



SOLUTIONS CUBED

Connecting Quadrature Encoders
To The ICON, MINI, MICRO PID
Position Controllers

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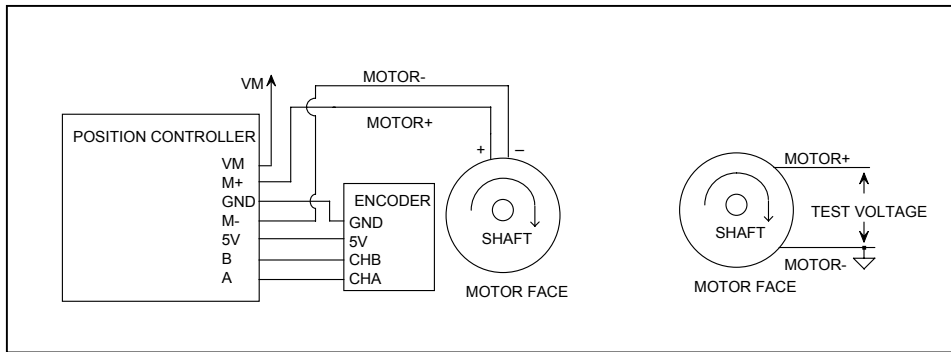
Connecting Quadrature Encoders to the ICON, MINI, MICRO PID Position Controllers

DESCRIPTION:

The marketplace is has a variety of motors and quadrature encoders. Most 2 channel optical encoders with TTL level outputs should be compatible with Solutions Cubed PID Position Controllers. However in our testing we have noticed that all motors and encoders do not rotate in the same direction when running “forward” (defined as the direction of motor shaft rotation when a positive voltage is applied between the motors positive and negative terminals).

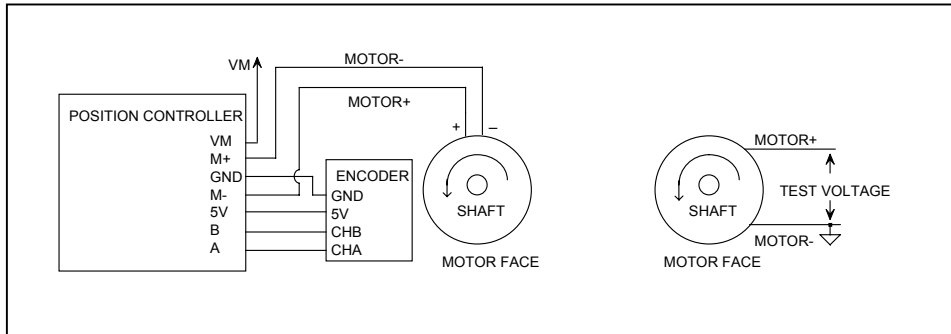
Solutions Cubed position controllers are labeled in a manner that makes them compatible with Pittman brushed DC motors with built in Agilent encoders. When a positive voltage is applied to the motor’s terminals the shaft should rotate in the clockwise direction (when looking at the motor face). When rotating in this direction the encoder should count up (channel A leads channel B).

Expected Motor/Encoder Connection



Some motors-encoder combinations may cause the encoder to count down when a positive voltage is applied to the motor’s terminals. If your motor shaft turns counter clockwise when a positive test voltage is applied to the motor’s terminals, this may be an indicator that your motor-encoder combination will operate in reverse of the expected connections.

Encoders that count down when a positive voltage is applied across the motors terminals will cause a “race condition”. The motor will run at full speed and the position error will grow instead of decreasing. To fix this condition either reverse your motor leads as shown in the diagram below, or swap the A and B connections (A connects to B, and B connects to A). Do not do both.



Always test your motor-encoder system with your position control module before applying a load to the motor’s shaft. A runaway motor can draw large amounts of current and damage your position controller.