

Instructions for DPI galvo and driver

Do not apply unnecessary force to the galvo shaft.

Do not attempt to rotate the galvo shaft by hand.

If galvo starts moving erratically or making noise, turn off the galvo driver immediately.

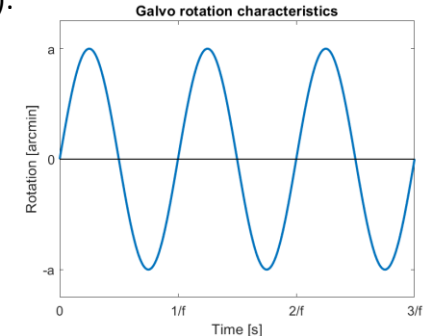
1. Verify galvo serial number: 612144
2. Verify that galvo is firmly attached to mounting bracket
3. Verify that artificial eye is firmly attached to galvo shaft
4. Verify that AMPLITUDE knob on driver is set to 14.0
5. Verify that SIGNAL SOURCE switch on driver is set to EXTERNAL IN
6. Connect galvo to driver using the multicolored ribbon cable
7. Connect function generator CH 1 OUTPUT to galvo driver EXTERNAL IN using 2-meter BNC cable
8. Turn on function generator and set the correct frequency and amplitude, but do not turn on the output
9. Turn on the galvo driver and observe galvo behavior: it should be steady and should not be making noise
10. Turn on the function generator output and observe galvo behavior: it should be oscillating at the frequency and amplitude set by the function generator
11. Adjust amplitude and frequency on function generator to achieve desired rotation characteristics (see table 1)
12. Optional: to monitor the motion characteristics of the galvo, connect a BNC cable between the galvo driver POSITION terminal and the oscilloscope input

Table 1: function generator voltage amplitude settings for different rotation amplitudes at different frequencies

Rotation amplitude (arcmin)	1 Hz	5 Hz	10 Hz	40 Hz	60 Hz
1	0.055	0.059	0.068	0.171	0.246
2	0.096	0.104	0.120	0.287	0.410
5	0.218	0.239	0.279	0.634	0.901
10	0.422	0.463	0.542	1.213	1.719
15	0.626	0.686	0.806	1.791	2.538
30	1.237	1.358	1.598	3.528	
60	2.460	2.702	3.180		
90	3.682	4.045			

Equations for converting between rotation amplitude and function generator voltage at different frequencies (all amplitudes are half of the peak-to-peak value):

V_{in} function generator voltage amplitude (V)
 a rotation amplitude (arcmin)



Frequency	Arcmin to voltage	Voltage to arcmin
1 Hz	$V_{in} = 0.0408a + 0.0146$	$a = 24.5396V_{in} - 0.3580$
5 Hz	$V_{in} = 0.0448a + 0.0147$	$a = 22.3302V_{in} - 0.3285$
10 Hz	$V_{in} = 0.0528a + 0.0148$	$a = 18.9540V_{in} - 0.2951$
40 Hz	$V_{in} = 0.1157a + 0.0553$	$a = 8.6398V_{in} - 0.4781$
60 Hz	$V_{in} = 0.1637a + 0.0820$	$a = 6.1070V_{in} - 0.5009$

Calibration conducted by Ben Moon (b.moon@rochester.edu) on 10-6-20