

# PowerSpector

FDAz FDLz FDA FDL



because inspection matters

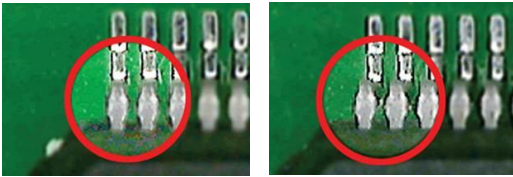
## In-Line and Desktop Automatic Optical Inspection systems

- √ Automatic Optical Inspection of PCB assemblies..... *test your PCB's optically and replace manual inspection*
- √ Inspects:..... *use inspection in all stages of the production process*
  - Components: SMT & THT (missing, type, polarity, offset, text, colours etc)
  - Solder Paste and CIP (Components in Paste; pre-reflow)
  - Soldering: Post Reflow, Post Wave, Selective, Manual
- √ 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-colour 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 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 Colour 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*

## Hardware and Software Features

### High grade Telecentric Lens

Parallel image over the whole sensor/lens Field of View— No parallax effect

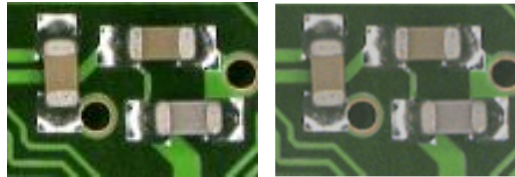


Telecentric Lens

Conventional Lens

### Large pixel image capturing sensor

18,8μ² pixel size — less noise — smooth and detailed image— great dynamic range

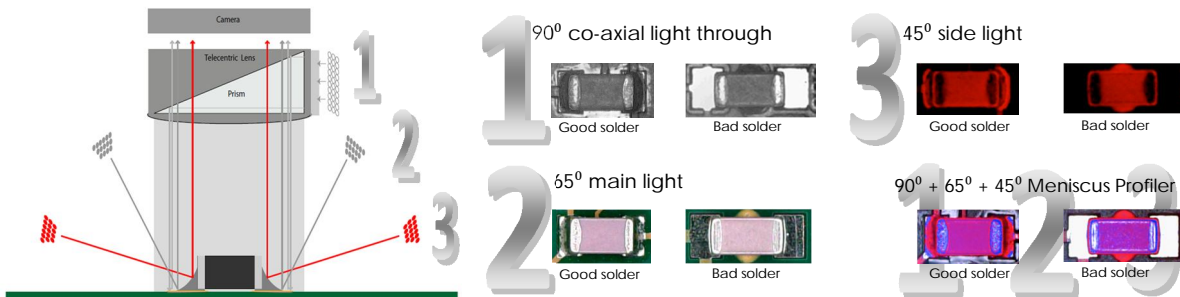


High dynamics sensor

Conventional sensor

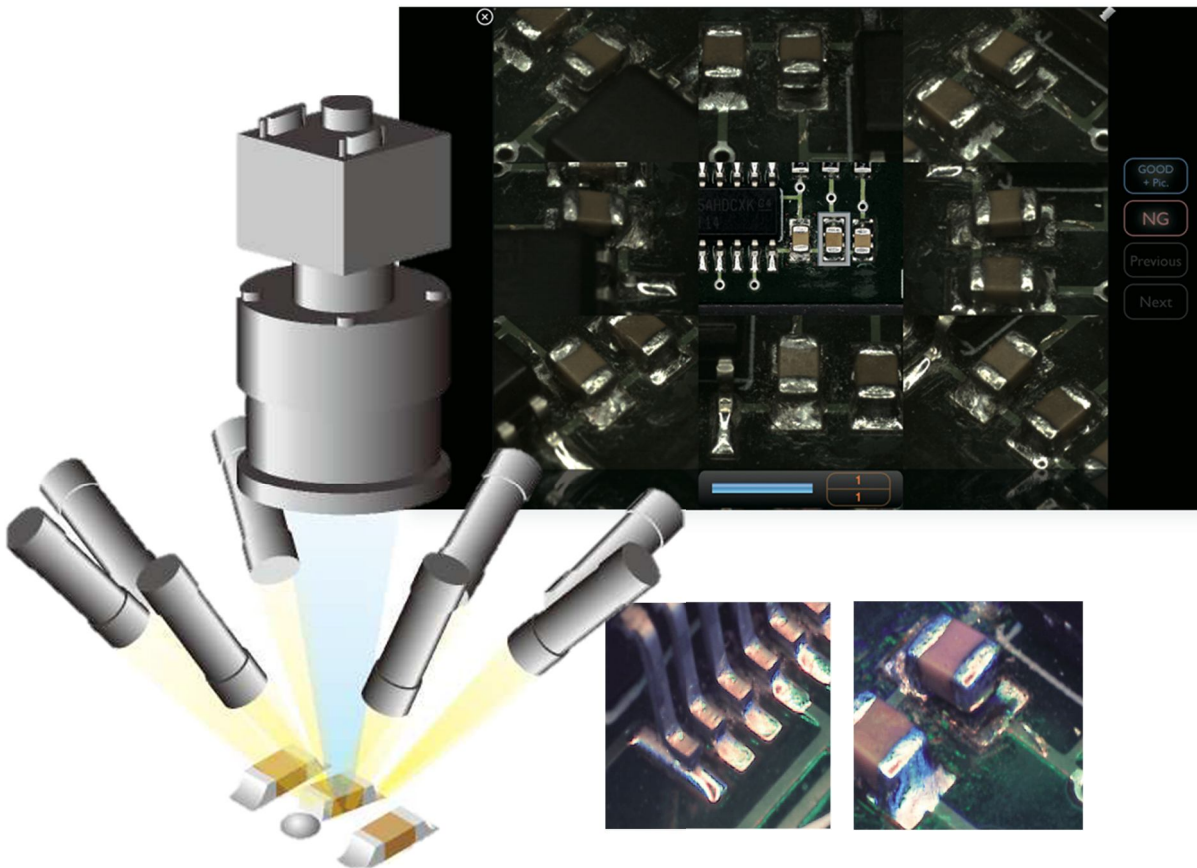
### Omnidirectional multi angle, multi color LED lighting

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

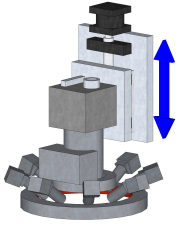


### 8x Angular Side Sensors (Only available for FDA and FDAz models)

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



## Hardware and Software Features — Continued

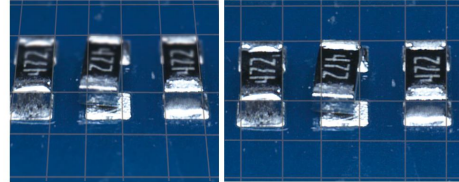


### In Height Adjustable Optical Head (Only available for FDLz and FDAz models)

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

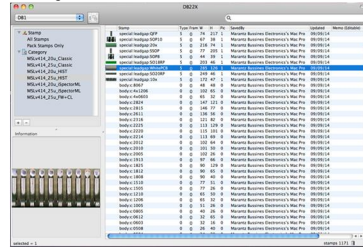
### Clean User Interface

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



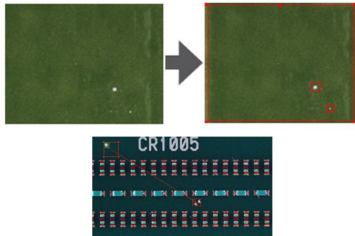
### Short Programming Time

Use of components database — Library management tools — Offline debugging — Inspection parameters of components unique selectable per program, per part name, per package or for all programs and all systems in the factory



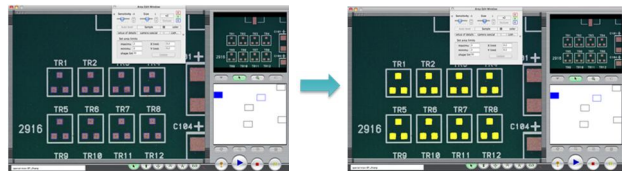
### Extra Part checking

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



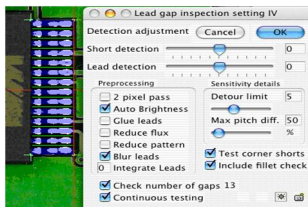
### 2D SPI, and CIP (Component In Paste) inspections built-in

Import of Gerber and CAD data — Check shape, offset, lack and smearing of solder paste



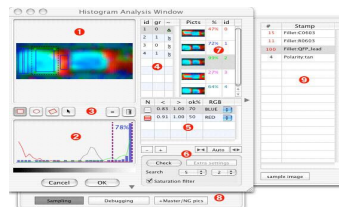
### Automatic IC/QFP Parameter detection

Auto detection of pitch size, pin length, pin width, number of pins — program 1 pin, others are automatically programmed



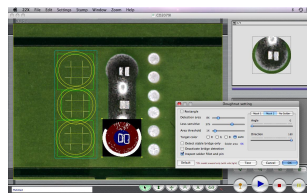
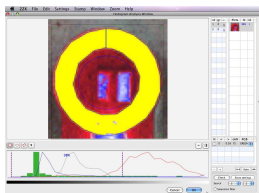
### Combined Pattern Matching and Condition based algorithms

Condition based to detect especially solder related errors — Pattern Matching for all kind of errors



### 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



# Desktop

# PowerSpector

## FDAz 350, 520, 650, 800

Desktop Series Specifications	PowerSpector FDAz 350	PowerSpector FDAz 520	PowerSpector FDAz 650	PowerSpector FDAz 800
Maximum PCB Size	350x250mm (13.8" x 9.8")	520x460mm (20.5" x 18.1")	650x550mm (25.6" x 21.6")	800x550mm (31.5"x21.6")
<b>Characteristics</b>				
Product type	Automatic Optical Inspector			
In-line/Off-line	Off-Line			
Camera movement	X Direction	X + Y Direction	X + Y Direction	X + Y Direction
PCB movement	Moving in Y	Stationary	Stationary	Stationary
PCB fixation	Direct Loading	Direct Loading	Manual Drawer Options: Motorised Drawer, Transverse loader	Manual Drawer Options: Motorised Drawer, Transverse loader
Parts inspection	Presence, Polarity, Offset, Correctness, Soldering			
Printing/paste inspection	Offset, Smearing, Bridges, Uniformity			
Distinction principle	Synthetic Imaging, Spectral Analysis, Greyscale limits			
Distinction parameters	Brightness, Hue, Saturation via Filters			
Camera type	Digital with CameraLink			
Camera Field Of View/Resolution	36x20mm/18.75µm or 19.2x10.8mm/10µ			
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)			
<b>Specifications</b>				
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 with CameraLink in 45/45 orientation			
Z-Axis movement range	60mm (2.4")			
Component clearance (bottom)	-70mm (-2.8")	-70mm (-2.8")	-70mm (-2.8")	-70mm (-2.8")
Maximum PCB Size	350x250mm (13.8" x 9.8")	520x460mm (20.5" x 18.1")	650x550mm (25.6" x 21.6")	800x550mm (31.5"x21.6")
Movement speed	720mm/s			
Inspection capacity typical	1500cps/min			
Mains	100-240 Vac / 150W			
<b>Interfacing</b>				
Control PC type	Apple MacPro Intel QuadCore with Mac OSX (not included)			
Control interface	USB			
Data interface	CameraLink			
<b>General</b>				
Operating temperature	15-30 degr C			
Operating humidity	15-80 % RH			
External size	W736 x D874 x H450 (29.0" x 34.4" x 7.7")	W1110 x D1040 x H600 (43.7" x 50" x 23.6")	W940 x D1015 x H500 (37.0" x 34.0" x 19.7")	W1157 x D1015 x H500 (45.55" x 34.0" x 19.7")
Weight	65kg (143lbs)	160kg (350lbs)	110kg (243lbs)	120kg (265lbs)

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# Desktop

# PowerSpector

## FDL

350, 520, 650, 800

Desktop Series Specifications	PowerSpector FDL 350	PowerSpector FDL 520	PowerSpector FDL 650	PowerSpector FDL 800
Maximum PCB Size	350x250mm (13.8" x 9.8")	520x460mm (20.5" x 18.1")	650x550mm (25.6" x 21.6")	800x550mm (31.5"x21.6")
<b>Characteristics</b>				
Product type	Automatic Optical Inspector			
In-line/Off-line	Off-Line			
Camera movement	X Direction	X + Y Direction	X + Y Direction	X + Y Direction
PCB movement	Moving in Y	Stationary	Stationary	Stationary
PCB fixation	Direct Loading	Direct Loading	Manual Drawer Options: Motorised Drawer, Transverse loader	Manual Drawer Options: Motorised Drawer, Transverse loader
Parts inspection	Presence, Polarity, Offset, Correctness, Soldering			
Printing/paste inspection	Offset, Smearing, Bridges, Uniformity			
Distinction principle	Synthetic Imaging, Spectral Analysis, Greyscale limits			
Distinction parameters	Brightness, Hue, Saturation via Filters			
Camera type	Digital with CameraLink			
Camera Field Of View/Resolution	36x20mm/18.75µm or 19.2x10.8mm/10µ			
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))			
<b>Specifications</b>				
Minimum inspection component size	01005" (0.4x0.2mm)(10µm resolution)			
Positioning accuracy	Pixel related Feedback Loop			
Component clearance (top)	+50mm (2.0")			
Component clearance (bottom)	-70mm (-2.8")	-70mm (-2.8")	-70mm (-2.8")	-70mm (-2.8")
Maximum PCB Size	350x250mm (13.8" x 9.8")	520x460mm (20.5" x 18.1")	650x550mm (25.6" x 21.6")	800x550mm (31.5"x21.6")
Movement speed	720mm/s			
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Control PC type	Apple MacPro Intel QuadCore with Mac OSX (not included)			
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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")
<b>Characteristics</b>			
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		
Distinction principle	Synthetic Imaging, Spectral Analysis, Greyscale limits		
Distinction parameters	Brightness, Hue, Saturation via Filters		
Camera type	Digital with CameraLink		
Camera Field Of View/Resolution	36x20mm/18.75µm or 19.2x10.8mm/10µ		
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))		
<b>Specifications</b>			
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 with CameraLink in 45/45 orientation		
Z-Axis movement range	30mm (1.2")		
Component clearance (bottom)	-35mm (-1.38") or -55mm (-21.7") 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	1500cps/min		
Mains	100-240 Vac / 330W		
<b>Conveyer</b>			
Conveyer belt speed	10-500mm/s (0.4-19.7"/s)		
Conveyer configuration	Left>Right, Front rail fixed, Height 830-950mm		
PCB Clamping	Ruler Blade, Top & Edge Clamping, Sensor Stopper		
Minimum board size	50x50mm (0.2" x 0.2")		
Board thickness	0.6-2mm (option 0.6-4mm) (24mils - 79mils)		
PCB warpage compensation	Automatic PCB support Lift with magnetic pins (option)		
<b>Interfacing</b>			
Control PC type	Apple MacPro Intel with Mac OSX (not included)		
Control interface	USB / SMEMA (conveyer)		
Data interface	CameraLink		
<b>General</b>			
Operating temperature	15-30 degr C		
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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because inspection matters

# Inline

# PowerSpector

## FDL

### 350L, 650L, 800L

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