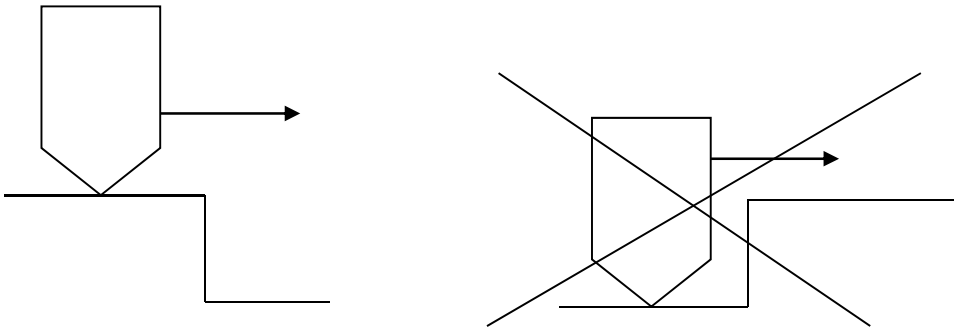
## EPFL - STI - CMI

# ALPHA STEP 500

The Alpha-Step 500 equipment is used to characterize a sample surface profile by scanning it with a diamond tip sensor. The obtained plot is a representation of the scanned area cross-view.
It can measure steps height down to 50Å through a scanning length of maximum 10mm. The holder of this particular equipment is suitable wafers up to 100mm.

**Do <u>NOT</u> put the tip in a hole or at any position away from the wafer. To measure steps higher than 500µm, always do it in descent (from the top of the feature):**



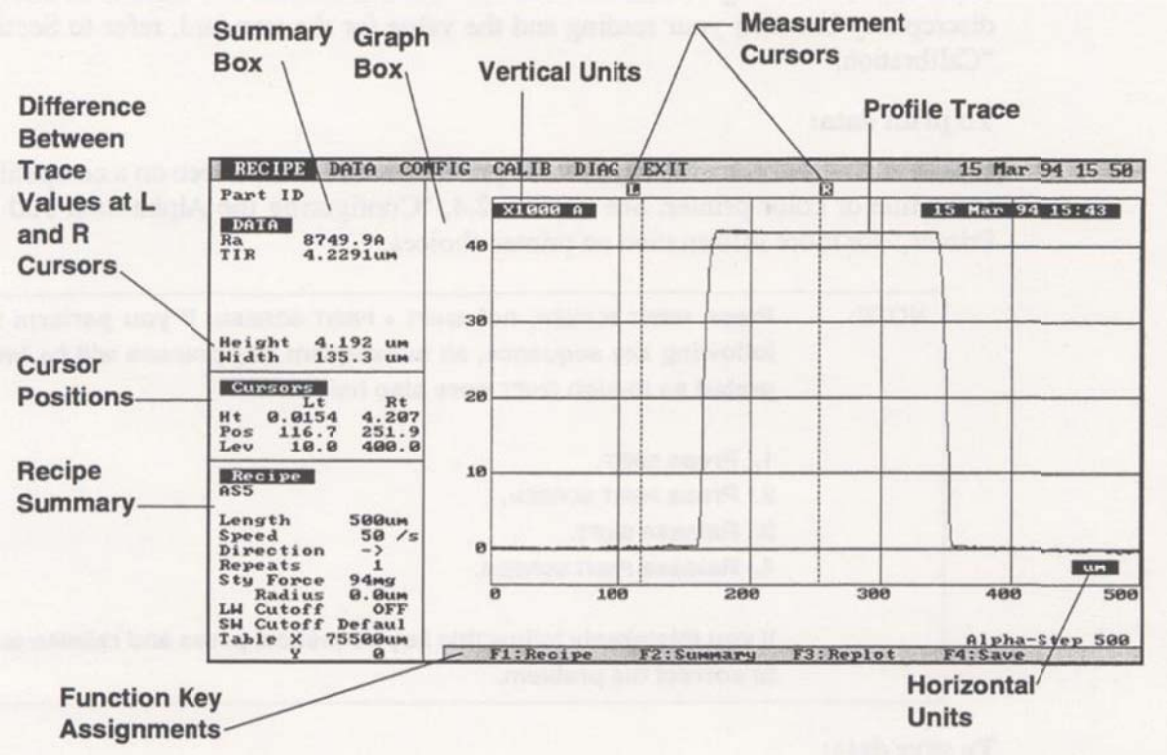
1) Switch on the computer screen
2) Press the ***Z-θ*** key and check that the holder is in low position
3) Put your sample on the holder
4) Activate the vacuum clamping (***vac*** position) and press the ***LOAD*** key
5) Keep the ↓ key pressed until the tip contacts the sample

**<u>NEVER</u> MOVE THE HOLDER WHEN THE TIP IS IN CONTACT WITH THE SAMPLE**

6) Press <u>once</u> the ↑ key to slightly lift the tip from the surface
7) Move to the place you want to measure using the "***trackball***" (use ***F1*** key to change the moving speed)
8) Press ***F4*** or ***ESC*** keys to return to the main menu

9) Choose CATALOG in the RECIPE menu. Either choose the general recipe or make your own (1 recipe per user). See appendices for recipe writing
10) Return to "camera view" using the ***Z-θ*** key
11) Press the ***START*** key to initiate the measure

12) Level adjustment of the profile plot
    - Press the ***LEVEL*** key
    - Using the 2 displayed red cursors, indicate two points on the profile plot that should be at the same level. Use the ← and → ***keys*** to move the cursors and the ***space bar*** to switch from one to another
    - Press ***ENTER***. The profile plot level is adjusted




13) Measuring cursors
    - Use the two cursors to get the height between two points of the plot
    - Average the value targeted by each of the two cursors by splitting them using the ↑ and ↓ keys
    - Use the ***space bar*** to switch from one cursor to the other or to activate both

14) Profile zoom
    - Press ***ZOOM*** (a "zoom box" appears)
    - Use the ← and → ***keys*** or the "***trackball***" to move that box to the area you want to zoom in

- Press ***F1*** to anchor the box and use the ← and → ***keys*** or the "***trackball***" to adjust the "zoom box" size
- Press ***F2*** or ***ZOOM*** for seeing (Press ***F3*** to get back to original plot)
- Press ***F4*** to suppress the "zoom box"

15) Data saving
- Press ***F4*** (save)
- "DATA BASE SAVE IDs" window opens
- Enter **#** symbol into the first six ID fields (quick shortcut. Press ***F1:Default***)
- In the "part ID" field enter the name as follows : **#nom**
- In the "Save data ?" field choose ***SUMM + RAW***
- Press ***ENTER*** to confirm

16) Data exporting on floppy disk
- Press ***F4*** or ***ESC*** to return to main menu
- Choose DISK PATH in CONFIG menu and press ***ENTER*** to see DISK PATH window
- Select "Export to/Import from: C:" and press ***F4***
- Select CATALOG in DATA menu and press ***ENTER***
- In "Type" field enter "Any Data" and press ***F2***
- Select the file and press ***F3(export)***
- Press ***N*** (ASCII format)
- Type a file name and press ***ENTER***

17) End of operation
- Go back to camera view by pressing the ***Z-θ*** key and then press ***UNLOAD***
- Release the vacuum clamping and unload your sample
- Go back to main menu by pressing ***F4*** or ***ESC***
- Switch off the screen (do not switch off the computer, only the screen)