PowerSpector

FDAz FDLz FDA FDL

In-Line Automatic Optical Inspection systems

√ Automatic Optical Inspection of PCB assemblies	*test your PCB's optically and replace manual inspection*
√ Inspects: ..... – Components: SMT & THT (missing, type, polarity, offset, text, colors, etc.) – Solder Paste and CIP (Components in Paste; pre-reflow) – Soldering: Post Reflow, Post Wave, Selective, Manual	*use inspection in all stages of the production process*
√ Flexible classification and reporting scenarios.....	*integrate AOI efficiently in your existing operations and factory lay-out*
√ In Medium and XXL size PCB's versions	*choose the best hardware configuration for your processes*
√ Multi-color 3 angle lighting with Line Source Coaxial Lighting and Meniscus Profiler	*reliable solder joint meniscus and pad surface analysis (to find meniscus and paste printing defects)*
√ Line Sourced DOAL(Direct On Axis Lighting) coaxial lighting system with high resolution Telecentric Optics……	*inspect solder joints without shadow effects from tall components nearby and accurate inspection model building*
√ Low Noise Large CCD High Speed 24 bit Color Camera	*find defects easier including printing defects on Gold or Cu plated PCB's*
√ Synthetic Imaging and Spectral Analysis.....	*powerful algorithms to achieve an optimal balance between defect detection and false reject levels in shortest time*
√ Triple use of side camera's (FDA and FDAz models only)	*Use for automatic inspection, classification and repair*
√ Prototype mode for 1st off inspection.....	*program in minutes to verify your production line is set-up correctly before starting full production*
√ In height adjustable optical head (FDLz and FDAz models only)	*Compensate for PCB warp and adapt to tall component and sandwich assemblies*
√ Compact footprint design	*maximize factory floor efficiency*

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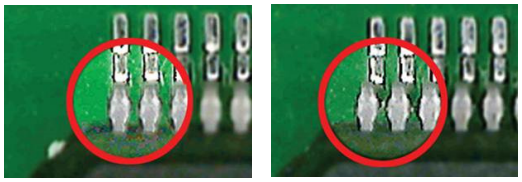
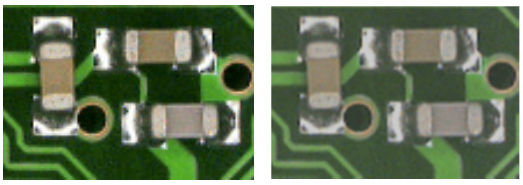
Hardware and Software Features

High grade Telecentric Lens
Parallel image over the whole sensor/lens Field of View— No parallax effect



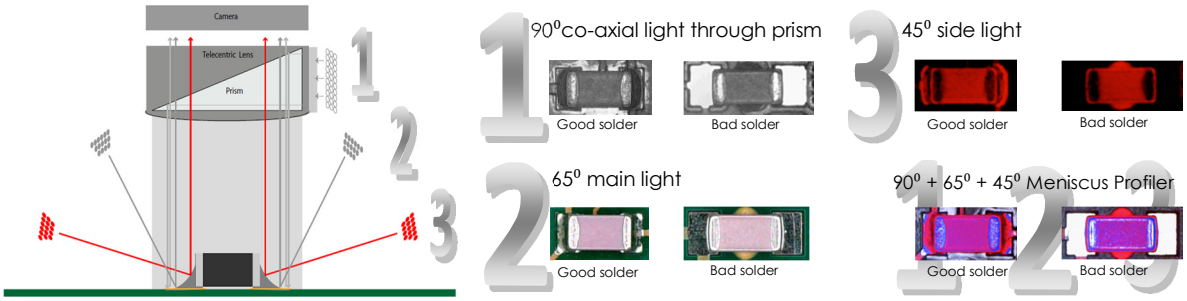
Telecentric Lens | Conventional Lens

Large pixel image capturing sensor
18.8µm² pixel size — less noise — smooth and detailed image— great dynamic range

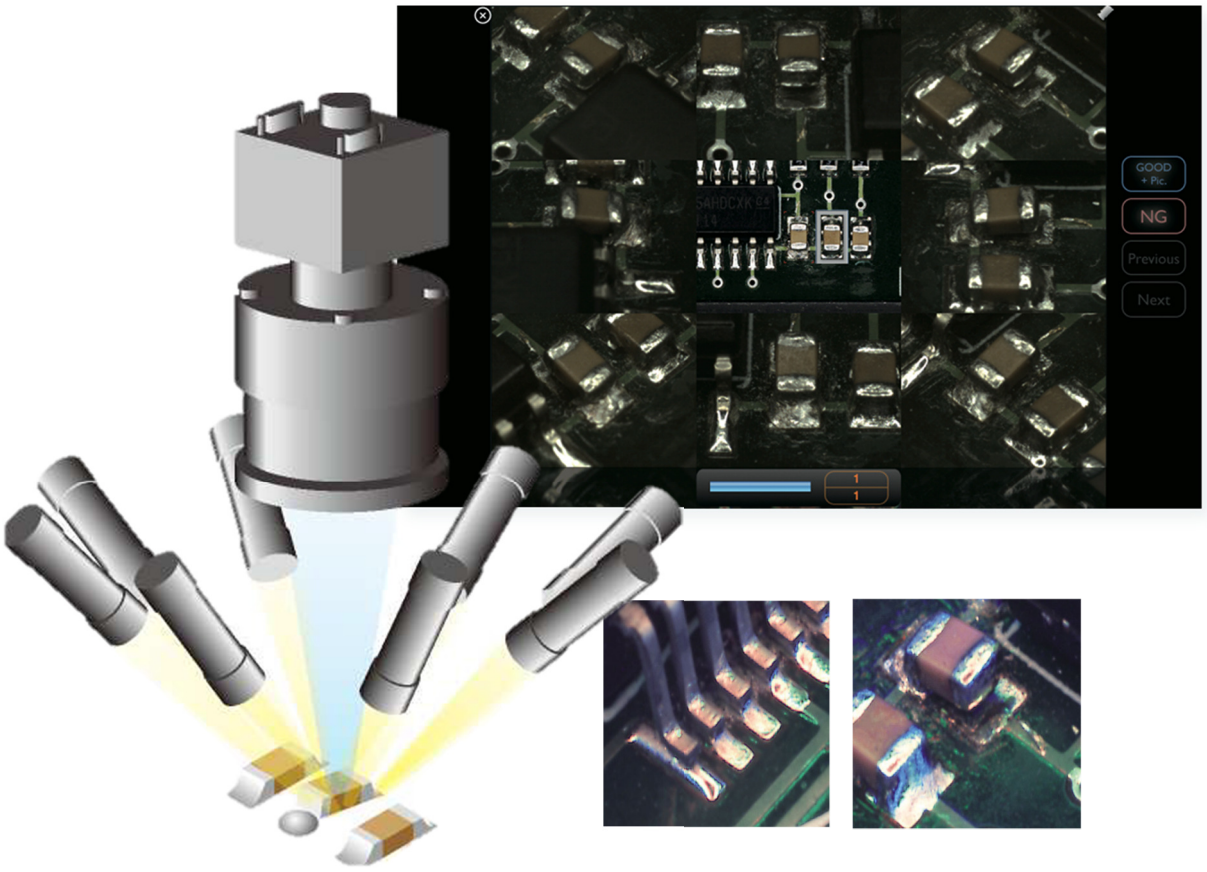


High dynamics sensor | Conventional sensor

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



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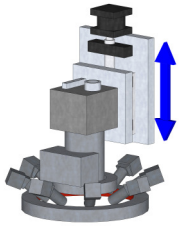
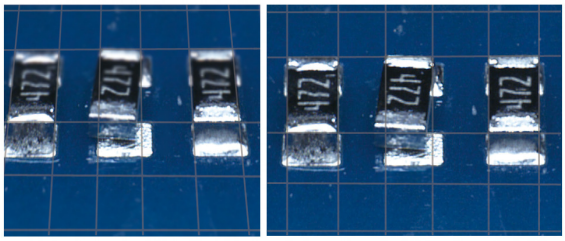
Hardware and Software Features — Continued



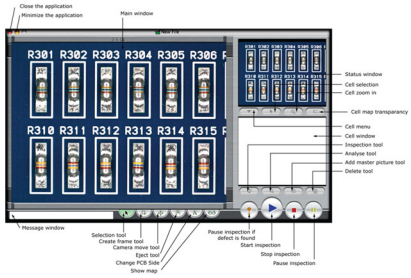
In Height Adjustable Optical Head (Only available for FDLz and FDAz models)
In Z-Axis moving Top Camera, Light and Side View cameras — Adaption to any PCB Thickness — PCB Warp Compensation — Inspection of PCB's with very tall components — Reliable text and/or polarity inspection on tall components — Inspection of "Sandwich" assemblies without need of jigs and multiple inspections

Shift & Tilt Side View lenses (FDA and FDAz models only)
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

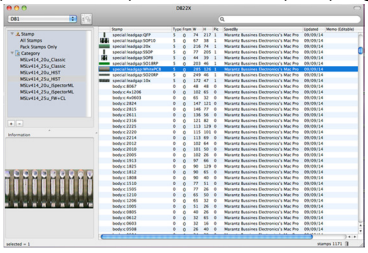


Without Shift&Tilt Shift&Tilt

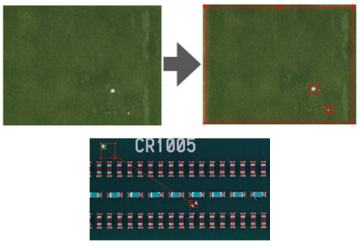
Clean User Interface
Intuitive user interface — Control everything from one screen — Easy step-by-step teaching, programming and debugging environment



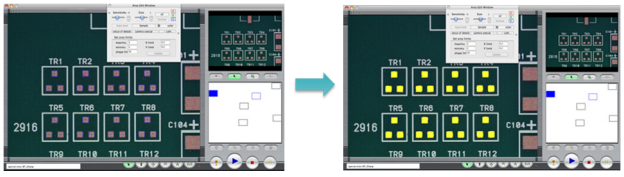
Short Programming Time
Use of components database — Library management tools — Offline debugging — Inspection parameters of components unique selectable per program , per part



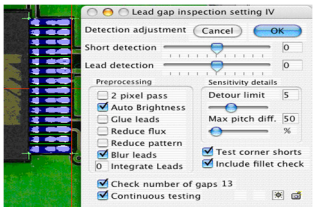
Extra Part checking
Inspect areas not covered by CAD data — Detect components and solder balls



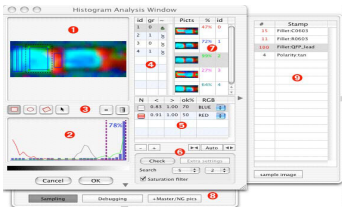
2D SPI, and CIP (Component In Paste) inspections built-in
Import of Gerber and CAD data — Check shape, offset, lack and smearing of solder paste



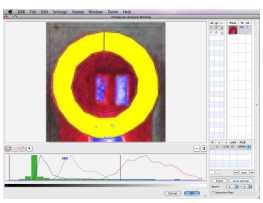
Automatic IC/QFP Parameter detection
Auto detection of pitch size, pin length, pin width, number of pins — program 1 pin and the others are automatically programmed

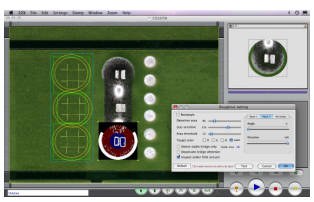


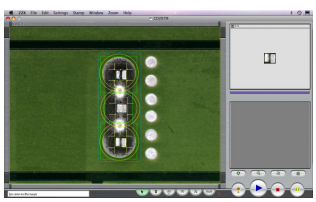
Combined Pattern Matching and Condition based algorithms
Condition based detection, great for solder related errors — Pattern Matching for all kinds of others



Special THT inspection algorithms
Detects all type of THT solder errors; pin availability, no solder, lack of solder, too much solder, bad shape solder, solder attached only to pin and circumferential wetting problems — Always inspect around pin also when pin is not in center of hole







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Inline

PowerSpector

FDAz 350L, 650L, 800L

In-Line Series Specifications	PowerSpector FDAz 350L	PowerSpector FDAz 650L	PowerSpector FDAz 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		
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 w/CameraLink		
Camera Field Of View/Resolution	36x20mm/18.75µm or 19.2x10.8mm/10µm		
Lens	Telecentric lens with built in prism for DOAL Lighting		
Lighting system	Omnidirectional Triple LED rings: Side, 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* w/CameraLink 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	1500ppm		
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 (Intel) with Mac OSX		
Control interface	USB / SMEMA (conveyer)		
Data interface	CameraLink		
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	180kg (397lbs)	240kg (529lbs)	290kg (639lbs)

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Inline

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FDL

350L, 650L, 800L

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