



Focus on Quality

ISIS
sentronics

SemDex[®]301

Semi-automatic Inspection System for a Wide Range of Wafer Applications

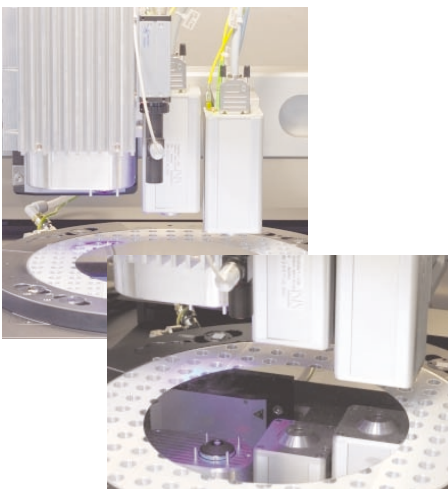


Optical Metrology:

- Substrate-thicknesses with sub- μm accuracy
- Bow/warp, flatness with μm accuracy
- Bumps, TSV-3D Metrology in nm range
- TSV depth with high aspect ratios
- Roughness in sub-nm range
- Thin layers > 0.2 μm
- Total layer thickness
- Optical inspection and pattern recognition


Features:

- Manual loading, automated measurement
- Standalone instrument with integrated PC and monitor
- Accepts wafers measuring up to 300 mm (12"), for measurement on both sides
- Framed and unframed wafers
- Single, twin, triple, or quadro sensor configuration
- Optional vacuum chucks, also for measurement of both sides
- Integrated vacuum generation for fixing wafers
- Optionally available with high-resolution HD CMOS camera
- Air-suspended measuring table for vibration-free measurement
- x/y-precision measuring stage with precise stepping motor positioning
- Calibration body integrated into chuck (layer thickness, 3D-topography, roughness)
- Coated steel housing or stainless steel housing for clean room operation
- SEMI S2- and S8-compliant ergonomics
- User-friendly WaferSpect software
- Optional: SECS/ GEM software package – integrated communication interface between fabrication and device




SemDex 301 with different sensor configurations

Typical Sensor Configurations:



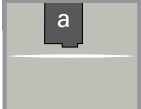
SemDex A31/A32-11

- Substrate thickness
- Bow / Warp



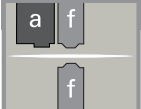
SemDex A31/A32-25

- Substrate thickness
- Bow / Warp
- Thin layer



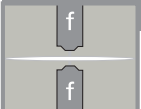
SemDex A31/A32-14

- nm-roughness
- Mini Bumps / TSV



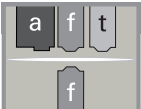
SemDex 301-34

- Substrate thickness
- Bow / Warp
- nm-roughness
- Mini Bumps / TSV
- Total thickness




SemDex A31/A32-21

- Substrate thickness
- Bow / Warp
- Total thickness



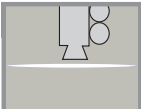
SemDex 301-44

- Substrate thickness
- Bow / Warp
- nm-roughness
- Mini Bumps / TSV
- Thin layer
- Total thickness



SemDex A31/A32-24

- Substrate thickness
- Bow / Warp
- nm-roughness
- Mini Bumps / TSV



Camera (optional)

All sensor configurations are also available with a high resolution HD-CMOS camera

a a-sensor for measuring roughness/ 3D topography

f f-sensor for measuring layer

t t-sensor for measuring thin layer

Specifications SemDex 301:

Accuracy after pattern recognition	5 µm (as option)
SECS/ GEM capability	yes (as option)
Max. number of metrology sensors	4
Dimensions	785 x 1844 x 1020 mm ³

f f-sensor	Layer thickness sensor 1 / 2	StraDex f24 - 300	StraDex f2 - 80
	Layer thickness (silicon)	8 - 800 µm	2.5 - 60 µm
	Spot size	24 µm	8 µm
	Wavelength	1300 nm	830 nm
	Working range	24 - 44 mm	2 - 22 mm
	Repeatability	0.1 µm	
	Field-of-view of integrated camera	ca. 3 x 3 mm ²	

t t-sensor	Thin film sensor	StraDex t6 - 60
	Thickness range oxide/ resist	0.2 - 10 µm
	Spot size	100 µm
	Wavelength	400 - 750 nm
	Working range	6 - 12 mm
	Repeatability	1 nm

a a-sensor	3D Micro-topography sensor	StraDex a3	StraDex a5
	Min. height	1 nm	
	Max. height	100 µm	
	Spot size	0.35 µm	0.75 µm
	Field of view (FOV)	(0.35 mm) ²	(0.8 mm) ²
	Working range	3.5 mm	5 - 5.25 mm
	Autofocus range	50 mm (ext. stage)	
	Minimal acquisition rate	4 sec.; 1 sec. (reduced FOV)	
	Repeatability (3-sigma)	0.5 nm (at same level); 3 nm (large step)	
	Wavelength	480 nm	