

ESD Bias Path Filter Test Procedure and Data
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Tested By:
 Test Date:
 Filter Serial Number:

Overview – The high voltage filters (D1400192) used in the ESD drive system consist of a two stage low pass filter. The components used in this filter permit safe use up to 600VDC (limited by the dielectric rating of the wire used internally to the filter assembly). This test procedure verifies the correct magnitude and phase of the filter transfer function, and checks that the filter does not break down upon application of voltages representative of those found in the ESD driver system.

Verification of the high voltage performance of this filter is a task that must be performed by a qualified LIGO Electrical Worker as outlined in M1200022. Work on exposed high voltages (>50VDC) is NOT ALLOWED unless you have been approved for such work by LIGO Management, and have a signed electrical work permit. Qualified workers can find guidelines for safe work practices on energized gear written in M1400128.

The transfer function of the filter is measured at low voltages using an SR-785 in the same manner as all LIGO transfer functions are taken.

Table 1 HV Filter (D1400192-v1) Results

Parameter	Required Value	Measured Value
Operation at +/- 500VDC (+/- 10VDC tolerance)	No observed current flow due to arcing or component failure	
Transfer Function Magnitude at 1 Hz	-5.9 dB +/- 0.1 dB	
Transfer Function Phase at 1 Hz	-72.2 deg +/- 3 deg	
Transfer Function Magnitude at 10 Hz	-32.7 dB +/- 0.1 dB	
Transfer Function Phase at 10 Hz	-154.0 deg +/- 3 deg	
Transfer Function Magnitude at 100 Hz	-72.0 dB +/- 0.1 dB	
Transfer Function Phase at 100 Hz	-177.3 deg +/- 3 deg	