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Test Procedure for Slow Controls Concentrator Auxiliary 2

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of the LIGO Laboratory.

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# Overview

The slow controls concentrator auxiliary 2 supports 8 photodiodes, 2 temperature control outputs and 4 axes of PZT readbacks.

# Test Equipment

* Multimeter, scope and signal generator.
* Second slow controls concentrator auxiliary 2 ([D1102045-v1](https://dcc.ligo.org/DocDB/0073/D1102045/001/D1102045-v1.pdf)).

Replace the 2 quad photodiode breakout boards with 2 quad TNC/GND breakouts.

* 2 test cables DB9 to 4xBNC ([D1102414-v1](https://dcc.ligo.org/cgi-bin/private/DocDB/ShowDocument?docid=77479)).
* DC power supplies.

# Documentation

* Schematics—[D1102045-v1](https://dcc.ligo.org/DocDB/0073/D1102045/001/D1102045-v1.pdf)

# Tests

Power up the measurement equipment and connect open the lid of the DUT. Connect a DB37 cable (male-male) between the DUT and the second slow controls concentrator. Equip the TNC inputs (but not the BNC inputs) of the DUT with 50Ω terminators. Connect a DB15 (male-female) between “PD DC 1-4 Out” and “PD DC 5-8 IN”. Connect the test cables to “PD DC 1-4 IN” and “PD DC 5-8 OUT”.

## Power

Check the voltages on the concentrator power board. The voltage should be within 5% of nominal. Test that the OK signal is a TTL low (<0.8V).

TP6 (+5V)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

TP8 (+15V)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

TP3 (−15V)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

TP9 (OK) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## LED

Check that the LED on the front panel and the 3 LEDs on the rear panel are lit.

Front panel LED\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Rear panel LEDs\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Testing

Use an Ohmmeter and check the continuity of the signal lines between the two slow controls concentrators. Each tested signal should read 50Ω.

|  |  |  |
| --- | --- | --- |
| **Concentrator** | **Signal** | **Pass/Fail** |
| PZT 1X HV | PZT readback |  |
| PZT 1X Sensor | PZT readback |  |
| PZT 1Y HV | PZT readback |  |
| PZT 1Y Sensor | PZT readback |  |
| PZT 2X HV | PZT readback |  |
| PZT 2X Sensor | PZT readback |  |
| PZT 2Y HV | PZT readback |  |
| PZT 2Y Sensor | PZT readback |  |
| Temp Laser | Temperature control |  |
| Temp Doubler | Temperature control |  |

Apply a 1kHz sine wave to each the BNCs of the first test cable while measuring the response with a scope on the second test cable, at the front panel BNCs of the DUT and at the front panel BNCs of the second concentrator. Since the 2 photodiode inputs are connected together, the response of the first 4 front panel BNCs is seen on the next 4 as well.

|  |  |
| --- | --- |
| **Cable 1** | **Pass/Fail** |
| **Cable 2** | **DUT** | **2nd concentrator** |
| **PDMon** | **PDMon+4** | **PDMon** | **PDMon+4** |
| BNC 1 |  |  |  |  |  |
| BNC 2 |  |  |  |  |  |
| BNC 3 |  |  |  |  |  |
| BNC 4 |  |  |  |  |  |