

Motion Coordinator Application Note

Number:MC-1029, Revision 1, 2/28/2007

Subject: Piezo Motor Control

Overview:

Additional loop control parameters have been added to the servo loop on the MC206 and MC224 Motion Coordinators. These control parameters are designed for control of piezo motors although they can be used for the control of other motors as well.

The loop parameters allow an offset to be applied to the output DAC signal in both a positive and negative direction. They also allow a deadband to be applied within which the output DAC signal will be clamped to zero.

Offset to output DAC signal:

Two keywords allow an offset to be applied to the output DAC signal from the servo loop. The offset is applied *after* the DAC_SCALE function. An offset of 327 will represent an offset of 0.1 volts when using an MC206 with a 16 bit DAC. An offset of 20 will represent an offset of 0.1 volts when using a servo daughter board with a 12 bit DAC. It is suggested that an offset of 65% to 70% of the value required to make the stage move in an open loop situation is used. The negative offset axis parameter should be negative:

POS_OFFSET=300
NEG_OFFSET=-270

Servo Deadband:

The servo loop DAC output can be clamped to zero when a move has been completed within a tolerance band. Two further axis parameters are used:

DEAD_BAND_MIN=3
DEAD_BAND_MAX=10

The servo loop will clamp the output to zero when the demand movement is complete and magnitude of the following error is less than the DEAD_BAND_MIN value. The servo loop will be reactivated if either the following error rises above the DEAD_BAND_MAX value, or a fresh movement is started. The DEAD_BAND values are specified