

# SQ3000™ 3D AOI

The Ultimate in Speed and Accuracy

Powered by  
MRS® Technology

SQ3000™ 3D AOI



Multi-Award Winning  
MRS-Enabled Inspection  
and Measurement Systems

**Multiple**  
MRS Sensor  
Options



# SQ3000™ The Ultimate in Speed and Accuracy

## High Precision Accuracy with Multi-Reflection Suppression® (MRS®) Sensor Technology

The SQ3000 is powered by CyberOptics' breakthrough 3D sensing technology comprising four multi-view 3D sensors and a parallel projector delivering metrology grade accuracy at production speed. 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.



### Multi-Reflection Suppression (MRS) Technology

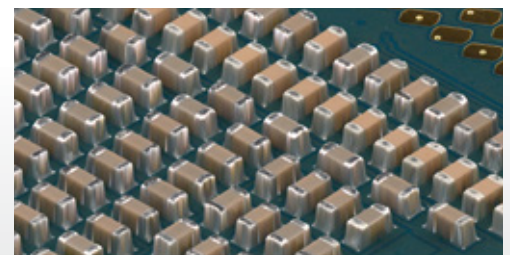
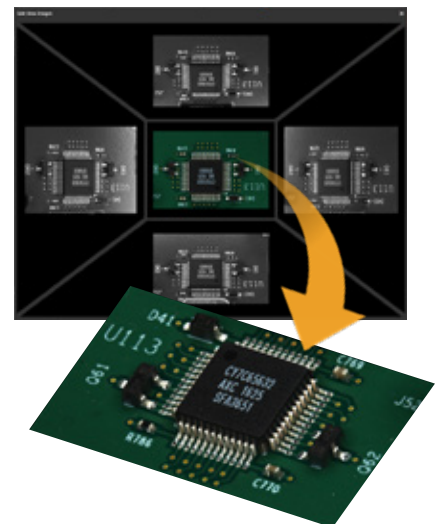
SQ3000 offers unmatched accuracy with the revolutionary MRS technology by meticulously identifying and rejecting reflections caused by shiny components and reflective solder joints. Effective suppression of multiple reflections is critical for accurate measurement making MRS an ideal technology solution for a wide range of applications including those with very high quality requirements.

### MRS Sensor Solutions for Metrology, Assembly, and Process Improvement

SQ3000 with MRS technology has multiple sensor options to meet even the most demanding applications. CyberOptics has advanced the proprietary Multi-Reflection Suppression (MRS) sensor to an even finer resolution. The Ultra-High Resolution MRS sensor enhances the SQ3000 3D AOI platform, delivering superior inspection performance, ideally suited for the 0201 metric process and micro-electronic applications where an even greater degree of accuracy and inspection reliability is critical.

### Large Board Capability

SQ3000™ X supports large boards up to 710 x 610 mm, and is capable of inspecting the most demanding assemblies at production speed without compromising on measurement accuracy and repeatability.



Packaging SMT





# AOISoftware

## Intuitive, Easy-to-Use Software

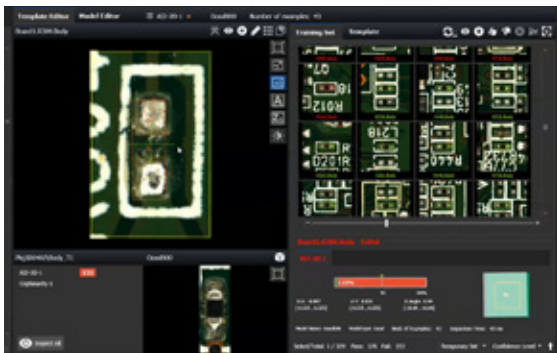
The multi-award winning SQ3000 AOI software is a more powerful yet extremely simple software designed with an intuitive interface. Including multi-touch controls, 3D image visualization tools and ultra-fast programming capabilities that brings ease-of-use to a completely new level, which reduces training efforts and minimizes operator interaction - saving time and cost.



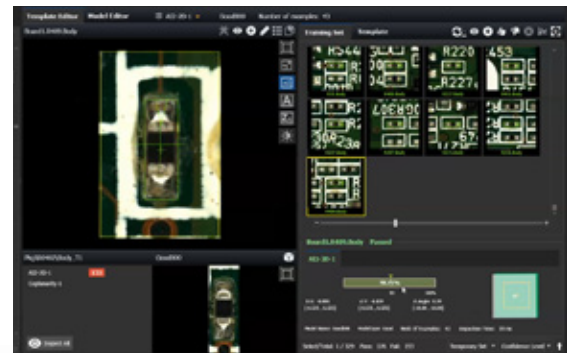
## Enable Smarter, Faster Inspection

Speed programming and tuning with new capabilities including AutoTeach, AutoTune and AutoDefine for faster set-up and simplifies process.

AI<sup>2</sup> (Autonomous Image Interpretation) technology is all about keeping it simple - no parameters to adjust or algorithms to tune. And, you don't need to anticipate defects or pre-define variance either - AI<sup>2</sup> does it all for you. With AI<sup>2</sup>, you have the power to inspect the most comprehensive list of features and identify the widest variety of defects. AI<sup>2</sup> offers precise discrimination with just one panel inspection making it a perfect solution for high-mix and high-volume applications.



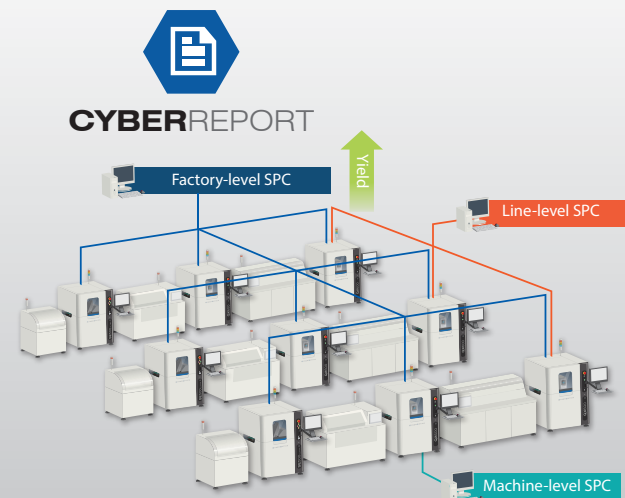
Failed Model



Passed Model

## Fast, Scalable SPC Solution

CyberReport™ offers full-fledged machine-level to factory-level SPC capability with powerful historical analysis and reporting tools delivering complete traceability for process verification and yield improvement. CyberReport™ is easy to setup and simple to use while providing fast charting with a compact database size.





Inspection Capabilities		Standard MRS Sensor	High-Speed MRS Sensor	High-Resolution MRS Sensor	Ultra-High Resolution MRS Sensor
Inspection Speed	40 cm²/sec (2D+3D)		50 cm²/sec (2D+3D)	20 cm²/sec (2D+3D)	15 cm²/sec (2D+3D)
Minimum Component Size	0402 mm (01005 in.)			0201 mm (008004 in.)	
PCB Size	SQ3000: Minimum: 50 x 50 mm (2 x 2 in.); Maximum: 510 x 510 mm (20 x 20 in.) SQ3000-X: Minimum: 50 x 120 mm (2 x 4.7 in.); Maximum: 710 x 610 mm (27.9 x 24 in.)				
Component Height Clearance	Top: 50 mm ; Bottom: 30mm				
PCB Thickness	0.3 - 5 mm				
Component Types Inspected	Standard SMT (chips, J-lead, gull-wing, BGA, etc.), through-hole, odd-form, clips, connectors, header pins, and more				
Component Defects	Missing, polarity, tombstone, billboard, flipped, wrong part, gross body and lead damage, and more				
Solder Joint and Other Defects	Gold finger contamination, excess solder, insufficient solder, bridging, through-hole pins				
3D Measurement Inspection	Lifted Lead, package coplanarity, polarity dimple and chamfer identification				
Measurement Gage R&R	<10% @ ±3σ (±80 μm process tolerance)				
Z Height Accuracy	1 μm on certification target				
Z Height Measurement Range	6 mm at spec, 24 mm capability			3 mm at spec, 8 mm capability	
Vision System & Technology					
Imagers	Multi-3D sensors				
Resolution	Sub 10 μm			7 μm	
Field of View (FOV)	36 x 30 mm	36 x 36 mm	26 x 26 mm	21 x 21 mm	
Image Processing	Autonomous Image Interpretation (AI²) Technology, Coplanarity and Lead Measurement				
Programming Time	<13 minutes (for established libraries)				
CAD Import	Any column-separated text file with ref designator, XY, Angle, Part no info; Valor process preparation				
System Specifications					
Machine Interface	SMEMA, RS232 and Ethernet				
Power Requirements	100-120 VAC or 220-240 VAC, 50/60 hz, 10-15 amps				
Compressed Air Requirements	5.6 Kg/cm² to 7.0 Kg/cm² (80 to 100 psi @ 4 cfm)				
System Dimensions	SQ3000: 110 x 127 x 139 cm (W x D x H) SQ3000-X: 134 x 139 x 139 cm (W x D x H)				
Weight	SQ3000: ≈965 kg (2127 lbs.) SQ3000-X: ≈1242 kg (2738 lbs.)				
Options					
Barcode Reader, Rework station, SPC Software, Alignment Target					
SQ3000™ D (Dual Lane), and SQ3000™ DD (Dual Lane - Dual Sensor) models available					