

PowerSpector

GTAz



In-Line 3D Automatic Optical Inspection systems

- ✓ Revolutionary 3D imaging technology
- ✓ High Speed 90Fps USB 3 Vision Cameras
- ✓ 2X FOV over previous Generation
- ✓ Multi-color 4 angle lighting with Line Source Coaxial Lighting and Meniscus Profiler
- ✓ Inspects:
 - Components: SMT & THT (missing, type, polarity, offset, text, colors, etc.)
 - Component Height and Coplanarity
 - Solder Paste and CIP (Components in Paste; pre-reflow)
 - Soldering: Post Reflow, Post Wave, Selective, Manual
- ✓ Flexible classification and reporting scenarios.....
- ✓ Line Sourced DOAL(Direct On Axis Lighting) coaxial lighting system with high resolution Telecentric Optics.....
- ✓ Low Noise Large CCD High Speed 24 bit Color Camera
- ✓ Synthetic Imaging and Spectral Analysis.....
- ✓ Triple use of side camera's
- ✓ Prototype mode for 1st off inspection.....
- ✓ In height adjustable optical head

True 3D imaging, Side cameras integrated in 3D processing.

*The latest generation of high speed, high quality cameras
No capture card requirements.*

Up to 50% reduction of cycle time.

*reliable solder joint meniscus and pad surface analysis (to find
meniscus and paste printing defects)*

use inspection in all stages of the production process

*integrate AOI efficiently in your existing operations and factory
lay-out*

*inspect solder joints without shadow effects from tall
components nearby and accurate inspection model building*

*find defects easier including printing defects on Gold or Cu
plated PCB's*

*powerful algorithms to achieve an optimal balance between
defect detection and false reject levels in shortest time*

Use for automatic inspection, classification and repair

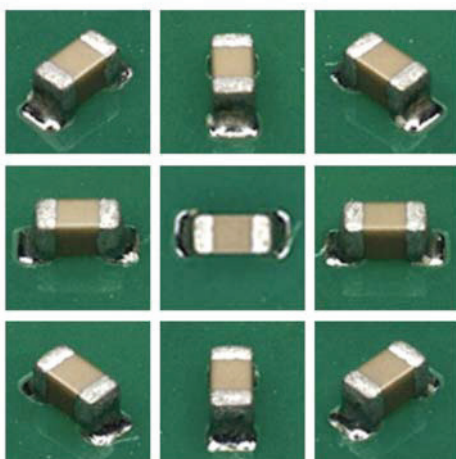
*program in minutes to verify your production line is set-up
correctly before starting full production*

*Compensate for PCB warp and adapt to tall component and
sandwich assemblies*

mek[®]
marantz electronics ltd

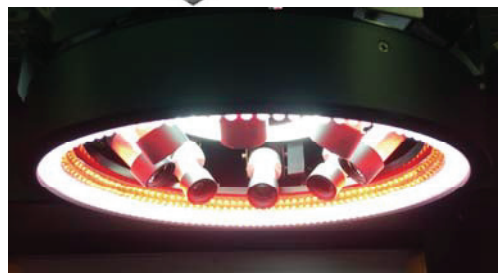
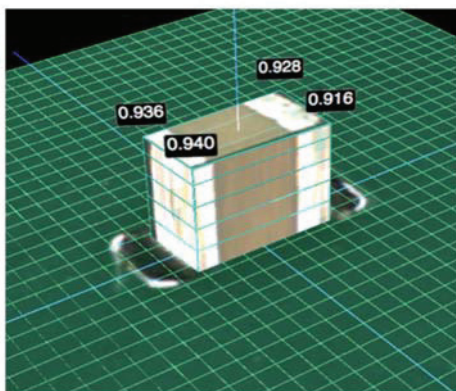
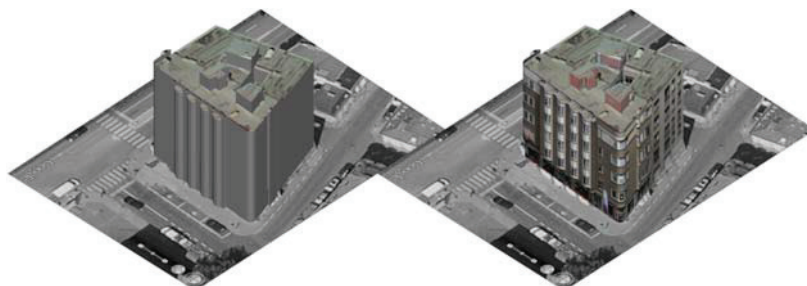
because inspection matters

Hardware and Software Features



Revolutionary 3D imaging

True Stereoscopic imaging using 9 cameras. Full colour 3D allows the ability to actually see the side of components rather than extruded 2D images. Using the addition of a 4th LED white light

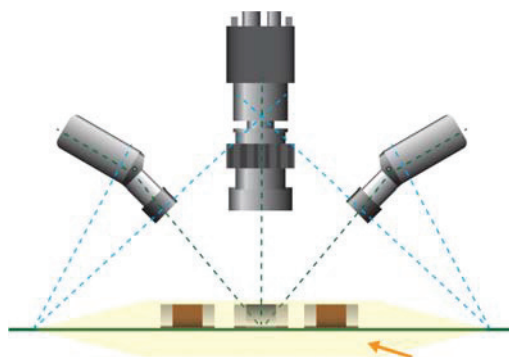


The perfect combination of 3D and 2D inspection

Height, tilt and coplanarity measurement. Pin Height measurement Component Presence Absence, Polarity, Value, Angle, Offset, Colour, Extra part detection, Solder ball detection, Solder profile analysis and short detection. The thickness of chip capacitors in combination with colour makes a more reliable inspection when checking chip capacitors value.

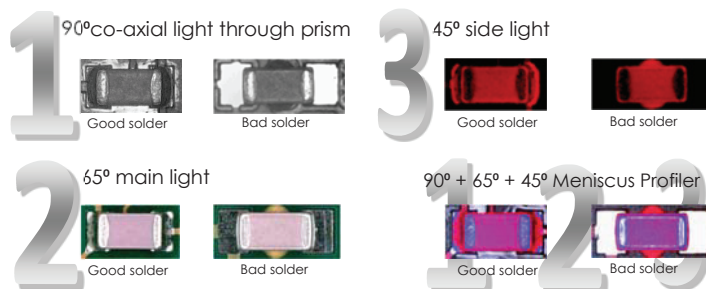
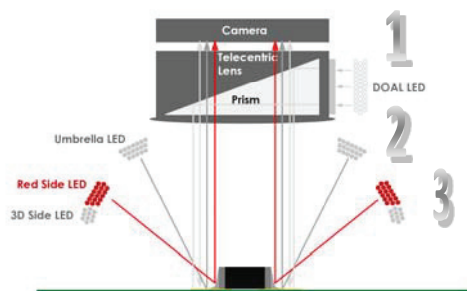
Unique 3D Stereoscopic Vision

Utilizing the full 9 cameras of the MEK camera head. The image differential are merged and a vectorised map of the component is created. Then analyzed based on the programmers applied tolerances. The vectorised map of the components removes the minor imperfection of the component surface giving more accurate measurement of height and surface angle of the component with reduced chance of false readings.



Omnidirectional multi angle, multi color LED lighting

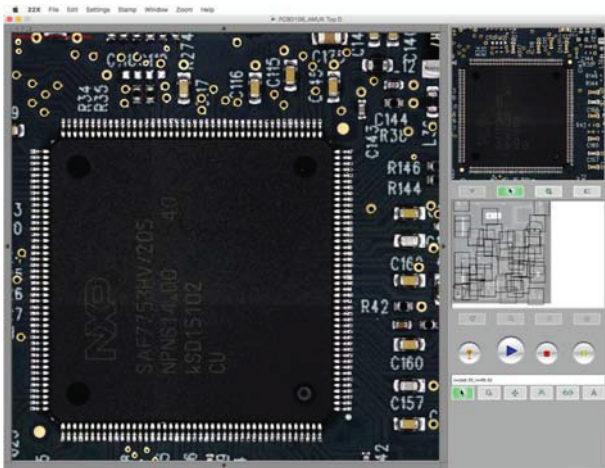
Optimal light no matter component direction — 3D color profile of solder meniscus — Reliable defect decision by the software — Decide Good Solder, No Solder, Lack of Solder and Too much solder for SMT and THT solder joints



8x Angular Side Sensors (Only available for FDA and FDAz models)

Simultaneously operating, multiplexed side view sensors with CameraLink interface — 45/45 arrangement — Triple use: Active automatic inspection, classification and repair — clear 9 angles defect review — high magnification 50x (10µm/pixel) — Full Color — Auto highlight — Large sensor pixels — 9 view images also in backup database

Hardware and Software Features — Continued



Double size FOV (Field of view)

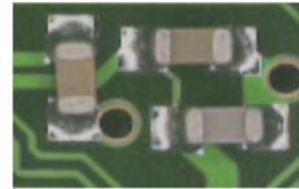
Up to 2x faster inspection over previous generations of machines. Square FOV combined with circular lighting allows for program rotation without time consuming debugging.

Large pixel image capturing sensor

18.8 μ m² pixel size — less noise — smooth and detailed image— great dynamic range



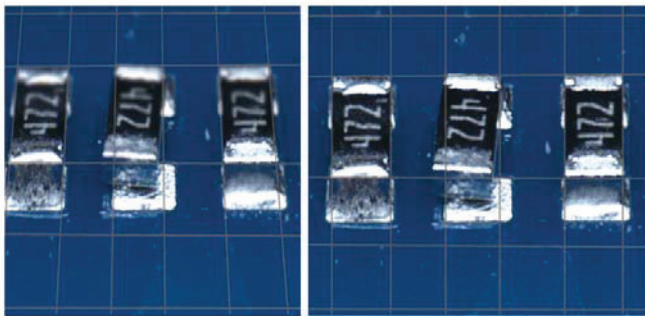
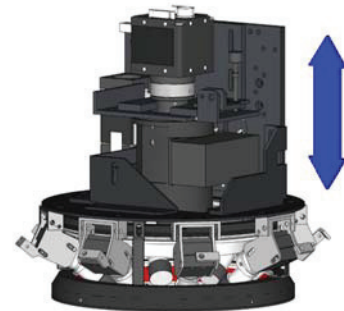
High dynamics sensor



Conventional sensor

In Height Adjustable Optical Head

In Z-Axis moving Top Camera, Light and Side View cameras — Adaption to any PCB Thickness — PCB Warp Compensation — Inspection of PCB's with very tall components — Reliable text and/or polarity inspection on tall components
Inspection of "Sandwich" assemblies without need of jigs and multiple inspections

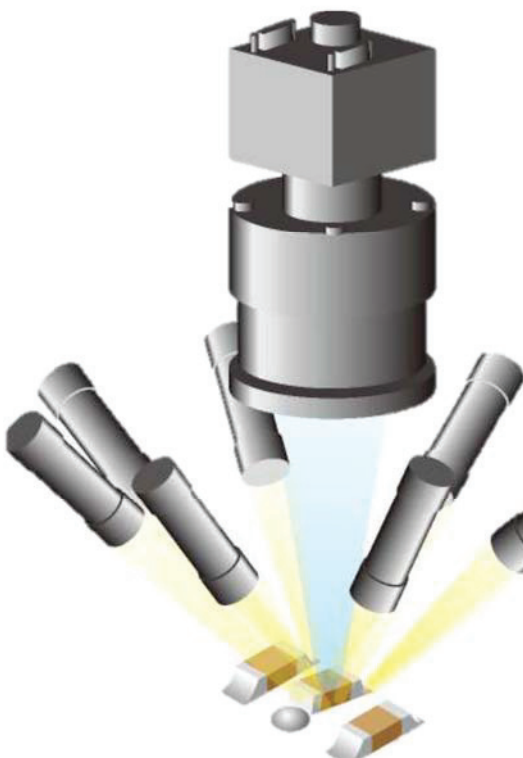
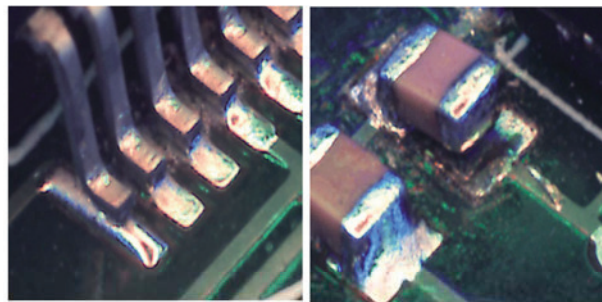


Without Shift&Tilt

Shift&Tilt

Shift & Tilt Side View lenses

Distortion free side images across whole FoV. Every point on the PCB within the FoV has same distance to the capturing sensor despite the angle of the optics



Inline

PowerSpector

GTAz

350L, 650L, 800L

| In-Line Series Specifications | PowerSpector GTAz 350L | PowerSpector GTAz 650L | PowerSpector GTAz 800L |
|--|---|---|---|
| Maximum PCB Size | 350x250mm (13.8"x9.8") | 650x550mm (25.6"x21.6") | 800x550mm (31.5"x21.6") |
| Characteristics | | | |
| Product type | Automatic Optical Inspector | | |
| In-line/Off-line | In-Line | | |
| Camera movement | X + Y Direction | | |
| PCB movement | Stationary during inspection | | |
| Parts inspection | Presence, Polarity, Offset, Correctness, Soldering, Height | | |
| Printing/paste inspection | Offset, Smearing, Bridges, Uniformity | | |
| Image Processing | Synthetic Imaging, Spectral Analysis, Greyscale limits | | |
| Image Parameters | Brightness, Hue, Saturation via Filters | | |
| Camera type | Digital color Thunderbolt interface 90 Fps | | |
| Camera Field Of View/Resolution | 38.5x38.5mm/18.75µm or 19.5x19.5mm/10µm | | |
| Lens | Telecentric lens with built in prism for DOAL Lighting | | |
| Lighting system | Omnidirectional T Quad LED rings: Side White, Side Red, Main, Line Sourced DOAL (Diffused On Axis Lighting (Coaxial)) | | |
| Specifications | | | |
| Minimum inspection component size | 01005" (0.4x0.2mm)(10µm resolution) | | |
| Positioning accuracy | Pixel related Feedback Loop | | |
| Component clearance (top) | 30mm (1.2") | | |
| Side Cameras | 8x Digital color USB 3.0 Vision in 45/45 orientation | | |
| Z-Axis movement range | 30mm (1.2") | | |
| Component clearance (bottom) | 35mm (1.38") or 55mm (2.17") without PCB support lift option | | |
| Maximum PCB Size | 350x250mm (13.8" x 9.8") | 650x550mm (25.6" x 21.6") | 800x550mm (31.5"x21.6") |
| Movement speed | 720mm/s | | |
| Inspection capacity typical | 2750ppm | | |
| Electrical requirements | 100-240 VAC / 330W | | |
| Conveyor | | | |
| Conveyor belt speed | 10-500mm/s (0.4-19.7"/s) | | |
| Conveyor configuration | Left>Right, Front rail fixed, Height 830-950mm | | |
| PCB Clamping | Top Justified, Ruler Blade, Top & Edge Clamping, Sensor Stopper | | |
| Minimum board size | 50x50mm (2.0" x 2.0") | | |
| Board thickness | 0.6-2mm (option 0.6-4mm) (24mils - 79mils) | | |
| PCB warpage compensation | Automatic PCB support Lift with magnetic pins (option) | | |
| Interfacing | | | |
| Control PC type | Apple Mac Mini or iMac | | |
| Control interface | SMEMA (conveyer) | | |
| Data interface | USB and Thunderbolt | | |
| Programming Interface | CSV Centroid file (Placement file) | | |
| Repair/Monitor/SPC System/MES-interface | Mek Catch System (Windows 7/8/10) (option) | | |
| 3rd party Interfacing (MES) & Data Storage | Enterprise SQL DB/XML Files/Socket (Catch System Option) | | |
| General | | | |
| Operating temperature | 15-30 deg. C(60-90 deg. F) | | |
| Operating humidity | 15-80 % RH | | |
| External size | W740 x D786 x H1236 (29.1" x 30.9" x 48.7") | W1040 x D1077 x H1270 (40.9" x 42.4" x 50.0") | W1190 x D1077 x H1259 (46.9" x 42.4" x 49.5") |
| Weight | 180ka (397lbs) | 240ka (529lbs) | 290ka (639lbs) |

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