

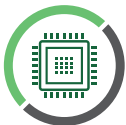
# ZENITH F

## The Industry's **Best-in-Class True 3D AOI** Solution for FPCB Assembly

Based on its best-selling Zenith series, the Zenith F combines the best opto-mechatronics technology with unmatched vision algorithms to deliver a solution for the growing flexible printed circuit board (FPCB) assembly market.



Incomparable True 3D  
Inspection Performance



FPCB Substrate Handling



Active Warp Compensation



AI-Powered Auto  
Programming (KAP)



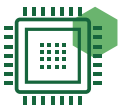
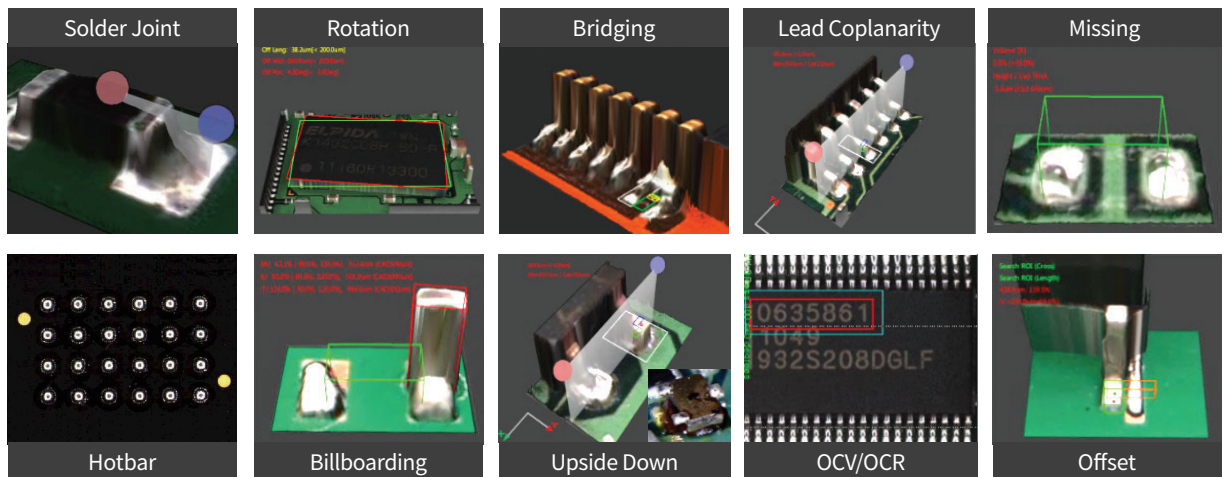
KSMART Solutions:  
True 3D Measurement-based  
Process Control System





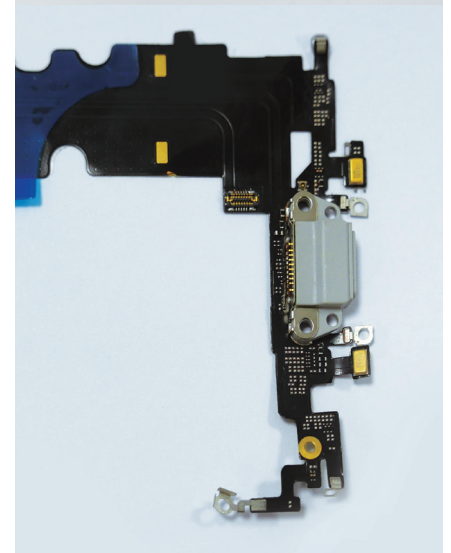
## Incomparable True 3D Inspection Performance

- The **Zenith F**, among other Koh Young solutions, is the only solution in the industry to base its inspection criteria on the IPC-610 standards for electronic assembly acceptability requirements. It delivers clear and concise AOI measurements to accurately identify multiple defects.
- True 3D Inspection Performance:** Hotbar, Missing Solder, Offset, Polarity, Upside Down, OCV/OCR, Solder Fillet, Billboarding, Lifted Lead, Lifted Body, Tombstone, Bridging, and more.



## FPCB Substrate Handling

- The **Zenith F** is the ideal solution for high-volume FPCB inspection. Due to the thinner and pliable nature of the flexible printed circuit boards, special handling with dedicated expertise is required in comparison to traditional rigid printed circuit boards. As such, FPCBs have been difficult to handle in the inspection industry until now.



Inspection Solution for Complex  
Flexible Printed Circuit Boards



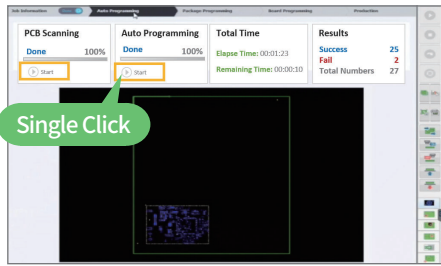
## Active Warp Compensation

- Koh Young's unique FPCB warp calculates and detects any substrate warpage. Using its exclusive 3D imaging and algorithms, the **Zenith F** considers multiple elements, like slope, stretch, twist, bow, and shrinkage, to guarantee an accurate measurement and the ultimate inspection system criteria.

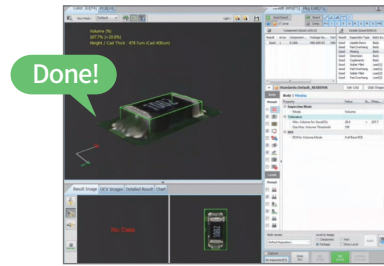


## AI-powered Auto Programming (KAP)

- 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 minimize time to production and reduces costs.



One Click Needed To Start KAP



Programming Time Saved by 70%

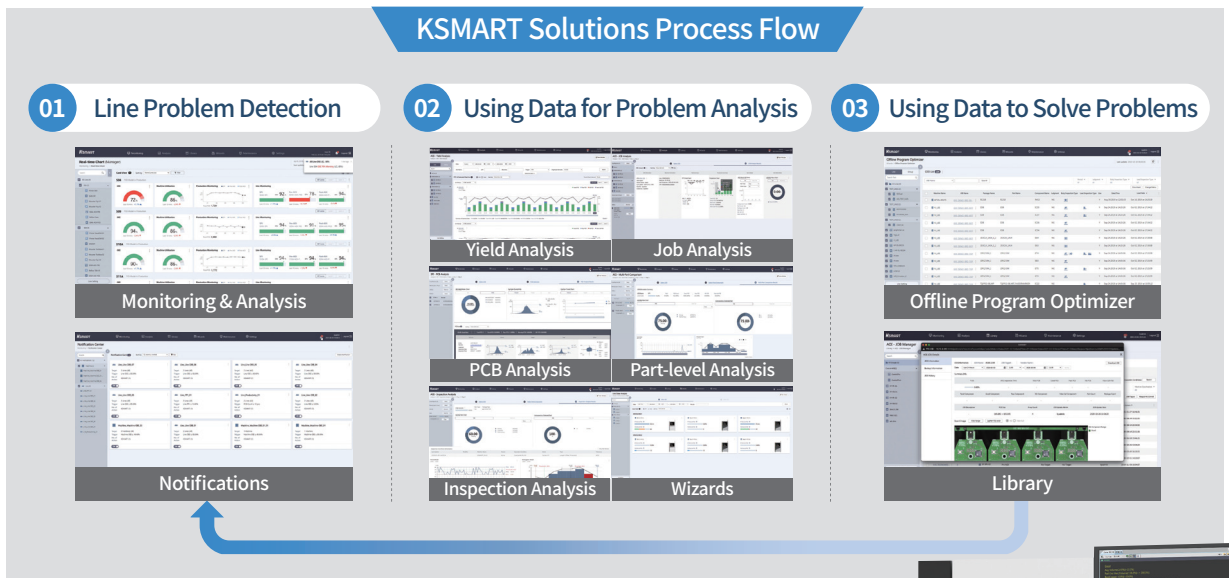


## KSMART Solutions: True 3D Measurement-based Process Control System

- 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



“Koh Young’s AOI is very stable and the results are repeatable and consistent – this allows Koh Young to stand out from other vendors.”

- Quality Engineering Manager



# Specification

Requirements	Solutions
Shadow Problem Solution	3D Shadow Free Moiré Technology & 8-Way Projection
Specular Problem Solution	
Shadowed Area Between Tall Components	
Small (01005 in) Component Inspection	Multi-Frequency Moiré Technology
Wide Measurement Range & Accuracy (Measurement Range Problem)	
Real-time PCB and FPCB Warp Compensation	Warp Compensation (Pad Referencing + Multi-Frequency Moiré Technology)
Dark Component and White Body Component Location	True 3D Measurement
Component Body and Lead Coplanarity Inspection	
Solder Joint Profile Inspection	
3D Polarity Inspection	
Component Crack Inspection	

Inspection Items	Inspection Task	Hotbar, Missing, Offset, Rotation, 3D Polarity, Upside Down, OCV/VCR, Coplanarity, Solder Fillet, Lifted Lead, Billboarding, Tombstone, Bridging, Dimension, and more.
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Zenith F Inspection Performance	Camera & Resolution	FOV Size	Full 3D Inspection Speed	Max. Measurement Height	Height Accuracy (KY Calibration Target)	Illumination
	12M 10um	41 x 31 mm	21.18 cm²/sec (0.61 sec/FOV)	1 mm	± 3%	IR-RGB LED (Dome Styled Illumination)

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)	

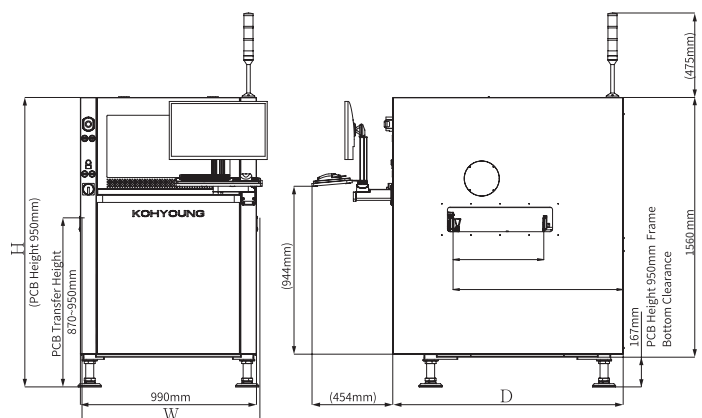
Software	Supported Input Format	GERBER Data (274X, 274D), ODB++, Placement File, Mounter JOB File, Allegro, Zuken, Mentor (Optional)
	Programing Software	ePM-AOI, AOI GUI
	Statistical Process Control Tool	SPC Plus, Review Station
	User-Friendly Operator	Library, KY Cal (Auto Camera Calibration, Auto 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 - Offline Programming Station	- Integrated Calibration Target - Review Station - Offline SPC Pro Station	- KSMART Solutions (Monitoring & Analysis, Remote Access, Offline Programing Optimizer, Link Data Analysis, Notification)
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(The above specifications are subject to change without notice.)

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	Single Lane	Dual Lane
Max. PCB Size (X x Y)	490 x 510 mm (19.2 x 20.1 in)	Single Mode <sup>o</sup> 490 x 580 mm (19.2 x 22.8 in) Dual Mode 490 x 320 mm (19.2 x 12.5 in)
Min. PCB Size	50 x 50 mm (2.0 x 2.0 in)	
PCB Thickness	0.4 ~ 5 mm (0.02 ~ 0.20 in)	
Max. PCB Weight	4 kg (8.8 lbs)	
Machine Weight (Approx.)	600 kg (1322.8 lbs)	700 kg (1543.2 lbs)
Bottom Clearance	50 mm (2.0 in)	
Supplies	220 VAC ± 10%, 1 Phase, 50/60 Hz, 5Kgf/cm² (0.45 Mpa)	
W	1000 mm (39.4 in)	
D	1295 mm (50.1 in)	1475 mm (58.1 in)
H	1727 mm (68.0 in)	

<sup>o</sup> Please contact us for more information about PCB Sizes.  
(The above specifications are subject to change without notice.)



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