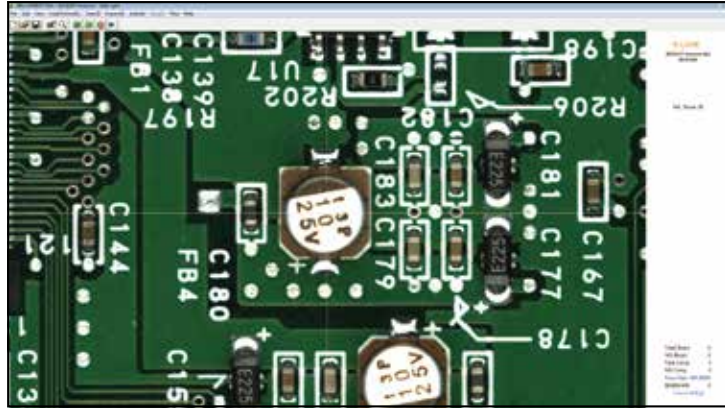


Technology 01 | Evolutionary Software

Including a growing number of rich inspection algorithms



Saki continually updates its software, applying the latest image processing technology and image analysis techniques, to bring significant performance and speed improvements to each new version. Newer software versions are backward compatible with older hardware, enabling the user to upgrade older systems to be compatible with new software versions. This provides users the ability to keep their Saki 2D AOI systems up-to-date with new inspection algorithms and libraries, and provide reduced programming time and faster production ramp-up, while keeping support issues to a minimum.



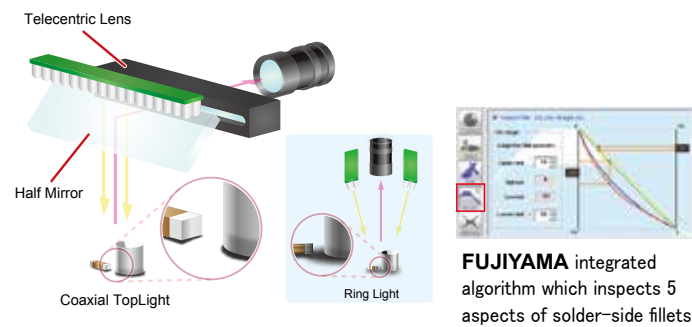
Single-Lane Mode



Dual-Lane Mode

Technology 02 | Coaxial TopLight

Applying Saki's Unique Coaxial TopLight Illumination

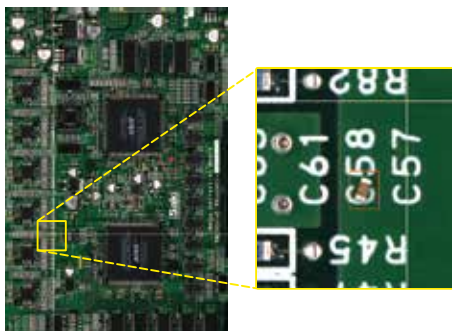


FUJIYAMA integrated algorithm which inspects 5 aspects of solder-side fillets

Saki's unique Coaxial TopLight illumination projects light perpendicular to the surface, eliminating shadowing from other objects on the surface. Coaxial TopLight is the best lighting for solder fillet inspection, due to the difference in reflection when a fillet is formed, and when it is not.

Technology 03 | Whole Area Inspection

ECD - extra components, solder balls and foreign objects detection



Take advantage of Saki's full PCB scanning to inspect for stray components, solder balls, and/or foreign materials across the entire surface. Eliminating these defects improves the quality of production while reducing the PPM failure level.



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Global Network
<https://www.sakicorp.com/en/>

System Descriptions and Specifications

2D AOI Lineup

Unique, Innovative and Accurate Inspection Technology

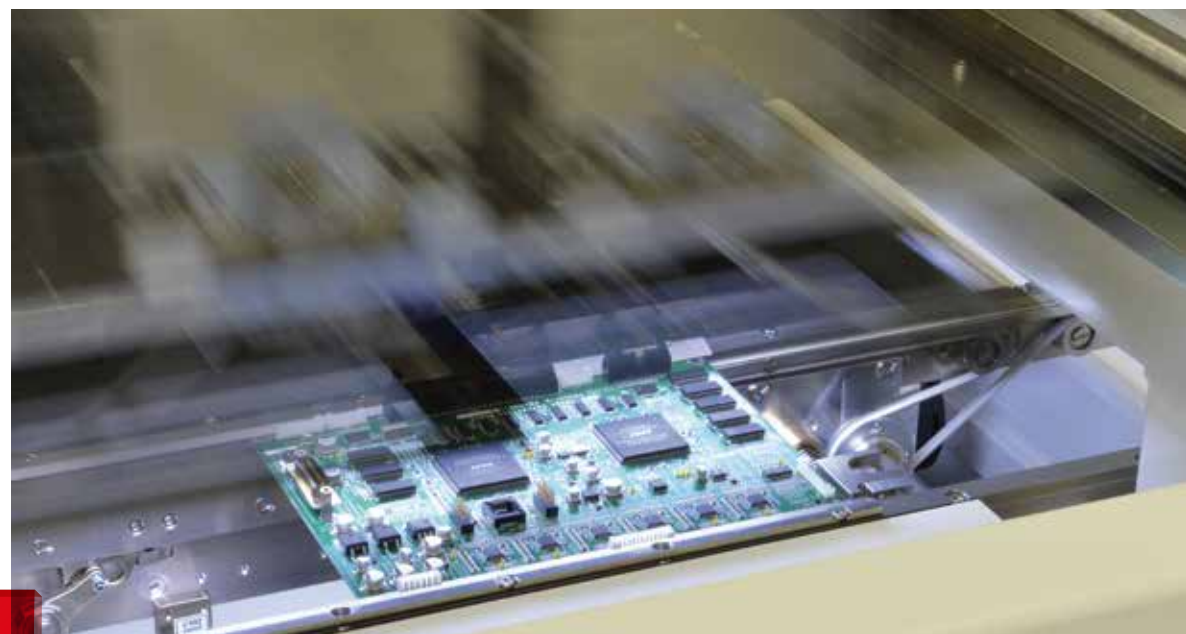


Model Lineup

Line Scan Technology

Our Line Scan Technology is Changing the Game...

Saki's 2D AOI systems employ its proprietary, ingenious line scan technology and coaxial overhead lighting, combined with a revolutionary imaging system and simple transport mechanism, providing the best choice for manufacturers looking for highly accurate, highly reliable, high-speed inspection.



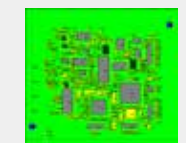
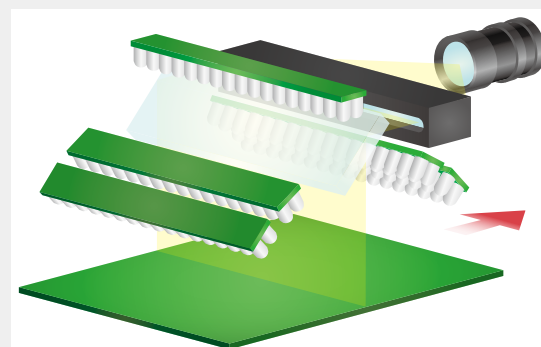
Fast, Accurate, Reliable

Fast - To meet the needs of ultra high-speed production, Saki introduces a new camera and lighting system that enable full image capture of an M-size board in 5 seconds(*1), and an L-size board in 5 seconds(*2). Ultra high-speed dual-lane inspection is also available, doubling throughput.

(*1) Using BF-Tristar II (10 μm resolution). Excluding board transfer time.
(*2) Using BF-Frontier II (18 μm resolution). Excluding board transfer time.

RELIABLE - All Saki 2D AOI systems - both single-lane and dual-lane models - are built with the same robust and simple transport mechanism, and are housed in a compact footprint, thereby providing years of reliable and productive operation.

ACCURATE - Saki's new vibration-free line scan mechanism is unaffected by mechanical noise produced by adjacent production equipment, with very low false failure rates and accurate inspection data.



Line Scan Method: Entire image capture in one rapid motion
FOV Method: Captures one camera field-of-view at a time.

"What is Line Scan Technology?"

Saki 2D AOI systems use a unique line-array CCD camera to capture the entire PCB image for each inspection. The speed of image capture is unaffected by the number of components on the PCB, as is the case with conventional FOV-type AOI systems. Saki's Line Scan Technology is the backbone of our 2D AOI systems, producing accurate and reliable inspection data at high speeds.

● 2D AOI



Model Name	Inline, Double-sided 2D Automated Optical Inspection Systems	Inline 2D Automated Optical Inspection Systems	Benchtop 2D Automated Optical Inspection Systems	
	Inline AOI using Line Scan Technology to inspect both PCB sides in one pass. BF-Tristar II	L-Size PCB Global Model for High-speed Inspection of PCBs L-size to S-size. BF-Frontier II	Accurate, High-speed Performance in a Smaller Desktop Model BF-Comet18	Accurate, High-speed Performance in a Benchtop Model for L-size PCBs. BF-Sirius
Resolution	10 μm	18 μm	18 μm	
Board Size	50 x 60 to 250 x 330mm, 2 x 2.4 to 10 x 13 in.	50 x 60 to 460 x 500mm, 2 x 2.4 to 18 x 20 in.	50 x 50 to 250 x 330mm, 2 x 2 to 10 x 13 in.	50 x 50 to 460 x 500mm, 2 x 2 to 18 x 20 in.
Board Thickness	0.6 to 3.2mm, 24 to 126 mils		0.6 to 2.5mm, 24 to 100 mils	
Board Warpage	+/- 1mm, 40 mils	+/-2mm, 80 mils	+/-2mm, 80 mils	
PCB Clearance	Top: 30mm, 1.18 in. (*4) Bottom: 30mm, 1.18 in. (*4)	Top: 40mm, 1.57 in. Bottom: 40mm, 1.57 in.	Top: 40mm, 1.57 in. Bottom: 60mm, 2.36 in.	
Rotated Component Support	Available from 0 to 359° (1° resolution)		Available from 0 to 359° (1° resolution)	
Inspection Categories	Presence/Absence, Misalignment, Tombstone, Inverted, Polarity, Bridge, Foreign material. Absence of solder, Insufficient solder, Lifted lead, Lifted Chip, and Fillet defect (*3)		Presence/Absence, Misalignment, Tombstone, Inverted, Polarity, Bridge, Foreign material. Absence of solder, Insufficient solder, Lifted lead, Lifted Chip, and Fillet defect (*3)	
Tact Time (based on PCB Size)	For 250 x 330mm size board: (*1) Approx. 16 sec.	For 460 x 500mm size board: (*1) Approx. 13 sec.	For 250 x 330mm size board: (*1) Approx. 11.5 sec.	For 460 x 500mm size board: (*1) Approx. 14 sec.
Scanning Time (based on PCB Size)	For 250 x 330mm size board: Approx. 5.5 sec.	For 460 x 500mm size board: Approx. 5 sec.	For 250 x 330mm size board: Approx. 4 sec.	For 460 x 500mm size board: Approx. 5.5 sec.
Camera	CCD Line Sensor Camera		CCD Line Sensor Camera	
Lighting	LED Lighting		LED Lighting	
Conveyor System	Flat Belt Conveyor		—	
Conveyor Height	900 +/-20mm, 36 +/-0.8 in.		—	
Conveyor Width Adjustment	Automatic	Manual (Automatic Width Adjustment is Optional)	—	
Operating System	Windows 10 IoT Enterprise 2015 LTSB 64 bit English Version		Windows 10 IoT Enterprise 2015 LTSB 64 bit English Version	
Optional System	BF-Editor	✓	✓	
	BF-RP1	✓	✓	
	BF-Monitor	✓	—	
Options	2D Barcode Reading	✓	✓	
	Journal Printer	✓	✓	
	OK/NG Signal I/O	✓	✓	
	Conformal Coating Inspection	✓	✓	
Electrical Requirements	Single-phase ~100-120/200-240V +/-10%, 50/60Hz		Single-phase ~ 100 - 120/200 - 240V +/- 10% , 50/60Hz	
Power Consumption	800VA	750VA	400VA	700VA
Air Requirement	0.5MPa, 5L/min (ANR)		—	
Operating Environment	15 (59F) to 30 (86F)°C / 15 to 80% RH (No Condensation)		15 (59F) to 30 (86F)°C / 15 to 80% RH (No Condensation)	
Noise Level	59.7 dB	58.3 dB	56.5 dB	60.5 dB
Dimensions	850 x 1295 x 1130mm, 33.5 x 51 x 45.5 in.	850 x 1340 x 1230mm, 33.5 x 52.8 x 48.4 in.	580 x 850 x 452mm, 22.8 x 33.5 x 17.8 in. (*2)	800 x 1280 x 600mm, 31.5 x 50.4 x 23.6 in. (*2)
Weight	Approx. 450 kg, 992.1 lbs	Approx. 450 kg, 992.1 lbs	(Un-crated) Approx. 80 kg, 176.4 lbs	(Un-crated) Approx. 175 kg, 385.8 lbs

(*1) Including scanning time.

(*2) PC, Monitor, Keyboard and Mouse sold separately.

(*3) Each defect name can be arranged.

(*4) When a PCB's thickness and warp are 1 mm, the top clearance is 28 mm and the bottom clearance is 30 mm from the PCB surface.

● System Option

BF-Family

Saki's BF-Family includes optional software programs that help you make the most of your Saki 2D AOI Investment. All BF-Family Software programs can be connected and linked to each other.

[BF-Editor]

Off-line Programming and Debugging - Create, edit and debug Inspection Programs on your PC.

[BF-RP1]

Review and Repair Defects - Install at your Repair or Rework Station. Visually displays defects and NG Images alongside Good Images to make repair easier.

[BF-Monitor]

Provides Control for Multiple AOI Systems at One Location - Use this to manage your factory's inspection process remotely.