KOH YOUNG TECHNOLOGY
INTELLIGENT INSPECTION

True 3D Smart Factory Solutions,
Powered by AI

ZENITH ALPHA

The Best Value 3D Automated Optical Inspection Solution

The Zenith Alpha is a True 3D AOI Solution powered by artificial intelligence and machine learning, combining the best mechatronics and algorithm technologies to deliver outstanding performance without sacrificing accuracy.

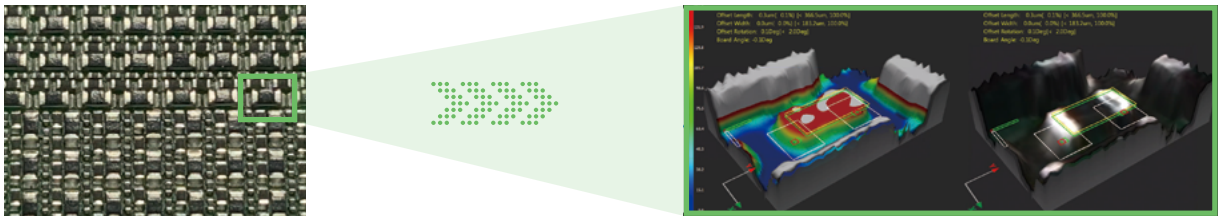
- Enhanced 3D Measurement Using Proprietary AI Technology
- High Accuracy and Speed for Demanding Production Line
- Advanced Tall Component Inspection
- Whole-board Foreign Material Inspection (WFMI)
- KSMART Solutions: True 3D Measurement-based Process Control System

ZENITH ALPHA

The **Best Value 3D** Automated Optical Inspection Solution

Enhanced 3D Measurement Using Proprietary AI Technology

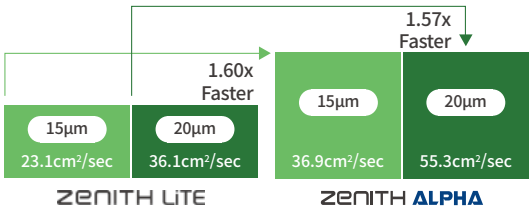
- The Smart & Dynamic True 3D measurement inspection technology on the Zenith Alpha incorporates AI to deliver the accuracy needed for ultra-fine pitch and solder joint interreflection challenges.



Ultra-Fine Pitch (Narrow Gap) Inspection

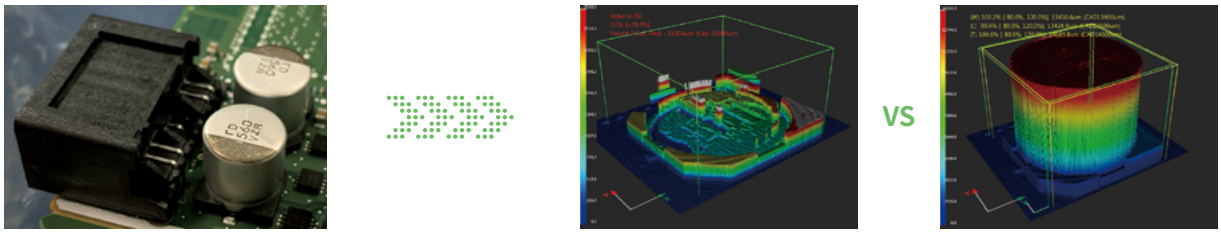
High Accuracy and Speed for Demanding Production Line

- Without sacrificing accuracy and speed, the Zenith Alpha combines mechatronics technology with cutting-edge measurement capabilities to yield high throughput suitable for demanding production lines.



Advanced Tall Component Inspection

- Tall components on a board has traditionally been a challenge for AOIs. Yet the Zenith Alpha easily handles tall components up to 25mm through Koh Young's combined multi-projection Moiré interferometry system and incomparable AI technologies. The Zenith Alpha overcomes component shadow challenges.



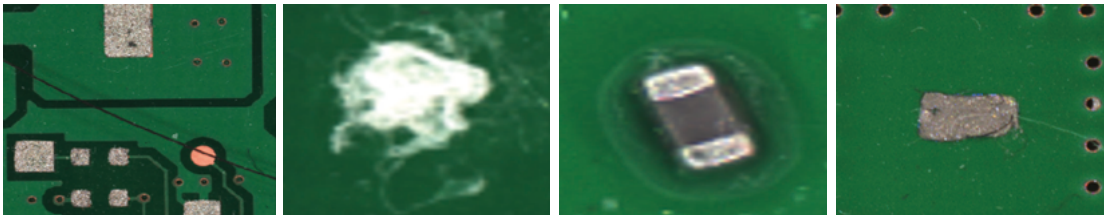
Tall Component Inspection

Standard AOI

ZENITH ALPHA

Whole-board Foreign Material Inspection (WFMI)

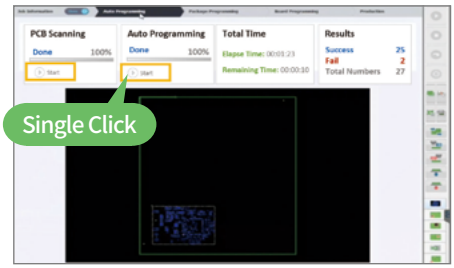
- Inspection is not limited to components and solder joints. The Zenith Alpha combines 2D and 3D technologies to identify Foreign Object Debris (FOD) across the board. The WFMI technology provides solutions for misplaced chips, solder balls, burr, and other foreign materials that may lead to costly field failures.



Identifies Foreign Object Debris Across Entire Board

AI-powered Auto Programming (KAP)

- Industry-leading 3D profilometry technology converges with Koh Young's proprietary AI technology to deliver true automatic programming. The innovative geometry-based Koh Young Auto Programming (KAP) software solution reduces the programming process to minimizes time to production and reduces costs.



One Click Needed To Start KAP

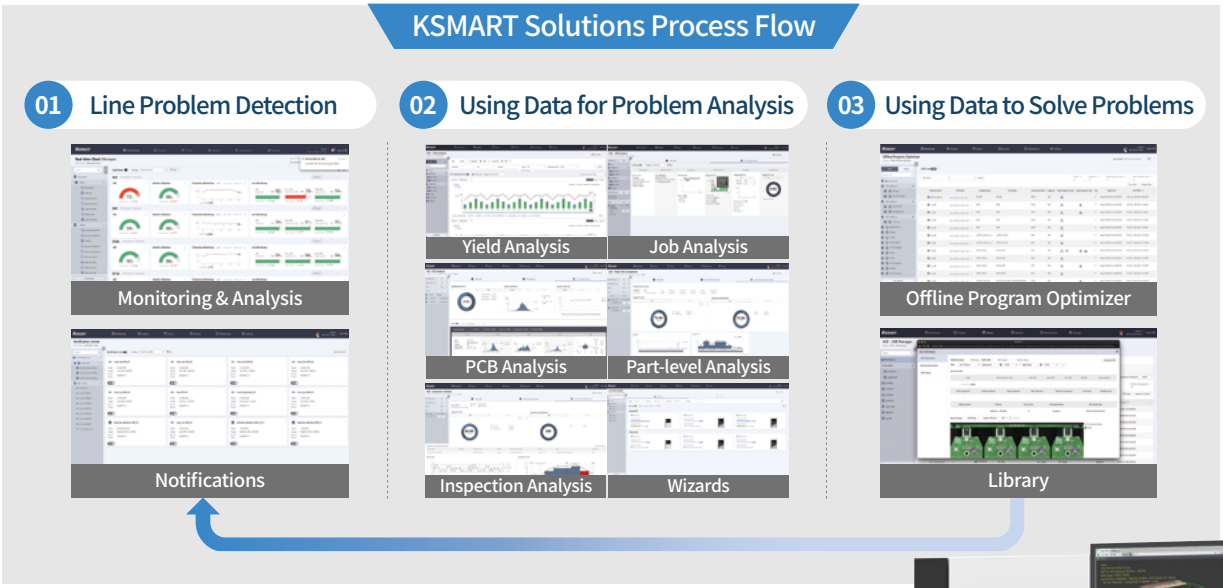
Programming Time Saved by 70%

KSMART Solutions: True 3D Measurement-based Process Control System

- Koh Young pioneered True 3D measurement technology 20 years ago to create a zero-defect future. This gave rise to KSMART Solutions and its continuous efforts to leverage data and connectivity.
- KSMART Solutions uses Artificial Intelligence to help automate process control while focusing on data management, analysis, and optimization. It collects data from across the factory line for defect detection, real-time optimization, enhanced decisions, and traceability to improve metrics, increase quality, and lower costs by eliminating variance, false calls, and escapes.

"KSMART Solutions is the Gateway to a Smart Factory"

- Converts data into knowledge for effective and quality-driven actions
- Delivers an AI-powered process analysis and optimization tool
- Achieves an autonomous process optimization facility



"We didn't think we would be able to satisfy both ends, however the Zenith Alpha proved otherwise. It is truly a best value AOI machine as it is equipped with Koh Young's best algorithms and capabilities without it being unreasonable."

- Global Industrial Manufacturer

Must-check Requirements of a 3D AOI System

Requirements	Solutions
Shadow Problem Solution	3D Shadow Free Moiré Technology & 4-Way Projection (Zenith Alpha HS & Zenith Alpha UHS) / 5-Way Projection (Zenith Alpha HS+)
Specular Problem Solution	
Shadowed Area between Tall Components	
Small (01005 in) Component Insepction	Multi-Frequency Moiré Technology
Wide Measurement Range + Accuracy (Measurement Range Problem)	
Real Time PCB Warp Compensation	Warp Compensation (Pad Referencing + Multi-Frequency Moiré Technology)
Dark Component & White Body Component Location	True 3D Measurement
Component Body, Lead Coplanarity Inspection	
Solder Joint Profile Inspection	
3D Polarity Inspection	
Component Crack Inspection	

Inspection Items	Inspection Task	Missing, Dimension, Offset, Rotation, Polarity, Upside down, OCV/OCR, Coplanarity, Solder fillet, Lifted lead, Lifted body, Tombstone, Bridging

Zenith Alpha Inspection Performance	Model	Camera / Resolution	FOV Size	Full 3D Inspection Speed	Max. Measurement Height	Height Accuracy (KY Calibration Target)	Illumination
	HS	6.5M 20μm 8M 10μm 8M 15μm	51 x 51 mm 28 x 28 mm 42 x 43 mm	55.3 cm²/sec (0.47 sec/FOV) 17.8 cm²/sec (0.44 sec/FOV) 36.9 cm²/sec (0.49 sec/FOV)	3 mm 4 mm 4 mm	±3%	IR-RGB LED (Dome Styled Illumination)
	HS+	6.5M 20μm 8M 15μm	51 x 51 mm 42 x 43 mm	49.1 cm²/sec (0.53 sec/FOV) 32.1 cm²/sec (0.55 sec/FOV)	20 mm 25 mm		
	UHS	12M 10μm 12M 15μm	41 x 31 mm 61 x 46 mm	28.2 cm²/sec (0.45 sec/FOV) 57.3 cm²/sec (0.49 sec/FOV)	4 mm		

PCB Handling					
	Conveyor Width Adjustment	Automatic			
	Conveyor Fix Type	Front / Rear Fixed (Factory setting)			
	(Optional Built-In Flipper) Machine Size	PCB Size (X*Y)	PCB Thickness	Clearance (Top / Bottom)	PCB Weight
	1000 x 1600 x 1627 mm (39.4 x 63.0 x 64.1 in)	Max: 500 x 500 mm (19.7 x 19.7 in) Min: 100 x 100 mm (3.9 x 3.9 in)	1.0 ~ 5 mm (0.04 ~ 0.2 in)	Clearance: 40 mm / 50 mm (1.6 x 2.0 in) Edge Clearance: 3 mm / 3 mm (0.1 x 0.1 in)	Max: 2 kg (4.4 lbs)

Software		
	Supported Input Format	GERBER Data (274X, 274D), ODB++, Mounter JOB file, Allegro, Zuken, Mentor (Optional)
	Programming S/W	ePM-AOI, AOI GUI
	Statistical Process Control Tool	SPC Plus, Review Station
	Operator User-friendliness	Library, KYCAL (Auto Camera Calibration, Auto Illumination Calibration, Auto Height Calibration)
	Operating System	WINDOWS 10 IOT ENTERPRISE LTSC 2019

Add-on Solutions

- 1D & 2D Handy Barcode Reader
- 1D & 2D Inline Barcode Reader
- Integrated Calibration Target
- Offline SPC Pro Station
- Review Station
- Whole Board Foreign Material Inspection (WFMI)
- KSMART Solutions (Monitoring & Analysis, Remote Access, Offline Programing Optimizer, Link Data Analysis, Notification)

(The above specifications are subject to change without notice.)

	L		XL	
	Single Lane	Dual Lane	Single Lane	Dual Lane
Max. PCB Size (X x Y)	490 x 510 mm (19.29 x 20.01 in)	Single Mode * 490 x 580 mm (19.29 x 22.83 in) Dual Mode 490 x 320 mm (19.29 x 12.60 in)	690 x 690 mm (27.17 x 27.17 in)	Single Mode 690 x 580 mm (27.17 x 22.82 in) Dual Mode 690 x 320 mm (27.17 x 12.60 in)
Max. PCB Size (Clearance Extension Option)	470 x 510 mm (18.50 x 20.01 in)	Single Mode 470 x 580 mm (18.50 x 22.83 in) Dual Mode 470 x 320 mm (18.50 x 12.60 in)	670 x 690 mm (26.37 x 27.17 in)	Single Mode 670 x 580 mm (26.37 x 22.82 in) Dual Mode 670 x 320 mm (26.37 x 12.60 in)
Min. PCB Size	50 x 50 mm (1.97 x 1.97 in)			
PCB Thickness	0.4 ~ 5 mm (0.02~0.2 in)		0.4 ~ 8 mm (0.02 ~ 0.31 in)	
Max. PCB Weight	4kg (8.82 lbs)		10kg (22.05 lbs)	
Machine Weight	600kg (1322.77 lbs)	700kg (1543.24 lbs)	750kg (1653.47 lbs)	
Clearance (Top/Bottom)	40mm(1.57 in) / 50mm(1.97 in) 100mm(3.93 in) / 70mm(2.75 in)**			
Supplies	220 Vac ± 10%, 1 Phase, 50/60 Hz, 5Kgf/cm² (0.45Mpa)			
W x D x H	1000x1295x1627mm (39.37x50.98x64.06 in)	1000x1475x1627 mm (39.37x58.07x64.06 in)	1200x1475x1627 mm (47.25x58.07x64.06 in)	

* Please contact us for more information about PCB Sizes.
** Clearance Extension Option
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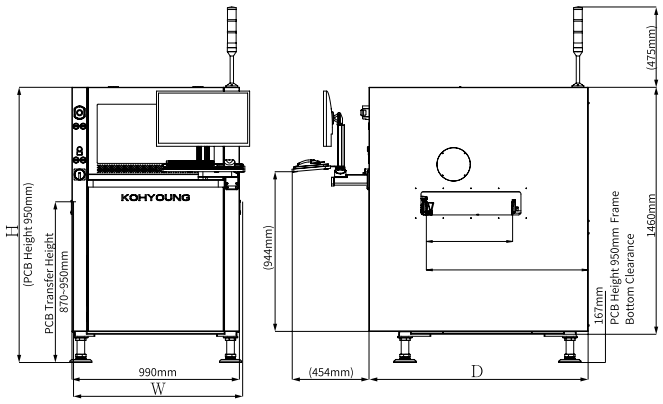

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