

# PowerSpector

BTL / BL

GTAz  
GTz  
GDAz



## MEK BTL/BL Dual side In-line AOI systems

- √ Dual side or bottom up only inline full featured inspection
- √ High Speed 90Fps thunderbolt main camera and USB 3 Vision Cameras side cameras
- √ Synchronized top and bottom inspection
- √ 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
  - THT solder inspection
- √ 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

*Featuring industry leading GTAz head and optional high clearance GDAz head*

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

*Top and bottom heads are linked to allow parallel inspection cycles*

*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*

because inspection matters

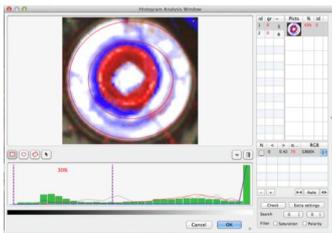
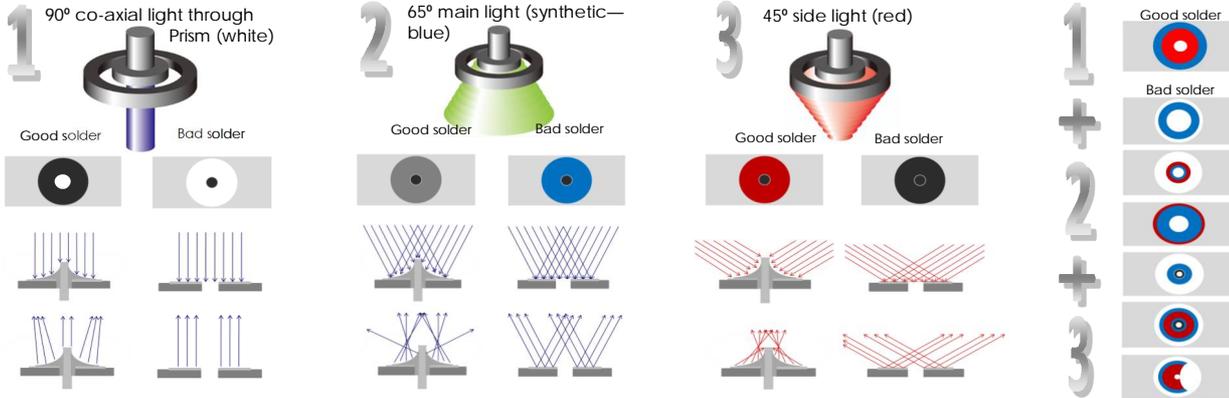
## Hardware and Software Features

### Sixteen possible head combinations

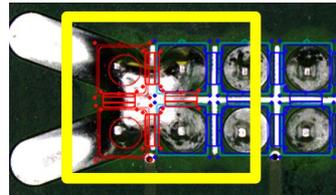
18 Cameras, 9 Top and 9 Bottom Cameras to 2 Camera Single top and Bottom Cameras. The D22X BTL is the ultimate in platform flexibility

### THT Solder Inspection

Scalable inspection points for the wide variety of Solder land shapes and pin sizes, Bridge and solder ball detection algorithms.

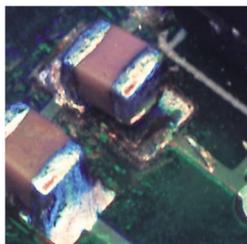
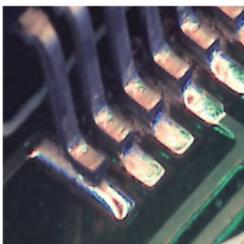
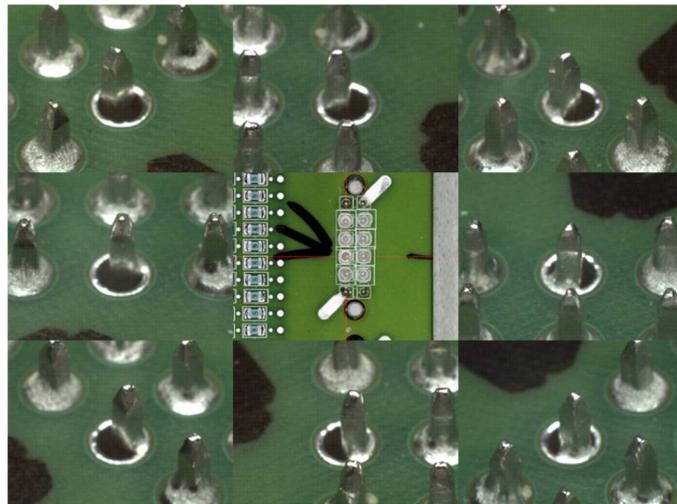
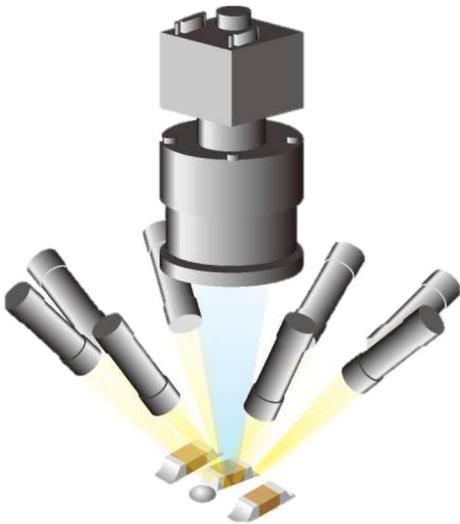
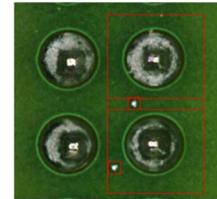


**Histogram Analysis algorithms**  
Condition based decision. Tolerances can be set tightly  
Close to zero false alarms



**Powerful algorithms for solder bridge detection**  
Simple and scalable

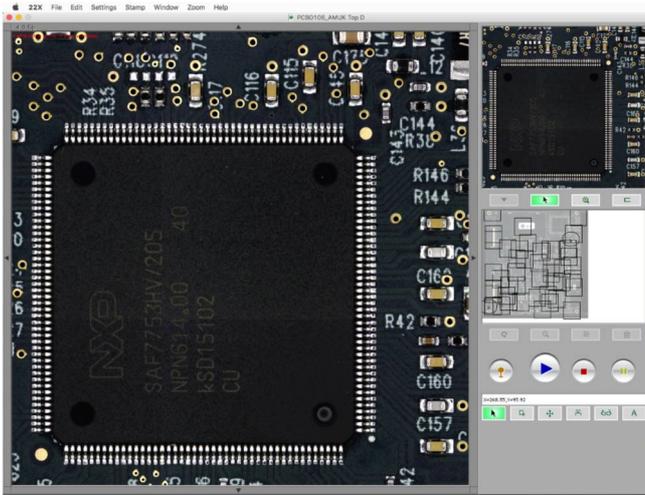
**Dedicated algorithms for solder balls detection**



### 8x Angular Side Sensors (Only available for GTaz and GDAz 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

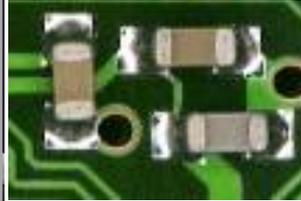


### Double size FOV (Field of view)

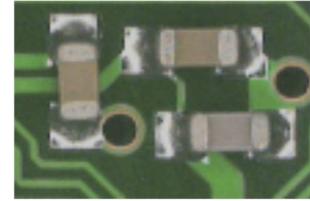
Up to 2x faster inspection over previous generations of machines. Square FOV combined with circular lighting allows for program rotation without time consuming debugging.

### Large pixel image capturing sensor

18.8µm<sup>2</sup> pixel size — less noise — smooth and detailed image— great dynamic range



High dynamics sensor



Conventional sensor

### Height Adjustable Optical Head

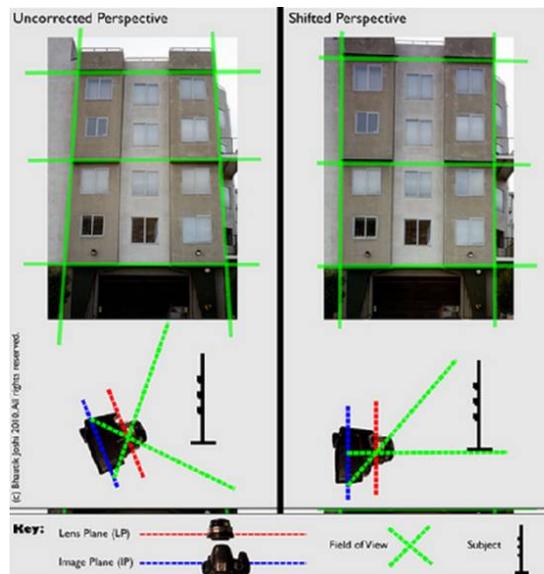
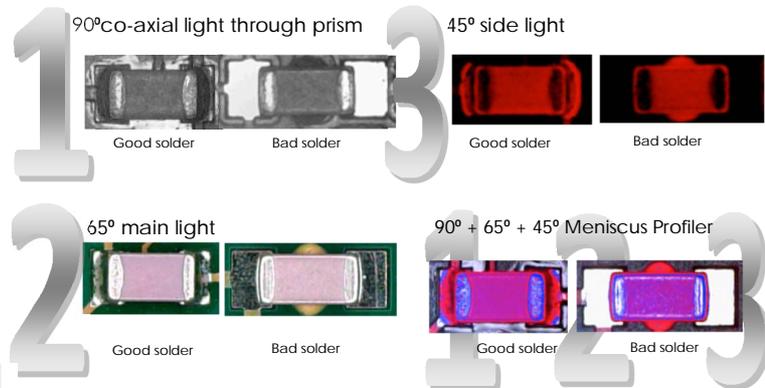
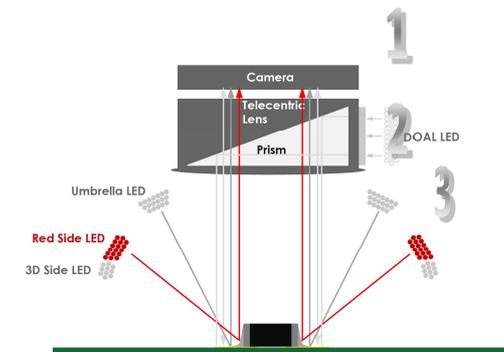
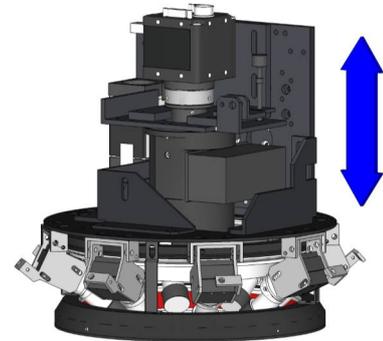
Z-Axis moving Top Camera, Light and Side View cameras — Adaption to any PCB Thickness — PCB Warp Compensation — Inspection of PCB's with very tall components — Reliable text and/or polarity inspection on tall components Inspection of "Sandwich" assemblies without need of jigs and multiple inspections

### 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

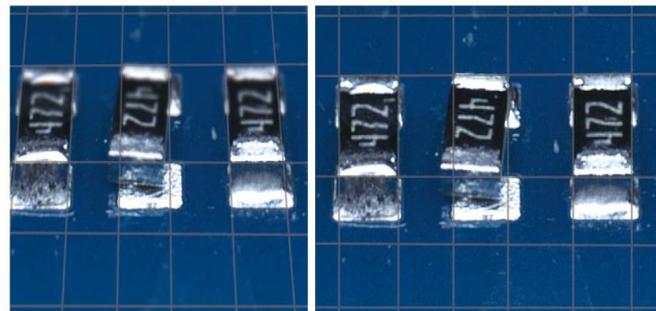
### SMT Solder Inspection

Full solder profiling and histogram algorithm analysis. Simple prebuilt solder inspection libraries



### 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



Without Shift&Tilt

Shift&Tilt

because inspection matters

Bottom & Top Simultaneous inspection

GTAz + GDAz

In-Line Series Specifications	PowerSpector GTAz + GDAz 350BTL	PowerSpector GTAz + GDAz 550BTL
Maximum PCB Size	350x250mm (13.8"x9.8")	550x550mm (21.6"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, 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))	
<b>Specifications</b>		
Smallest inspection component size	01005" (0.4x0.2mm)(10µm resolution)	
Positioning accuracy	Pixel related Feedback Loop	
Component clearance (top)	<b>GTAz 30mm (1.2") GDAz 60 mm (2.4")</b>	
Side Cameras	<b>8x Digital color USB 3.0 Vision in 45/45 orientation</b>	
Z-Axis movement range	30mm (1.2")	
Component clearance (bottom)	30mm (1.2") with GTAz bottom camera or 60mm (2.4") GDAz bottom camera	
Maximum PCB Size	350x250mm (13.8" x 9.8")	550x550mm (21.6" x 21.6")
Movement speed	720mm/s	
Inspection capacity typical	2750ppm	
Electrical requirements	100-240 VAC / 330W	
<b>Conveyor</b>		
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	0.6-4mm (24mils - 79mils)	
<b>Interfacing</b>		
Control PC type	Apple Mac Mini or iMac x2	
Control interface	SMEMA (conveyor)	
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)	
<b>General</b>		
Operating temperature	15-30 deg. C(60-90 deg. F)	
Operating humidity	15-80 % RH	
External size	W878 x D916 x H1313 (34.6" x 36.1" x 51.7")	W1078 x D1320 x H1317 (42.4" x 52" x 51.8")
Weight	240kg (397lbs)	400kg (529lbs)

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# Inline BTL



## Bottom & Top Simultaneous inspection

GTz + GTz

In-Line Series Specifications	PowerSpector GTz + GTz 350BTL	PowerSpector GTz + GTz 550BTL
Maximum PCB Size	350x250mm (13.8"x9.8")	550x550mm (21.6"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, 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))	
<b>Specifications</b>		
Smallest inspection component size	01005" (0.4x0.2mm)(10µm resolution)	
Positioning accuracy	Pixel related Feedback Loop	
Component clearance (top)	<b>GTz 40mm (1.5") extendable to 60mm</b>	
Side Cameras	<b>NA</b>	
Z-Axis movement range	30mm (1.2")	
Component clearance (bottom)	30mm (1.2")	
Maximum PCB Size	350x250mm (13.8" x 9.8")	550x550mm (21.6" x 21.6")
Movement speed	720mm/s	
Inspection capacity typical	2750ppm	
Electrical requirements	100-240 VAC / 330W	
<b>Conveyor</b>		
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	0.6-4mm (24mils - 79mils)	
<b>Interfacing</b>		
Control PC type	Apple Mac Mini or iMac x2	
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)	
<b>General</b>		
Operating temperature	15-30 deg. C(60-90 deg. F)	
Operating humidity	15-80 % RH	
External size	W878 x D916 x H1313 (34.6" x 36.1" x 51.7")	W1078 x D1320 x H1317 (42.4" x 52" x 51.8")
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because inspection matters