

# Seeing is Believing™

## QUADRA



## QUADRA™ Series

X-ray Inspection

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

**Nordson**  
TEST & INSPECTION

# Your X-ray Inspection Partner

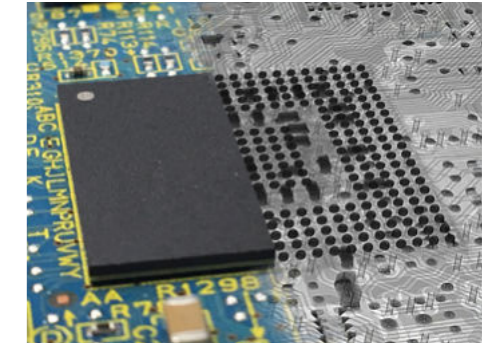
Nordson TEST & INSPECTION is the market leading provider of award winning X-ray inspection systems that help customers detect manufacturing defects early - ensuring product quality, maximizing return on investment and reducing long term costs.

Based in Aylesbury, UK, and part of the Nordson Corporation with annual revenues of over \$1.8 billion and more than 6,000 employees worldwide, Nordson TEST & INSPECTION designs and manufactures every major component in its X-ray inspection system, including X-ray source, power supply and detector. This unrivaled level of vertical integration delivers unbeatable, world-class inspection solutions.

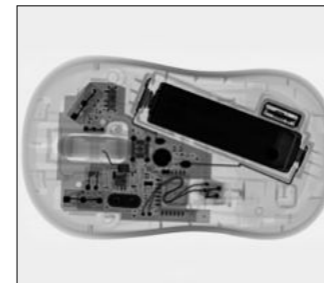


# Seeing Is Believing

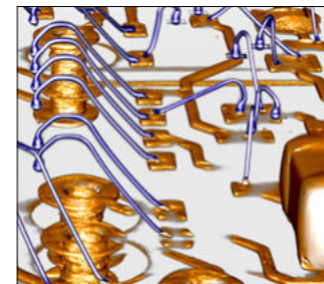
Quadra™ series X-ray inspection takes you beyond optical imaging, allowing you to non-destructively inspect obscured areas inside devices and components at up to 68,000 times magnification.



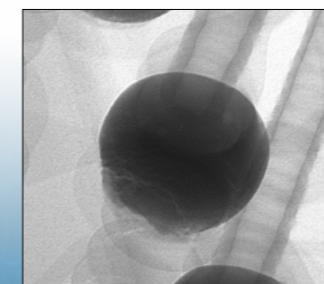
Optical → X-ray



X-ray inspection image of a computer mouse



Multi level PCBA

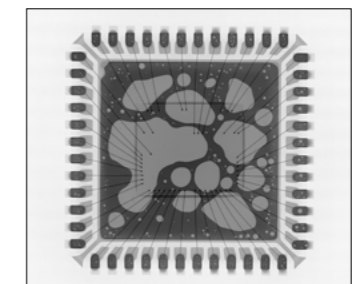


Microcrack in a BGA solder ball

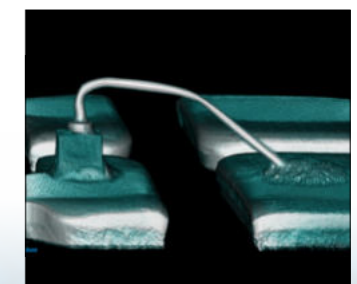
x20

x500

x68,000

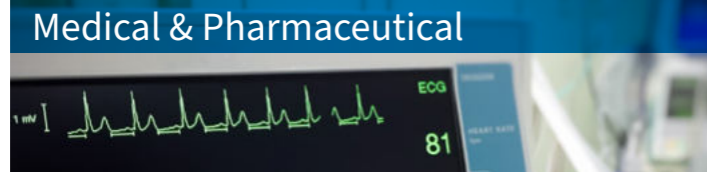


Voiding in a QFN package



Light emitting diode

# Your X-ray Inspection Solution



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



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.

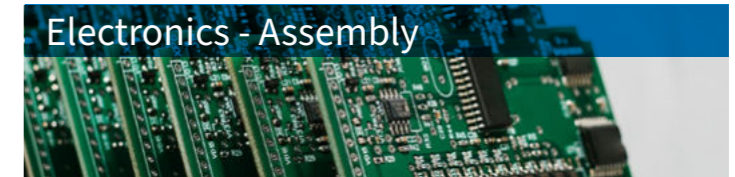


Inspect automotive components for wear and fatigue cracking. Inspect electronic components and PCBAs for soldering quality (IPC-A-610) and BGAs (IPC-7095).



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

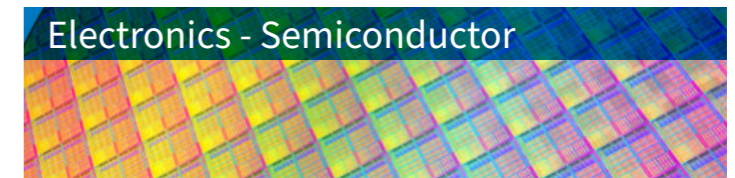
# QUADRA™



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



POP, QFN, QFP, BGA, flip chip bulk and interfacial void measurement, BGA alignment, ball size variation, missing solder, missing BGA balls. Head in pillow identification. Solder cracking, bridging, open circuit. Component cracking, warping. Bond wire integrity, attachment. MEMS and passive component inspection.



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



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

# Turn Images Into Solutions

Quadra™ creates unbeatable images, making it easy to see even the tiniest detail and find defects quickly. The in-house designed high performance X-ray tube and detector allows feature recognition down to 100nm and magnification up to 68,000 times.

## Unique patented technology

QuadraNT™, Nordson's latest generation X-ray source is 10 times brighter and intrinsically more stable than conventional X-ray tubes. It utilises a LaB<sub>6</sub> emitter instead of a traditional tungsten filament, and an ion pump to maintain a higher quality vacuum. QuadraNT opens up a world of stable, high resolution images at all power levels.

## Unbeatable resolution

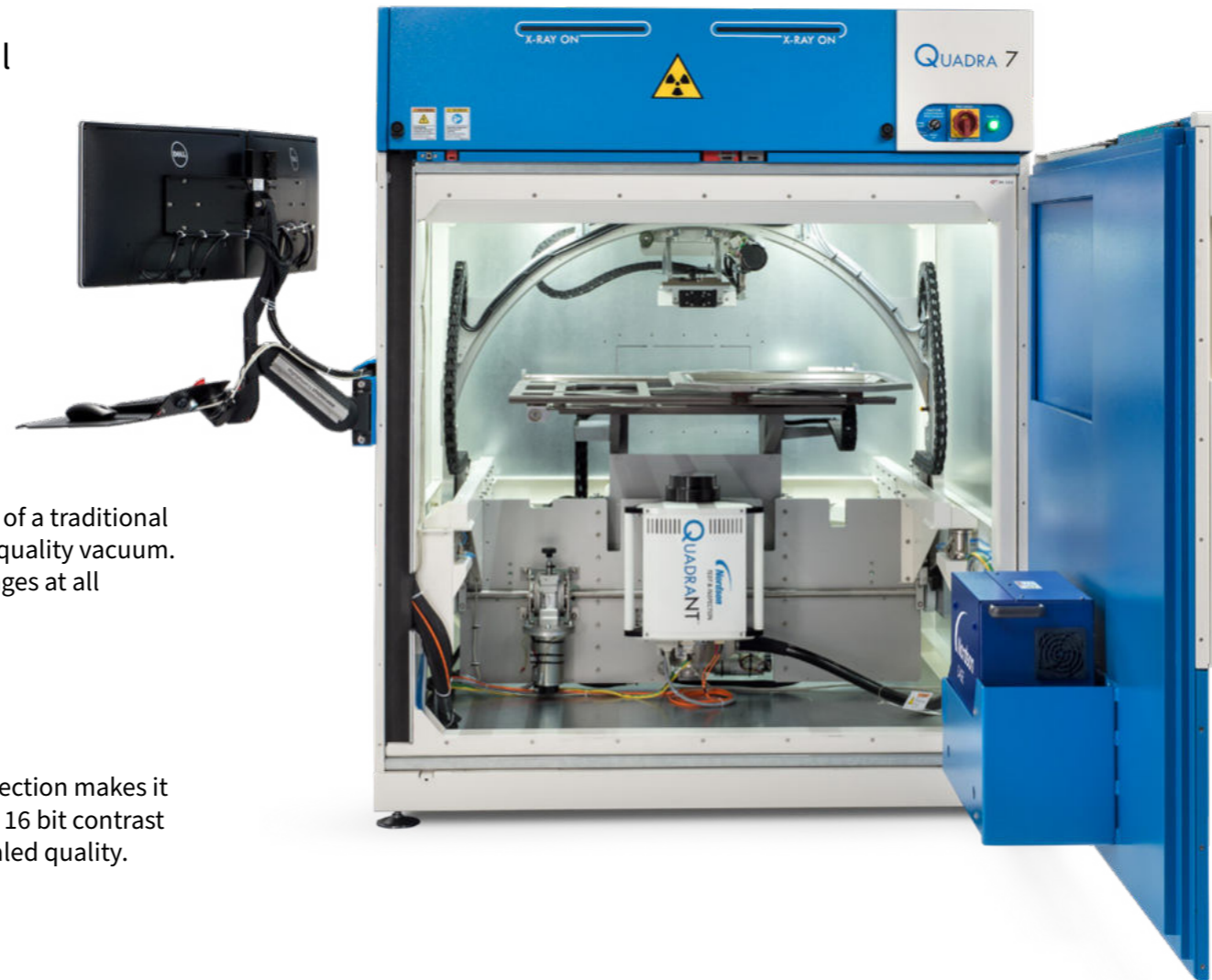
The Aspire™ Flat Panel detector from Nordson Test & Inspection makes it easy to see even the smallest defects. Aspire FP combines 16 bit contrast with 6.7 megapixel resolution to produce images of unrivaled quality.

## Bring out the finest details

Over 30 advanced filters bring out the sharpest images and show the finest details, allowing you to find features and defects faster. HDR Imaging increases the dynamic range so defects in both dark and light areas can be seen clearly on one image.

## The complete picture

Understand your sample in 3D at high times magnification utilizing the  $\mu$ CT sample stage with computed tomography (CT). Watch solder reflow in real time with the heated stage accessory.



# Simplicity As Standard

X-ray inspection should be as easy and intuitive to use as possible. Quadra enables operators and occasional users to get incredible X-ray images quickly, easily and with minimal training.

## Ease of use

Get working quickly with Gensys™ proprietary control and measurement software which features an intuitive “point and click” user interface.

## Measuring the invisible with X-Plane®

Image slices allow hard to see defects such as interfacial voids to be found and measured easily. Only X-Plane generates CT image cross sections quickly and easily, anywhere on the sample tray without having to manually align.

## Ergonomically designed

Comfortable to use for prolonged periods without fatigue, Quadra is designed to SEMI S8 standards for ergonomics.

## Compliance

Inbuilt tools for dimension measurement, BGA void analysis, bump diameter and roundness, wire sweep analysis and through hole filling make quick work of finding and characterizing defects, helping you achieve IPC-A-610 and IPC-7095 compliance.



# Maintenance Free

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

## Unique, patented technology

Traditional transmission X-ray tubes use 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.

## QUADRA™ LIFE

Total Peace of Mind

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

# The Quadra™ Series

0.10  
µm

## QUADRA™ 7



4K UHD



Ultimate image quality and magnification, Quadra 7 reveals quality defects as small as 0.1 µm.

Ideal for root cause failure analysis, wire bond integrity checking, component cracking, MEMS inspection and wafer level components including TSV and wafer bumps.

20W

X-PLANE  
QUADRAµCT

0.35  
µm

## QUADRA™ 5



Advanced, sub µm feature detection and higher output power for more challenging workflows.

Perform high accuracy void measurements, inspect power electronics and finished goods. Study solder reflow in real time.

20W

X-PLANE  
QUADRAµCT

0.95  
µm

## QUADRA™ 3



High quality, high magnification inspection for production applications.

Inspect BGA and QFN attachment, solder shorts, PTH filling and detect counterfeit components.

10W

X-PLANE

# Specifications at a Glance

	QUADRA™3	QUADRA™5	QUADRA™7
<b>X-ray Tube</b> QuadraNT™ filament free transmissive			
Feature recognition	0.95 µm	0.35 µm 0.95 µm above 10 W	0.1 µm 0.3 µm above 10 W
Tube target power	10 W	20 W	20 W
Voltage		30 - 160 kV	
<b>Detector</b> AspireFP™ Flat Panel Detector			
Resolution	1.4 MP	3 MP	6.7 MP
Frame rate	10 fps	25 fps	30 fps
Digital image processing		16-bit	
<b>Inspection</b>			
Operation		Mouse point and click (joysticks optional)	
Oblique angle view		2 × 70° - No sample rotation required	
Inspection area		510 × 445 mm (20 × 17.5")	
Anti-vibration	Passive	AXIS - Active X-ray Image Stabilization	
Geometric magnification	Up to × 2,000	Up to × 2,500	
Total magnification	Up to × 7,500	Up to × 45,000	Up to × 68,000
Display	Single 24" WUXGA 1920 × 1200	Single 24" WUXGA 1920 × 1200	Twin 24" 4K UHD 3840 × 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	Not required	5-8 bar clean dry for anti-vibration	

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

**Nordson Test & Inspection Europe, SEA, Africa**  
ti-sales-eu@nordson.com

**Nordson Test & Inspection Americas**  
ti-sales-us@nordson.com

**Nordson Test & Inspection China**  
ti-sales-cn@nordson.com

**Nordson Test & Inspection Japan**  
ti-sales-jp@nordson.com

**Nordson Test & Inspection Singapore**  
ti-sales-eu@nordson.com

**Nordson Test & Inspection Taiwan**  
ti-sales-tw@nordson.com

**Nordson Test & Inspection Korea**  
ti-sales-korea@nordson.com



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