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)
XY Resolution	10 µm		7 µm	
Z Resolution	0.5 µm			
Minimum Feature Size	100 µm		70 µm	
Maximum Feature Size	SQ3000: 510 x 510 mm (20 x 20 in.), SQ3000-X: 710 x 610 mm (27.9 x 24 in.)			
Minimum Feature Height	50 µm			
Maximum Feature Height	24 mm		8 mm	
XY R&R	< 3 µm 1 sigma		< 2 µm 1 sigma	
Z R&R	< 2 µm 1 sigma			
Accuracy XY	6 µm		5 µm	
Accuracy Z	2 µm			
Height Clearance	Top: 50 mm ; Bottom: 30mm			
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	
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 Kgf/cm² to 7.0 Kgf/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				

CYBEROPTICS®

Contact CyberOptics today for more information
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SQ3000™ 3D CMM

The Ultimate in Speed and Accuracy for Semiconductor Applications

Powered by MRS™ Technology

NEW CMM Suite

Fastest – Seconds, not Hours
- Significantly speeds attaining coordinate measurements vs. traditional CMMs
- Reduces engineering resource time

Easy-to-use Interface
- Simplifies process with award-winning, intuitive, touch screen experience
- Quick programming for complex applications
- Multi-process capable – AOI, SPI, AOM, CMM

Metrology-grade Accuracy
- Achieve metrology-grade accuracy with MRS-enabled technology
- Repeatable and reproducible measurements for SMT, Semiconductor, Microelectronics and Metrology Applications

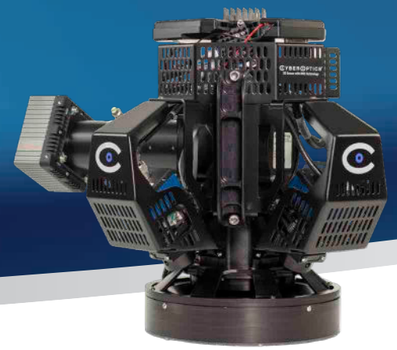
CYBEROPTICS®

SQ3000™ 3D CMM

SQ3000™ The Ultimate in Speed and Accuracy

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

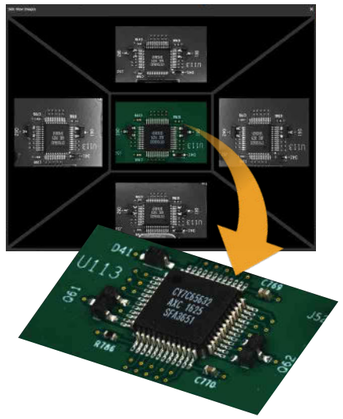
The SQ3000 is powered by CyberOptics' breakthrough 3D sensing technology comprising four multi-view 3D sensors and a parallel projector delivering metrology grade accuracy at production speed. CyberOptics' unique sensor architecture simultaneously captures and transmits multiple images in parallel while proprietary 3D fusing algorithms merge the images together. The result is ultra-high quality 3D images and high-speed inspection.

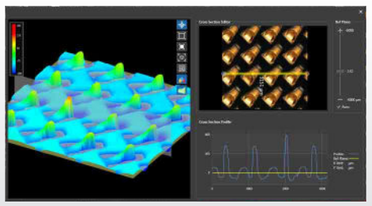


Multi-Reflection Suppression (MRS) Technology

SQ3000 offers unmatched accuracy with the revolutionary MRS technology by meticulously identifying and rejecting reflections caused by shiny components. 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.

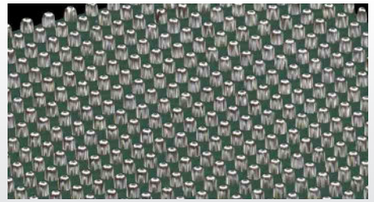
CyberOptics has advanced the proprietary Multi-Reflection Suppression (MRS) sensor to an even finer resolution. The Ultra-High Resolution MRS sensor enhances the SQ3000 3D CMM platform, delivering superior inspection performance for socket metrology, advanced packaging, solder ball & bump, micro-electronics, and a variety of semiconductor applications where an even greater degree of accuracy and inspection reliability is critical.





Socket Metrology

Packaging SMT



Solder Ball and Bump

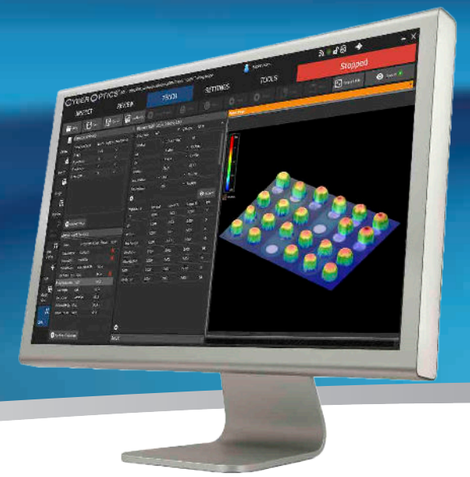
Large Board Capability

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.

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.

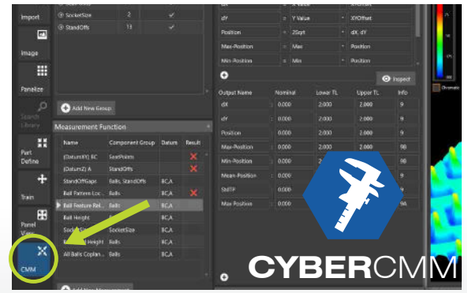


Enable Smarter, Faster Inspection

Reduce time to program and tune with ultra-fast programming capabilities including auto tuning and enhancements that significantly speed setup, simplify the process, reduce training efforts and minimize operator interaction. AI² (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 - AI² does it all for you. With AI², you have the power to inspect the most comprehensive list of features and identify the widest variety of defects. AI² offers precise discrimination with just one panel inspection making it a perfect solution for high-mix and high-volume applications.

Seconds, not Hours - Faster, Highly Accurate Coordinate Measurement Suite (CMM)

CyberCMM™, a comprehensive software suite of coordinate measurement tools provides highly accurate, 100% metrology-grade measurement on all critical points much faster than a traditional CMM, including coplanarity, distance, height and datum X, Y to name a few. A fast and easy set-up can be performed in less than an hour for programming complex applications as compared to slow, engineering resource-intensive set-up that typically requires multiple adjustments with traditional coordinate measurement machines (CMMs)



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.

CYBERREPORT