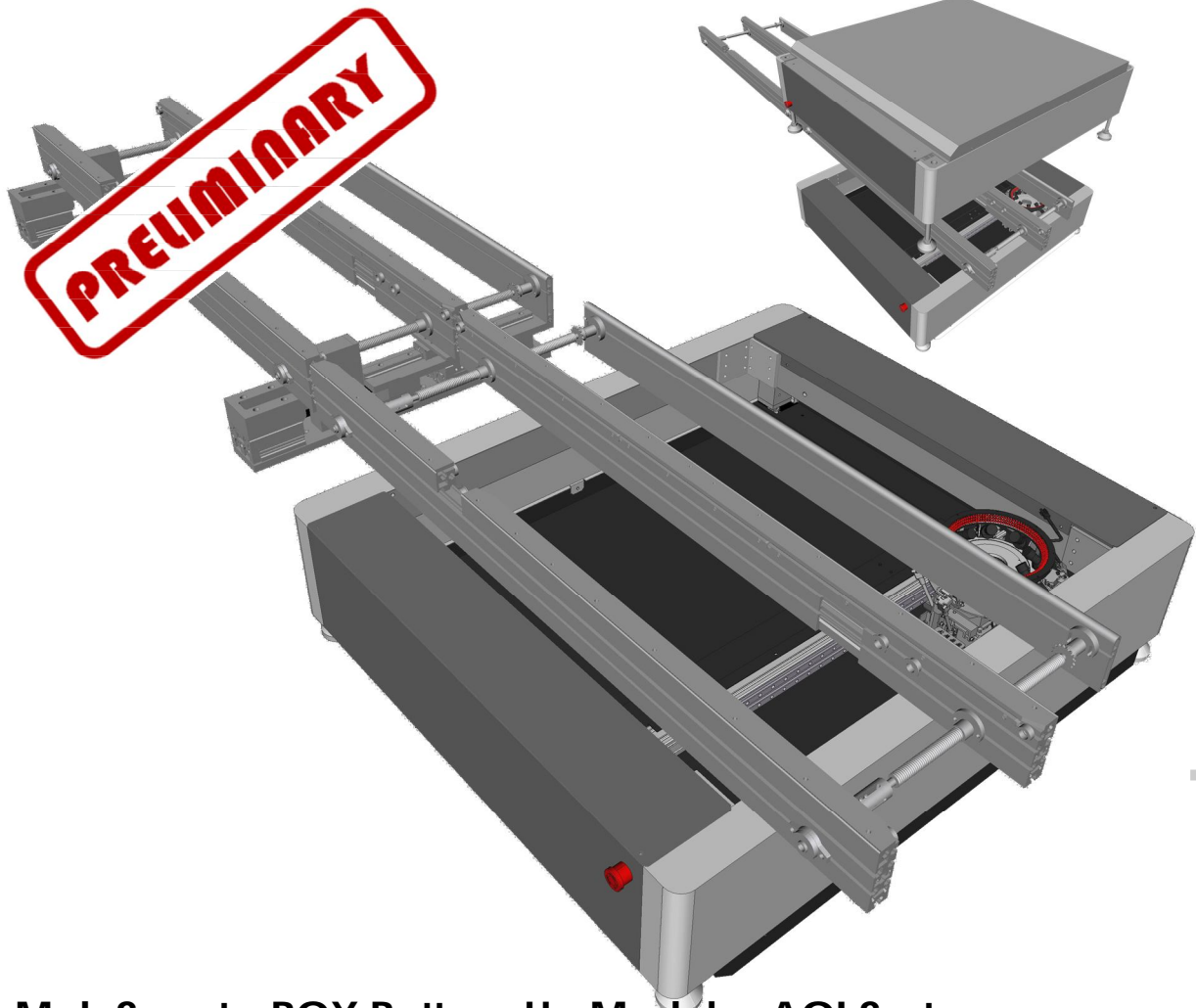


SpectorBOX

FDAz FDLz



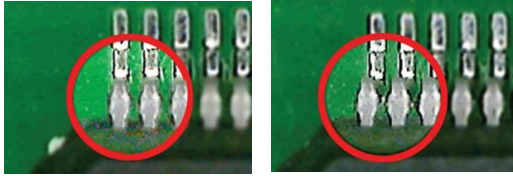
Mek SpectorBOX Bottom Up Modular AOI System

√ Optimized for Wave and Selective Soldering	AOI solution for Wave & Selective soldering of THT & SMT components
√ Bottom-up inspection	Inspects PCB's from below a conveyer belt or chain
√ Solder Frame compatible	Designed to inspect PCB's inside Solder Frames directly from the conveyer system
√ Ultra slim design inspects down to 280mm above factory floor	Save production space! Fits below existing Return and/or Feed conveyers
√ Modular inspection possibilities: Bottom, Top or Top + Bottom	Possibility to combine two SpectorBOX systems for simultaneous top+bottom AOI
√ Up to 18 cameras	Choose between 1 or 9 camera's per inspection side (up to 18 cameras in Top+Bottom configuration)
√ In Z-Axis moving optical head(s)	Focus and position optimally for varying PCB distances or warp-age (FDAz head)
√ General purpose I/O	Configurable I/O to be controlled by existing conveyer systems
√ Post defect classification and reporting scenarios	Inspect your PCB's automatically now, classify/report defects later whenever convenient
√ Cost effective solution	Save costs by fitting practically at any conveyor spot

Hardware and Software Features

High grade Telecentric Lens

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

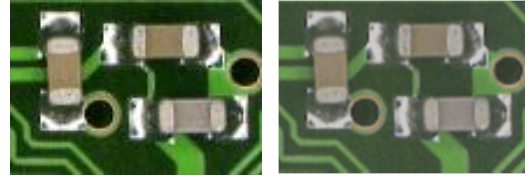


Telecentric Lens

Conventional Lens

Large pixel image capturing sensor

18,8 μ m² pixel size — less noise — smooth and detailed image— great dynamic range



High dynamics sensor

Conventional sensor

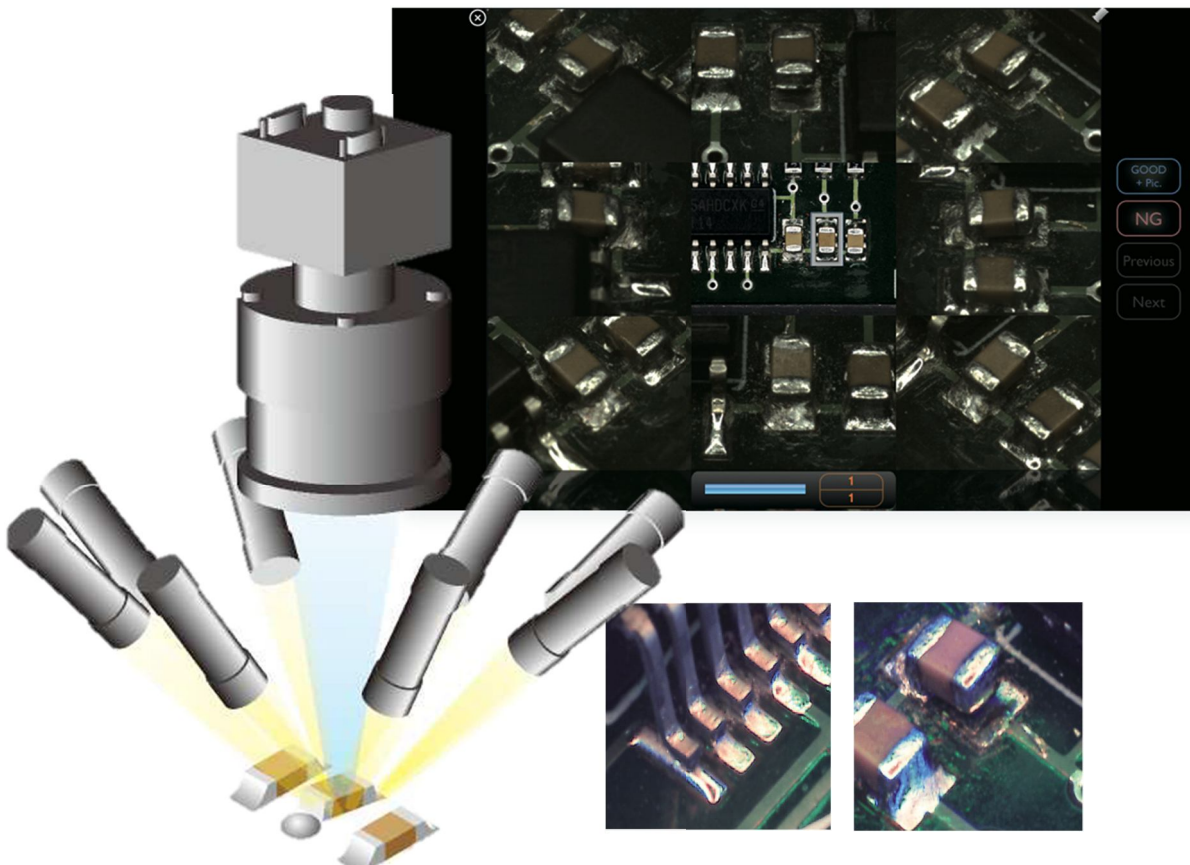
Omnidirectional multi angle, multi color LED lighting

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



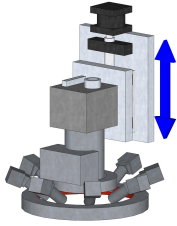
8x Angular Side Sensors (Only available for FDA and FDAz models)

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 (10 μ m/pixel) — Full Color — Auto highlight — Large sensor pixels — 9 view images also in backup database



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Hardware and Software Features — Continued

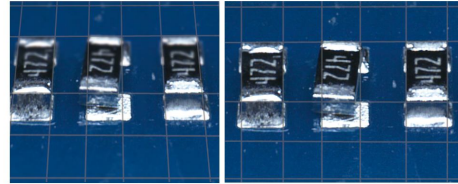


In Height Adjustable Optical Head (Only available for FDLz and FDAz models)

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

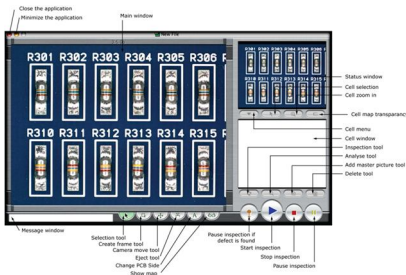


Without Shift&Tilt

Shift&Tilt

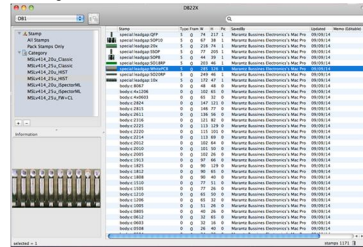
Clean User Interface

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



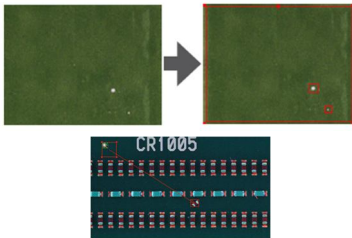
Short Programming Time

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



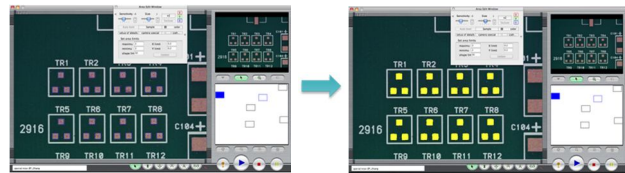
Extra Part checking

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



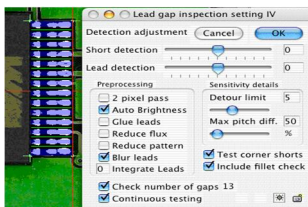
2D SPI, and CIP (Component In Paste) inspections built-in

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



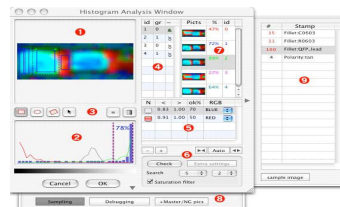
Automatic IC/QFP Parameter detection

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



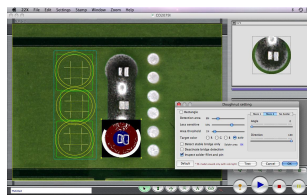
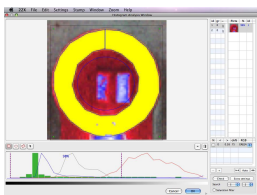
Combined Pattern Matching and Condition based algorithms

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



FDAz

SpectorBOX FDAz	
Maximum PCB Size	550x520mm (21.7" x 20.5")
Characteristics	
Product type	Automatic Optical Inspector
Camera movement	X+Y Direction
PCB movement	Stationary
PCB fixation	Direct from conveyor
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 Light (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 with CameraLink in 45/45 orientation
Z-Axis movement range	60mm (2.4")
Component clearance (bottom)	-70mm (-2.8")
Maximum PCB Size	550x520mm (21.7" x 20.5")
Movement speed	720mm/s
Inspection capacity typical	1500cps/min
Mains	100-240 Vac / 150W
Interfacing	
Control PC type	Apple MacMini (or higher) with Mac OSX and Thunderbolt interface (not included)
Control interface	USB
Data interface	CameraLink
General	
Operating temperature	15-30 degr C
Operating humidity	15-80 % RH
External size	W900 x D1056 x H251 (35.5" x 41.6" x 9.9")
Weight	100kg (220lbs)

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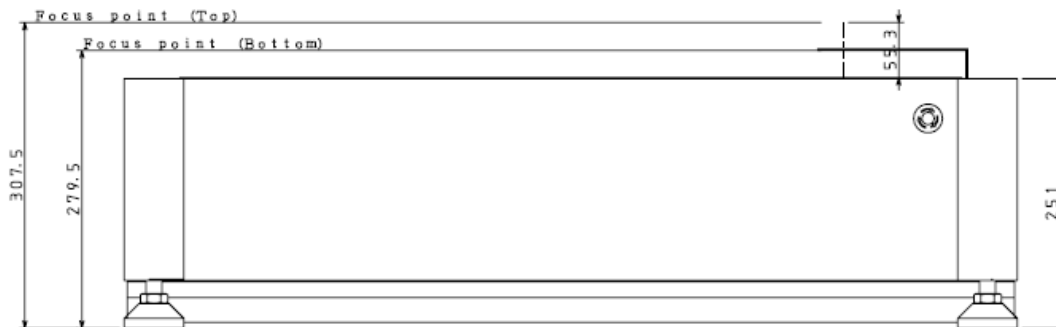
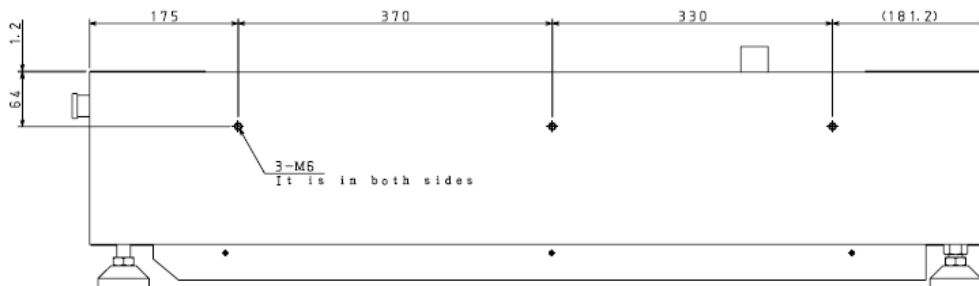
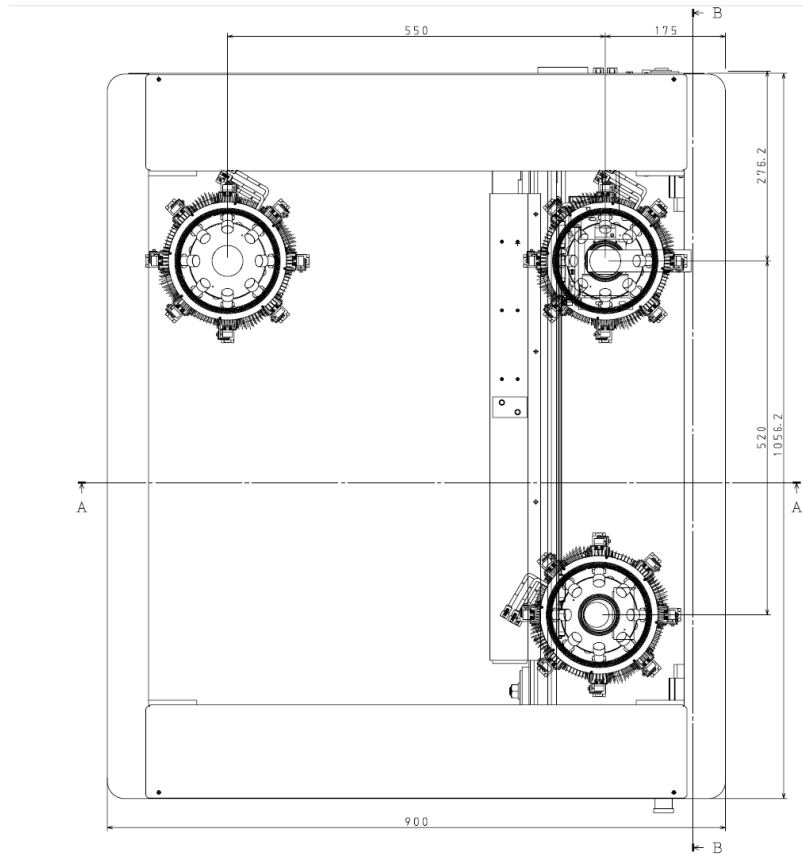
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FDLz

SpectorBOX FDLz	
Maximum PCB Size	550x520mm (21.7" x 20.5")
Characteristics	
Product type	Automatic Optical Inspector
Camera movement	X+Y Direction
PCB movement	Stationary
PCB fixation	Direct from conveyor
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))
Specifications	
Minimum inspection component size	01005" (0.4x0.2mm)(10µm resolution)
Positioning accuracy	Pixel related Feedback Loop
Component clearance (top)	+40mm (1.57")
Side Cameras	No side cameras
Z-Axis movement range	60mm (2.4")
Component clearance (bottom)	-70mm (-2.8")
Maximum PCB Size	550x520mm (21.7" x 20.5")
Movement speed	720mm/s
Inspection capacity typical	1500cps/min
Mains	100-240 Vac / 150W
Interfacing	
Control PC type	Apple MacMini (or higher) with Mac OSX and Thunderbolt interface (not included)
Control interface	USB
Data interface	CameraLink
General	
Operating temperature	15-30 degr C
Operating humidity	15-80 % RH
External size	W900 x D1056 x H251 (35.5" x 41.6" x 9.9")
Weight	100kg (220lbs)

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