



LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY

LIGO Laboratory / LIGO Scientific Collaboration

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Advanced LIGO

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Test Procedure for Slow Controls Concentrator Auxiliary 5

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1 Overview

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

2 Test Equipment

- Multimeter, scope and signal generator.
- Second slow controls concentrator auxiliary 5 ([D1201352 -v1](#)).
Replace the 2 front-panel breakout boards with quad TNC breakouts.
- DC power supplies.

3 Documentation

- Schematics—[D1201352 -v1](#)

4 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.

4.1 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) _____

4.2 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_____

4.3 Testing

Connect the test cable to the PD Amp DC 1-4 connector. Measure the voltage of the photodiode amplifier monitors at the DUT at the second chassis and at the rear cable (should be close to zero). The quad TNC breakouts of the second chassis have the connectors assigned as Gain 1 input, Gain 2 input, Monitor 1, Monitor 2, respectively.

Signal	Voltage at DUT	Voltage at 2 nd unit	Cable
Photodiode amplifier monitor 1			
Photodiode amplifier monitor 2			
Photodiode amplifier monitor 3			
Photodiode amplifier monitor 4			

Clip a 100 k Ω resistor to the TNC PD input of each DC photodiode amplifier channel in turn. Measure the voltage of the photodiode amplifier monitors at the DUT at the second chassis and at the rear cable. Make one measurement at this gain (voltage should be 100mV).

Signal	Voltage at DUT	Voltage at 2 nd unit	Cable
Photodiode amplifier monitor 1			
Photodiode amplifier monitor 2			
Photodiode amplifier monitor 3			
Photodiode amplifier monitor 4			

Now ground the center pin of the corresponding gain input and measure again (should be 315mV).

Signal	Voltage at DUT	Voltage at 2 nd unit	Cable
Photodiode amplifier monitor 1			
Photodiode amplifier monitor 2			
Photodiode amplifier monitor 3			
Photodiode amplifier monitor 4			

Ground both the center pin and the outer shell to ground, measure again (should be 1.00V).

Signal	Voltage at DUT	Voltage at 2 nd unit	Cable
Photodiode amplifier monitor 1			
Photodiode amplifier monitor 2			
Photodiode amplifier monitor 3			
Photodiode amplifier monitor 4			

Ground the outer shell to ground, measure again (should be 3.15V).

Signal	Voltage at DUT	Voltage at 2 nd unit	Cable
Photodiode amplifier monitor 1			
Photodiode amplifier monitor 2			
Photodiode amplifier monitor 3			
Photodiode amplifier monitor 4			