

Index Pulse Calibration Procedure

To maintain the highest accuracy of the axis positioning, the system must be calibrated when the encoders are changed or moved. This can be accomplished by the following steps:

- 1) If you have moved or replaced one of the encoders verify that the tolerances are correct based on the heindenhein manual.
- 2) Modify the Position() subroutine in the software (ew.c, ns.c, or focus.c) to display raw values. The printf call is already there, just uncomment it and recompile.
- 3) Connect an oscilloscope to the buffered index pulse on the Tech 80 5928 servo control card (Pin 11 of U4). (You may need to remove other cards if the axis you want is not on top.)
- 4) Put the system in manual from the control screen.
- 5) Use the LVDT voltage output in the NS and EW axis and the POT voltage output in the Focus axis (displayed by step 3) to place the axis as close to the zero position as possible. (Note that the zero volts position for the Focus axis is 50mm.)
- 6) Push the reset button on the control screen to zero out the servo registers.
- 7) Using the Position command from the control screen drive the system away from the zero position in 1mm increments until you observe an index pulse on the oscilloscope. Move the system back and forth until you are confident of the location of the index pulse. (Be right on top the index pulse.)
- 8) Look at the count reading and the voltage from the printf output. Modify the offset values at the beginning of the ew.c, ns.c or focus.c according to the values you observed. The constants you will need to correct are:
 - FOC_VOLT_OFF and FOC_POT_CNT for the focus software,
 - EW_VOLT_OFF and EW_LVDT_CNT for the east/west software,
 - NS_VOLT_OFF and NS_LVDT_CNT for the north/south software.