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# alpha 2.0

## Specification sheet 2023

The alpha 2.0 is the ideal spectroscopic ellipsometer for fast, routine thin film measurements. It was designed to provide a perfect balance of accuracy, speed, and price.



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## Features

### Dual-Rotation™ Technology

The alpha 2.0 is equipped with Dual-Rotation ellipsometry technology, featuring a rotating compensator on the source unit and rotating analyzer on the detector unit. This technology provides access to high accuracy and Mueller matrix measurements in a single optical cycle.

### CCD Detection System

The alpha 2.0 uses a CCD detector for simultaneous measurement of 190 wavelengths. This allows measurement from 400 nm to 1000 nm in less than a second.

### Compact

Everything contained in one small package to fit easily on your benchtop. Easy connection to your computer via USB.

### Auto Alignment

Alignment is integrated into the data acquisition routine. Automated Z-translation alignment for easy data acquisition. Simply place your sample on the stage and the alpha 2.0 does the rest.

### CompleteEASE® Software

CompleteEASE is the world's leading ellipsometry software. Includes prebuilt models for beginners, comprehensive measurement capabilities, and advanced data analysis features.



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### System specifications

#### System Configuration (in order)

Light source  
Fixed polarizer  
Sample  
Step scan rotating compensator  
Fixed analyzer  
Spectrometer and detector

#### Angles of Incidence

Manual adjustment  
65°, 70°, 75° (off sample)  
90° (straight through)

#### Spectral Range

400nm to 1000nm (190 wavelengths)

#### Light Source

Quartz Tungsten Halogen (QTH)

#### Data Acquisition Rate

5-10 seconds for full spectrum (typical)

#### Beam Diameter

Focused, <1 mm

#### Sample Size

The alpha 2.0 accommodates samples up to 200mm diameter and 16mm thick.

#### Measurable Quantities

**Ellipsometry:**  $\Psi$  (0°-90°) and  $\Delta$  (0°-360°)  
**Intensity:** % Transmission and % Reflection  
**Depolarization:** % Depolarization  
**Mueller Matrix:** 11 normalized elements of the Mueller Matrix (normalized to  $m_{11}$ ). Useful for samples that are both anisotropic and depolarizing.

#### Typical Repeatability

Thirty consecutive measurements of native oxide (nominally 2nm) or thermal oxide (nominally 25nm) on silicon with a warm system at 70° angle and ten second averaging with fixed sample:

$\delta$ thickness < 0.01nm  
\*1-standard deviation



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### Facility requirements

#### Environmental Operating Range

Temperature: 10°C to 35°C

Humidity: 20% to 80% (non-condensing)

#### Power

100/240 VAC, 47-63Hz, <1 Amp

#### Ambient Lighting

RCE technology allows accurate measurements under normal room light conditions.

#### Weight

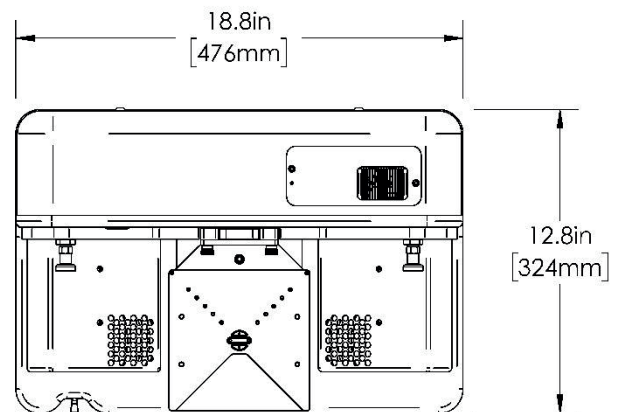
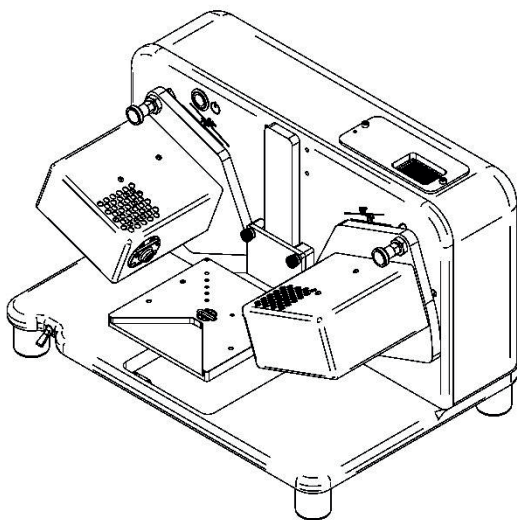
39 lbs. (excluding computer)

#### Dimensions

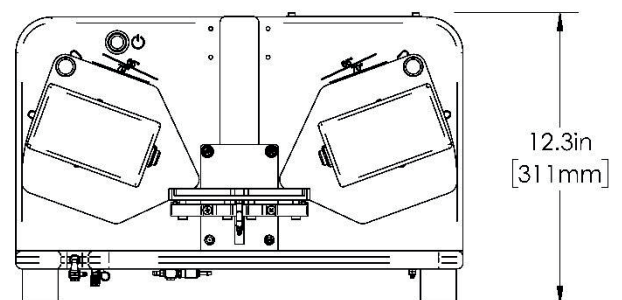
Width 18.8"

Depth 12.8"

Height 12.3"



TOP VIEW



FRONT VIEW