Thermo Scientific Software

Wafer Software

User Guide

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For U.S. Technical Support, please contact:

Thermo Fisher Scientific
5225 Verona Road
Madison WI 53711-4495 U.S.A.
Telephone: 1 800 532 4752
E-mail: us.techsupport.analyze@thermofisher.com
World Wide Web: http://www.thermo.com/spectroscopy

For International Support, please contact:

Thermo Fisher Scientific
Telephone: +1 608 273 5017
E-mail: support.madison@thermofisher.com
World Wide Web: http://www.thermo.com/spectroscopy

For Research Use Only. This instrument or accessory is not a medical device and is not intended to be used for the prevention, diagnosis, treatment or cure of disease.

WARNING Avoid an explosion or fire hazard. This instrument or accessory is not designed for use in an explosive atmosphere.

Wafer Options

1. Select **Wafer > Wafer Options** to set the stage and wafer parameters.
2. Select a measurement from the **Wafer Size** dropdown box. Options are:
   - 300 mm – only displayed for 300 mm stages
   - 200 mm
   - 150 mm
   - 125 mm
   - 100 mm
3. Enter the size of the area in mm to exclude from in the **Edge Exclusion** field.
4. Select the **Stage Type** from the dropdown box. Options are:
   - MappIR
   - MAP300
5. Select the **Controller Type** from the dropdown box. Options are:
   - USB
   - Serial
   - None
6. Select **Configure** to configure the controller.

   Enter the device number or the port, as prompted.
7. Select **OK** to save the new configuration. Select **Cancel** to exit without saving any changes.

Ejecting a Wafer

Select **Wafer > Eject** to move the wafer stage out from the instrument. Unload an existing wafer or load a new wafer if the stage is empty.

Loading a Wafer

Place a wafer onto the stage. Select **Wafer > Load** to load the wafer into the instrument.

Setting Absolute Wafer Position

Select **Wafer > Set Absolute Wafer Position** to set the wafer position to a specific value. Enter the desired radius in mm and desired angle in degrees (0 – 360).

Select **Move** to move the stage to the desired position.

Select **Cancel** to exit without moving the stage.

Setting Relative Wafer Position

Select **Wafer > Set Relative Wafer Position** to set the wafer position to a value relative to the current position. Enter the desired radius in % and desired angle in degrees (0 – 360).

Select **Move** to move the stage to the desired position.

Select **Cancel** to exit without moving the stage.

Centering the Wafer

Select **Wafer > Quick Center** to return the stage to the home position. The beam is centered on the wafer and the stage angle is 0°.

Analyzing the Current Point

Select **Wafer > Analyze Current Point** to specify a quant method, collect data, and analyze the current position.

Enter the quant file to use in the **Quant Method** field. Select **Start** to begin the analysis.

Select **Cancel** to exit without performing an analysis.

Running a Profile

1. Select **Wafer > Run Profile** to set up and perform a multi-point collection and analysis.
2. Select a profile to use from the **Profile** dropdown box. Options are:
   - 10 Point Center
   - 5 Point Star
   - 9 Point Star
   - 17 Point Star
   - 5 Point Diameter
   - 9 Point Diameter
3. Check the **Quantify Spectra** box to automatically quantify the spectrum for each point. If you checked the box, enter the quant file to use in the **Quant Method** field.
4. Select **Start** to collect a background spectrum. If prompted, load the reference wafer.

   Select **Cancel** to exit without performing a collection.

5. After the background is collected, load the sample wafer. Select **Start** to collect the sample spectrum and analyze the results.

Setting Up for Epitaxial Analysis

Select **Wafer > Epitaxial Settings** to edit the existing EPI quant method or create a new method. This menu item is only available when an EPI quant method file is open.

EPI Quant Method Parameters

TQ Method Title	Enter the title of the method
Report Thickness component (mm)	Thickness is the only component available for EPI
Thickness Analysis Technique	Select one: • Interferogram • Interferogram Subtract • Cepstrum
Refractive index of the sample film	Enter the refractive index value
Use mirror as reflectivity reference	Check to enable
Reference Title (Interferogram Subtract only)	Enter the reference title
Largest Peak to use for measuring thickness (Interferogram and Interferogram Subtract only)	Select one: • Positive Peak • Negative Peak
Threshold for locating the thickness peak (Interferogram and Interferogram Subtract only)	Enter the threshold value
Thickness slope (Interferogram and Interferogram Subtract only)	Enter the thickness slope value
Thickness intercept (Interferogram and Interferogram Subtract only)	Enter the thickness intercept value

Measurement Range for Cepstrum (Cepstrum only)	Select one: • Submicron 0.29 to 1.48 • Thin 0.29 to 20.00 • Thick 0.29 to 185.00 • Very Thick 0.29 to 740.00
Cepstrum Peak (Cepstrum only)	Select one: • Peak Magnitude • Positive Peak in Real Data • Negative Peak in Real Data • Positive Peak in Imaginary Data • Negative Peak in Imaginary Data

Setting Up for Carbon and Oxygen Analysis

Select **Wafer > Carbon/Oxygen Settings** to edit the existing CO quant method or create a new method. This menu item is only available when a CO quant method file is open.

CO Quant Method Parameters

TQ Method Title	Enter the title of the method
Report Thickness component (mm)	Select one or more: • Thickness • Oxygen • Carbon
Prompt for thickness of each sample	Check to enable
Correct for multiple reflections	Check to enable
Standard Thickness (mm)	Enter the thickness in mm
Standard Oxygen content (ppma)	Enter the oxygen content in ppma
Standard Carbon content (ppma)	Enter the carbon content in ppma

Units of thickness results	Select one: • mm • mils
Carbon results units (Applies to both Carbon and Oxygen except as noted in the Oxygen Algorithm parameter description).	Select one: • ppma • atoms/cc
Oxygen Algorithm	Select one: • Alpha values (units for oxygen concentration fixed as "Abs") • ASTM-79 (appends "79" to the oxygen units) • ASTM-83 (appends "83" to the oxygen units) • JEIDA (appends "JEIDA" to the oxygen units) • Custom (enables Oxygen custom factor and Oxygen custom units fields when selected) • ASTM-88 (appends "88" to the oxygen units)
Custom Oxygen factor (only for Custom algorithm)	Enter the custom oxygen factor.
Custom Oxygen units (only for Custom algorithm)	Enter the custom oxygen units.
Apply slope and intercept before (uncheck) or after (check) unit conversion	• Uncheck for before • Check for after
Oxygen Slope	Enter the oxygen slope value
Oxygen Intercept	Enter the oxygen intercept value
Carbon Slope	Enter the carbon slope value
Carbon Intercept	Enter the carbon intercept value