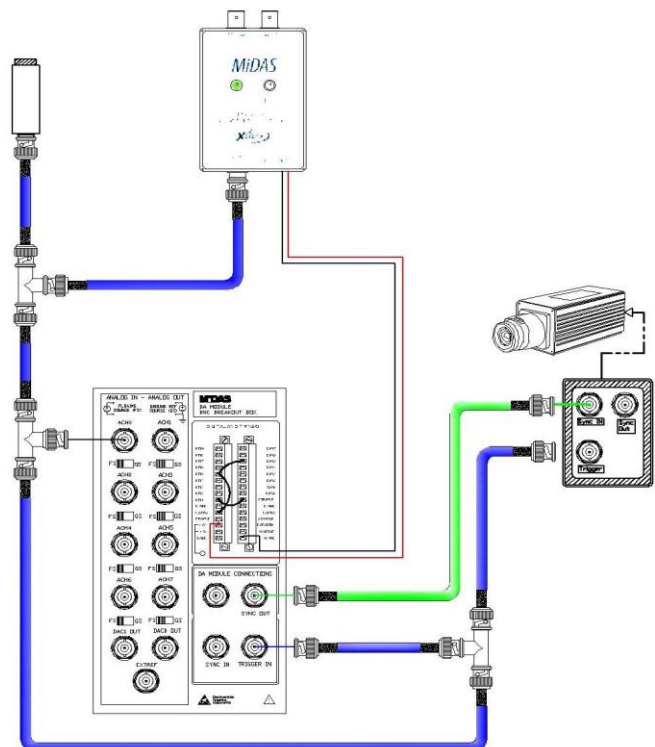
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Abstract

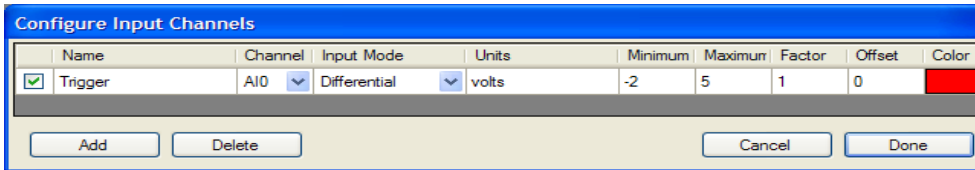
The new Xcitex LED-2 MkII demo box is a valuable tool for measuring synchronization between cameras and data acquisition systems. This test will visually demonstrate and quantify the accuracy of the event trigger to the “0” video frame of a camera and ‘0’ datum of a data acquisition system. After you have completed the recording, comparing the video and data information will show the accuracy of the MiDAS video/data combination.

Installation and Configuration

1. Configure your camera to record in its native software. Make sure it is in external sync mode, with the sync input connected to the sync out on your BNC-2110 breakout box.
2. Connect your *LED-2 MkII Demo box* as shown at right, connecting your trigger source to all of the following points.
 - Trigger source
 - **Trigger in** on the *LED-2 MkII Demo Box*
 - **Channel 0** on your BNC Breakout Box
 - **Trigger in** on your BNC Breakout Box
 - **Trigger in** on the camera
3. Place the *LED-2 MkII Demo Box* within the field of view of the camera so that the camera can see the LED.

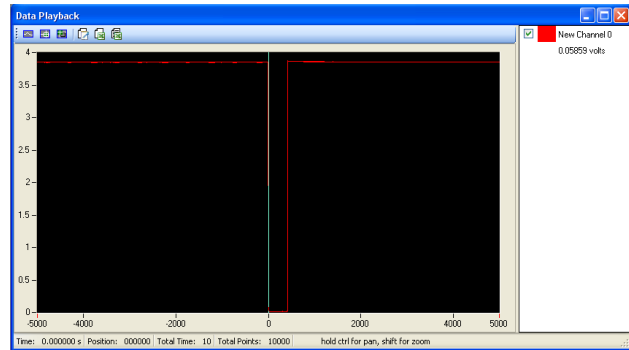


4. In MiDAS DA, set the data configuration as shown below.



*Note: If the LED is naturally on, set MiDAS and your camera software to **Falling Edge Trigger**.*

5. Set MiDAS to record at least 10 samples per frame. Sync Out (Frame rate) X 10 = Sample rate (Hz)
6. Record video (the image of the LED as it turns on or off) and data (the voltage change to the LED).

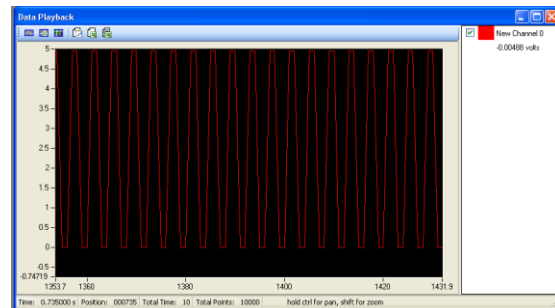


7. Playback the synchronized video and data.
You will find a transition on the data graph that matches the light on/off in the video. You will note that the transition occurs during the acquisition of the “0” frame and a change in the intensity of the LED in the previous and following video frames.

Further Analysis

This test/demonstration can be utilized at any trigger percentage, frame rate, and data sample rate. Vary the trigger percentage and repeat the test to illustrate the trigger position dependence on the settings.

The “TRIGGER” test is also a useful practical way of determining trigger location and accuracy with a single data channel.



You may repeat this test using the Sync pulse instead of the Trigger pulse and achieve the graph at right. Video frames will align to the leading edge of the sine wave.

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