



Model 215 NanoSpec[®]/AFT

*Automated Film Thickness Measurement
and Mapping System*



Specifications

Specifications for the Model 215 can be divided into wafer specifications, measurement specifications, system specifications, environmental specifications, and installation site specifications.

Wafer Specifications

Wafer size	4" (100 mm), 5" (125 mm), 6" (150 mm)
Wafer indexing method	Flat or notch, configurable in Process Engineer mode
Wafer cassettes	
Capacity	Two, with a maximum of 25 wafers each
Type	Any cassette that complies with SEMI standards for automatic wafer handlers, in the current <i>Book of SEMI Standards</i> , Volume 2, Equipment Automation Division, Chapter E1, published by the Semiconductor Equipment and Materials Institute, Incorporated
Recommended cassettes	
	100 mm Fluoroware PA182-39MLB, 25 wafer capacity, blue polypropylene, Nanometrics p/n: 9720-0139
	125 mm Fluoroware PA182-50MB, 25 wafer capacity, blue polypropylene, Nanometrics p/n: 9720-0140
	150 mm Fluoroware PA182-60MB, 25 wafer capacity, blue polypropylene, Nanometrics p/n: 9720-0141
Pick up	Vacuum wand touches only back side of wafer
Selection	Completely random access, pick up and place, computer controlled
Indexing	Non-contact centering: ± 0.5 mm Optical index orientation: $\pm 1^\circ$

Measurement Specifications

Thickness range	100Å to 500,000Å
Measurement spot sizes	5x objective: 50 microns 10x objective: 25 microns 50x objective: 5 microns

Focus

Programmed focus:	For use on patterned or unpatterned wafers with the 5x objective lens
Auto focus	For use on patterned or unpatterned wafers with 5x, 10x, and 50x objective lenses
Focus time	1.5 to 2 seconds

Film types	oxide on silicon	nitride on silicon
	negative resist on silicon	polysilicon on oxide
	negative resist on oxide	nitride on oxide
	thin oxide on silicon	thin nitride on silicon
	polyimide on silicon	positive resist on silicon
	positive resist on oxide	positive dyed resist on silicon
	thick films	silicon

System Specifications

Stage

Movement range	X: 150 mm Y: 150 mm Theta: 360°
Drive	X, Y and Z via computer controlled stepper motors
X/Y slew rate	25 mm per second
Resolution	0.08 microns (minimum stage movement increment)
Position reproducibility	±5 microns
Standard program-mable positions	Up to 499 sites per wafer

Objective lenses

Available positions	Three, infinity corrected tube length, par-centered, par-focal
Selection	Fully automatic, computer controlled
Change time	1 second

System control

Metrology computer (MC1)	IBM PC/AT-compatible 80386-based processor with 80387 numeric coprocessor, 4 megabytes of system memory, one 40 megabyte hard disk drive, one 1.2 megabyte floppy diskette drive, EGA display adapter
NanoStation computer (NS1)	IBM PC/AT-compatible 80286-based processor with 80287 numeric coprocessor, 640 kilobytes of system memory, one 40 megabyte hard disk drive, one 1.2 megabyte floppy diskette drive, EGA display adapter
Computer Monitor	13" RGB color graphics monitor capable of displaying 640 dots (horizontal) by 480 dots (vertical) for VGA resolution
Communication	Full SECS-II compatibility

Environmental Specifications

Operating temperature	45°F to 80°F (7°C to 27°C)
Humidity	20% to 80%, noncondensing

Installation Site Specifications

Location	Any solid, level surface void of excessive vibration (whether mechanically or acoustically induced), and void of electromagnetic and magnetic fields
Power	
Domestic	115 Vac nominal (+10%, -15%), single phase, 50/60 Hz Connector: 8A two pole/three-wire twist-lock #3334-GC
International	225 Vac nominal ($\pm 25V$), 50/60 Hz Connector: supplied by user due to wide differences in approved types

- ◆ **Important** The NanoStation and computer display operate at 115 Vac nominal, regardless of system power setting. The computer tower has internal power circuitry that provides 115 Vac to the switched outlets when operating from 225 Vac. **Always connect the NanoStation and computer display to the switched outlets on the back of the tower. Connecting them to facility power of the wrong voltage may cause severe damage.**

Vacuum	10" mercury ($\pm 1"$) Connector: Swagelok, QC4 series (accepts clean cut, 3/8" flexible tubing)
Footprint (width x depth x height)	38" (97 cm) x 28" (71 cm) x 30" (76 cm)
Weight	Approximately 210 lb (95 kg)