DXT Profilometer
Last Updated: 6/10/2021

You must be a “Qualified Self-User” to operate this instrument independently.
You must be on the labs “Instrument Reservation Schedule” before touching the instrument for any reason.
Any problems, STOP, Post a note on the instrument and send an email to mtim@mit.edu immediately.
Do not perform any maintenance.
Do not install any software
Do not adjust any optics.

Instrument Hazards:
Electrical: 110-120V, 60Hz

Required Apparel:
Safety Glasses

CORAL:
Engage the instrument using CORAL when you enter the lab.
Disengage CORAL when you are leaving the lab.
Report all problems immediately to mtim@mit.edu.

Important: Potential Instrument Damaging Actions
Do NOT touch the stylus or drive your substrate into the stylus.
Checkout the instrument out when you arrive
Tower Assembly - Raised
Computer: On
Software: Open
Dust Cover: Closed
Neat and Clean
Measure the Calibrated Standard
Measure the 4500 Angstrom step height calibration standard (±50 Å). Each measurement range is calibrated separately. You should check the standard with the parameters you will use for your sample.

Abbreviated Operation Procedure
Place Standard on stage being careful not to touch the stylus mechanism. Position the Styli above sample. Lower the Tower. (Use X or the escape key to stop movement). Move to your feature of interest. Edit the measurement setup screen for your measurement. Run a single scan.

Scan Parameters
Standard Scan
Range: 6.5um
Styli size: 2um or 12.5um
Stylus Force: 2mg
Scan Length: 300um
Scan Time: 10seconds

Shutdown
Tower Home
Computer: On
Software: Open and showing.
Dust Cover: Closed
Walk away with a copy of your data. No data storage here. Leave the instrument in perfect condition and ready for the next user. Disengage CORAL
Specifics
Model: Bruker DXT-A
Bruker DXT-A Stylus Profilometer
Step Height Range: 20A-1mm
200mm Scan Length, (55mm without stitching).
Styli available: 2um, 12.5um
Color Video Camera
2D & 3D Scanning
2D Stress Analysis
Stylus force control: Typical 2mg, N-lite option allows force control to 0mg
Eight inch Sample Stage.
Computer controlled theta rotation
manual leveling

Web Description
Provides high precision surface topography measurements on a wide variety of substrates using a diamond tipped stylus.

Theory
A programmable motorized stage moves the sample beneath a diamond tipped stylus. Stylus displacement is measured with an LVDT.

Data Formats
Binary-Proprietary format - .OPD, (Good Lab practice - if your data is important enough to take with you then this what you should take with you at the end of your session).
Also, Export as .csv or image file if needed.
Right click in the window you would like to obtain comma separated values (CSV) for. Choose Export.

Computing
Printing to the room printer.
Internet Access: Yes
USB: Yes, CD: Yes, DVD: Yes
**Computer Restarting**
Name: (blank)
Password: (blank)

**Restarting the Vision64 software**
You will be prompted to initialize the stage movement and then the Theta movement when starting the vision64 software.

*If an error message is encountered.*
It is ok to try and correct the problem by restarting computer and instrument software.
The system will go through a self-test routine upon restart.
Try measuring the provided Step Height Standard.
If the error persists:
Stop using the instrument (prevents possible damage).
Report the problem to mtim@mit.edu immediately.

**Utilities:**
Electricity (wall).

**Emergency Shutdown:**
Shutdown the computer.
Turn off the Profilometer power.
Power switch is on the computer bench, big red button.

**Restart after an emergency:**
Restart the computer.
Turn on the Profilometer power.
Power switch is on the computer bench, big red button.