

# Making the Invisible Visible

## QUADRA<sup>®</sup> Pro



# QUADRA<sup>®</sup> Pro Series

## Manual X-ray Inspection

[www.nordson.com/TestInspect](http://www.nordson.com/TestInspect)

**Nordson**  
Test & Inspection

# 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.

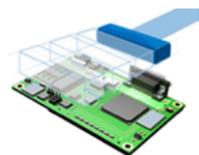


Exceptional support  
from Nordson's worldwide network

## MXI Products

**Making the Invisible, Visible**

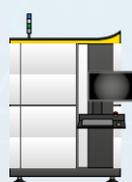
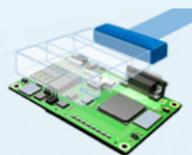
Manual X-ray Inspection



## AXI Products

**High Speed High Flexibility**

Automated X-ray Inspection



## AXM Products

**Measuring the Invisible**

Automated X-ray Metrology



## CC Products

**Count On Us™**

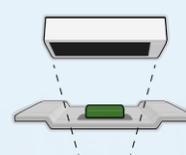
X-ray Component Counting



## XT Products

**High Speed High Resolution**

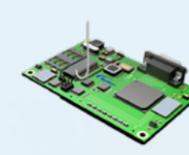
X-ray Technologies



## BT Products

**Test Your Design**

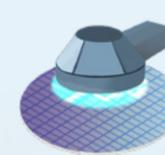
Bondtesters



## AOI Products

**Proprietary Advanced Technology**

Optical Inspection & Metrology



## WS Products

**Improve Your Yields**

Semiconductor Metrology Sensors



## AMI Products

**Qualify Your Design**

Acoustic Inspection



# Your X-ray Inspection Partner

Nordson Test & Inspection's state-of-the-art manufacturing facility in Aylesbury, UK is responsible for development and production of the key core technology in the X-ray imaging chain. This includes X-ray source, power supply and flat panel detector. This unrivalled level of vertical integration enables Nordson to achieve the best image quality and make systems that are easy to use.



# The Quadra Pro Series

<0.10  $\mu\text{m}$



## QUADRA 7<sup>®</sup> Pro



Ultimate image quality and magnification, Quadra 7 Pro reveals quality defects as small as 0.1  $\mu\text{m}$ .

20W



0.3  $\mu\text{m}$



## QUADRA 5<sup>®</sup> Pro



Advanced, sub  $\mu\text{m}$  feature detection and higher output power for more challenging workflows.

20W



0.75  $\mu\text{m}$



## QUADRA 3<sup>®</sup> Pro

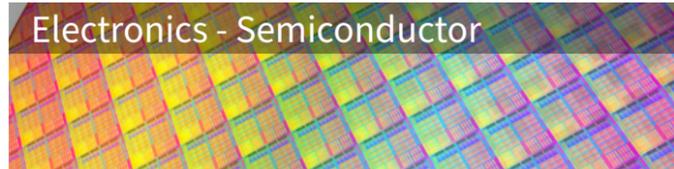


High quality, high magnification inspection for production applications.

15W



# Your X-ray Inspection Solution



FO-WLP, 3D packaging.  
Through Silicon Via (TSV) filling and voids.  
Micro bump, copper pillar size and void measurement.



Assembly & IC Packaging.  
Memory, CPU/GPU, wire bonding.



Inspect electronic components for soldering quality (IPC-A-610) and wire bond integrity, including metal cored boards and copper backed BGAs.  
Perform component quality inspection for cracking, voids, counterfeiting and dimensional checks.



Measure voids in solar cells, inspect under-fill.  
Check for component cracking and wire bond integrity.

## QUADRA<sup>®</sup> Pro



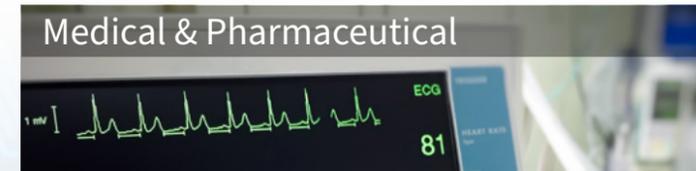
Solder shorts, open connections, paste residue, voiding, cracking.  
Track inspection, plated through hole filling.  
Counterfeit device screening.



Inspect automotive components for wear and fatigue cracking. Inspect electronic components and PCBAs for soldering quality (IPC-A-610) and BGAs (IPC-7095).



Detect micro-cracks, wire bond defects, die adhesion, voiding and PCB quality. Inspect laser-diodes and LEDs.



Inspect products non-invasively in 2D or 3D, perform root cause failure analysis. Offline inspection for contaminant detection and fill level measurement.

# Turn Images Into Solutions

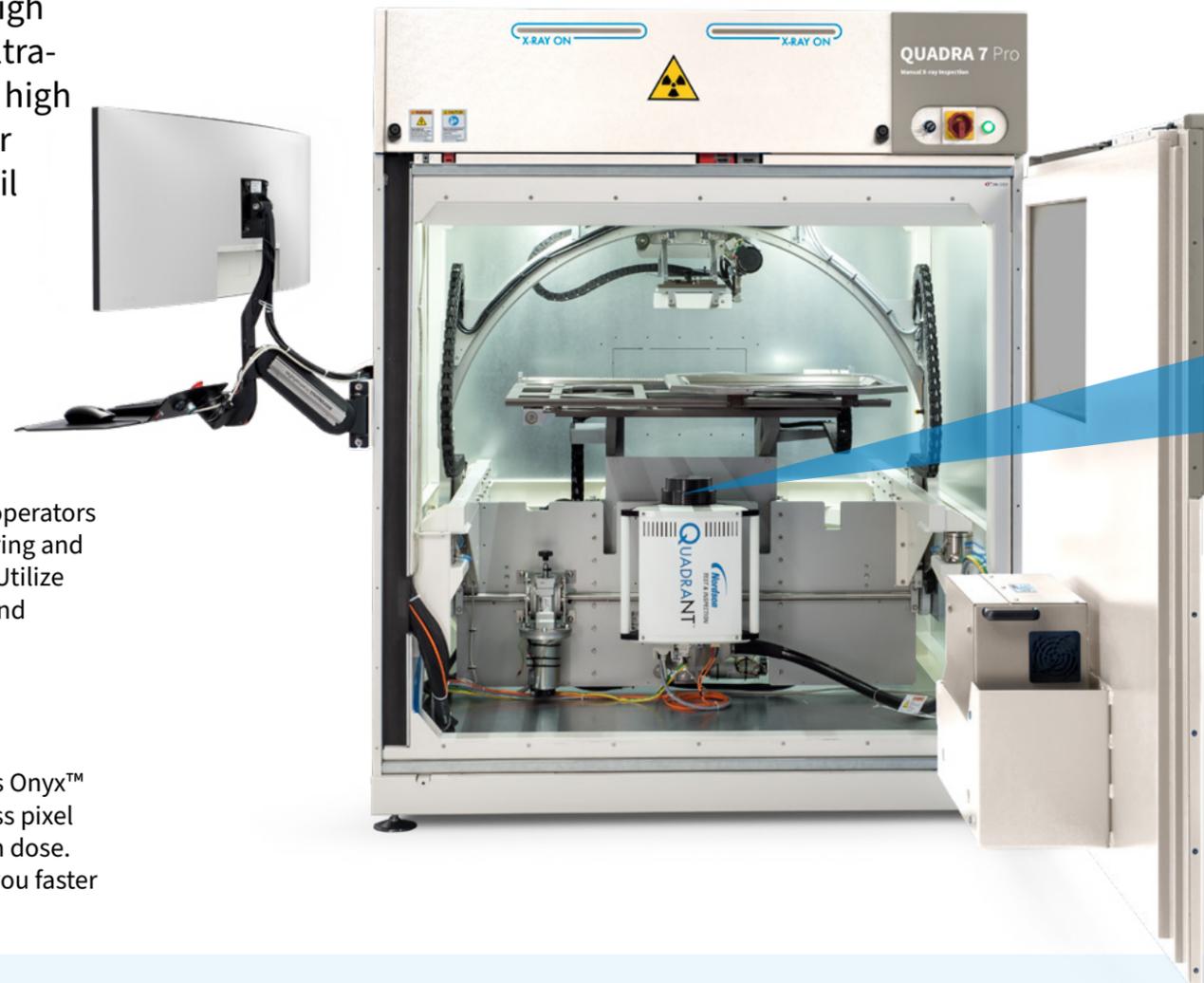
Quadra™ Pro creates unbeatable ultra high resolution images displayed on a new ultra-wide monitor. The proprietary designed high performance X-ray tube and the detector provide visibility of even the tiniest detail and finding the defects immediately. Nothing can hide anymore.

## Under Control

Get working quickly and easily with Revaluation™ control software which features simple intuitive menus and controls. Personalize and store individual operators screen layouts for smoother workflow. Customize filtering and image enhancements to suit your applications needs. Utilize the easy point & click controls to analyze defects fast and produce automated inspection routines.

## All In Sight

Designed in-house by a team of semiconductor experts Onyx™ delivers state-of-the-art performance. Using world-class pixel specifications for low dose sensitivity & high saturation dose. Onyx™ has higher frame rates and lower noise, giving you faster images with highest clarity and brilliance.

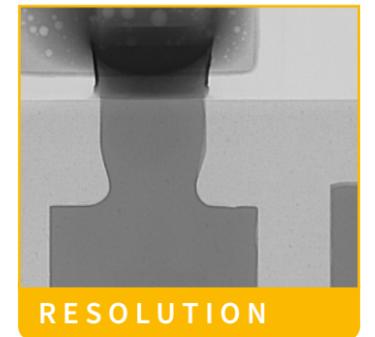


## Dual Mode Tube Technology

QuadraNT™ is the powerhouse of Quadra Pro. Nordson's latest generation X-ray source gets another enhancement with patent-pending, automatic Dual Mode in the Quadra 7 Pro. The tube automatically switches between two modes:

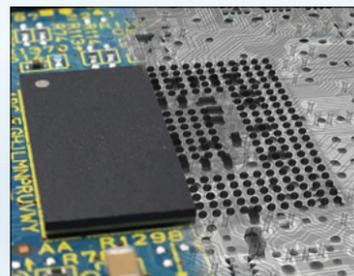


High flux mode essential for dense, thicker samples.

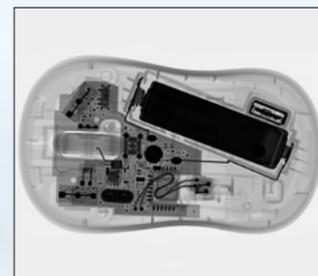


High resolution mode ideal for sensitive, semiconductor samples.

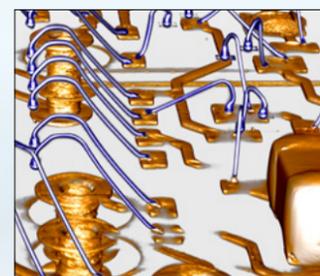
The benefit of Dual Mode is crystal clear images to spot defects in more detail than you have seen before! The best-in-class X-ray tube maintains its 10-fold brightness and improved stability over conventional tubes and bests them again with smaller spot size at any voltage. The results you can see for yourself.



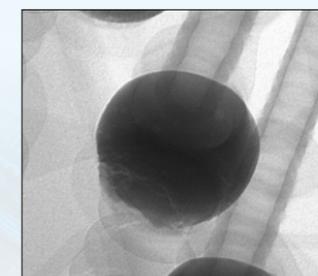
Optical



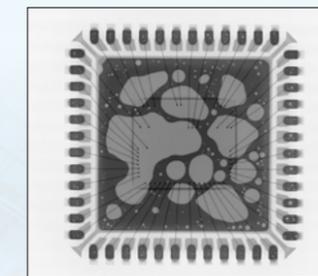
X-ray Computer mouse



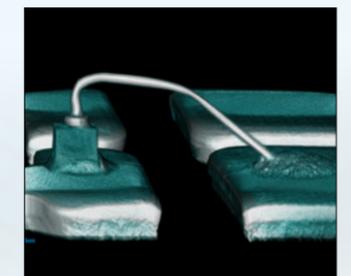
Multi level PCBA



Microcrack in a BGA solder ball



Voiding in a QFN package



Light emitting diode

# Maintenance Free

Increase your return on investment, reduce your downtime and costs. Quadra™ Pro is the only maintenance free inspection system. Regular preventative maintenance visits are no longer required to guarantee optimum X-ray performance.

## Unique, patented technology

No use of tungsten filaments which degrade quickly and require regular replacement and maintenance. QuadraNT™ tubes use proprietary filament free technology for continuous service.

## Lifetime repeatability

Stable performance is guaranteed since the filament is never changed. Inspection imagery is clear and repeatable, today, tomorrow and year after year.

## Oil free

Eliminate the risks of oil contamination in the X-ray tube, oil spills or leaks into the work environment. QuadraNT uses an oil free ion pump to maintain X-ray tube vacuum which never requires an oil change.



QuadraNT 4<sup>th</sup> generation X-ray tube.

## Applications and training support

Technical applications, training and software support tailored to your specific requirements ensure you get the most from your Quadra Pro.

**QUADRA™ LIFE** 

Total Peace of Mind

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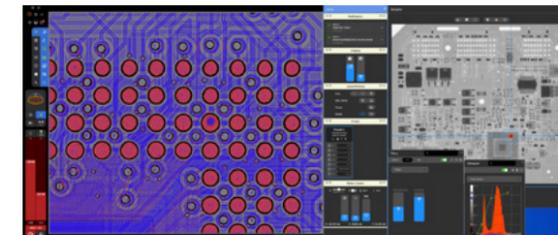
Quadra Life is the 5 year plan for your Quadra Pro that guarantees your cost of ownership, eliminating risk and maximizing uptime for total peace of mind.

# Revaluation™

Nordon's brand new Revaluation™ software has everything under control with its modern GUI design and optimized workflow. Revaluation has many new and optimized features including:

## Layout flexibility

When dealing with complex images, control windows can be floating or docked in the dock bar allowing you to create the space you need.



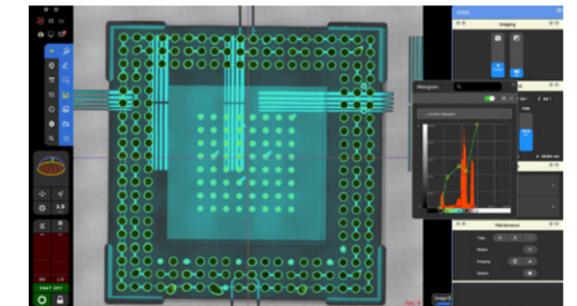
## Annotations & measurements

Markers with notes can be added to images, measurements are color coded and can be combined with notes. Annotations remain locked to location when system moved including zooming.



## Filtering and imaging

Customize filtering and image enhancements to suit your applications needs with the enhanced histogram and Image filters with simplified drag and drop editing.



Histogram - save and load settings, can be coloured.

## Main tool bar

The toolbar consists of groups of controls to assist your workflow, along with animations and visual indicators allowing you to see the tube power, and an interactive orbit control that is draggable to reposition the detector.



# Specifications

	QUADRA 3 <sup>®</sup> Pro	QUADRA 5 <sup>®</sup> Pro	QUADRA 7 <sup>®</sup> Pro
<b>X-ray Tube</b>	Mk4 15 W sealed transmissive	Mk4 20 W sealed transmissive	Mk4 Dual Mode
Feature recognition	<750nm	<300nm	<100nm
Max. Power	15 W	20 W	20 W
JIMA	1.0 μm (across 0.5W to 15W power range)	0.8 μm (across 0.5W to 20W power range)	0.5 μm (across 0.5W to 20W power range)
Tube voltage	30-160kv	30-160kv	30-160kv
<b>Detector</b>	Onyx Gadox	Onyx HL	Onyx HL
Resolution	1.6 MP	3.3 MP	6.5 MP
Frame rate	25 fps	25 fps	25 fps
Effective Pixel Size	70 μm	70 μm	50 μm
Active Area (mm <sup>2</sup> )	7800	15000	16000
<b>Inspection</b>			
Operation	Mouse point and click (joystick optional)		
Software	Revaluation		
Oblique angle view	2 × 70° - No sample rotation required		
Inspection area	510 × 445 mm (20 × 17.5")		
Geometric magnification	x750 + Digital zoom		
Anti-vibration	Passive	Active	Active
Ultra Wide Curved Display	34" Ultra Wide Monitor (3440 × 1480)	38" Ultra Wide Monitor (3840 × 1600)	40" Ultra Wide Monitor (5120 × 2160)
<b>Installation</b>			
Footprint (W × D × H)	1.57 × 1.50 × 1.90 m		
Weight	1,950 kg		
Power	Single phase 200-230 Vac, 50/60 Hz, 16A		
X-ray safety	< 1 μSv / hour		
Air	Only required for CT configuration	5-8 bar clean dry for anti-vibration	
<b>Options</b>			
X-Plane <sup>®</sup>	View sample slices without additional CT hardware		
μCT	Create high resolution 3D models with the μCT sample stage		
Barcode reader	Track samples easily		
Joystick	USB Joystick Module		
Filtering Tray	Reduce sample X-ray dose		
Wafer Holders	For handling 300 mm and 200 mm wafers		

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

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