1 ELL2 Quick Start Guide

The FS-8 ellipsometer, allows Ex-Situ characterization of thin films. It features 8 wavelengths in the spectral range of 370 – 950 nm. It has a motorized sample stage and a motorized Z-stage.

Caution: Do not push or force the motorized stages. All spatial adjustments are done through the software.

- 1. Switch power ON by pressing the white ON/OFF button near the right side of the unit.
- 2. Check that the detector is switched ON.
- 3. When ready, a flickering white beam of light should be emitted from the front aperture of the source unit.
- 4. Open FilmSense software by clicking the Microsoft Edge icon on the desktop or by clicking the FilmSense icon in the taskbar.
- 5. The Film Sense software will be displayed (see fig.1).

Film S	Sense [™]	Model: FS-RT300 Version: 3.37 <u>Manual</u>		
Align Sample Measure Sample Data. Save Open Manage				
Acquisition Time: Standard Model: SiO2 on Si				
Mapping Stage				
Scan Pattern: (none) ► Edit Pattern) Move Stage ► Settings				
Model Fit Results:				
Fit_Diff	0.0063			
Thick(nm).1	96.771			
Angle	65.025			

Figure 1: Main window of FilmSense software

6. Mount your sample. If you need to move the stage, click the **Move Stage** button (see fig.2), select **Move Stage Screen**

	Move Stage Screen	
	Home Stage	
	Stage Center	
Move Stage •	Load Position	

7. In the stage mapping (see fig.3), move the stage by clicking the desired position in the grey box. Alternatively, move the stage using the keyboard arrows.

Move Mappi Current Position	ing Stage	0.000
Land Desilier		
Cancel	vs jog size (mm	Home Stage

Figure 3: Moving the stage

- 8. To go back to the center of the stage, select **Stage Center** in the Move Stage menu (see fig.2)
- 9. Align the beam to the height of your sample. For that, adjust the Z-stage position from the FilmSense software. In the main window, go to tab

Screen: Single Measurement. Click on the Align Sample button. In the Align window (see fig.4), adjust the Z-stage using the up and down arrows in the keyboard. The values of **Intensity** and **AlignY** changes when the Z-stage is moved. Make sure that the **Intensity** value remains high enough to perform measurements (>0.05). When the height adjustment is complete, click the **Auto-Align** button. The auto-align procedure adjust the Z-stage height to have a zero value of **AlingY**.

10. When the alignment is done, click on the **Back** button

🗱 Film Sense	Model: FS-RT300 Version: 3.37 <u>Manual</u>
Aligning Sample Back	(Data:) 100nm04022024
Motorized Height Stage Auto-Align Current Height (mm): 2.655	(Home)(Sample Position)
AlignX: - 0.01° Alig Intensity: 19.87 (Gain=3	nY: - 0.01°

Figure 4: Align window. After Auto-Align, AlignY=0

11. Measuring samples. In **Screen: Single Measurement** select the **Model** to analyze the data (see fig.5). If model is set to **(none)**, the Ellipsometric Data at each measurement wavelengths will be displayed.



Figure 5: Select model

12. Set the **Acquisition Time** (standard is 1 (s)). Changes to the acquisition time can be made in **Screen: Settings** window (see fig.6).

Film Sense	Model: FS-RT300 Version: 3.37 <u>Manual</u>			
Screen: Settings	(Data:) (unsaved)			
Data Acquisition Times (seconds)reset to defaults)Short:0.100Standard:1.00Long:10.0Alignment:0.10Calibration:1.00ExternaTime Units for Graphing:Seconds vZone Ave:Sing	I: 1.00 Ie & Dyn. Meas. 🗸			
Data Acquisition Options				
Use Window Correction Auto-Save Dynamic Da	ita			
Show Advanced				
Startup				
Screen: Single Measurement Set Screen Loc	ĸ			
Model: SiO2 on Si				
Device Address				
Name: fs.local V IP Mode: DHCP (default) V				
IP Address: 169.254.1.1				
Serial Number: 240104				
Upload Files Download Files				
Update Software (Restore Factory Settings)				
Disk Free: 877MB (63129 nFiles), Mem. Free: 75.1%				

Figure 6: Settings Window

13. Set the Scan Pattern. If set to (none) the measurements will be performed without moving the stage. The scan pattern is edited by clicking the Edit Pattern button (see fig.7). In the Edit Scan Pattern window, select the Substrate Shape, Size, Edge of Exclusion and Pattern Type. Save and select from the Scan Pattern menu.



Figure 7: Edit Scan Pattern window

14. Save your data. To save data click on the **Save** button (see fig.1). Add the filename. In **Folder** select **Folder:DataUsers**. The data is saved to a memory card in the Ellipsometer and not in the PC.

To save the data on the PC (and retrieve it) click on the **Manage** button (see fig.1). A screen showing a list with available data will be shown. Select the data you want to export, and click **Download Files**.

A compressed folder with the data saved to txt files will be download to the **Downloads** folder in the PC.

Create a folder with your **Name** and **Last Name** in the folder **Documents/Ell2UsersData**.

- 15. At the end of your session, take your data with you using an USB or using the internet.
- 16. If nobody else is signed up in ELL2 (CoreResearch) on the same day, shut down the instrument with the **On/Off** button near the right side of the unit.