

# 4800 INTEGRA Plus

Automated Wafer Testing

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

  
*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

## BT Products

### Test Your Design

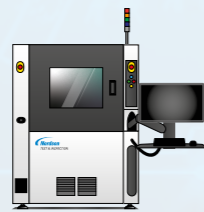
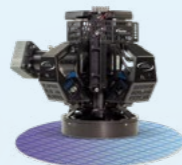
Bondtesters



## AOI Products

### Proprietary Advanced Technology

Optical Inspection & Metrology



## WS Products

### Improve Your Yields

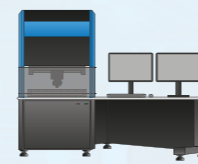
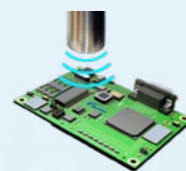
Semiconductor Metrology Sensors



## AMI Products

### Qualify Your Design

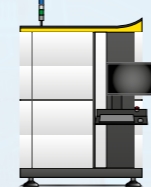
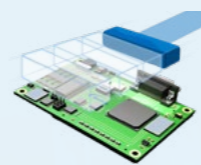
Acoustic Inspection



## AXI Products

### High Speed High Flexibility

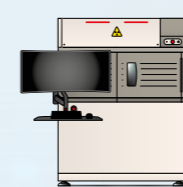
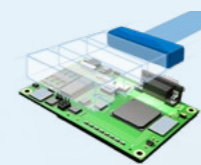
Automated X-ray Inspection



## MXI Products

### Making the Invisible, Visible

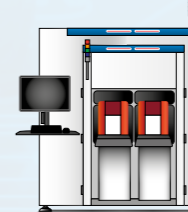
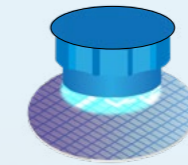
Manual X-ray Inspection



## AXM Products

### Measuring the Invisible

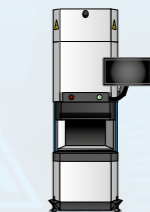
Automated X-ray Metrology



## CC Products

### Maximize Efficiency

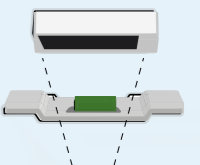
X-ray Component Counting



## XT Products

### High Speed High Resolution

X-ray Technologies



# Automated Wafer Testing

The Nordson Test & Inspection 4800 INTEGRA Plus is a complete solution for automated wafer bond testing. Best ingredients for the best results: The Integration with a wafer handler transforms the Nordson Test & Inspection 4800 into a fully automated system ensuring reliable and repeatable operation, utilizing the next generation of enhanced bond testing software, Paragon™.

## Advanced Wafer Testing

The system is designed to operate in a high mix and high throughput automated wafer manufacturing environments. It provides a highly intuitive and configurable interface provides quick and easy automated test recipe programming and execution for a wide range of sample configurations. Smart load port and wafer chuck enables smooth change over for different materials types maximizing through put. The entire system is factory configured and controlled from one PC.

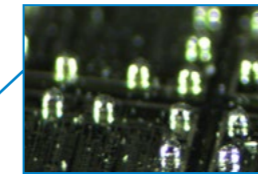
2 load port EFEM configurable to dual 300mm or 200/300mm operation with light curtain providing extra safety



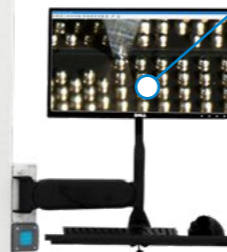
Automated center lift smart chuck lip seal design and high precision XY stage with sub-micron resolution and micron level repeatability



Unique dual microscope mount designed for high power optics



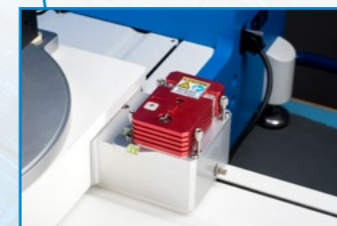
Wafer creation and mapping



Vision system upgraded with high speed and high resolution cameras



Integrated debris removal station cleans shear and pull tools automatically between tests



## Matrix Map / Strip Map

A “smarter” automation that tests and trace results based on a “map” file providing flexible and streamlined test device selection and ultimately higher test precision.

## AI AutoGrade

Smart, objective, operator-free failure mode grading feature that can be trained and upgraded over time to deliver highly accurate grading results.

## Full SECS/GEM Integration

The system connects directly to a network to allow full SECS/GEM operation. When combined with a FOUF loading system, testing, analysis and results can be entirely automated.

## Clean Room Compatible

An optional fan filter unit and front doors can be added with ionizers for clean room operation.

## Smaller Footprint

Building on the highly successful 4800 INTEGRA, the Plus offers more advanced features, is easier to use and comes with a smaller footprint.

# Features

## Powerful Optical Systems

The 4800 system offers a range of optical solutions:

**Image Capture System** - Provides high resolution images for failure mode analysis. Built into the system, it's location close to the tool maximizes throughput, particularly for automated tests.

**Alignment Camera** - A built-in high resolution camera with macro zoom lens and coaxial illumination. Used in conjunction with the image capture system the set-up and use of automation patterns and routines is significantly enhanced.



Integrated image capture and alignment camera

**Trinocular Camera** - When used with an appropriate microscope the field of view can be adjusted from wide to close up; ideally suited for macro positioning. With the side alignment camera, the front and side view enable precise tool alignment. In addition high power optics can be used to see very small features sub 20 microns aiding operator alignment for shear testing.

**Side Alignment Camera** - Ideal for testing micro features. The secondary view point provides the ability to do accurate and repeatable testing. It's ultra stable attachment ensures vibration free imaging with constant focus on the tool tip.

**CCD Camera Monitoring** - Optional CCD cameras can be fitted to the wafer handler and inside the 4800 INTEGRA Plus. This allows for monitoring and recording of the test process.

## Successfully Test Warped and Thin Wafers

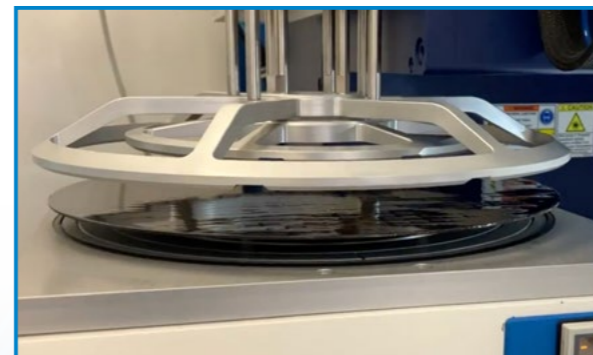
The edge lift smart chuck has a unique design where the edge lift pins ensure that warped or thin wafers cannot slide off the chuck. The gradual vacuum pressure enables optimum vacuum on the wafer. Features include:

**Pre-alignment Accuracy** - Lateral movement is eliminated by fully supporting the wafer at the edges. This assures secure wafer placement for every application.



### Wafer Justifier & Lip Seal Technology

Automatic wafer justification combined with our patented Lipseal™ technology ensures that even very warped wafers can be tested accurately.

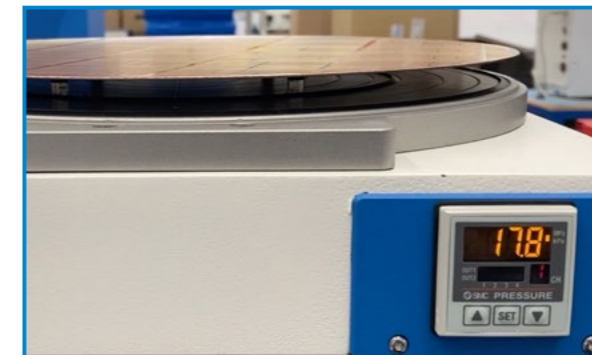


**Integrated Calibration** - Guaranteed accuracy and confidence in results via built in verification and cartridge calibration.

## Intelligent and Intuitive Chuck Controller

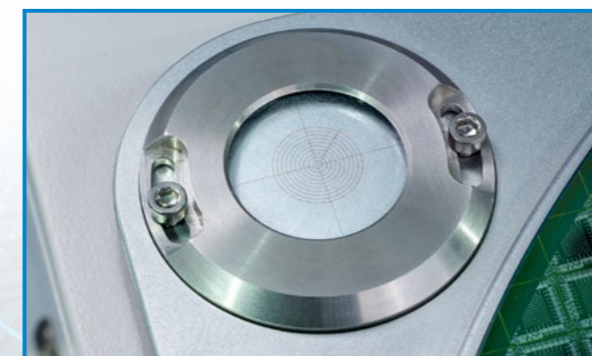
The multi-function programmable controller ensures safe and secure transfer of the wafer. Seamlessly integrated into the Paragon software it provides feedback on the vacuum clamping pressures therefore preventing damage to the wafer.

What's more the operator can easily see continuous feedback of the vacuum and air levels and can therefore take action to prevent damage to the wafer should there be an interruption to the air supply.



### Built-in Cross Hair Camera Alignment Target

This alignment target ensures the operator is 100% confident on the location of the load tool in relation to the chuck. This calibration greatly enhances accuracy.



## Automatic Wafer Justifier

The wafer justifier ensures warped wafers can be automatically clamped to the vacuum chuck prior to testing.

## Fan Filter Unit

The 4800 Integra can be fitted with a fan filter unit and enclosed doors. This allows for a positive pressure to be kept inside the system to keep debris out of the test area.

## Unparalleled Versatility

The patented industry leading multi-function cartridges expand the versatility of the 4800 bondtester. Operators can easily identify which transducer is active transducer not in use via the cartridge window whilst the 'Park Position' protects the transducers inside the cartridge.



Existing cartridges, used on the 4000 and 4000Plus bondtesters are also compatible with the 4800 system.

- Ergonomic, low-mass grab handles ensure safe and secure removal
- Quick and easy to interchange with single load cartridges
- Patented air bearing technology for shear testing
- Park position protects transducers
- Transducer application window

# Nordson Intelligence

# Powerful Upgrades

Nordson’s Ecosystem enables our customers to program their own software. The more data is fed in, the more customized the software is programmed to the customer’s specific requirements. The application is then simply clicked via an AI button. A family of algorithms delivering significant throughput improvements and detection capabilities not possible through traditional approaches.

Nordson Intelligence provides users the autonomy to enhance their inspection results, and quickly deploy solutions for different types of applications. Nordson Intelligence is designed for production, for flexibility and for rapid changes.

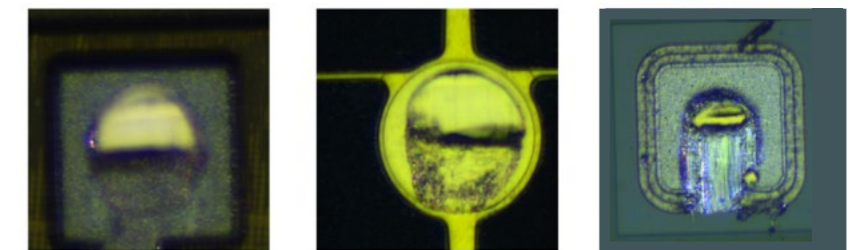
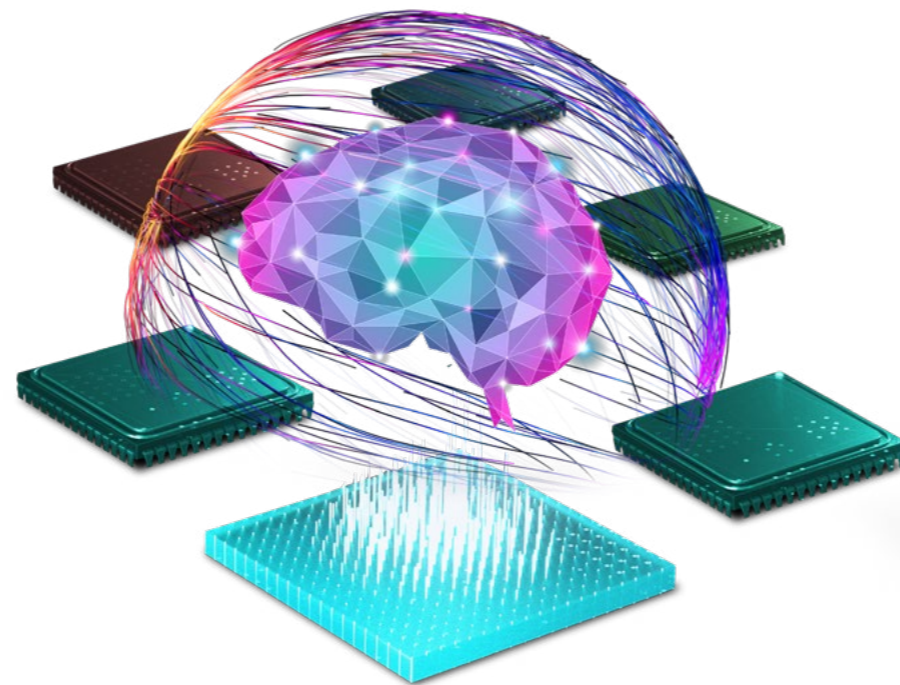
## Failure Mode Imaging and Grading

The automated image capture system locates the correct position to optimize image quality.

Offline Data, Preparation, DataLabeling, Train Model and Test Model fed into N-Intelligence and together with Nordson PARAGON software fast testing of bump and wire, detection of point of failure and better failure classification accuracy is possible and easy to use/set up.

## Nordson AutoGrade – Machine Learning

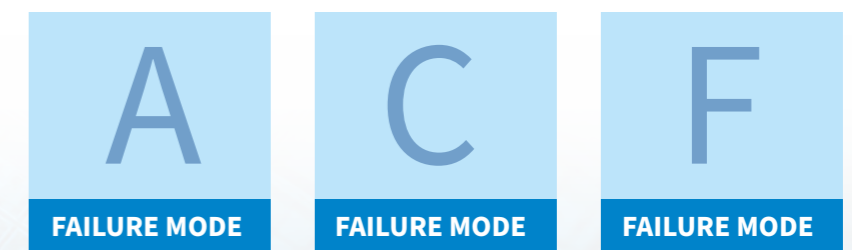
Nordson’s AutoGrade has the capability to determine the point of failure using a vast library of test images for better classification accuracy.



Real world test image is acquired.



Nordson Intelligence algorithms analyze the test image.



Nordson Intelligence Instantly identifies and classifies the failure mode.

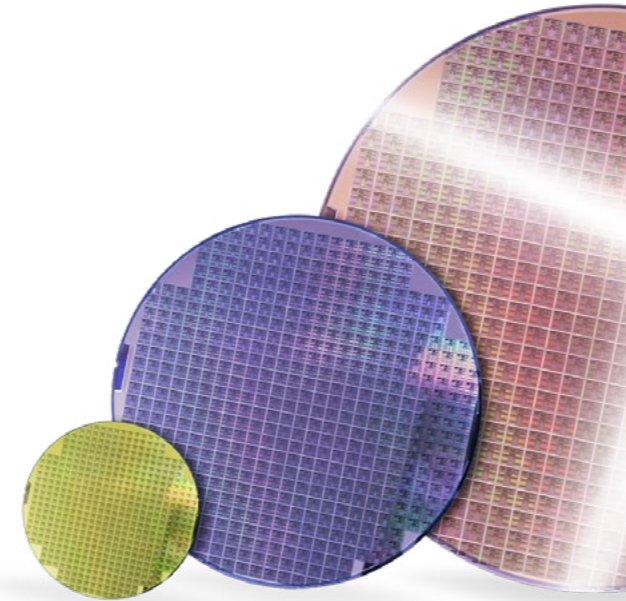
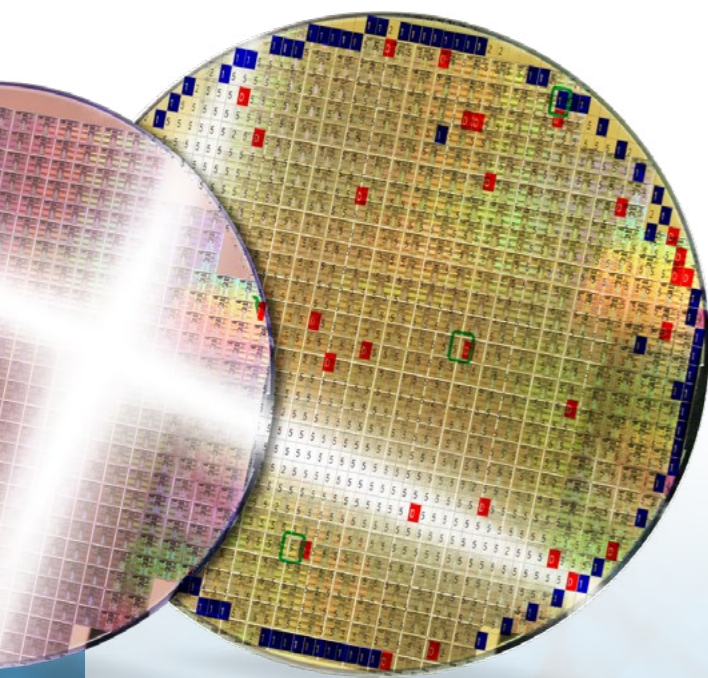


# Automation Software

## Automation Software

Nordson Paragon™ test software boasts a highly configurable and intuitive interface as well as a wide variety of advanced functionality, such as automatic GR&R calculation, built-in diagnostics, a range of charts and a unique database search engine wizard. Utilizing the onboard Imaging systems allows for automated alignment via fiducial matching. Paragon™ provides the ultimate flexibility for wafer map creation enabling quick and precise set-up of test patterns; with virtual images for each test pattern allowing for easy editing. You can select from the following methods:

- Scan the wafer using the unique on-board intelligent automatic wafer mapping software.
- Import wafer maps using industry standard formats
- Use the simple mouse point and click wizard to program any test point anywhere on the wafer



## Matrix Map for Wafer & Leadframes

In order to meet the demand from fully automated wafer level packaging environments via factory host or remote control system (MES, EAP), Nordson's Matrix Map features A "smarter" automation that tests and trace results based on a "map" file providing flexible and streamlined test device selection and ultimately higher test precision.

# Nordson Paragon Software

Nordson Paragon V6™ software takes bond testing to the next level. Its highly intuitive and configurable interface provides quick and easy access to advanced functionality, increasing efficiency and providing 100% confidence in your bond testing results.

## Quick and Easy Test Set-Up

Intuitive design ensures test set-up parameters are easily accessible with the start-up check list enabling a quick start.

## Advanced Data Presentation

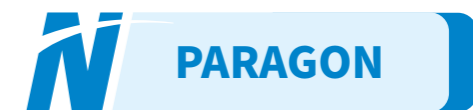
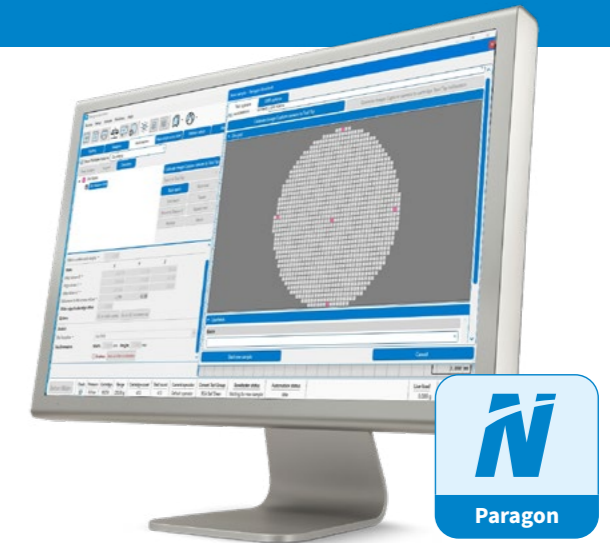
Extensive charting functionality allows several graphs to be displayed at once and to resize and zoom in easily.

## Consistency Guaranteed

Failure mode grading available to provide analytical information for each test. GR&R is tool kit is available to determine the bond testers repeatability and reproducibility.

## New Test Modes

Fine wire bond pitch (60µm) and micron bump pitch (25µm) automation test powered by PC853 and Paragon V6.



## Intelligent Bond Testing

# Specifications

Test Modes	
Manual operation	
Semi-automatic	
Fully-automatic via fiducial and pattern recognition	
Onboard wafer map creation	
Wafer map download	
Optical / camera systems	
Integrated Image capture Ultra Fast	
Trinocular camera (M80 spec)	
Alignment camera (large FOV) Ultra Fast	
Axis Performance	
Max XY Axis Speed	50mm/s
Z axis speed	5mm/s
Axis travel (X x Y x Z)	550x410x75mm
Total system accuracy	Measured accuracy at $\pm 1 \mu\text{m}$ over 50 mm • Repeatability at $\pm 0.1 \mu\text{m}$
EFEM Wafer handling	
200 and 300mm flexible and hybrid warped wafers (subject to testing)	
2 load ports for dual 300mm or 200/300mm operation	
OCR and Aligner compatible for both opaque and transparent carriers	
E84 sensor ports for OHT and AGV	
Software	
Paragon™	
SECS/GEM (Please consult factory)	
Interfaces	90 - 264V AC, 47 - 63 Hz, Single Phase, Universal
Installation	
Power supply	90 - 264V AC, 47 - 63 Hz, Single Phase, Universal
Pneumatic supply	Minimum 4 bar, 6mm OD / 4mm ID plastic pipe
Vacuum supply	Minimum 67kPa, 6mm OD / 4mm ID plastic pipe

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

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