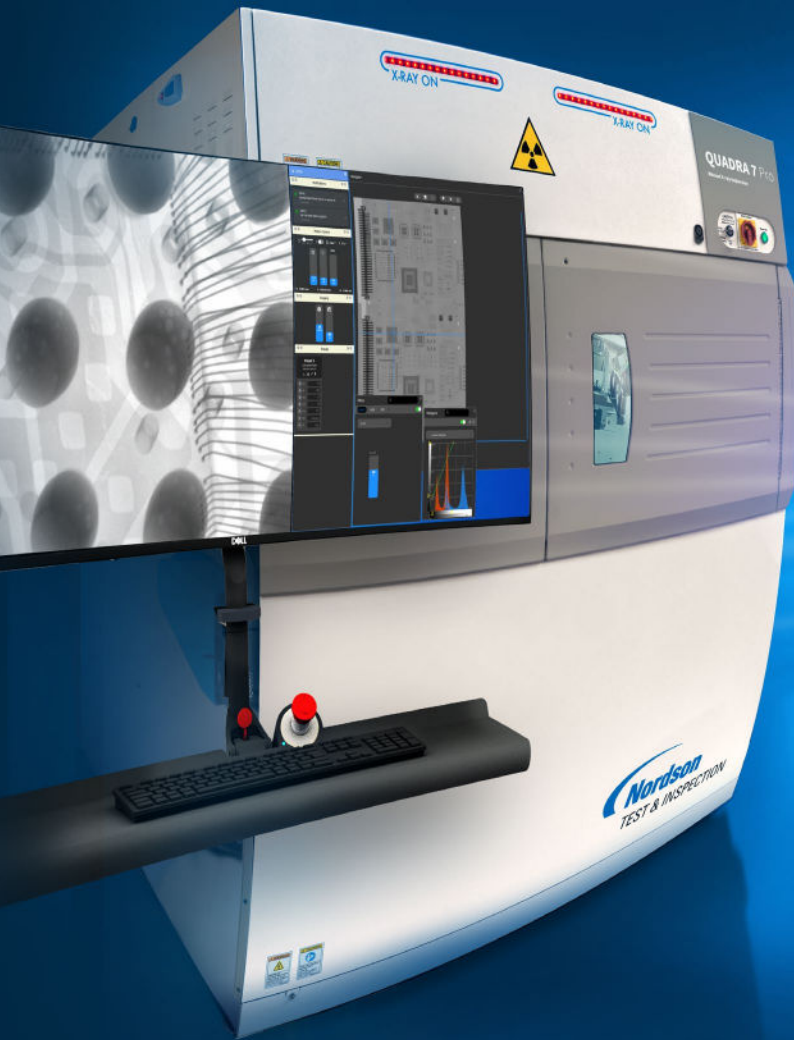


Making the Invisible Visible

QUADRA® Pro



QUADRA® Pro Series

Manual X-ray Inspection

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.

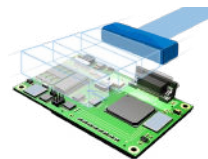
Nordson TEST & INSPECTION offers its SMT & Semiconductor customers a robust product portfolio, including Acoustic, Optical and both Manual and Automated X-ray Inspection systems, X-ray Component Counting systems and Semiconductor measurement sensors. Nordson TEST & INSPECTION is uniquely positioned to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

Guaranteed support
from Nordson's worldwide network

MXI Products

Making the Invisible, Visible

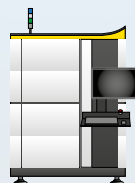
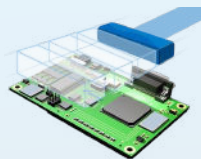
Manual
X-ray Inspection



AXI Products

**High Speed
High Flexibility**

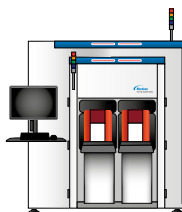
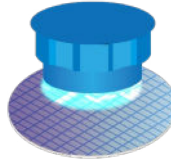
Automated
X-ray Inspection



AXM Products

Measuring the Invisible

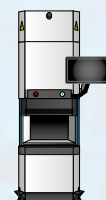
Automated
X-ray Metrology



CC Products

Count On Us™

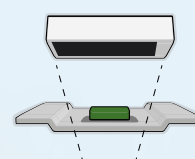
X-ray Component
Counting



XRT Products

**High Speed
High Resolution**

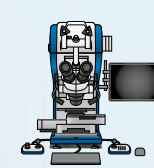
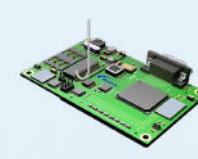
X-ray
Technologies



BT Products

Test Your Design

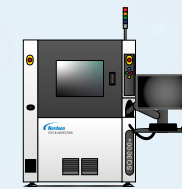
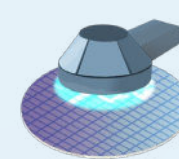
Bondtesters



AOI Products

**Proprietary
Advanced
Technology**

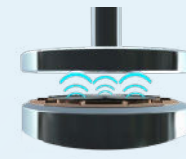
Optical Inspection
& Metrology



WS Products

Improve Your Yields

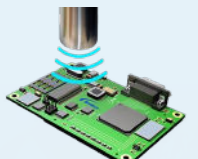
Semiconductor
Metrology Sensors



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 μm



QUADRA 7[®] Pro



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

20W

QUADRA μ CT

X-PLANE

0.3 μm



QUADRA 5[®] Pro



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

20W

QUADRA μ CT

X-PLANE

0.75 μm



QUADRA 3[®] Pro



High quality, high magnification inspection for production applications.

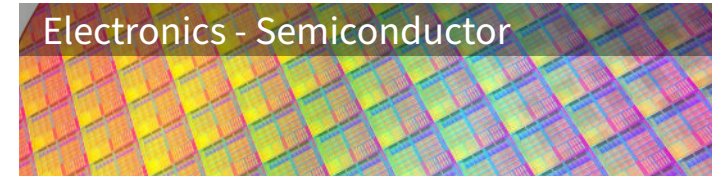
15W

X-PLANE

Your X-ray Inspection Solution



Electronics - Semiconductor



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



Packaging - Semiconductor



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



Aerospace



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.



Energy



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

QUADRA[®] Pro



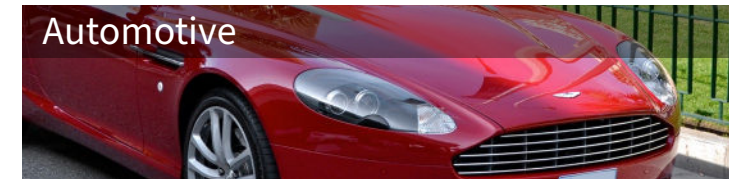
Electronics - Assembly



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



Automotive



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



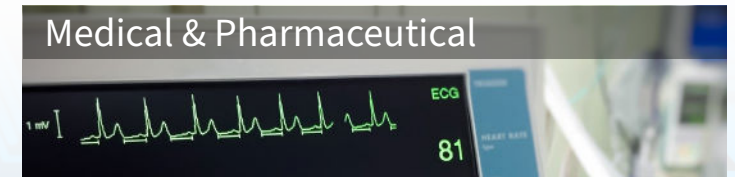
Optoelectronics



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



Medical & Pharmaceutical



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

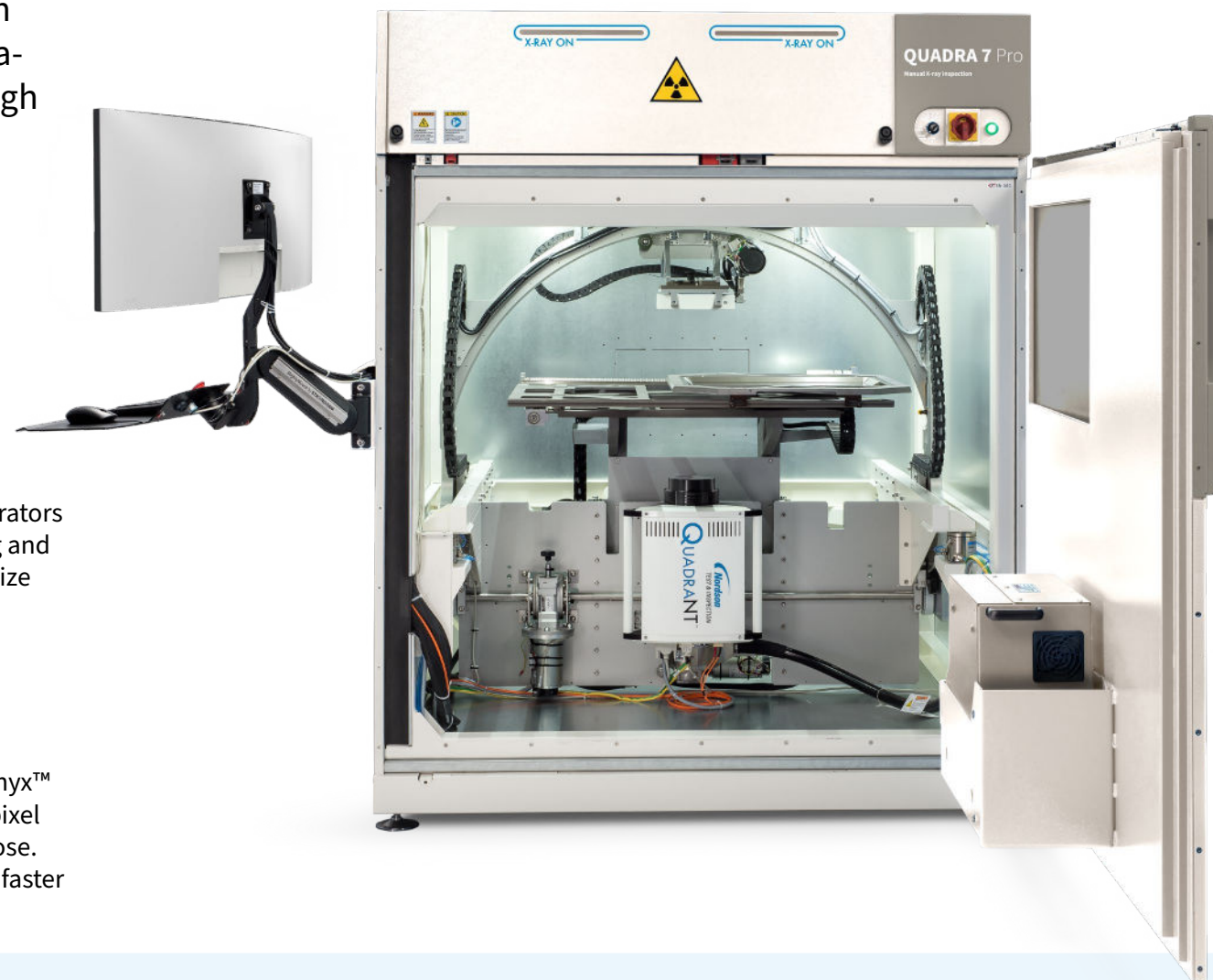
Quadra™ Pro creates unbeatable ultra high resolution images displayed on a new ultra-wide monitor. The proprietary designed high performance X-ray tube and the detector provide visibility of even the tiniest detail and finding the defects immediately. Nothing can hide anymore.

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.



Easy to maintain

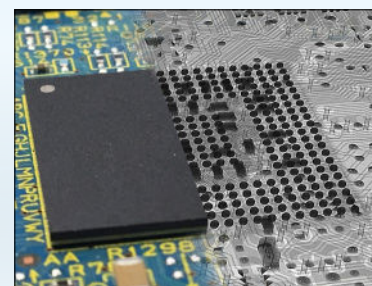
QuadraNT™ tubes use filament free technology for continuous service. Eliminate the risks of oil contamination in the X-ray tube, oil spills or leaks into the work environment. QuadraNT uses an oil free ion pump to maintain X-ray tube vacuum which never requires an oil change. Stable performance is guaranteed since the filament is never changed.

Dual Mode Tube Technology

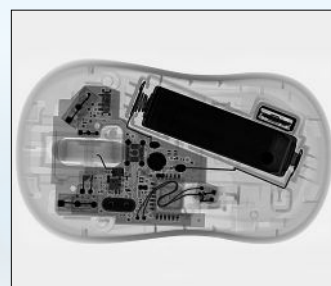
QuadraNT™ is the powerhouse of Quadra Pro. Nordson's latest generation X-ray source gets another enhancement with patent-pending, automatic Dual Mode in the Quadra 7 Pro. The tube automatically switches between two modes:

- High resolution mode ideal for sensitive, semiconductor samples
- High flux mode essential for dense, thicker samples

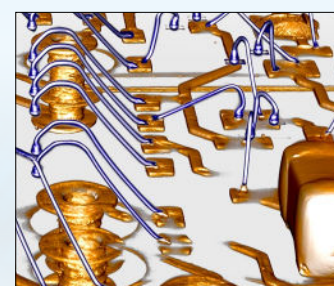
The benefit of Dual Mode is crystal clear images to spot defects in more detail than you have seen before! The best-in-class X-ray tube maintains its 10-fold brightness and improved stability over conventional tubes and bests them again with smaller spot size at any voltage. The results you can see for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



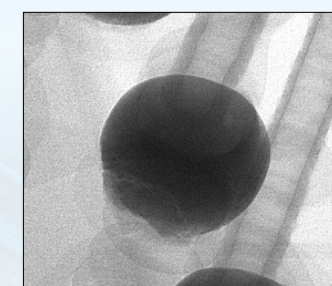
Optical → X-ray



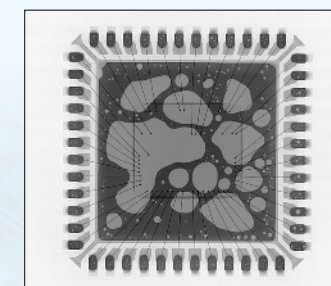
Computer mouse



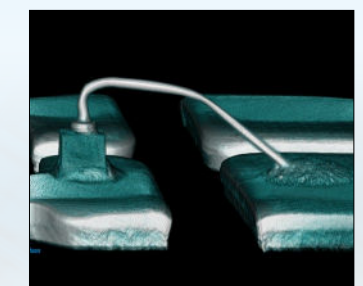
Multi level PCBA



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

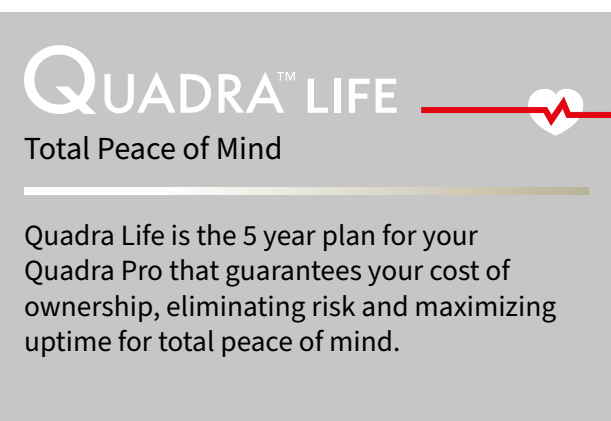
Eliminate the risks of oil contamination in the X-ray tube, oil spills or leaks into the work environment. QuadraNT uses an oil free ion pump to maintain X-ray tube vacuum which never requires an oil change.



QuadraNT 4th 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.



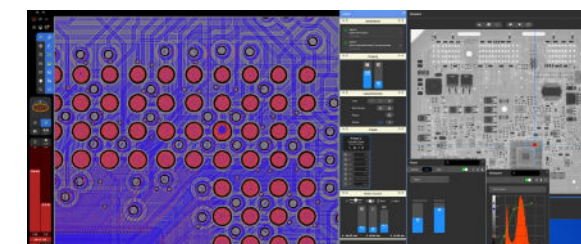
Quadra Life is the 5 year plan for your Quadra Pro that guarantees your cost of ownership, eliminating risk and maximizing uptime for total peace of mind.

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:

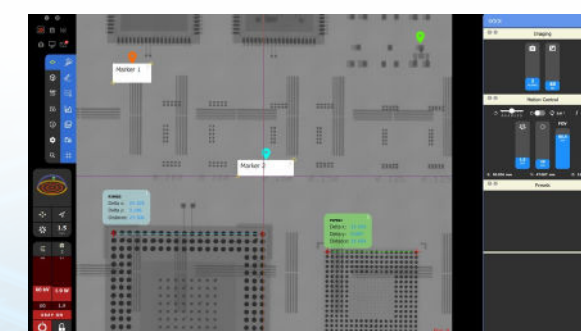
Layout flexibility

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



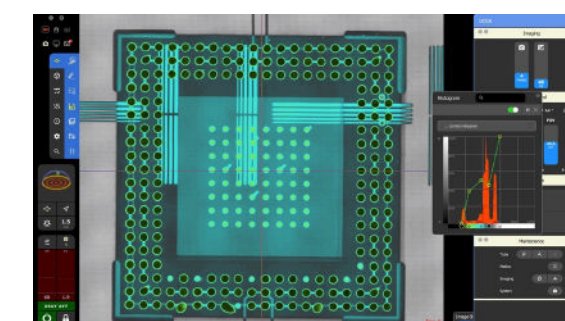
Annotations & measurements

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

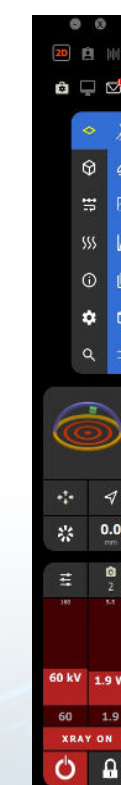
Customize filtering and image enhancements to suit your applications needs with the enhanced histogram and Image filters with simplified drag and drop editing.



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 [®] Pro | QUADRA 5 [®] Pro | QUADRA 7 [®] Pro |
|---------------------------|--|---|---|
| X-ray Tube | 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 |
| Detector | 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 ^ 2) | 7800 | 15000 | 16000 |
| Inspection | | | |
| 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) |
| Installation | | | |
| 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 | |
| Options | | | |
| X-Plane [®] | 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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BR-QPRO 12/12/2023-V1