

**LASER INTERFEROMETER GRAVITATIONAL WAVE
OBSERVATORY**

-LIGO-

CALIFORNIA INSTITUTE OF TECHNOLOGY
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| Test Procedure and Results | LIGO-T020124-A-C | 5 May 2006 |
| 8 Channel Valve Driver Test Procedure | | |
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Board Serial Number _____

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1. Overview

The LIGO 8 channel valve driver module is designed to interface from a multi channel DAC to a set of 8 hydraulic valves used in the seismic isolation system. A voltage output from a DAC channel is converted to a current drive signal to actuate a valve. A +/- 10-volt drive should produce approximately +/- 80 mA of total drive current.

This procedure covers the test of each of the 8 driver channels supplied on the module.

2. Test Equipment

- Power Supply capable of +/- 15 volts at +/- 200 mA
- Multi-meter
- Oscilloscope
- BNC 50 ohm load
- Clip leads to BNC adapter

3. Preliminaries

- Perform visual inspection on board to check for missing components or solder deficiencies
- Set power supplies to +/- 15 volts, turn them off then connect board under test to the test valve using the connecting cable and interface board

4. DC Tests

- Turn on the power supplies to the system under test and record the total current. The specification assumes all inputs are not driven and the test valve is attached to one channel

| Total Current | Specification | Measured Current |
|-----------------|-----------------------------|------------------|
| Positive Supply | Less than or equal to 200mA | |
| Negative Supply | Less than or equal to 200mA | |

- For the channel under test, connect an 80 ohm +/- 10 ohm resistor across the output to simulate the load of the valve. This is best done using a Dsub breakout to ease access to the pins
- Apply +10 volts DC then -10 volts DC to the input under test and measure the following points with a Multimeter. Test remaining channels moving the load as needed to the appropriate channel under test. Observe each channel with the oscilloscope for instabilities while testing. Record data in the chart below

| Channel | OP-27 pin 2 to GND Requirement | OP-27 pin 2 to GND Measured |
|----------------|---|--|
| 1 | +/- 4 volts, +/- 10 mV | |
| 2 | +/- 4 volts, +/- 10 mV | |
| 3 | +/- 4 volts, +/- 10 mV | |
| 4 | +/- 4 volts, +/- 10 mV | |
| 5 | +/- 4 volts, +/- 10 mV | |
| 6 | +/- 4 volts, +/- 10 mV | |
| 7 | +/- 4 volts, +/- 10 mV | |
| 8 | +/- 4 volts, +/- 10 mV | |