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Test Procedure for Shutter Controller

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1 Introduction

The following test procedure describes the test of proper operation of the shutter controller.

2 Test Equipment

- Voltmeter
- Oscilloscope
- Shutter Controller Tester — [D1200449-v1](#).
- 2 Uniblitz shutters
- Board Schematics — [D1102312-v1](#).

3 Tests

The Shutter Control has two D880C Shutter Drivers mounted on the main PCB.

The Shutter Controller Tester should be powered up and plugged into the powered Shutter Control.

A Uniblitz shutter should be connected to each output.

- 1) **Verify that the basic logic works.** Toggle the open and close switches for both drivers.

The monitor LEDs on both the Controller and Tester should change states.

Channel 1 open OK _____ Not OK _____ close OK _____ Not OK _____

Channel 2 open OK _____ Not OK _____ close OK _____ Not OK _____

Verify with a voltmeter that the front panel BNCs read the correct TTL levels, when toggling open and close. Write down the voltages (TTL HI > 2.0V and TTL LO < 0.8V).

Channel 1 open HI _____ V LO _____ V close HI _____ V LO _____ V

Channel 2 open HI _____ V LO _____ V close HI _____ V LO _____ V

- 2) **Verify that with no threshold and no trigger voltage applied the shutter can be operated.** Set the threshold pot at minimum and verify the voltage is zero with a meter connected to J1. Toggle on/off, the monitor LEDs should not change state. Now ramp the trigger voltage up and verify that the shutter closes.

Channel 1 OK _____ Not OK _____ Channel 2 OK _____ Not OK _____

Verify with a voltmeter that the front panel BNC readback shows the correct photodetector voltage levels, when ramping. The photodiode voltages at the BNC should be 5% below the set point. Write down the voltages for

Channel 1 Lowest set point _____ V Readback _____ V

Channel 1 Mid set point _____ 2.5 _____ V Readback _____ V

Channel 1 Highest set point _____ V Readback _____ V

Channel 2 Lowest set point _____ V Readback _____ V

Channel 2 Mid set point _____ 2.5 _____ V Readback _____ V

Channel 2 Highest set point _____ V Readback _____ V

- 3) **Verify that when a threshold voltage is applied the shutter closes.** Set the threshold pot at 2.5 volts and verify with meter connected to J1. Now ramp the PD pot from minimum to maximum, the shutter should close and the monitor LEDs should change state, read the trigger voltage with a meter connected to J1.

Channel 1 OK _____ Trigger 1 _____ V Channel 2 OK _____ Trigger 2 _____ V

Verify with a voltmeter that the front panel OUT BNCs read the correct TTL levels, when toggling the shutter. Write down the voltages (TTL HI > 2.0V and TTL LO < 0.8V).

Channel 1 out HI _____ V LO _____ V

Channel 2 out HI _____ V LO _____ V

Verify with a voltmeter that the front panel BNC readback shows the correct threshold voltage levels, when ramping. The threshold readback voltages should be the same as the set point. Write down the voltages for

Channel 1 Lowest set point _____ V Readback _____ V

Channel 1 Mid set point _____ 2.5 _____ V Readback _____ V

Channel 1 Highest set point _____ V Readback _____ V

Channel 2 Lowest set point _____ V Readback _____ V

Channel 2 Mid set point _____ 2.5 _____ V Readback _____ V

Channel 2 Highest set point _____ V Readback _____ V

4) Verify that when close is applied the shutter stays closed. Mount a 50 terminator to the front panel close BNC. Set the threshold pot at 2.5 volts and verify with meter connected to J1. Now ramp the PD pot from minimum to maximum, the shutter should stay close for all voltages.

Channel 1 OK _____ Not OK _____

Channel 2 OK _____ Not OK _____