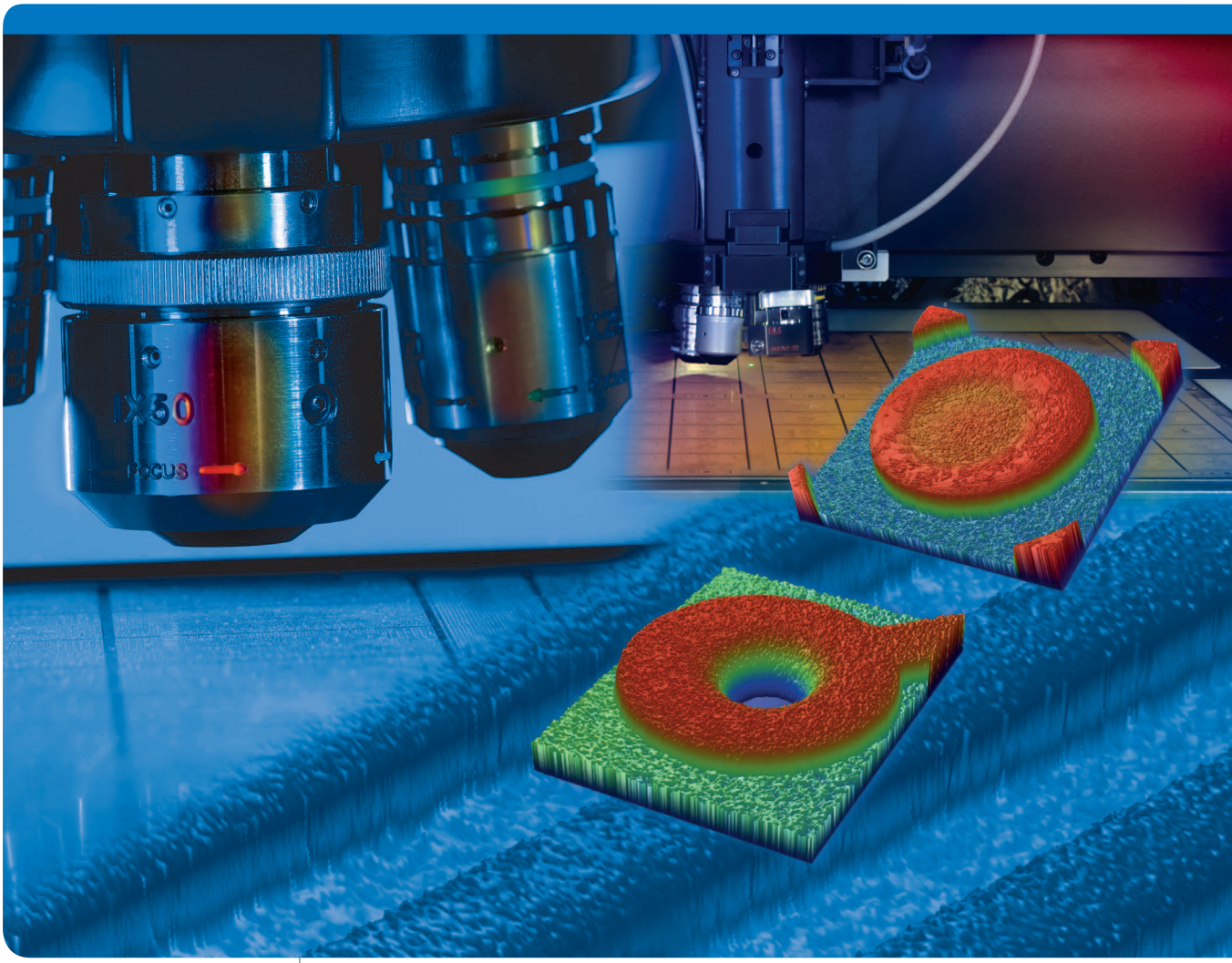



# ContourSP Large Panel Metrology System

- Industry's Most Comprehensive Measurements for High-Volume, High-Precision PCB Production Control

Optical Metrology

Innovation with Integrity

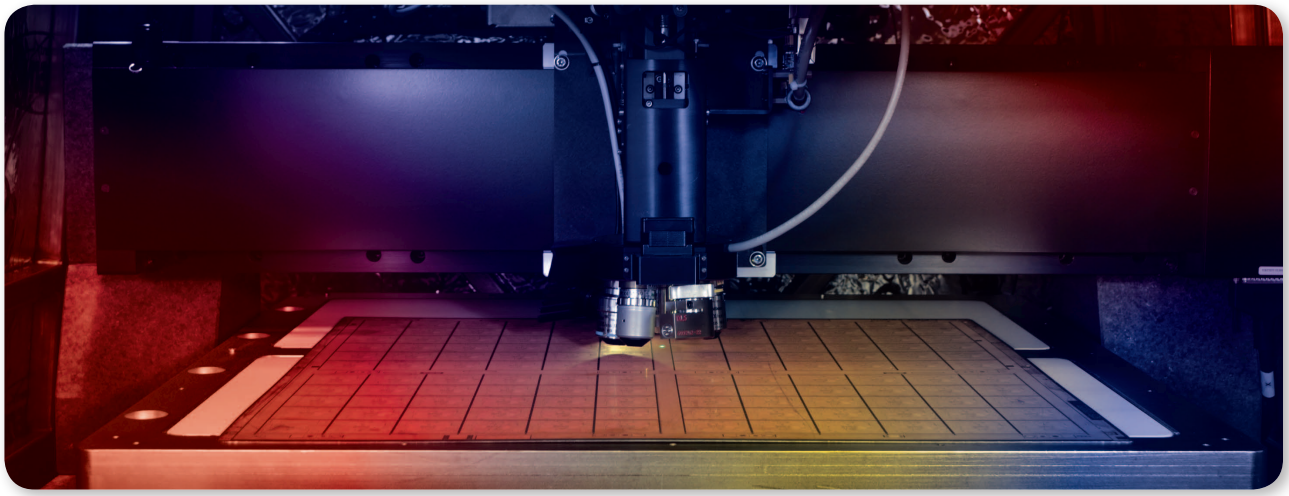
# ContourSP 3D Optical Microscopy Enhance Product Performance and Maximize Yield

Driven by the semiconductor industry roadmap's rapid pursuit of shrinking transistor geometries, PCB manufacturers are developing smaller and denser features on ever thinner high-density interconnect (HDI) and multi-chip module (MCM) substrates. The gage-capable ContourSP Large Panel Metrology System is specifically designed to measure each layer of the PCB panels during manufacturing, assuring the minimum recipe development time, highest yield, maximum up-time, and lowest cost per measured panel in production.


### Unique Capabilities for Maximum Productivity

- Highest throughput: >2x faster than previous generation systems
- Many new features:
  - Dynamic Signal Segmentation (DSS)
  - Remeasure function
  - Topography scanning to compensate for wafer bow
  - Easy coordinate file import, active ESD protection
  - Operator Access Control based on Vision64®
- Recipe portability for multi-tool and multi-factory deployment

**The ContourSP's unique features deliver the utmost in production performance, convenience, reliability and throughput for large format panel metrology.**



The ContourSP gantry design provides a 600x600mm measurement area.

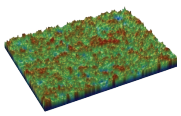
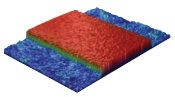
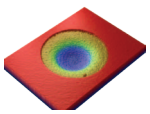
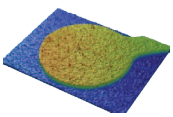
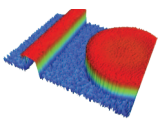
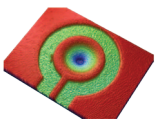
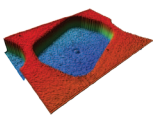
## High Resolution, Unmatched Accuracy

With its new vibration tolerant system design and patented Wyko® Vertical Scanning Interferometry (VSI), the gage-capable ContourSP system performs extremely accurate 3D critical dimensional (CD) measurements in nanometer resolution. This ability allows the ContourSP to multitask as both a powerful surface texture metrology instrument and an easy-to-use defect inspection tool.

## Simplified Interface, Increased Uptime

The ContourSP intuitive production interface offers fast and easy fiducial alignment with configurable user input. In addition to pass/fail information, users can now select detailed parameter results for display on the summary screen. New Vision64 software provides full access control for engineers, technicians and operators with easy coordinate file import capability, guaranteeing system-to-system recipe portability and fast file creation.

## Industry's Most Comprehensive Analyses

| | | |
|---|---|---|
|  | Surface Roughness | Accurate and repeatable 3D Ra |
| | | Inner-core, build-up, dielectric and other critical process layers |
|  | Trace | Width, height and spacing of traces on flat substrates |
| | | Needle density calculations (similar to anchor calculations) |
|  | Advanced Via | Depth, top and bottom diameter |
| | | Roughness of anchor and via regions |
| | | Dynamic signal segmentation for accuracy in presence of fiber layer obstructions |
|  | Auto-Alignment/CD | Easy setup of large variety of fiducials for automated alignment |
| | | Optional software ensures fast, accurate location of desired features |
|  | Pad Clearance | Calculates gap (clearance) between edge pads and closest panel feature |
|  | Panel Recess | Measurement of "dimples" on central features |
| | | Depth of recess of the dimple |
| | | Thickness of the pad on which dimple is located |
|  | Solder-Mask/ Opening | Dimensions and heights of mask, pads and substrate within mask |
| | | Relative heights of features, XY dimensions or diameter mask/pad features |

# ContourSP

## Specifications

| | |
|---|---|
| Measurement Capability | Fully automated, non-contact, high-throughput, 3D HDI/PCB surface characterization; analysis library: Ra roughness, trace, via, pad clearance, dimple, anchor, overlay, soldermask, including via analysis for fiber-reinforced PCBs and thick film |
| Advanced Functions | Full- and semiautomatic remeasure functions; easy-to-use production mode with built-in databasing and pass/fail for any parameter optional stitching, MATLAB®/TCPIP, thick film, SureVision; optional COGNEX vision/recognition system; FixSure™ custom fixture designs for panels with up to 6mm warpage/bow |
| System Software | Comprehensive PCB-HDI-MCM panel and thick film analysis suite; Vision64 3D optical measurement and analysis software; Microsoft® Windows 7® 64-bit O/S |
| Computer System | Advanced multi-core Intel processor PC with dual RAID1 drives; keyboard, mouse, joystick box for XY axis and Z focus control; 23 in. flat panel monitor mounted on Ergotron® support unit |
| Field of View Multipliers | Discreet zoom lenses; 1X included; optional 0.55X, 0.75X, 1.5X, 2X |
| Objectives | 2.5X, 5X, 10X, 20X, 50X for magnifications from 0.75X to 100X |
| Lens Mounting | Quick-release motorized 5-position turret with automatic position sensing; optional quick-release single-objective adapter |
| Measurement Camera Array | High-resolution digital camera; 80fps standard array format; 60 fps large array format |
| Light Source | Long-lifetime, high-powered green and white LEDs |
| Optical Assembly | Standard Contour series optical design with lightweight, compact housing; dual LED light source; digital camera and motorized MMD |
| Vertical Measure Range | 0.1nm to 10mm standard |
| Vertical Resolution[1] | <0.1nm |
| RMS Repeatability[2] | 0.01nm |
| Vertical Scan Speed | User selectable up to 80µm/sec |
| Lateral Spatial Sampling | 0.1 to 13.2µm (≤160nm with large-format camera) |
| Optical Resolution | 0.55µm min. (based on Sparrow Criteria at 600nm) |
| Field-of-View | 8.45mm to 0.05mm (10.8mm x 8.1mm max. with large format camera); optional stitching for larger FOVs |
| Reflectivity | <1 to 100%; measures all CZ, SR, ABF, and other typical PCB type substrate panels |
| Step Height | 0.6% accuracy; <0.1% to 100% at 1s repeatability |
| ESD | Optional integrated ionizer for ESD sensitive samples |
| Construction | 4th generation, granite base and gantry metrology platform; fully automated sample access for samples up to 600mm x 600mm; stainless steel acoustic-dampening enclosure with integrated production R/Y/G light tower and safety EMO |
| Footprint | 163cm H x 143cm D x 115cm W (64in. H x 56in. D x 45in. W) |

[1] As demonstrated by a PSI measurement with nulled fringes on an SIC reference mirror.
[2] As demonstrated by taking the one sigma Rq value of 30 PSI repeatability measurements on an SIC reference mirror.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