

4800 Bondtester

Advanced Automated Wafer Testing

www.nordson.com/TestInspect

 **Nordson**
TEST & INSPECTION

Automated Wafer Testing

The Nordson TEST & INSPECTION 4800 is at the forefront of wafer testing technology catering for the testing of wafers from 200mm up to 450mm.

Combining proven technology with the latest Paragon automation software delivers unparalleled accuracy, repeatability and results stability. The Nordson 4800 is truly unique and is the most advanced bondtester on the market.

Superior Quality

Unsurpassed accuracy and repeatability ensures there is total confidence in the quality of test results.

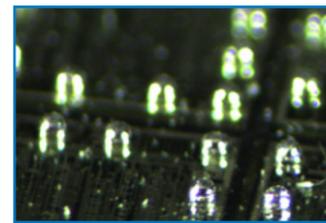
Ultimate Step Back Accuracy

Control of shear height (step back) is critical to consistent test results. Nordson TEST & INSPECTIONS's unique patented anti backlash system aids setting and controlling shear height leading to step back accuracy up to +/- 0.25 microns.

Advanced Imaging

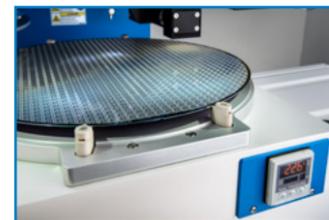
A range of powerful camera and optical systems optimize load tool alignment, auto programming and post-test analysis.

Unique dual microscope mount for high power optics.

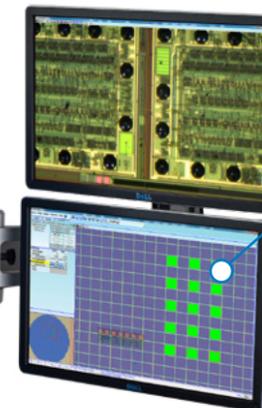


Interchangeable test cartridges including the patented Multi-Function Cartridge (MFC).

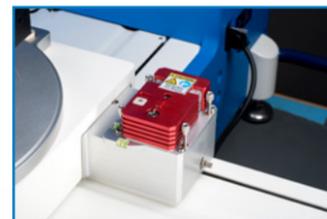
Automatic edge lift smart chuck and high precision XY stage with sub-micron resolution and repeatability



Wafer creation and mapping



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



Integrated image capture and side alignment cameras



Debris Removal Station

Quickly and efficiently clears debris automatically from shear and tweezer cartridges.

Unique Dual Microscope Mount

The 4800 bondtester's advanced optics combined with the microscope's dual vibration reduction mount and adjustable eye-line, provides unparalleled image stability.

Precise Alignment for Small Geometries

The unique vector nudge controls, offering key pad operation, feature programmable nudge buttons for precise step movement to ensure ultimate positional accuracy.

Automated Testing

A fully automated test routine can be configured to run a set of tests on selected or random die, using the intuitive wafer mapping module. Assistance from load to result from Camera Alignment, Failure Mode Assignment and graphical data representation.

Our Pedigree

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

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

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.

Borescope Imaging System - Provides high magnification imaging which is ideal for precise tool alignment. It also enables off line failure mode analysis, test grading and live recording of tests.

In Automated Bondtesting

Successfully Test Warped and Thin Wafers

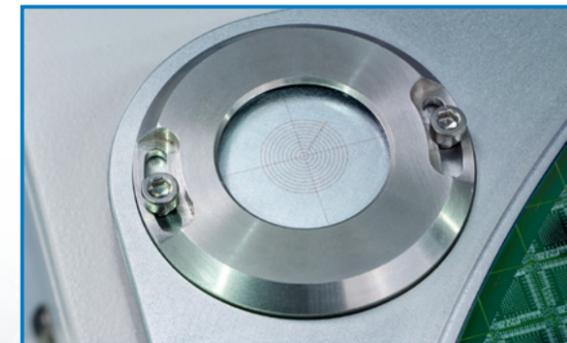
The edge lift smart chuck has a unique design where the edge lift pins ensure that warped or thin wafers cannot slide off the chuck. The gradual vacuum pressure enables optimum vacuum on the wafer. Features include:

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



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.



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

Intelligent and Intuitive Chuck Controller

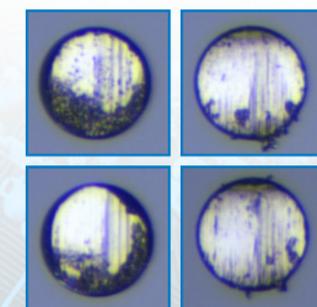
The multi-function programmable controller ensures safe and secure transfer of the wafer. Seamlessly integrated into the Paragon software it provides feedback on the vacuum clamping pressures therefore preventing damage to the wafer.

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.



Failure Mode Imaging and Grading

The automated image capture system locates the correct position to optimize image quality. An extended depth of field option also produces an automatically focused image and 3D map of the failure.



Typical failure modes

Automated Wafer Testing

The Nordson TEST & INSPECTION 4800 Integra is a complete solution for automated wafer bond testing. The entire system is factory configured and controlled from one PC.

4800 INTEGRA



Virtually Operator Free Testing

The system is completely controlled via Paragon™ software and once programmed will perform all parts of the test automatically, with no need for operator input.

Full SECS/GEM Integration

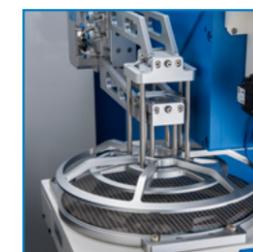
The system connects directly to a network to allow full SECS/GEM operation. When combined with a FOUP loading system, testing, analysis and results can be entirely automated.

Clean Room Compatible

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



Fan filter unit and enclosed doors.



Automatic wafer justifier.



Interlocked doors.

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.

Interlock Options

Light curtains or interlocked doors can be fitted and are used to protect operators from the test area. If broken or opened the system will pause the current test and restart once the obstruction is removed.

CCD Camera Monitoring

Optional CCD cameras can be fitted to the wafer handler and inside the 4800 Integra. This allows for monitoring and recording of the test process.

Wafer Handler Integration

The Nordson TEST & INSPECTION 4800 integrates with wafer handler systems to ensure reliable and repeatable operation.

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 bond testing software, Paragon™.

The highly intuitive and configurable interface provides quick and easy automated test

routine development and execution for a wide range of sample configurations. A step by step wizard guides the user through the set up process, catering for a variety of options. Paragon also provides the ability to simultaneously display and record the view from multiple cameras.



Brooks EFEM with Vision™ load port modules

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 High power microscope Trinocular camera Alignment camera (large FOV) Side alignment camera Borescope	
Axis Performance	
XY Stage travel	550mm X / 410mm Y
XY Stage	High resolution linear encoders
Axis travel (X x Y x Z)	75mm Z Travel
Total system accuracy (see detailed load cartridge specifications)	up to +/- 0.05% FSD (See cartridge specification)
Wafer Loading	
Manual via carrier frame Fully automatic, load from left or right (factory configured) EFEM	
Software	
Paragon™	
SECS/GEM (Please consult factory)	
Interfaces	
90 - 264V AC, 47 - 63 Hz, Single Phase, Universal	
Installation	
Footprint (W x D x H)	1075mm x 980mm x 855mm (ex PC)
Weight	170 kg
Power supply	90 - 264V AC, 47 - 63 Hz, Single Phase, Universal
Pneumatic supply	Minimum 4 bar, 6mm OD / 4mm ID plastic pipe
Vacuum supply (4600-W only)	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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BR-BT-4800-140523-V1