*LIGO Laboratory / LIGO Scientific Collaboration*

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Test Procedure for Slow Controls Concentrator Auxiliary 11

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LIGO Scientific Collaboration

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of the LIGO Laboratory.

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# Overview

The slow controls concentrator auxiliary 5 supports 4 DC photodiode amplifiers.

# Test Equipment

* Multimeter, scope and signal generator.
* Second slow controls concentrator auxiliary mockup ([D2300326-v1](https://dcc.ligo.org/LIGO-D2300326)).

Use 2 quad TNC/GND breakouts instead of the legacy LSC photodetector board. Either use no front panel or use a slow controls concentrator auxiliary 1 front panel.

* Legacy LSC Photodetector with 15-pin D-sub extension cable.
* Flashlight
* DC power supplies.

# Documentation

* Schematics—[D2300326-v1](https://dcc.ligo.org/LIGO-D2300326)

# Tests

Power up the measurement equipment and open the lid of the DUT. Connect a DB37 cable (male-male) between the DUT and the second slow controls concentrator.

## 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 2 LEDs on the rear panel are lit.

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

## Testing

### Legacy LSC Photodetector

The 8 BNCs of the 2 quad TNC/GND breakout boards located in the second chassis have the connectors assigned as: not used, not used, status, D2, D1, D0, not used, PD monitor.

Connect the legacy LSC photodetector and watch the LED turn on. Check the status on the second chassis, which should be TTL levels.

Front panel LED of legacy PSC PD\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ TTL level at status\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Hook up a DVM to the front-panel monitor output of the legacy LSC PD, and the PD monitor of the second chassis. Use a flash light to illuminate the legacy LSC PD and monitor that the DVM readback changes.

|  |  |  |  |
| --- | --- | --- | --- |
| **Signal** | **Voltage at DUT** | **Voltage at 2nd unit** | **Cable** |
| Photodetector monitor |  |  | Not used |

Mount the flashlight at fixed position and make sure the monitor readback does not read more than 100 mV. Using Gray-encoding ground D0-D2 on the second chassis in turn to cycle through all the gain stages.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Gain** | **D2** | **D1** | **D0** | **Voltage at DUT** | **Voltage at 2nd unit** | **Cable** |
| 0 dB | open | open | open |  |  | Not used |
| 10 dB | open | open | GND |  |  | Not used |
| 20 dB | open | GND | GND |  |  | Not used |
| 30 dB | open | GND | open |  |  | Not used |
| 40 dB | GND | GND | open |  |  | Not used |
| 40 dB | GND | GND | GND |  |  | Not used |
| 40 dB | GND | open | GND |  |  | Not used |
| 40 dB | GND | open | open |  |  | Not used |