

BASICS OF INSTRUMENTATION LABVIEW EXERCISES

As a reference, download the *LabVIEW Fundamentals* manual from the National Instruments website

<http://www.ni.com/pdf/manuals/374029a.pdf>.

Additionally, the best guide is always the LabVIEW help. Try Ctrl+?

MICRODRIVE CONTROL

Send commands to the motor. Open the vi from last week and add a second (parallel) while loop which communicates with the motor. Alessandro will show you the most basic commands to use. Try it, then improve it. The front panel of your vi will be required to include the following:

- a control for the direction
- a control for the number of pulses (11bit range)
- a *move* button to send one command
- a single *stop* button to close the vi
- a waveform chart indicating the current relative position

What is the smallest (non-zero) movement you can get?

Hint: Use an event structure. All you need to know about the motor is in the NSD-2101 datasheet. The address is 54.

Move to a predefined position. Add a control for the desired target position. Use a 1-element queue to send the current position from the sensor loop to the motor loop. Then a click on the *move* button should:

- send a command to the motor if the target position has not been reached
- stop the vi if the current position is within a 10um range around the target

Relative to absolute position. For each N-S couple on the magnetic strip you get position values between 0 and 2mm. When you move to the next couple, you see steps from 0 to 2 and vice versa. When you detect any of such steps add or subtract 2mm to the current position so that the value you plot is the absolute position of the motor. Add a *reset* button to manually select the beginning of the magnetic strip.

Hint: use a case structure in a sub-vi.