

Functional Testing of Test Bench

Objective:

The objective is to provide a controllable input to the correction module and measure the effectiveness of the vibration cancelations. The test bench will be run a specified frequency and amplitude with the stabilization turned off and on.

Equipment:

Test bench

Camera

Laser pointer

Power supply

Function generator

Wall target

Procedure:

On test bench set mechanical hard stops on actuators to desired amplitude. Securely attach tested gyroscope and processor to their mounting locations on the test bench. Ensure that both the forward and reverse actuator is connected to their respective terminal on the solid state relay (SSR) and ground of the power supply. Connect the positive terminal of the power supply to the input terminal of the SSR, and the function generator to the trigger terminals making sure that the reverse actuator is connected with reverse polarity. Set the function generator waveform to +10V / -10V (20Vp-p) square wave at desired frequency. Attach laser pointer securely to the test platform. Setup the target on the wall and setup camera for long exposure image on the target.

Power on laser, begin taking the long exposure photo. Power on test bench, turn on output of function generator and allow the test bench to run for long enough to obtain full range of motion. Verify with gyroscope to determine actual amplitude and frequency. Turn off test bench and function generator output and stop photo. Turn on stabilization system and start new long exposure photo. Repeat test for stabilized output and for each desired frequency and amplitude.