

Title: Homing a Gantry
Products(s): MultiFlex, DCX-PCI300
Keywords: Gantry, Homing
ID#: TN1061
Date: August 2, 2005

Summary

More so than with applications that use 'individual axes', gantry system design should include considerations for how the gantry is to be 'homed'.

More Information

Other than the fact that a gantry is homed with the axes in Master / Slave mode, there is little difference between homing an individual servo versus homing the two servos of a gantry.

Single Home location

For applications where a single home reference (index) is used, it should be located on the linear stage of the Master axis, and wired to the Index input of the Master axis. The basic steps required to home the gantry are:

- 1) Enable Master /Slave mode
- 2) Issue a move to the Master axis in the direction of the Index mark
- 3) Issue the function MCIndexArm() to 'capture the index event'
- 4) When MC_STAT_INDEX_FOUND = True
- 5) Issue function MCWaitForIndex()
- 6) Stop the axes with MCStop(), wait until motion is complete
- 7) Disable gearing (MCEnableGearing = False)
- 8) Enable Master axis, the 'reported' position of the Master axis will change (relative to the location of the Index). **Note:** if Master / Slave mode was not disabled (as described in step 7) the Slave axis will 'jump' and will 'error out' and/or damage may occur.
- 9) Enable Slave axis, you can also use the function MCSetPosition() to set the slave position = to master position
- 10) Enable Master / Slave mode with MCEnableGearing()

Dual Linear Stage Home location

If each of the gantries (rails) has an Index mark (and they are mechanically aligned at 90°):

- 1) Home the Master axis as described above - stopping after step 8
- 2) Enable both the Master and the Slave axis with MCEnableAxis()
- 3) Enable Master / Slave mode with MCEnableGearing()
- 4) Move the Master to the location of the index mark with MCMoveAbsolute = 0.
- 5) When motion is complete - MCEnableGearing = False

- 6) Command a move of the Slave axis in the direction of the Index.
Note: Commanding a motion of the Slave axis that is 'outside the allowable angular deviation' of the gantry 'cross member' will result in the axis 'erroring out' and/or damage to one or both axes.
- 7) Similar to the 'Single Home Location' description above, use MCIndex(), MCWaitForIndex(), MCStop(), MCEnableAxis(), and MCMoveAbsolute() to 'home' the Slave axis