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ThorLabs Z825B Motorized Actuator with TDC001 Control Cube

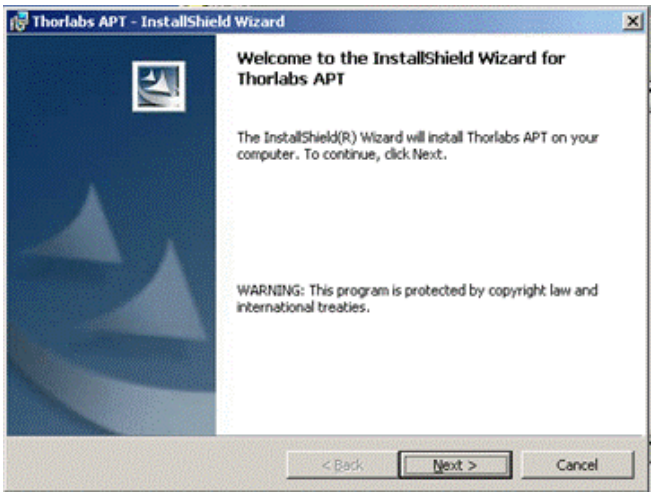
A motorized actuator coupled with a translation stage can be useful in many practical lab scenarios. Those include, but are not limited to, measurements requiring small and repeatable steps in the position of the stage, measurements with the stage at a constant velocity, and other measurements requiring precise translations. Below are the basics to get you up and running with the hardware, software, and interface between the two.

Configuration Utility and Drivers

Begin the setup by ensuring the APT Utility is installed on the machine being used. If the APT User Utility is already installed, skip to the next section.

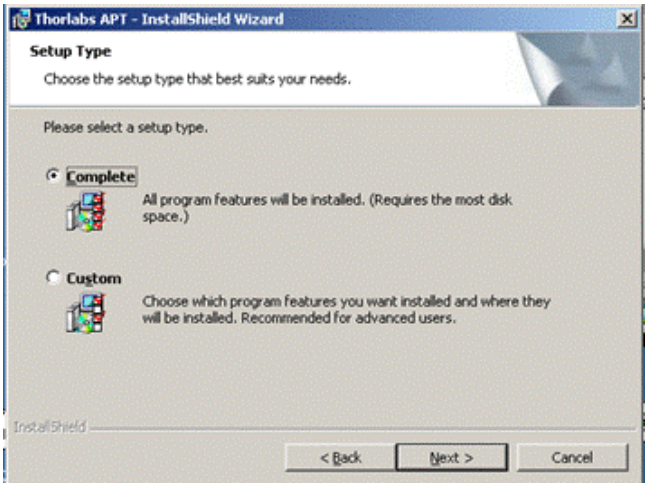
1. Install the APT Utility from the CD provided with the Control Cube or download the latest version of the ATP Utility from the Thor Labs website:
   http://thorlabs.com/software_pages/ViewSoftwarePage.cfm?Code=APT

2. MAKE SURE THE CONTROL CUBE IS NOT CONNECTED TO THE MACHINE AT THIS TIME
3. From either the CD or downloaded file double click the ‘setup.exe’ or ‘autorun.exe’ to begin the install process



4. Follow the onscreen instructions to complete the installation. For detailed install instructions see the Thor Labs ReadMe:
http://www.thorlabs.com/software/APT/Application/Web_Download_ReadMe/Web_Download_Readme.htm

5. Do a Complete Install

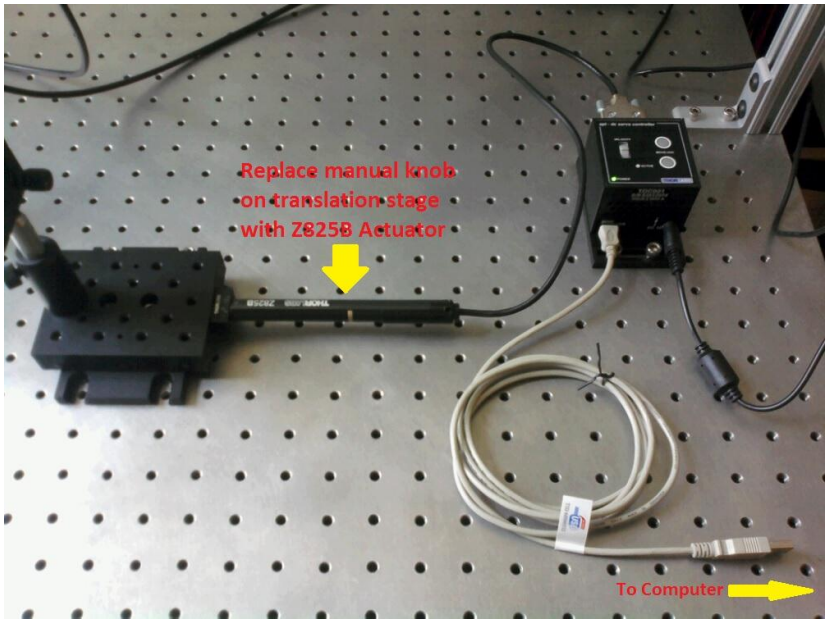


6. Once the setup is complete proceed to setup the physical apparatus for the experiment

Hardware Setup

Installing the hardware is straightforward as seen in the figure below.

1. Replace the manual micrometer on the translation stage with the ThorLabs Z825B electronically controlled actuator
2. Connect the Z825B to the ThorLabs TDC001 Control Cube. Ensure that the Cube is located in a position close enough to the actuator to allow full range of movement without binding the data cable.
3.



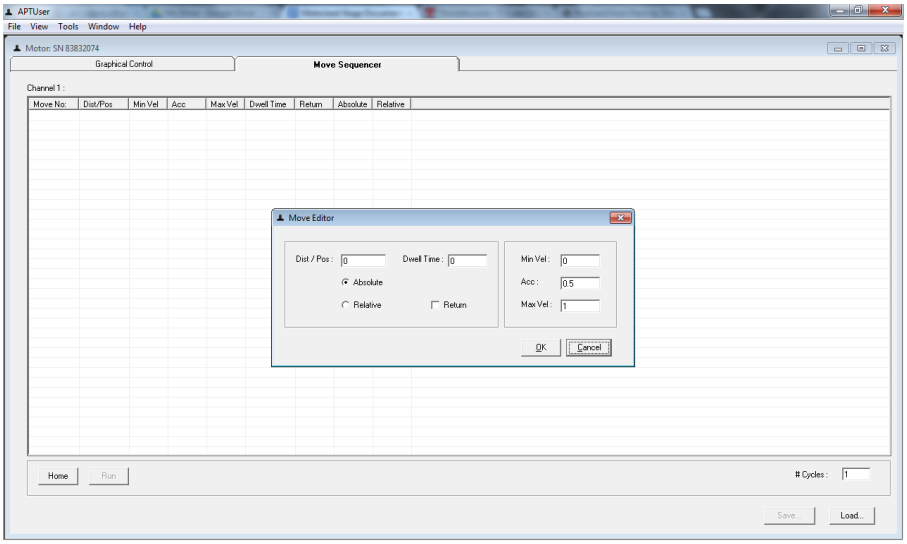
4. Do not connect the USB cable to the computer at this time

Interfacing with the computer

It is crucial to follow these next steps in the correct order otherwise the Control Cube will not interface properly with the computer and APT utility.

1. Connect the USB from the Control Cube to the computer being used
2. Apply power to the Control Cube
3. Open APT User Utility. The utility will initially look like the image below. This control can be used to control the translation stage but for more precise steps, constant velocity movement, or more programmable parameters select the ‘Move Sequencer’ tab

4. Under the ‘Move Sequencer’ tab, right click on an empty cell and select ‘New’. This will open the ‘Move Editor’ which will allow the user to program in desired distance, acceleration, velocity, ect. Multiple moves may be programmed to run in sequence if desired.



Other Noteworthy Information

Please read as the following information is also quite useful

1. Pay attention to the operational limitations of the motorized actuator when in use. While the Control Cube is designed to work with the Z825B actuator, it is not limited to use with it. As such it can produce power in excess of what the actuator can handle. The operational limitations of the actuator can be found in the spec sheet with the actuator or on ThorLabs website.

   http://www.thorlabs.com/NewGroupPage9.cfm?ObjectGroup_ID=1883&pn=Z825B#2510

2. Close the APT utility before disconnecting the USB from the computer

3. For any further information about either the TDC001 Control Cube or Z825B Actuator consult the ThorLabs website. Current versions of the APT Utility can be found on their website as well.