

AIS 43X-HW

Inline SMD Automated 3D Optical Inspection Machine



Detailed

01
5 cameras and composite imaging processing for more comprehensive 3D imaging details

Efficient

02
Faster with multi-camera synchronous photography combined with large FOV

Stable

03
New modular anti-shake platform dedicated to ultimate stability

SPECIFICATION

Category	Item	AIS431B-HW	AIS431-D-HW
Board Info	Dimension	50* 50mm-510* 460mm (Large board mode 710*460mm)	Single Lane: 50* 50mm-510* 610mm Dual Lane: 50* 50mm-510* 330mm
	Thickness	0.5mm-6mm	
	Height Clearance	900mm	
	Max weight	≤3Kg	
	Max Component Height	Top: 35mm, Bottom: 80mm	
Vision Module	Edge Clearance	3mm	
	Camera	21MP area array high-speed industrial camera + 4 side cameras	
	Light Source	RGBW+Projector	
	FOV	13um: 66mm*53mm; 10um: 51mm* 40mm	
	Resolution	13um, 10um	
Inspection	Inspection Speed	Fastest Speed: 0.50sec/FOV	
	SMD Defects	Wrong, Missing, Polarity(Reversed), XY Offset, Angle Offset, Damaged, Skewed, Floating, Tombstone, Lifted lead, Bend pin, Etc.	
	Main Algorithm	AI Algorithm Mainly: AI Skew Algorithm, AI Missing Algorithm, OCR Algorithm, AI Solder Algorithm, AI Solder Hole Algorithm, AI Bridging Algorithm, AI No Pin Algorithm, 3D Pin Height Algorithm, Solder Height Algorithm, etc.	
	Multi-scene Inspection	Support Auto Change Program, multi-panel, mixed components, spot inspection, random inspection, etc.	
	Programming Method	1. Support importing CAD file; 2. Quick Programming: Intelligently realize auto-search and drawing of detection frames for the body, silk screen, pins and solder joints of AI-trained components and configure algorithms and parameters to reduce the complex workload of manual frame drawing, color extraction and parameter adjustment.	
Programming	In-line on fly programming and finetuning	Feature allow users perform programming, components changes or parameters updates without stop or distract the active production line.	
	Component Library	Feature allow user store default parameter setting for specific component become standart or template for common parts and improve shorten programming time.	
	Barcode Identification	1D/ 2D barcode & QR Code identification(5* 5mm above)	
	Statistical Data Analysis	Software solution to display AOI inspection record, analysis, graph and chart plotting. Extract data summary in excel or .csv file format.	
	Industrial Computer	CPU: intel i7 Graphics: RTX3060 12G Memory: 128G Storage: 256G SSD+6T HDD Network: 1000M network card	
Hardware	Display	23.8 inch	
	Operating System	Ubuntu 22.04 LTS 64bit	
	Communication	Standard SMEMA interface	
	Width Adjustment	Manual/automatic. Roller single stage	
	Motion Structure	High precision screw + servo motor	
	Dimension and Weight	(L* H* W) 1015* 1670* 1445mm (Tower light excluded), 830Kg	(L* H* W) 1015* 1670* 1695mm (Tower light excluded), 970Kg
	Power Supply and Power	AC 220V, Rated power 470W	
	Air	0.4-0.6Mpa	
	Environmental Requirements	Temperature: 10~45°C. Humidity: 30~85%RH	



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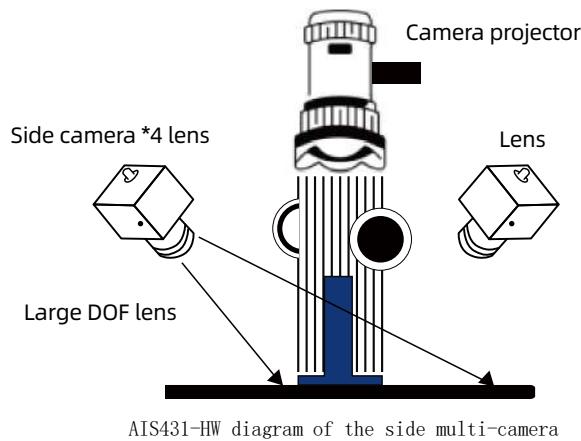


YouTube

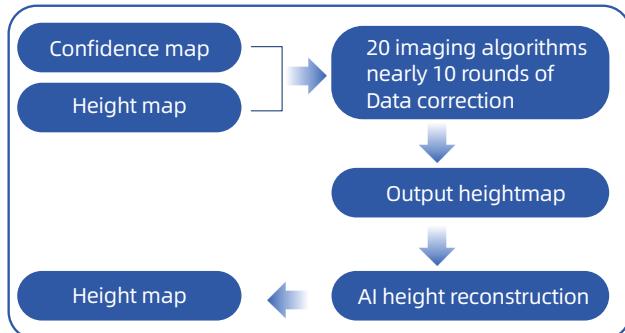
● CORE ADVANTAGES

High-precision 3D AI imaging system

Self-developed panoramic multi-camera and AI algorithms for accurate 3D shape restoration

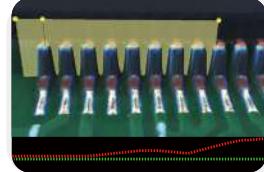


AIS431-HW diagram of the side multi-camera



Composite multi-angle AI imaging processing system: integrate self-developed imaging algorithms, intelligently remove interference and retain the rich texture structure

• 3D higher imaging accuracy



Preserve the pin solder climbing slope details to avoid the false call caused by loss of details due to overfitting

• Side defects inspection



Cold solder can be quickly detected with the AI pin algorithm and unaffected by lack shadow showed on the image

• Silk screen of components with large height differences



Silk screen on the board or the 5.4mm or 10mm components is clearly visible

• Higher detection range



The imaging height is 25mm at a time; Adjusting the Z axis supports up to 40mm imaging

2D multi-spectral high-speed imaging system improves feature visibility. supports more than 98% of 2D scenarios

12-channel light source combination and a unique multi-angle lighting solution improves the visibility of complex features such as solder, scratches, and silk screens, improves detection and operator review accuracy to avoid the NG boards outflow.



Solder spray redglue imaging



Goldfinger scratches



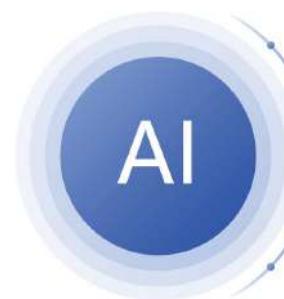
Silk screen on black gold capacitor



Laser engraving

Intelligent AI model

Largest AI model in the industry for industrial scene data has stronger recognition and expression capabilities, improving detection accuracy and capabilities



Simplified Programming

Massive data training empower recognition capabilities. Auto-locates components and configures parameters. Easy to operate.

Inspection Ability

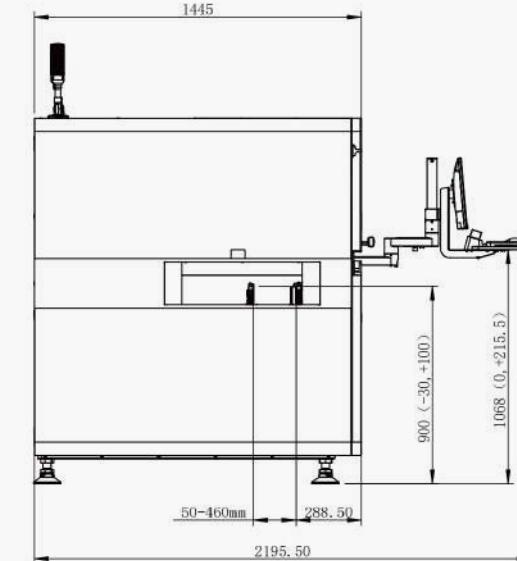
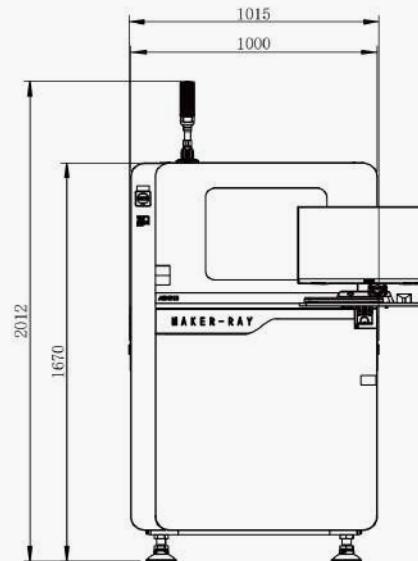
More than 10 AI algorithms cover 90% of defects. Strong generalization and anti-interference capabilities for accurately classify unseen data and maintain high detection accuracy for abnormal interference.

Continued Growth

Continue to accumulate and learn new components and solder features. Be smarter the more it is used.

● ARCHITECTURE DRAWING

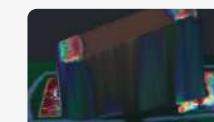
The width of the space occupied is only 1015mm while meets the requirements of 510mm board detection



Unit: mm

● INSPECTABLE DEFECTS

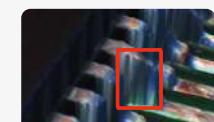
Lifed



Shift



Lifted Lead



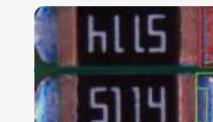
Exposed Copper



Side Damage



Insufficient Solder



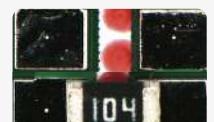
Wrong Part



Cold Solder



Missing Part



Bridging

