


# SQ3000™ 3D AOI

The Ultimate in Speed and Accuracy



 Multi-Award Winning MRS-Enabled Inspection and Measurement Systems

**Multiple MRS Sensor Options**



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



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# 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.



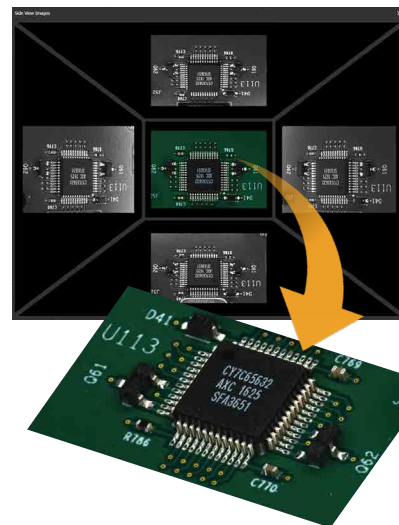
## Intuitive, Easy-to-Use Software

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.



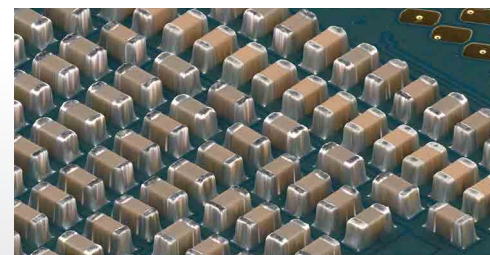
## Multi-Reflection Suppression (MRS) Technology

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

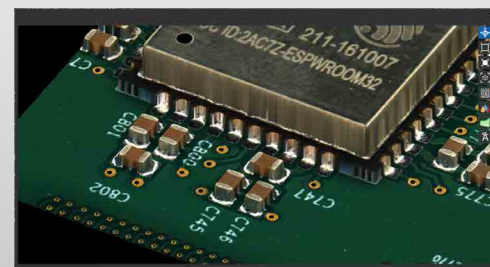
SQ3000 with MRS technology has multiple sensor options to meet even the most demanding applications. CyberOptics has advanced the proprietary Multi-Reflection Suppression (MRS) sensor to an even finer resolution. The Ultra-High Resolution MRS sensor enhances the SQ3000 3D AOI platform, delivering superior 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.



Packaging SMT

## Large Board Capability

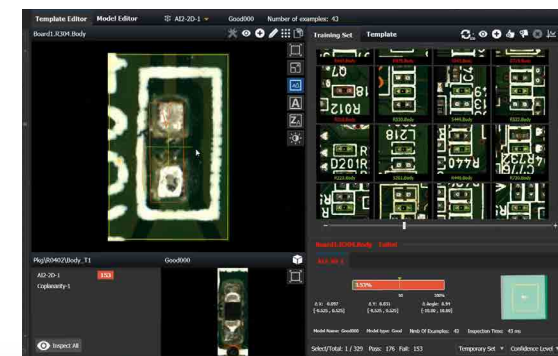
SQ3000™ X supports large boards up to 710 x 610 mm, and is capable of inspecting the most demanding assemblies at production speed without compromising on measurement accuracy and repeatability.



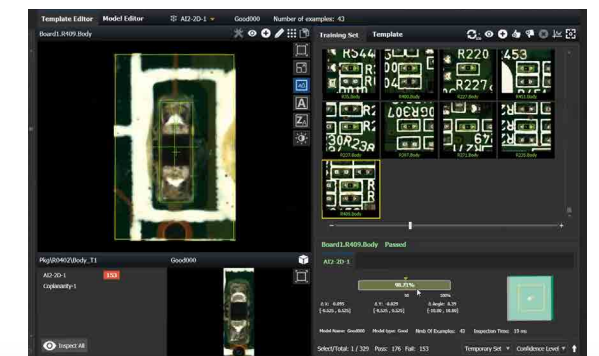
## Enable Smarter, Faster Inspection

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

