WX3000™ High Speed 3D+2D Wafer Bump Inspection System

Ultra-Fast • 100% Bump Inspection for Improving Yield

WX3000™

Powered by NanoResolution MRS® Technology

12" and 8" Wafer Size

Ultra High Speed
≥ 25 WPH at 12"

Nordson TEST & INSPECTION

CYBEROPTICS

WX3000™ 3D+2D Metrology & Inspection

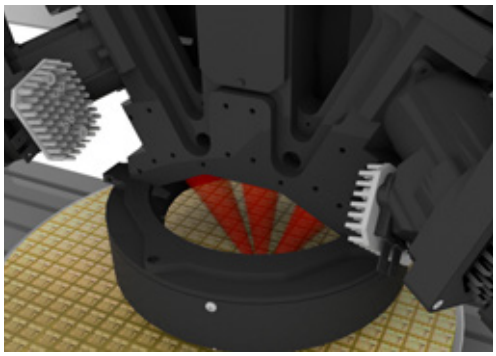
Powered by NanoResolution Multi-Reflection Suppression® (MRS®) Sensor Technology

WX3000 3D and 2D metrology and inspection system provides the ultimate combination of high speed, high resolution and high accuracy for wafer-level and advanced packaging applications to improve yields and productivity. Offering an unparalleled combination of high accuracy, high resolution and speed, MRS sensors are widely used for inspection and measurement in the SMT and semiconductor markets.

CyberOptics' unique sensor architecture simultaneously captures and transmits multiple images in parallel while proprietary 3D fusing algorithms merge the images together. The result is ultra-high quality 3D images and high-speed inspection.

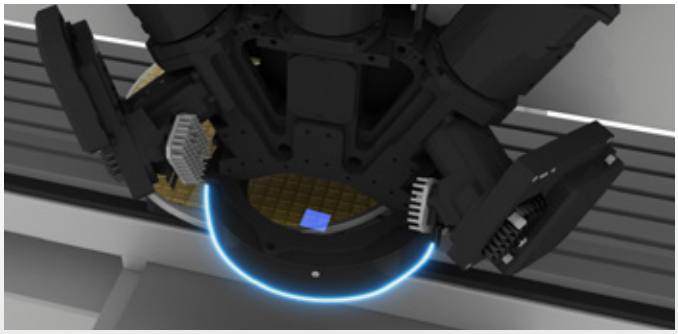
Metrology-Grades Accuracy with Multi-Reflection Suppression (MRS) Technology

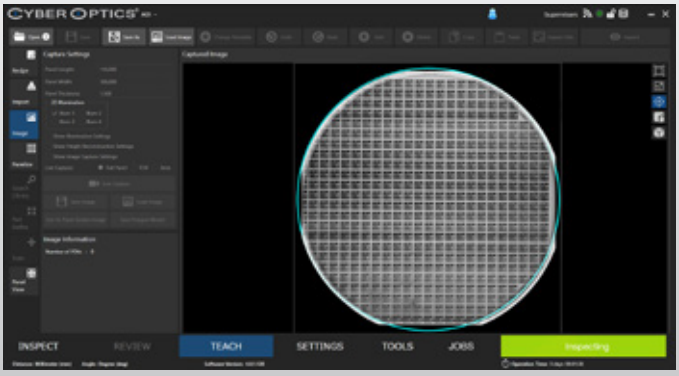
Proprietary MRS sensor technology, deemed best-in-class, meticulously identifies and rejects multiple reflections caused by shiny components and mirror-like surfaces. Effective suppression of multiple reflections is critical for highly accurate measurements. The 3-micron NanoResolution (X/Y resolution of 3 micron, Z resolution of 50 nanometer) MRS sensor enables metrology grade accuracy with superior 100% 3D and 2D measurement performance for features as small as 25-micron.



Fast, Superior Inspection Performance

Performing two to three times faster than alternate technologies at data processing speeds in excess of 75 million 3D points per second, the NanoResolution MRS sensor delivers throughput greater than 25 wafers (300mm) per hour. 100% 3D and 2D metrology and inspection can be completed simultaneously at high speed, versus an alternate, slow method that requires two separate scans for 2D and 3D, and only a sampling of a few die.





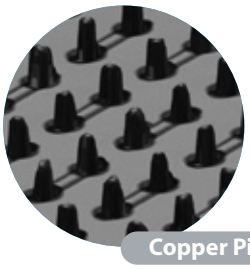
Metrology and Inspection for 8" and 6" Wafer Sizes

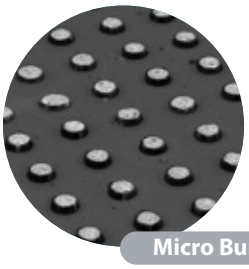
Same metrology-grace accuracy, superior inspction performance and versatility, but for 8" and 6" wafer sizes. Delivers throughput of 55 wafers (200mm) per hour.

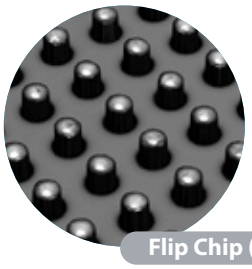
8" and 6" Wafer Size

Versatility for Wafer-Level and Advanced Packaging Applications

Measure and inspect a wide range of semiconductor applications including gold bumps, solder balls and bumps, wafer bumps, copper pillars and other wafer-level and advanced packaging applications Measure and inspect critical packaging features including bump height, coplanarity, diameter and shape, relative location and variety of other measurements.


Copper Pillar

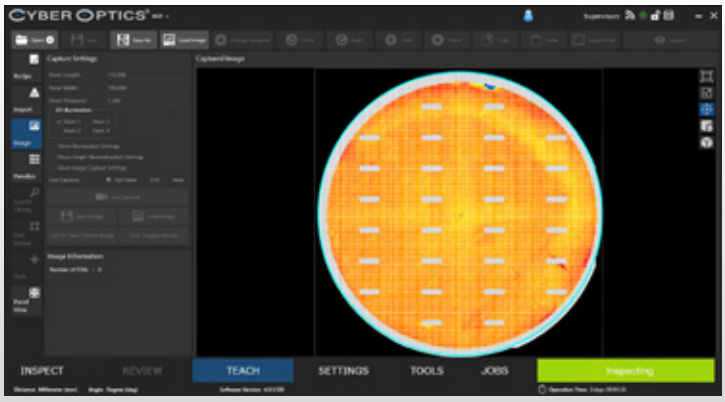

Micro Bump


Flip Chip (c4)

Benefits of 100% Wafer Bump Metrology and Inspection

The WX3000 enables 100% 3D metrology and inspection for wafer bumps that can identify:

- Cluster Defect, indication of equipment or process issue
- Repeating Defect, potentially mask/ reticle defect
- Bump Height Distribution of Each Wafer, identify performance differences between different plating machines and individual plating cells
- Non-uniform Bump Heights, indication of uneven current density distribution of the plater
- Wafer Edge Tall Bumps, avoid probe card damage



3D Metrology	WX3000 12”+ 8” Wafer Size	WX3000 8”+ 6” Wafer Size
3D Capability	Full wafer	
3D Accuracy	0.2 µm (VLSI standard)	
3D Repeatability	0.3 µm @ 3σ (VLSI standard)	
3D Throughput	≥ 25 WPH (300 mm full wafer)	≥ 55 WPH (200 mm full wafer)
Bump Height (Size) Coverage Range	25-250 µm	
Die Coplanarity Capability	Yes	
Wafer Coplanarity Capability	Yes	
Bump Height Tendency Map by Die Average	Yes	
2D Metrology		
2D Objectives and Resolution	Fixed resolution - 3 µm	
2D Measurement Accuracy for Bump & RDL	1/2 (1.5 µm) pixel size accuracy	
2D Measurement Repeatability	1.6 µm @ 3σ	
2D Throughput (300 mm full wafer)	≥ 25 WPH (300 mm full wafer)	≥ 55 WPH (200 mm full wafer)
2D Measurement Range	>20 µm	
Bump Diameter Tendency Map by Die Average	Yes	
General Specifications		
Wafer Size	12” & 8” Bare wafer	8” & 6” Bare wafer
Wafer Warpage	Up to 1mm for 300mm bare wafer	Up to 1 mm for 200 mm bare wafer
Auto Handling for Bare Wafer	Yes	
Wafer Breakage	Not more than 1/100,000	
Wafer Carrier	200 mm open cassette, 300 mm FOUP/FOSB	200 mm open cassette
OCR for Bare Wafer	Yes, top/back	
SECS/GEM	Yes	
Ionizer	Both handling and scanner sides	
Traffic Light	3 color traffic lights	

Specifications	Nano Resolution MRS Sensor (3D+2D)
Minimum Feature Diameter	25 µm
FOV	15x15 mm
Lateral Resolution	3 µm
3D Sensor Height Resolution	0.05 µm
3D Repeatability	0.3 µm @ 3σ (VLSI standard)
3D Accuracy	0.2 µm (VLSI standard)
Height Measurement Range	0.25 mm
3D Acquisition Time, typical	150 msec
Illumination	Integrated 2D Illumination

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