KOH YOUNG TECHNOLOGY
INTELLIGENT INSPECTION

True 3D Smart Factory Solutions, Powered by AI

KY8030-3 USX

The Highest Standard in 3D SPI Solution for Extra-long Applications

The KY8030-3 revolutionized the solder paste inspection process when it entered the market and is now the industry's leading solution. Based on proven 3D measurement-based inspection technologies, Koh Young has expanded its offerings with optimized solutions for extra-long board applications.

- Best-in-class Measurement Accuracy and Inspection Reliability
- Unmatched Inspection Speed with Guaranteed Best Accuracy
- Active Warp Compensation
- Optimized Solution for Extra-long Applications
- Self-Diagnosis for Optimal Performance Maintenance
- Beyond Solder Paste Inspection
- AI-Powered Zero-Defect Process Optimization
- True 3D Measurement-based Process Control System

KY8030-3 USX

The Highest Standard in 3D SPI Solution

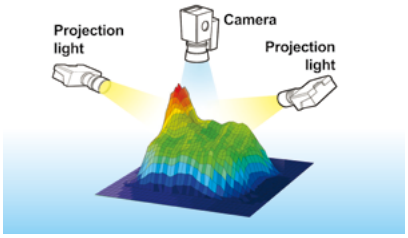
Inspection Challenges for Extra-long Applications

Printed circuit boards are becoming increasingly complex. Evolving applications like LED lighting, electronic vehicles (EVs), communications, and even storage can challenge manufacturers, especially in terms of board length and size.

The KY8030-3 USX uses patented True 3D technologies and communication protocols to accurately measure solder paste volume and communicate with printers to ensure a reliable print process. AI-powered algorithms further improve quality and yield with solutions for both rigid and flexible printed circuit board (FPCB) assembly, which is gaining popularity within various applications like LED lighting, electric vehicles (EV), communications and storage devices.

Best-in-class Measurement Accuracy and Inspection Reliability

- Koh Young's inspection systems have become the industry standard. The KY8030-3 features a pioneering True 3D Moiré and dual-direction projection by eliminating shadow and specular reflection challenges without compromising accuracy.



Unmatched Inspection Speed with Guaranteed Best Accuracy

- The KY8030-3 blends Koh Young's pioneering technologies with an inspection speed of 91.2cm²/sec. The combination of this system's throughput and accuracy makes the KY8030-3 suitable across a vast range of applications. The latest options makes this system twice as fast as its predecessor with guaranteed measurement accuracy.

Warp Compensation

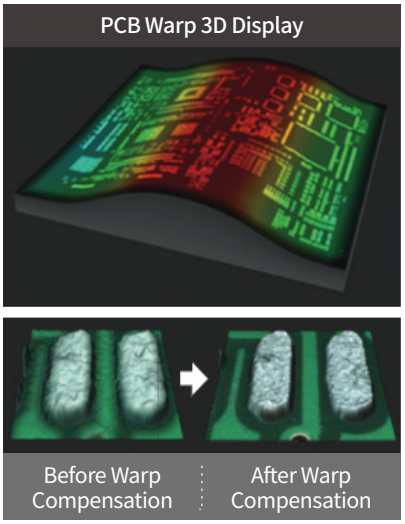
Active Warp Compensation

- **Z-tracking 3D compensation**

  The unique Koh Young warp compensation technology actively calculates and detects any substrate warpage. Using its exclusive 3D imaging and algorithms , Koh Young considers multiple elements like slope, stretch, twist, bow, and shrinkage to guarantee an accurate measurement and to meet the ultimate inspection system criteria.

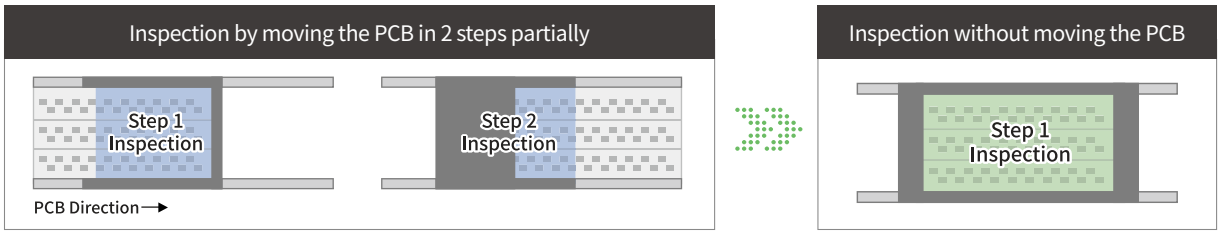
- **Pad-referencing 2D compensation (optional)**

  Real-time, automatic reference teaching uses IR lighting to compensate for non-linear inspection challenges by analyzing the PCB pad locations against the ideal PCB stencil design defined in the CAD file.



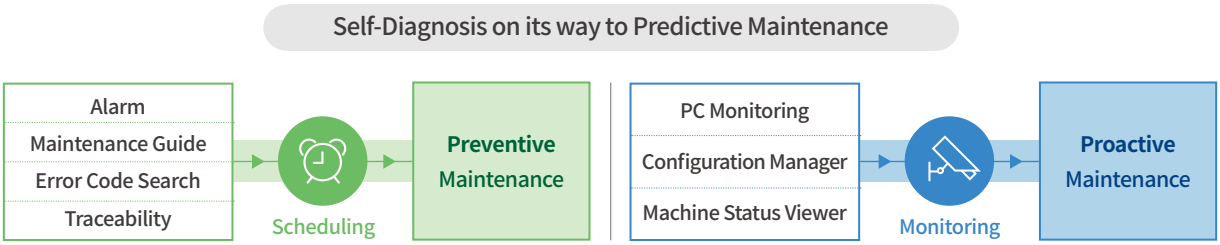
Optimized Solution for Extra-long Applications

- The new USX series allows manufacturers to efficiently inspect boards up to 1,300mm long in a single pass and can be optionally configured to handle boards up to 1,800mm long.



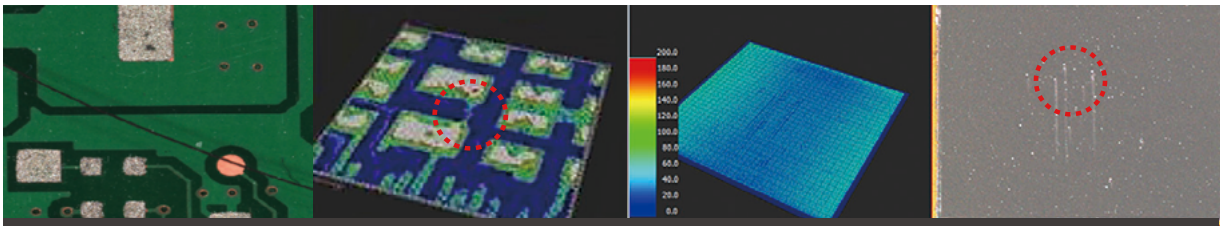
Self-Diagnosis for Optimal Performance Maintenance

- Unscheduled downtime can cripple production. Self-Diagnosis allows operators to take precautionary measures through predictive maintenance in order to reduce process interruptions, enhance uptime, and ensure optimal machine performance.
- The Self-Diagnosis feature comes with distinct modules which offers periodical machine checkups on critical items such as 3D/2D light intensity, PZT feed, height accuracy, and XY offset.



Beyond Solder Paste Inspection

- Inspection is not limited to just solder deposits. Koh Young's SPI system provides whole-board foreign material inspection (WFMI), conductive glue, sinter paste inspection with full color image display results.


Full Color Image Display Results

"We evaluated many inspection machines on the market and Koh Young proved to be the most reliable. The software was very stable and implementation was quick and easy. The machine caught defects that none of the other competitors could." - Global EMS Company

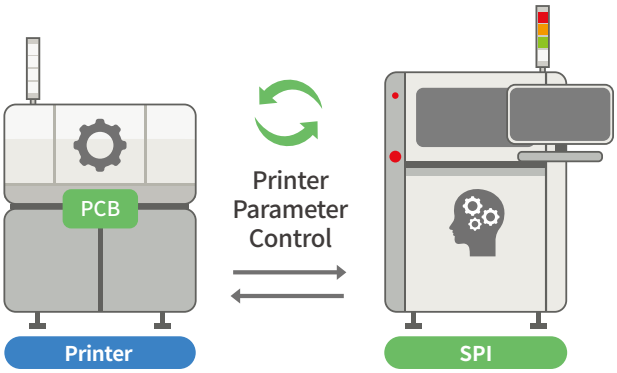
Zero-Defect Process Optimization, powered by AI

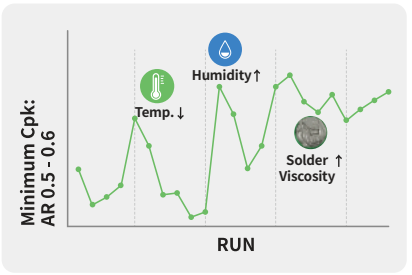
- Creating a closed-loop, connected electronics manufacturing floor for defect-free production by applying an ever-evolving AI-powered suite of interconnected software modules.

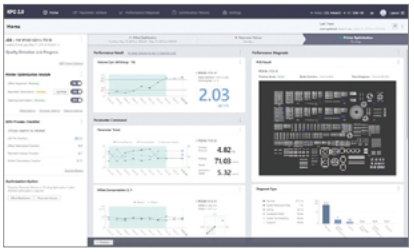
Real-time Koh Young Process Optimizer (KPO) Printer

KPO Printer is an AI-based automatic printing process optimizer. This solution applies machine learning algorithms to real-time process data and delivers the optimum printing parameters. KPO Printer allows customers to monitor print quality and optimize parameters in real-time to guarantee the best print quality without any intervention by an operator or process expert.

General Concept of KPO Printer Solution & GUI Example







Printer Diagnosis

PDM detects different defects related to printer setup by studying the patterns of solder paste depositions on the PCB through multiple anomaly detection algorithms. This module ensures a correct printer setup and highlights special cause variations in the process.

Printer Diagnosis

PAM is developed to recommend the optimal printing parameters including printing speed, pressure, and separation speed. With SPI-to-printer communication, PAM automatically performs DOEs designed to perform a detailed SPI result analysis using advanced diagnostic algorithms and then recommends the ideal print parameters. This helps avoid the trial-and-error experimental runs to set up the printing parameters, especially for New product Introductory (NPI).

Printer Optimizer

Printing quality is changeable during production because of environmental changes or other printing conditions. POM is developed to maintain or even improve the printing quality by monitoring production data in real time and adjusting the printing parameters in a fully-automated manner.

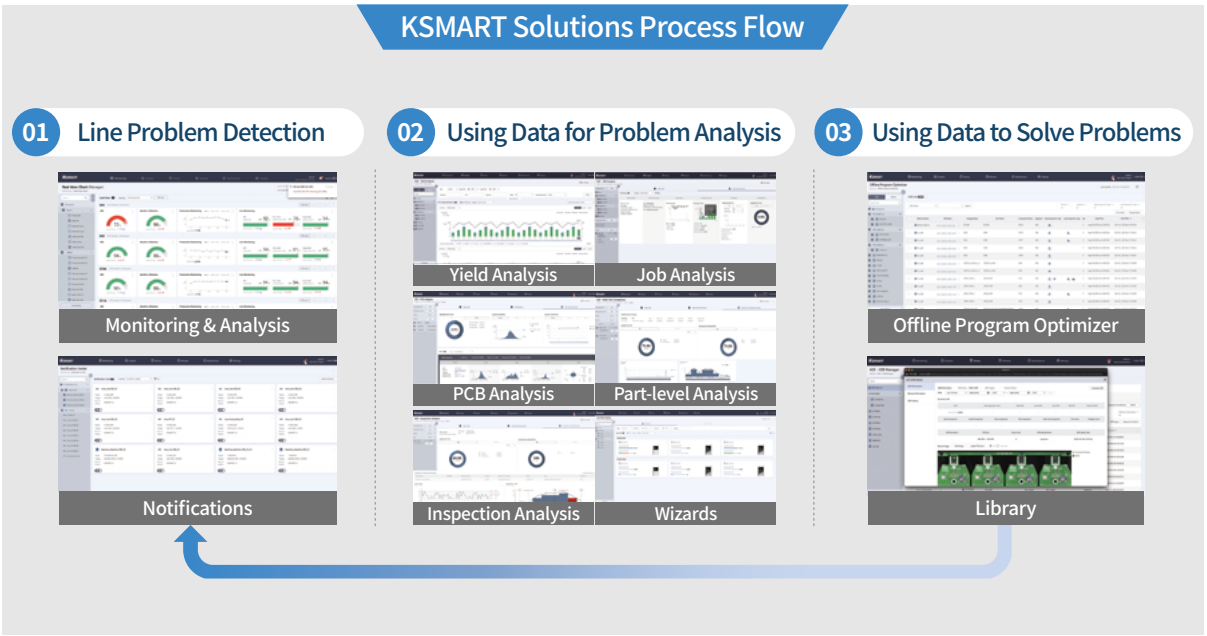
The Gateway to a Smart Factory

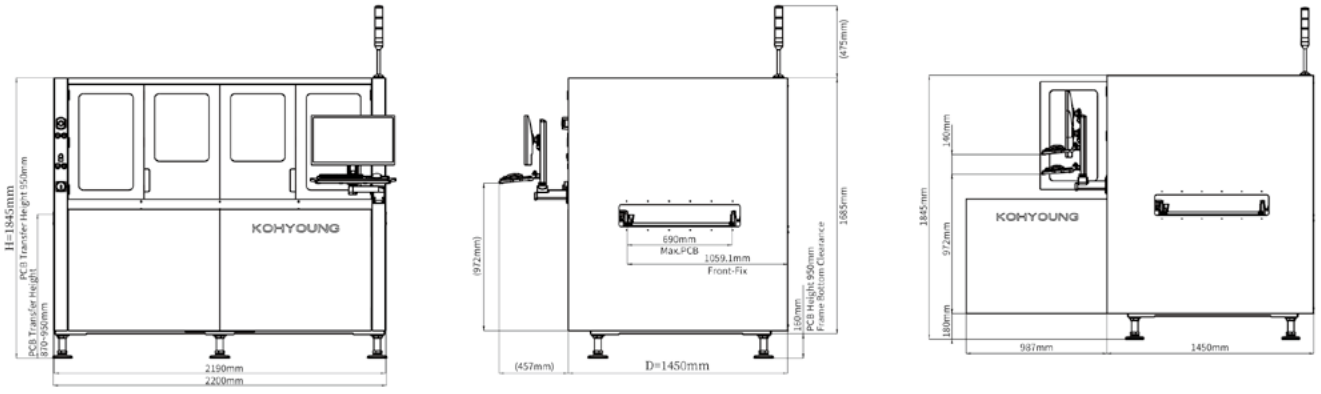
- Maximizing production efficiency by combining industry standards with AI engines to go beyond simple machine connectivity and open the gates to a smart factory to everyone.

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

KSMART Solutions use 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 lowercosts by eliminating variance, false calls, and escapes.

- 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





"Everyone knows solder paste printing is the core of quality. If you do not get it right at this stage, nothing else matters. We had large boards with around 4000 parts and 50 different BGAs and finding a vendor was difficult. When we installed our first Koh Young SPI USX system, we were very happy to see our production speed and yield increase overnight." - EMS VP of Operations

Must-Check Requirements of a 3D SPI System

Requirements	Solutions
Solution to shadow problem	3D shadow free moiré technology & dual projection
Real-time PCB warp compensation (2D + 3D solution)	Active warp compensation (Z-tracking & pad-referencing (Optional))
User-friendly operation	Renewal GUI, real color 3D image
Whole-board Foreign Material Inspection (WFMI)	3D foreign material inspection

Inspection Task	Metrology Capability	Volume, area, height, offset, bridging, shape deformity, paste offset, coplanarity
	Type of Defects	Insufficient, excessive, missing paste, bridging, shape deformity, paste offset, coplanarity

	Model	Camera	Pixel Resolution	Full Speed Inspection Speed	Min. Distance between Pads	Max. Inspection Height
Inspection Performance	KY8030-3 (HS)	8 Mpix	20 µm	Up to 91.2 cm²/sec	20 µm: 200 µm / 7.9 mils 15 µm: 150 µm / 5.9 mils 10 µm: 100 µm / 4.0 mils	450 µm / 17.7 mils
			15 µm	Up to 53.5 cm²/sec		
			10 µm	Up to 23.8 cm²/sec		
	KY8030-3	4 Mpix	20 µm	Up to 47.1 cm²/sec		
			15 µm	Up to 28.1 cm²/sec		
			10 µm	Up to 13.3 cm²/sec		
	Illumination		IR-RGB LED Dome Styled Illumination			
	Z-Resolution		0.37 µm / 0.01 mils			
	Height Accuracy (on KY calibratoin target)		1 µm / 0.04 mils			
	01005mm Inspection Capability		Gage R&R < 10 % at 6 Sigma (± 50 % Tolerance)			
	Max. Inspection Size		< FOV			
	Multi-Colored PCB Inspection		Possible			
	Optional		4-Way Projection (Max. Inspection Height up to 2 mm)			

PCB Handling	Conveyor Width Adjustment		Automatic	Max. PCB Weight		15 kgs
	Conveyor Fix Type		Front / Rear fixed (Factory setting)	Edge Clearance	Top	6.0 mm
	PCB Size	Max.	1,300 x 690 mm		Bottom	6.5 mm
		Min.	150 x 150 mm	Clearance	Top	20 mm
	PCB Thickness		0.6 ~ 8.0 mm		Bottom	50 mm

Software	Supported Input Format	GERBER Data (274X, 274D), ODB++ (Optional)
	Programming Software	ePM-SPI
	Statistical Process Control Tool	SPC Plus
	User-Friendly Features	Library Manager, 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
- Auto-Verficiation
- Integrated Calibration Target
- Long Board Option
- Offline Programming Station
- ODB++
- SPC Plus for Remote Computer
- Panasonic APC Interface (FF/FB)
- Panasonic iLNB Interface
- Closed Loop Interface
- IPC-CFX Interface
- KSMART Solutions (Monitoring & Analysis, Remote Access, Offline Optimizer, Link Data Analysis, Notification)
- KPO Printer (Diagnosis, Advisor, Optimizer)
- Fuji Nexim Interface
- iTAC Interface
- ASYS OIC

Installation Requirements	Machine Weight	1,200 kgs
	Machine Size (W x D x H)	2,200 x 1,450 x 1,845 mm (based on the PCB transfer height of 950 mm)
	Supplies	**(Electrical Supply)** 200~240 VAC, Single Phase, 50/60 Hz **(Compressed Air)** 5 Kgf/cm² (0.45 MPa)

* The above specifications are subject to change without notice.

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