

Quadrature Encoders

For the 2219 Servo Motor

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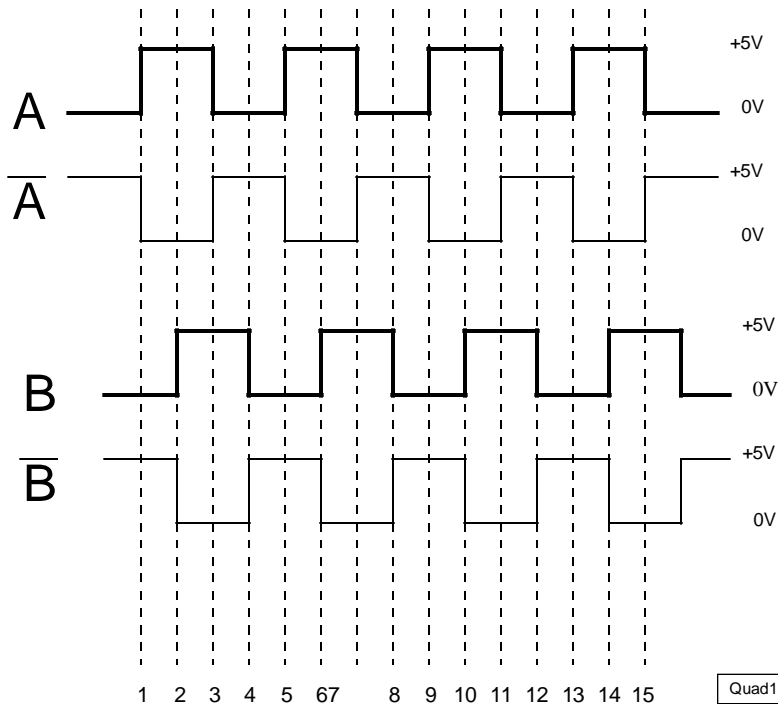
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A quadrature encoder is a device that senses either rotary or linear motion. A rotary encoder is a glass or metal disk that is mounted to a motor shaft. Glass disks are etched with radial lines and metal disks have etched radial slits. Two sets of optics are positioned within the encoder to shine through the disk. As the disk rotates, each of these optics is alternately blocked. Electrical pulses are generated when one of the radial lines blocks the optical sensor. The two optical sensors are mounted 90 degrees out of phase from one another and result in the pulse relationship shown in the diagram below. This convention allows the 2219's encoder input to record precise position and direction information.

The diagram below shows Phases A and B and their respective electrical complements, which increases noise immunity. When the motor is in motion, the phase relationship is 90 degrees out of phase from one another. However, each signal is dependent upon the other for accurate positioning of a motor. Each edge is counted as a pulse. This example shows fifteen pulses counted. If one or more of the phases are not connected to a CTC controller, intermittent results and/or loss of position will occur. The direction is determined by the phase with the leading edge.



CTC recommends using an oscilloscope to measure these signals with respect to the controller's 24V return.