



## Agilent Medalist SJ50 Series 3 Automated Optical Inspection (AOI) and Measurement

### Data Sheet

#### Leading the way in AOI

The Agilent Medalist SJ50 Series 3 is a cost-effective, fast, easy-to-use and highly reliable imaging platform that provides full coverage which can be flexibly deployed at multiple locations on the surface mount technology manufacturing line to *detect* and *prevent* defects.

The SJ50 is an extremely versatile platform that provides algorithms for post-paste 2D solder, pre and post-reflow components, and solder joint inspection. Through scalable resolution, the SJ50 Series 3 is capable of inspecting the most challenging of components, including 01005. Here are some key system features:

- . Imaging chain technology changes provide increased inspection speeds, demonstrating the ability to keep up with ever-increasing line rates
- . Algorithm advancements provide greater image clarity to low contract components, leaving users with better defect analysis capability and lower false call rates
- . User-friendly programming, universal and self-learning algorithms, geometric pattern matching, and click and drag optical character recognition and verification.
- . The system utilizes revolutionary 3D Solid Shape Modeling (SSM) for inspection needs.
- . Operator interfaces available for Simplified and Traditional Chinese, Japanese, and English language formats.
- . Optional head swap conversion kit for 3Dsolder paste inspection.



Flexible AOI detects and prevents defects at multiple stages of your production line.



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## SPECIFICATIONS

### Software Systems

|                                  |                                                                                                                                                          |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating environment            | Windows ® XP SP2 operating system with easy to use GUI and password-protected user levels                                                                |
| Vision Algorithms                | Parametric component models, self learning classifiers, color learning, geometric pattern matching, solid shape modeling (SSM)                           |
| Statistical Analysis             | Supports Agilent's proprietary SPC and defect prevention packages, complete with test output files.                                                      |
| Data transfer interface          | 3.5" FD, DVD/CD-RW, USB drives, and Ethernet                                                                                                             |
| <b>Functionality</b>             |                                                                                                                                                          |
| Post-reflow inspection           | Coverage: Missing, offset, skewed, polarity, billboard, tombstone, lifted/bent leads, excess/insufficient solder, bridging, wrong part, and traceability |
| Pre-reflow inspection            | Coverage: Missing, offset, 2D paste, skewed, polarity, bridging, wrong part, and traceability                                                            |
| Speed of inspection <sup>1</sup> | Post reflow: 5 in <sup>2</sup> /sec (32 cm <sup>2</sup> /sec)<br>Pre-reflow: 6.3 in <sup>2</sup> /sec (41 cm <sup>2</sup> /sec)                          |
| Traceability                     |                                                                                                                                                          |
| Board level                      | External barcode reader configured; Camera-read Barcodes                                                                                                 |
| Component level                  | OCR capability with batch code logging                                                                                                                   |

<sup>1</sup>Inspection Inspection speeds may vary. Contact your local Agilent sales representative for specific questions about your application or product.

### Hardware Systems

|                  |                                                                                                                                                           |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Computer system  | HP Workstation; Pentium ® 4 processor; 2GB RAM; 2 x 250GB SATA drives configured as RAID 1; 17" Flat screen monitor                                       |
| Host protocols   | 10/100/1000-BaseT Ethernet; TCP/IP or MS Network (and other common XP supported networking protocols)                                                     |
| CAD file formats | Standard import functionality for numerous CAD file formats using CAMCAD, including BOM files for version control and non-populated inspections           |
| Camera system    | 4 mega pixel digital camera. 19 um per pixel resolution (scalable to 12 um for 01005 inspection)<br>Field of view: 44.7 mm x 32.8 mm                      |
| Lighting system  | Multiple color, multiple angle, multiple segment LED lighting head, auto-calibration                                                                      |
| Board conveyor   | In-line SMEMA conveyor<br>Auto-width adjust<br>Bottom-up clamping                                                                                         |
| XY robot system  | Gantry robot systems with linear motors and linear encoders<br>Repeatability: <6 um<br>Encoder resolution: 0.5 um                                         |
| Enclosure        | Designed to conform to CE Mark standards for electrical and mechanical industrial safety                                                                  |
| Supplies         | Electricity 100-240V, 16A<br>Clean filtered air at 5 bar                                                                                                  |
| Temperature      | Operating temperatures 5 °C to 40 °C, max board temperature 80°C                                                                                          |
| Hardware Options | Offline Programming (OLP) Station<br>Conversion kit option enables full 3D solder paste inspection<br>Dual lane conveyor (standard Series 3 machine only) |
| Software options | Solutions associated with Intelligent Test Framework, including Agilent Medalist Repair Tool and Medalist Quality Tool                                    |

| Board Dimensions                                          | SJ50 Series 3                       | SJ50 Series 3 XL                    |
|-----------------------------------------------------------|-------------------------------------|-------------------------------------|
| Maximum board size <sup>2</sup>                           | 510 mm by 510 mm (20" by 20")       | 620 mm by 620 mm (24" by 24")       |
| Minimum board size                                        | 50 mm by 50 mm (2" by 2")           | 75 mm by 50 mm (3" by 2")           |
| Maximum board size for dual lane conveyor hardware option | 216 mm by 510 mm (8.5" by 20")      | Not applicable                      |
| Maximum board thickness                                   | 4 mm (0.16")                        | 15 mm (0.5")                        |
| Minimum board thickness                                   | 1.5 mm (0.06")                      | 1.5 mm (0.06")                      |
| Board weight                                              | Up to 3 kg (6.6 lb)                 | up to 13 kg (28 lb)                 |
| Clearance                                                 |                                     |                                     |
| - Topside of board                                        | 41 mm (1.61")                       | 41 mm (1.61")                       |
| - Bottomside of board                                     | 50 mm (1.97")                       | 50 mm (1.97")                       |
| - Minimum edge clearance                                  | 3.5 mm (0.14")                      | 3.5 mm (0.14")                      |
| - Conveyor Height Range                                   | 821 mm to 965.2 mm (32.4" to 37.9") | 821 mm to 965.2 mm (32.4" to 37.9") |

<sup>2</sup> Larger boards can be accommodated. Contact your Agilent sales representative for details.

| System Dimensions | SJ50 Series 3                 | SJ50 Series 3 XL              |
|-------------------|-------------------------------|-------------------------------|
| Footprint         |                               |                               |
| Width             | 1004 mm (3.3 ft)              | 1210 mm (4 ft)                |
| Depth             | 1423 mm (4.7 ft) <sup>3</sup> | 1423 mm (4.7 ft) <sup>3</sup> |
| Height            | 2210 mm (7.3 ft) <sup>4</sup> | 2210 mm (7.3 ft) <sup>4</sup> |
| Weight            | ~ 1150 kg (2535 lb)           | ~ 1250 kg (2756 lb)           |

<sup>3</sup> Excluding keyboard, monitor, arm, isolator and hood handles

<sup>4</sup> Including lighting tree and adjustable feet (set to 95 mm)



Characterize components and solder joints with life-like 3D visualization.

#### AGILENT MEDALIST AOI FAMILY

Both the Medalist SJ50 and SP50 Solder Paste Inspection (SPI) systems integrate key enabling technologies for a degree of accuracy and flexibility not previously seen in AOI. Interchangeable lighting heads and Agilent's unprecedented unified platform technology allow the systems to be redeployed at paste, pre- or post-solder as needs change. Find out more by visiting Agilent at [www.agilent.com/see/aoi](http://www.agilent.com/see/aoi).



ICES/NMB-001



## Related Web Resources

For more information on Agilent Medalist Printed Circuit Board Test and Inspection solutions, visit:

[www.agilent.com/see/pcb](http://www.agilent.com/see/pcb)



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