

Final Project Statement: Design and build a proportional feedback system that controls the position of a 9-12V dc motor. The motor must be driven by a PWM signal through an H-bridge. The motor is supposed to have a small disk load on its shaft and be able to track an input reference angle. Students must work individually to complete this project. The components you need for this project are included in the following link: [Parts List](#).

Notes: The PWM board converts a POSITIVE analog signal to PWM. The PWM signal is the input to the H-Bridge. The H-Bridge drives the DC motor. The H-bridge has direction control pins that accept 0-5 Volt logic. You will have to use an absolute value circuit to convert the bipolar error signal (reference angle minus the motor position angle) to a positive signal by taking its absolute value (check the absolute values circuit shown below). You also need a comparator circuit that accepts the error signal and generate a 0 Volt if the error is negative and 5 Volt if the error is positive. This signal binary signal feeds into the direction pin on the H-Bridge.

Absolute Value circuit:

