# SQ3000™ 3D AOI, SPI, & CMM

## The Ultimate in Speed and Accuracy with Multi-Process Capability.

○— SQ3000™ is an all-in-one solution that's loaded with powerful tools that cover inspection and measurement for AOI, SPI and CMM applications. SQ3000-X™ offers support of large board capability of up to 720 x 620 mm board sizes.

○— The SQ3000™ offers unmatched accuracy with the revolutionary Multi-Reflection Suppression (MRS) technology by meticulously identifying and rejecting reflections caused by shiny components. 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.

AOI SPI & CMM All-in-one
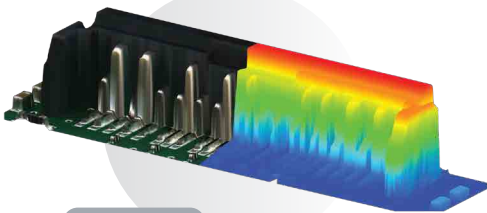
AOI
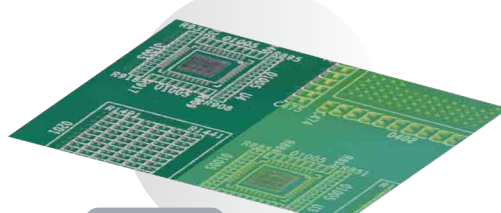
SPI
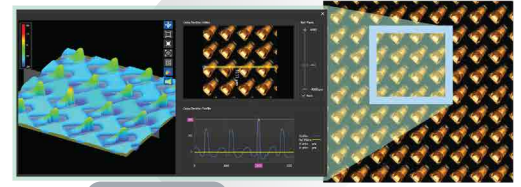
CMM

Metrology-Grade Accuracy at Production Speed

– Achieve metrology-grade accuracy at production speed enabled by MRS technology.
– Attain repeatable and reproducible measurements for Industrial Metrology, Semiconductor, Microelectronics and SMT applications.

Faster, Smarter, Award Winning Software

– Simplifies process with powerful yet extremely simple software designed with an intuitive interface that reduces training efforts and minimizes operator interaction.
– Take ease-of-use to a whole new level of inspection with multi touch controls and 3D image visualization tools with CyberOptics 3D AOI software that includes full SPI capability, and expanded coordinate measuring capabilities with CyberCMM™.
– Add on CyberReport™ for full-fledged machine-level to factory-level SPC capability.

AOISOFTWARE

CYBERCMM

CYBERREPORT

Richer SPI Experience with Closed Loop, Feedback - Feed Forward

– Optimize printing process by proactively analyzing current trend data with the standalone SPI software and CyberPrint Optimizer.
– Enable smarter and faster inspection that provides reduction in rework costs, minimizes scrap and optimizes print process.

SPISOFTWARE

CYBER PRINTOPTIMIZER

CYBEROPTICS®

SMT Inspection Capabilities	MRS Sensor	Ultra High Resolution MRS Sensor
Inspection Speed	40 cm^2/sec (2D+3D), High Speed option available: 50 cm^2/sec (2D+3D)	15 cm^2/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: 720 x 620 mm (28.3 x 24.4 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	
Solder Paste Inspection	Height, area, volume, registration and bridge detection	
Measurement Gage R&R	<10% @ ±3σ	
Z Height Accuracy	1 µm on certification target	
Z Height Measurement Range	6 mm at spec, 24 mm capability	3 mm at spec, 10 mm capability
CMM Capabilities		
Accuracy XY / Z	3 µm / 2 µm	2 µm / 2 µm
Resolution XY / Z	10 µm / 1 µm	7 µm / 1 µm
Maximum Weight	SQ3000: 3 kg, SQ3000-X: 10 kg	
Min./ Max. Feature Height	Min. 2 µm ; Max. 24mm	Min. 2 µm ; Max. 10mm
Maximum Feature Size	SQ3000: 510 x 510 mm (20 x 20 in.); SQ3000-X: 720 x 620 mm (28.3 x 24.4 in.)	
Carrier Thickness	0.3 - 5 mm (10 mm Option)	
Coordinate Measurement Capability	Line / Distance / X,Y / Mid Line, Inter Point / Regression Shifted, Datum X,Y / LSF X,Y Offset, X,Y Offset / Value / Location / List of X,Y Values, Height / Local Height / Regression / Radius, Coplanarity/ Distance to plane / 2nd Order fitting, Difference / Absolute / 2sqrt / VC, Max / Min / Ave / Sigma / Plus / Minus / Multiple	
Vision System & Technology		
Imagers	Multi-3D sensors	
Resolution	Sub 10 µm	7 µm
Image Processing	Autonomous Image Interpretation (AI^2) Technology, Coplanarity and Lead Measurement	
Programming Time	<15 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 Kgf/cm^2 to 7.0 Kgf/cm^2 (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., Programming Software: ePM-SPI/AOI & GC-PowerPlace, Offline Defect Review. SQ3000-D (Dual Lane), and SQ3000-DD (Dual Lane - Dual Sensor) models available

CYBEROPTICS®

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