SQ3000S Multi Function AOI, SPI & CMM

Optical Inspection & Metrology

Nordson
Test & Inspection

www.nordson.com/TestInspect

Nordson Test & Inspection

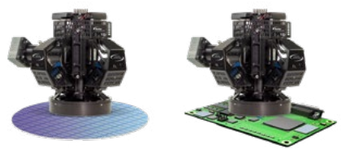
Founded in 1954, Nordson Corporation is a market leading industrial technology company with annual revenues of over $2.1 billion and more than 7,500 employees worldwide.

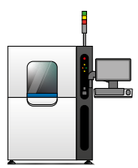
Nordson Test & Inspection offers its SMT & Semiconductor customers a robust product portfolio, including Acoustic, Optical and both Manual and Automated X-ray Inspection systems, X-ray Component Counting systems and Semiconductor measurement sensors. Nordson Test & Inspection is uniquely positioned to serve its customers with best-in-class precision technologies, passionate sales and support teams, global reach, and unmatched consultative applications expertise.

AOI Products

Proprietary Advanced Technology

Optical Inspection & Metrology

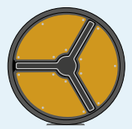




WS Products

Improve Your Yields

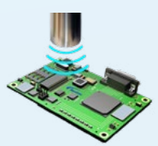
Semiconductor Metrology Sensors



AMI Products

Qualify Your Design

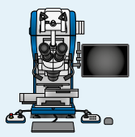
Acoustic Inspection



BT Products

Test Your Design

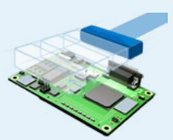
Bondtesters

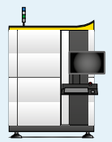


AXI Products

High Speed High Flexibility

Automated X-ray Inspection

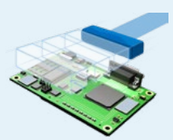




MXI Products

Making the Invisible, Visible

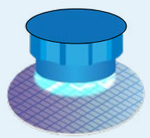
Manual X-ray Inspection

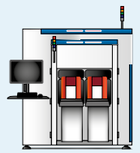


AXM Products

Measuring the Invisible

Automated X-ray Metrology

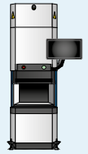




CC Products

Maximize Efficiency

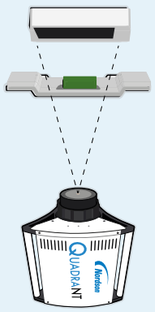
X-ray Component Counting



XT Products

High Speed High Resolution

X-ray Technologies



Multi Function Advantages

The SQ3000S is an all-in-one solution that's loaded with powerful tools that cover inspection and measurement for AOI, SPI and CMM applications.

For larger boards the SQ3000S™ X offers support of large board capability of up to 710 x 610 mm board sizes.

Shorter Inspection Times

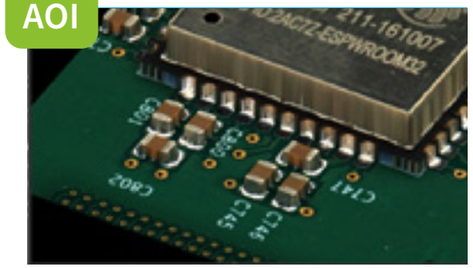
Unmatched Accuracy and Resolution with MRS Technology

Versatility for Applications with High Quality Requirements

AOI, SPI, CMM IN-LINE

The SQ3000S all-in-one is capable of performing AOI, SPI and CMM in-line.

AOI

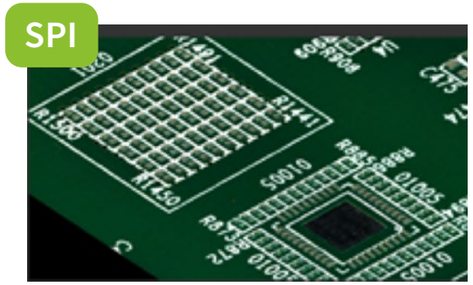


Automated Optical Inspection (AOI)

Achieve metrology-grade accuracy at production speed enabled by MRS technology.

Attain repeatable and reproducible measurements for SMT, semiconductor, microelectronics and metrology applications.

SPI

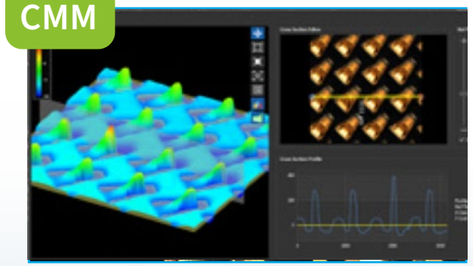


Solder Paste Inspection (SPI)

Richer SPI Experience with Closed Loop, Feedback - Feed Forward. Optimize printing process by proactively analyzing current trend data with the standalone SPI software and Nordson Print Optimizer.

Enable smarter and faster inspection that provides reduction in rework costs, minimizes scrap and optimizes print process.

CMM



Coordinate Measuring Machine (CMM)

SQ3000S utilizes Nordson CMM, a comprehensive software of coordinate measurement tools which provides highly accurate, 100% metrology-grade measurement on all critical points.

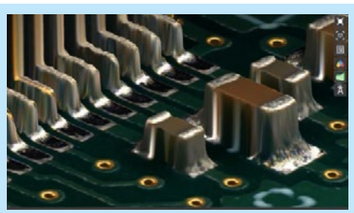
A fast and easy set-up can be performed with the world's first in-line CMM system for programming complex applications.

Multi-Reflection Suppression® (MRS®) Sensor Technology

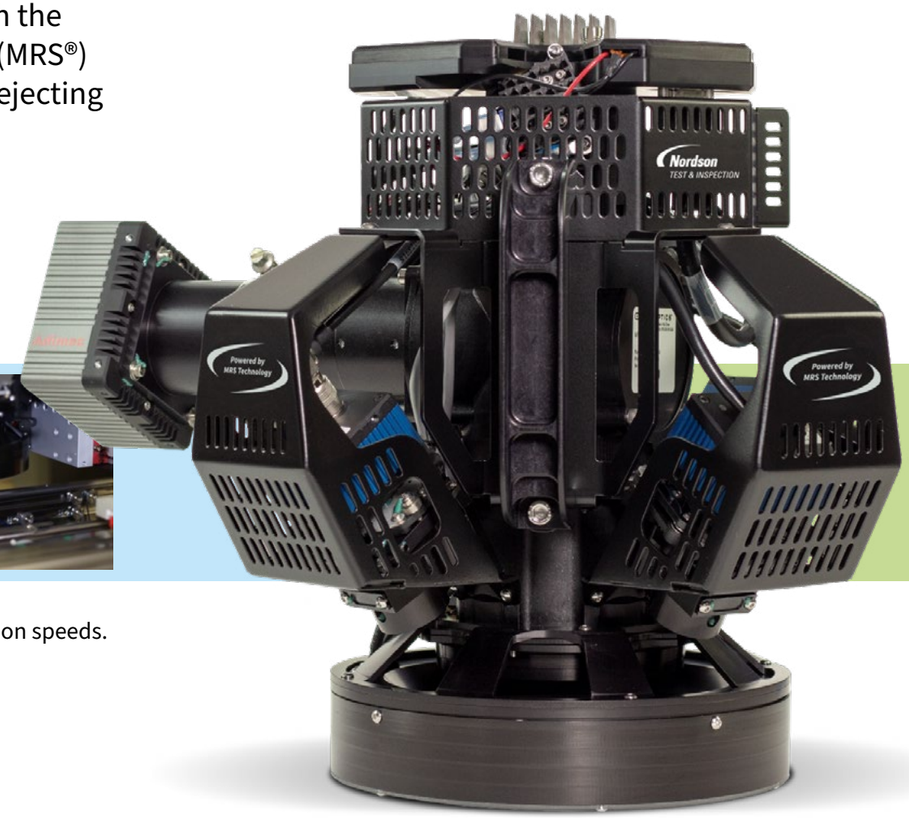
The SQ3000S offers unmatched accuracy with the revolutionary Multi-Reflection Suppression® (MRS®) technology by meticulously identifying and rejecting reflections caused by shiny components.

Reflection based distortions

MRS is designed to Inhibit reflection-based distortions from shiny and specular surfaces.



Enabling the highest possible inspection accuracy at production speeds.



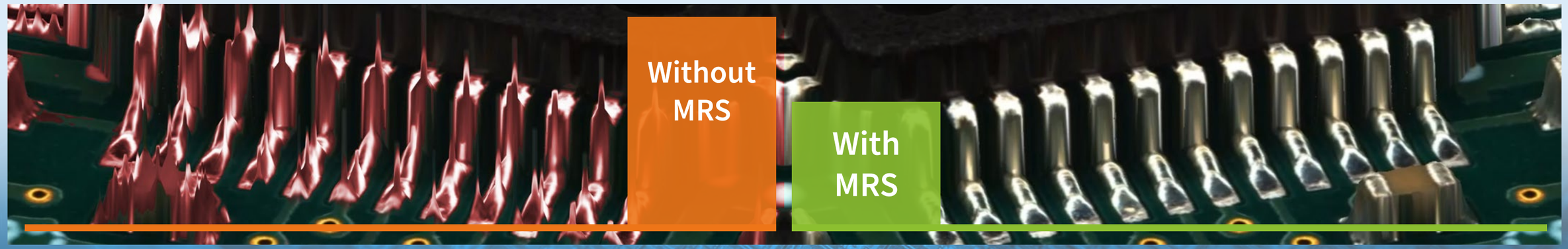
Nordson's MRS Sensor for SQ3000S 3D AOI, SPI and CMM' breakthrough 3D sensing technology comprising four multi-view 3D sensors and a parallel projector delivering metrology grade accuracy at production speed.

Nordsons' 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, accurate to sub 10 µm at production speed.

MULTIPLE MRS SENSOR OPTIONS

Standard MRS Sensor	High Speed	High Resolution	Ultra High Resolution

The Ultra-High Resolution MRS sensor enhances the SQ3000S 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



Enable Smarter, Faster Inspection

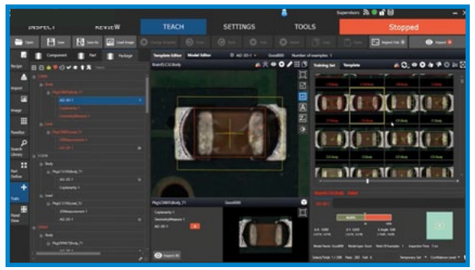
The multi-award winning SQ3000S AOI software is a more powerful yet extremely simple software suite designed with an intuitive interface and multi-touch control with 3D image visualization tools.

Ultra-fast programming capabilities

Bring the ease-of-use to a completely new level and significantly speed setup, simplifie the process, reduce training efforts and minimize operator interaction – all saving time and cost.

Speed programming and performance with AI² (Autonomous Image Interpretation) technology for set-up in <13 minutes with a data-rich, pre-loaded library and automated scripts that collect and update models all on their own.

AOI & SPI Inspection Measurement Tools - Detect even the most subtle defects, insufficent & excess solder, Solder Meniscus measurment. Additional tools include, Height, Volume, Area, XY Offset, Blob Analysis, Bridging & more.



Powerful 3D image vizualisation with ultra-fast programming capabilities that brings ease-of-use to a completely new level.

AI² - Enable smarter, faster inspection

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 the perfect solution for high-mix and high-volume applications.

AI² technology is all about keeping it simple - no parameters to adjust or algorithms to tune. You don't need to anticipate defects or pre-define variance either. AI² does it all for you. Powered by a data-rich, pre-loaded library and automated scripts that collect and update models all on their own.

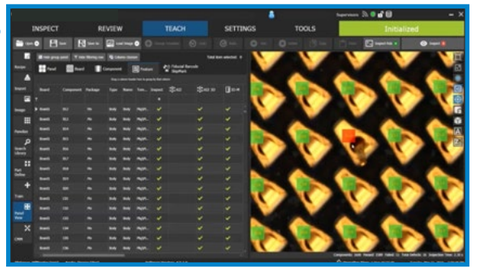
Faster, Highly Accurate CMM Suite

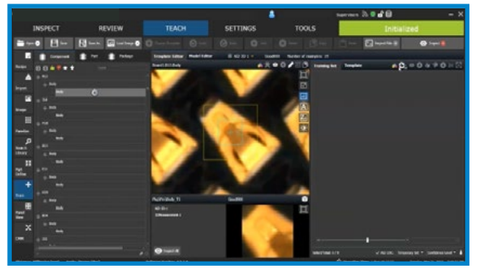
Nordson Software Solutions provide our customers and partners the best added-value possible for inspection and measurement in electronics manufacturing.

CMM

Nordson CMM software suite

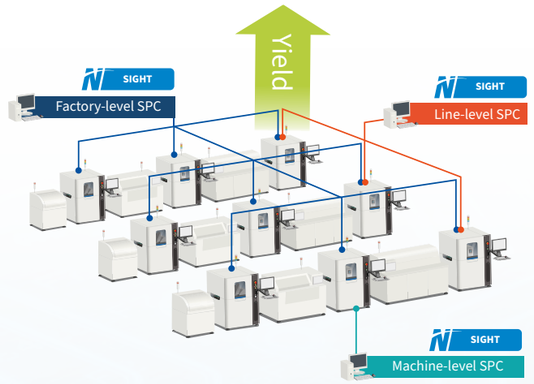
Nordson CMM's comprehensive software suite of coordinate measurement tools, provides highly accurate, 100% metrology-grade measurement on all critical points much faster than a traditional CMM, including coplanarity, distance, height and datum X, Y to name a few. A fast and easy set-up can be performed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





Measure critical points faster than traditional measurement systems.

SIGHT



Nordson Sight - Fast, scalable SPC software solution

Nordson Sight offers full-fledged machine to factory level SPC capability with powerful historical analysis and reporting tools. The software delivers complete traceability for effective process verification and yield improvement.

Nordson Sight is designed for simple set-up and intuitive use, while simultaneously delivering scalability, fast charting, and an extremely compact database size.

High End Applications

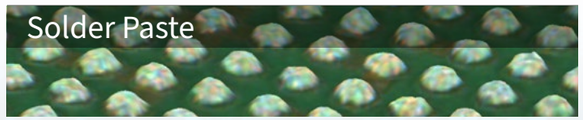
The SQ3000S offers unmatched accuracy with the revolutionary Multi-Reflection Suppression (MRS) technology. Effective suppression of multiple reflections is critical for accurate measurement, making MRS an ideal technology solution for a wide range of applications including those with very high quality requirements.

The SQ3000S inspection and measurement capabilities include:

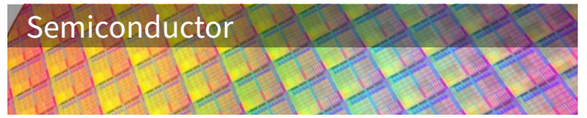
Fine pitch component • BGA solder ball • Diameter uniformity • BGA coplanarity.

Backlight • Five point & solder paste • Pad gap • Warpage corpenarity • Illumination Intensity • Adhesive squeeze out • Dye chip out.

Pin • True position • Dispensed material • Dispensed patterns.



Tight area • Off water bridging • Jet print paste • Type 4 paste.

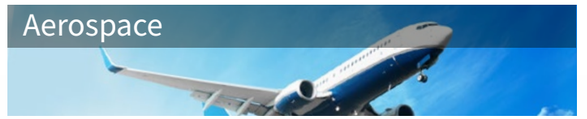


Highly reflective dye • Wirebond • Ribbons • Ball bond • Wirebonding • Wedgebond • Wirebond loop height • Cornerfill / Underfill.

Microelectronics • Various electronics applications.

Tighter tolerance • Higher demand for accuracy • Life critical • Small components, Micro electronics • Conformal coating.

Component verification • Counterfeit part detection • High map • Point cloud output • Adhesive & epoxy.



Metal module cavities • Suberate • Critical • Highly reflective material • Wire bond • Ribbon.

Tuning forks • Connector • True position for key features • True position for key component • High precision placement • Smaller Modules • Critical pin.

Inspection Capabilities	SQ3000S-S	SQ3000S-HS	SQ3000S-RS	SQ3000S-HR
Nordson Part Number	6283904	6283902	6283903	6283901
Inspection Speed	43 cm^2/sec	52 cm^2/sec	27 cm^2/sec	17 cm^2/sec
Minimum Component Size	0402 mm (01005 in.)		0201 mm (008004 in.)	
PCB Size	Minimum: 50 x 50 mm (2 x 2 in.); Maximum: 510 x 510 mm (20 x 20 in.)			
Component Height Clearance	Top: 50 mm (1.97 in.); Bottom: 30 mm (1.97 in.)			
Board Edge Clearance	Top: 2.5 mm (0.10 in.); Bottom: 3 mm (0.12 in.)			
PCB Thickness	0.3 to 5.0 mm (0.01 in. to 0.2 inc)			
Component Types Inspected	Standard SMT (chips, J-lead, gull-wing, etc.), Integrated circuits (SOIC, QFN, QFP, BGA), through-hole, odd-form, clips, connectors, header pins, LED, IPC Compliant, and more			
Component Defects	Missing, polarity, alignment, tombstone, billboard, flipped, wrong part, gross body and lead damage, and more			
Solder Joint and Other Defects	Gold finger contamination, excess solder, insufficient solder, solder volume, solder height, missing solder, bridging, through-hole pins & more			
3D Measurement Inspection	Lifted Lead, package coplanarity, polarity dimple and chamfer identification, engraving depth, gap uniformity, and more			
Measurement Gage R&R	<10% @ ±3σ (±80 µm process tolerance)			
Z Height Accuracy	1 µm on certification target			
Z Measurement Range	6 mm at spec, 24 mm capability		3 mm at spec, 8 mm capability	

CMM Capabilities				
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			
Advantage	Faster speed compared to a typical CMM machine. Single setup for inspection and CMM result			
Accuracy XY / Z	6 µm / 2 µm		5 µm / 2 µm	
Resolution XY / Z	10 µm / 0.5 µm		7 µm / 0.5 µm	
Maximum Weight	3 kg / 5 kg (Option)			
Min./ Max. Feature Height	Min. 50 µm ; Max. 24mm		Min. 50 µm ; Max. 8mm	

Vision System & AI Capabilities				
Imagers	Multi-3D sensors			
Resolution	Sub 10 µm		Sub 7 µm	
Field of View (FOV)	36 x 30 mm	36 x 36 mm	26 x 26 mm	21 x 21 mm
Maximum Inspection Area	508 x 503 mm (20 x 19.8 in.)			
Image Processing	Autonomous Image Interpretation (AI^2) Technology, Coplanarity and Lead Measurement			
Nordson Intelligence	Network Based Algorithm Models, Automatic PCB Segmentation, Auto Programming, Anomaly Detection, Auto Defect Classification & more			
CAD Import	Any column-separated text file (.txt) or comma-separated value file (.csv) 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	110 x 129 x 139 cm (W x D x H)
Weight	900 kg (2127 lbs.)

Options	
	Barcode Reader, Offline Rework Station, SPC Software, Alignment Target, Programming Software: ePM-SPI/AOI

For more information, speak with your Nordson representative or contact your Nordson regional office

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