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## **Tencor P2-Profilometer Operating Instructions**

Before proceeding ensure the UP sign is displayed on the Profilometer, if not do not continue. If you encounter any problems during operation of the tool, please place the tool in the down state and contact a member of staff / put in a service request.

**N.B. Photoresist samples must be hard baked for a minimum for 30 minutes @ 90 °C prior to loading into the tool.**

- **LOADING SAMPLE**
  - The P2 stage should be positioned at the home position, towards the front of the tool. If this is not the case hit **LOAD** to bring the stage to the loading position. N.B. Do not attempt to open the plexiglass cover whilst the stage is moving as the door is interlocked.
  - Open the plexiglass cover and place the sample in center of stage with the feature of interest as close to the central circular hole as possible, this makes for ease of feature location once under the camera.
  - Close the plexiglass cover and hit **LOAD** to position the sample under the analyzer head.
  
- **RECIPE SET-UP**
  - To enter the recipe set-up menu hit **MENU** and then using the cursor keys select **RECIPE / VIEW MODIFY** and hit **SEL**.
  - Use the UP / DOWN cursor keys to step between the recipe parameters and the LEFT / RIGHT cursor keys to alter a parameter.
  - The parameters that can be altered for your specific sample are:
    - Scan Length / Scan Speed / Sampling Rate / Direction
    - Multiple Scans 1 – 10 (to improve noise level)
    - Vertical resolution / Profile / Scale (set to AUTO)
  - Ensure that the data entered meets with the needs of your sample, i.e. scan length is not so long so as to drop off the end of your sample or the vertical resolution is set to be too small for your particular step height.
  - **DO NOT MAKE ANY CHANGES TO STYLUS FORCE; THIS CAN RESULT IN DAMAGE TO THE TOOL AND LOSS OF CLEANROOM PRIVILEGES.**
  
- **POSITIONING AND SCANNING**
  - Press **Z0** to view the camera mode. You now have control over the **Z** (height) of the analyzer head and also the **θ** (angle) of the stage.
  - Before proceeding ensure the X and Y (as shown on the CRT) positions are at 105,000 (+/- 2000) and the Z value is below 64,000. If this is not the case then **DO NOT** proceed, put the tool down and notify a member of staff immediately.
  - Press the down ↓ cursor once to bring the analyzer head into position. The screen will display “POSITIONING SENSOR”. Then repeatedly press the down ↓ cursor until the mirror image of the analyzer head is seen coming towards the real analyzer head. Bring the mirror image and the real

analyzer head close together **BUT DO NOT ALLOW THEM TO TOUCH**, this process brings the sample into focus and makes for easier location of features.

- Press **XY** to allow for the x / y positioning of the sample. Pressing **F1** at this time will cycle through the various speed settings of the stage. For precise alignment of the feature ensure the tool is set to **PRECISION MODE**, to cover a large a distance and for course alignment of the sample **HIGH SPEED** mode is recommended. Sample movement can be achieved by either pressing the cursor keys or moving the track ball.
  - If sample rotation is required once the feature is aligned then pressing **F2** to bring up the rotation menu. Select the angle required, making sure to select the correct direct of rotation (**CW / CCW**) and press **F2** to rotate, **F4** to quit.
  - To perform the scan simply press the **START** button. If during the scan you believe the analyzer head may fall off the end of the sample hit **STOP** immediately and alter the scan recipe or move your sample into a different position.
- **DATA MANIPULATION**
    - Once the scan is completed the system will automatically display the scan data.
    - To level the data press **LEVEL** and using the cursor keys/track ball move the **LEFT** and **RIGHT** cursor lines on the CRT to positions which you believe should be level (switch between the two cursors simply by pressing the **SPACE BAR**). Once the **LEFT AND RIGHT** cursors are in position press **F2** to replot the leveled data.
    - To zoom in on a particular area of the data press **ZOOM**. A new box will now appear which can be position again using the cursor keys/track ball. To fix the initial position of the **ZOOM** box press **F1** to anchor, remembering the **ZOOM** box will be anchored on the bottom left corner. The **ZOOM** box is now enlarged to the required area using the track ball/cursors. Once you have framed the required area press **F2** to replot the enlarged data. Hitting **F3** will return to the original un-enlarged data.
    - Once the scan data is in a satisfactory format on the screen it is possible to measure step height and horizontal distance. This is simply carried out by positioning the **LEFT** and **RIGHT** cursors at the points to be measured. The “Data Heading” on the screen will then display the “Height” and “Width” between the two cursors.
- **UNLOADING SAMPLE**
    - Once you are satisfied with your scan data and results, simply unload your sample by pressing **LOAD**.
    - Ensure the stage has fully reached the home position before attempting to open the door.
    - Open the plexiglass cover; remove your sample and close the plexiglass cover again.



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