Elevation 1+ Motion Parameters

03/12/2010

Elevation 1+ units contain a set of 7 motion parameters, these parameters help to define the movement charastics of the attached motor.

NOTE: Only adjust these parameters if you are confident of your abilities to tune the system. The Elevation 1+ is supplied with a default set of parameters which are designed to work in the vast majority of situations and environments. When tuning the drive be sure that the device and load are free and safe to move and that there is physical room to allow for unexpected movement and behaviour.

The 7 parameters are:

- Proportional Gain (Default 25000)

The proportional gain in the system creates an output that is proportional to the position following error (the difference between its current location and its ideal location). This gain is not affected by speed and ramps and provides the majority of the feedback require to keep the system working correctly.

- Integral Gain (Default 1500)

The integral gain creates an output that is proportional to the sum of the errors that have occurred during the system operation. Its effect is to reduce small steady-state position errors. Integral gain has most effect in ensuring that the desired speed is followed as accurately as possible and therefore applies most during the cruise phase of a move profile.

- Derivative Gain (Default 00250)

The derivative gain is a function of the measured velocity and improves the high frequency closed loop response. Derivative gain is the most volatile of the three settings. Its effect is most pronounced during the acceleration and deceleration phases of a move profile. An incorrect value for this setting can lead to instability during movement and potentially erratic behaviour.

- Min Drive Speed (Default 50)

movement. This value is used with the max speed output parameter to limit
unsigned integer.

- Max Drive Speed (Default 5000)

The maximum raw speed value that can be sent to the drive. This value is measured in units of 0.02Hz. Used to set the maximum drive speed that may be permitted. This value is used with the min speed output parameter to limit the range of the PID loop. The Elevation 1+ Firmware only uses the lower 16 bits as an unsigned integer.

- Pos Trip Difference (Default 300)

The PID servo control generates the correct move profile in software which the PID loop attempts to follow as closely as possible. Should the position leading or following error distance exceed this setting an over speed or under speed error will be generated and the move stopped. Firmware only uses the lower 16 bits as an unsigned integer.

- Brake Delay (Default 0)

If for any reason an Elevation 1+ looses it's motion parameters or you wish to check to ensure an Elevation 1+ unit has the correct set of motion parameters, this can be done from the Channel Setup window in Vector. Under the Motion Parameters heading select each motion parameter from the drop down and the value will appear. Changing any of these values from the default (set by the motor personality) can cause unexpected behaviour by the motor and should not be done without prior consultation with Kinesys.

Lost Motion Parameters

If for any reason an Elevation 1+ looses it's motion parameters or you wish to check to ensure an Elevation 1+ unit has the correct set of motion parameters, this can be done from the Channel Setup window in Vector. Under the Motion Parameters heading select each motion parameter from the drop down and the value will appear. Changing any of these values from the default (set by the motor personality) can cause unexpected behaviour by the motor and should not be done without prior consultation with Kinesys.

The signs that an Elevation 1+ has lost it's motion parameter settings are that it will loose it's address and once the address has been reset any attempted movement will cause an underspeed error.

This can be fixed either by using Vector as indicated above or via the front panel of the Elevation 1+, under the Setup/Parameters/ P1- P7 menu.

Ensure that you reset the offset parameters (Up and Down) back to 0, as these can also become corrupted if an Elevation 1+ has lost it's motion parameters.