

Dektak3030 – Physical Profiler

Powering On:

1. Before powering up the system, plug in the stage x/y motorized directional control panel by plugging in the adapter
2. On top of the Dektak tower (power supply), that is separate from the monitor, flip the power switch to the ON position
3. The system is very old, so an image may fail to appear on the monitor. If this is the case, switch the power supply OFF and try step 2 again until the title screen appears on the monitor.

Loading a Sample:

1. Place your sample in the middle of the stage until it is under the stylus (measuring tool)

WARNING

Moving the stage with the stylus in the down position may create too much pressure for the tip of the stylus. The stylus tip WILL break if the stage is moved during this time. If the tip breaks, the machine will be rendered useless. Please make sure to move the stylus in the up position before moving the stage at any point.

2. Lower the stylus to check to see if your sample is in the correct position. Use the large knob on the front of the Dektak in the bottom right corner to adjust the distance between the stage and stylus.
 - a. The machine measures from a forward position to a backward one.
 - b. Make sure that the desired measuring step is behind the stylus, and that a known, flat, level surface is the first thing that the stylus touches. This will be needed in order to calibrate the auto-level mechanism.
 - c. If it is not in the correct position, raise the stylus and move the stage using the control panel to find the right spot to start on your sample being measured.
3. When your sample is in the desired position, along with the stylus, increase the distance between the stylus and stage by turning the knob in the opposite direction from before. There should be about a 1inch distance separating the two.

Scanning the Sample:

1. While at the title screen on the Dektak, press the PRGM (Program) button.

2. Make sure that the “Scan Program Menu” is highlighted and hit ENTR (Enter)
3. At the program menu, make sure that you have an appropriate Scan Length, Speed is reduced to “medium” or “low”, Profile shows the up/down step height process, and Auto Leveling is set to NO.

IMPORTANT

“Stylus Force” should be no larger than 20mg (0.20mN). Too much force will increase the possibility that the stylus tip will break.

- a. If you become experienced with this machine, you may also be able to choose parameters that you wish.
4. After the parameters are set, hit the blue SCAN button in the bottom right of your monitor control panel. This will begin your scan from the desired point. (Remember, the machine scans from a forward position to a backward one)
5. Once the scan is complete, you should be able to see a step profile. If you did not see the complete step, repeat the “Loading a Sample” steps to get your best step profile.

Analyzing the Sample:

1. If you see a step height with room to measure before and after the step, press the blue REF (Reference) button, then move the cursor with the arrow keys to the furthest LEFT spot on your known, leveled profile. This is Always your substrate.
2. Click the blue MEAS (Measure) button, and move the cursor to the point just before your step begins (the end of your known, leveled area.
3. Click the gray LVL (Level) button to begin leveling your physical profile. The scan window will automatically change your profile to the correct position.
4. Move your REF cursor a level point on your profile, and move your MEAS cursor to a point after the step height. The large peak in between is usually due to a large build-up of resist on your sample. We are looking for the average step height after this projection.
5. At the above, right corner on the monitor’s screen, there will be a value that gives the Horizontal and Vertical differences between the REF and MEAS cursors. Use the Vertical difference to evaluate step height.
6. Remember that the Vertical distance is given in the form of Ångströms.
7. Repeat the entire process for a new measurement at a similar location at least two more times to get an approximate value of step height.

Shutting Down:

1. Unplug the stage control panel adapter
2. Put away your sample
3. Wipe stage down with a Kim-wipe
4. Flip the Dektak power supply switch to the OFF position, and make sure that there is no image on the monitor.