

SMT Inline AOI

V5000 Series

Automated Optical Inspection



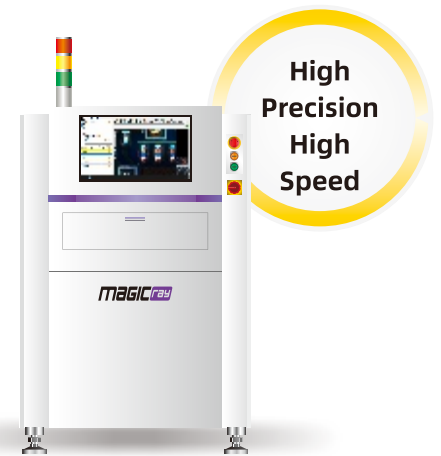
Automated Optical Inspection

Poor Soldering Inspection Expert

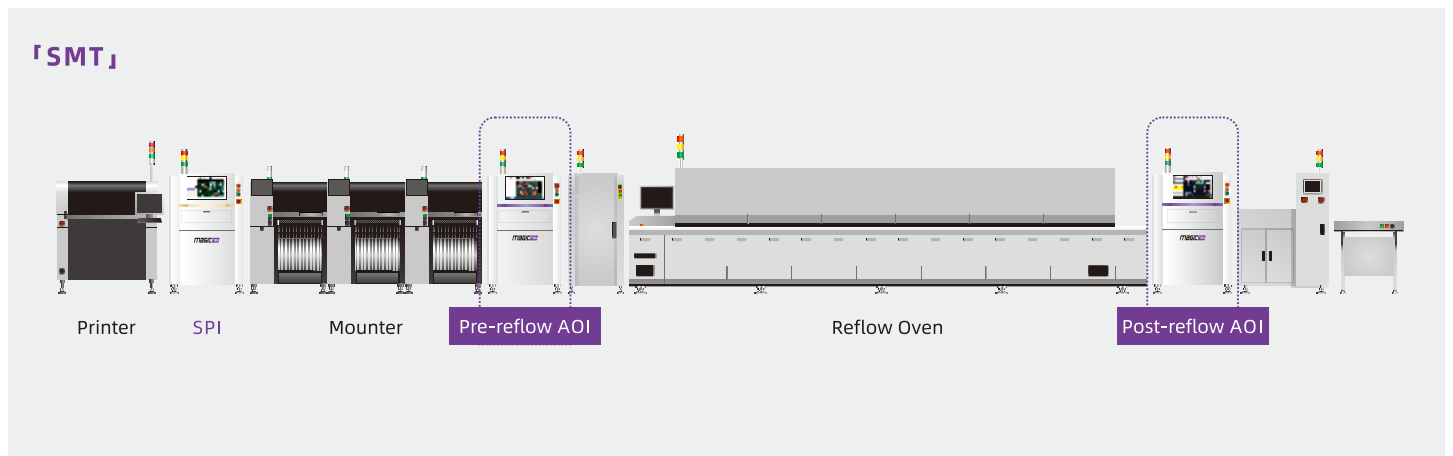
MagicRay inline AOI-V5000 series are suitable for high-precision and high-speed inline inspection of both pre-reflow and post-wave.

Product Features

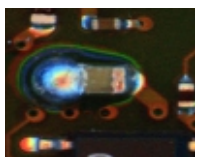
- Use of granite platform and telecentric lens.
- Powerful software algorithm makes inspection very reliable.
- Automatic compensation for board warpage or PCB deformed by high temperature effects makes our machine just as suitable for FPC.
- SPC data analysis helps to improve process quality.



Production Line Solution



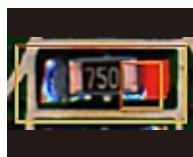
Inspection Examples



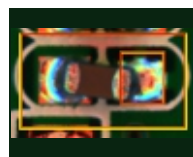
▲ Excess Solder



▲ Excess Solder



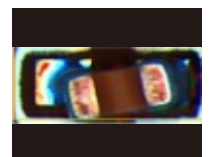
▲ Poor Solder



▲ Open Solder



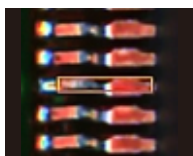
▲ Shift



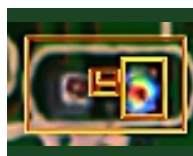
▲ Shift



▲ Solder Bridge



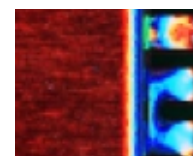
▲ Lifted Lead



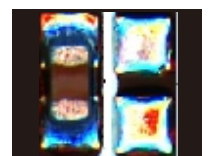
▲ Tombstone



▲ Solder Ball



▲ Solder Bridge



▲ Missing

Core Technology and Advantages

Intelligent Solder Pad Positioning + Entire FOV Assisted Positioning

With the use of MagicRay's proprietary Solder Pad Positioning we can significantly reduce false calls caused by deformation of PCB after wave soldering. This is even more pronounced for FPC. Our entire FOV assisted positioning algorithm also helps to significantly reduce false calls due to PCB warpage, silkscreen printing and interference caused by the board's legend.

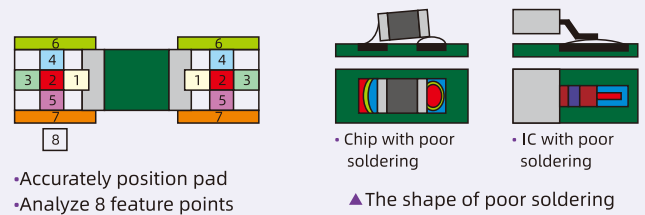


▲ Before positioning

▲ After positioning

Poor Soldering Inspection

Based on precise positioning of the solder pad poor solder of chip or IC can be effectively detected.



• Accurately position pad
• Analyze 8 feature points

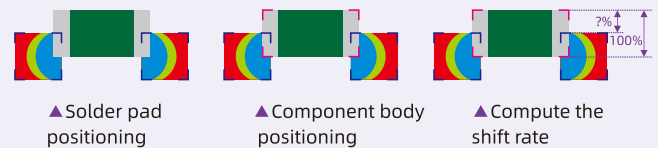
• Chip with poor soldering

• IC with poor soldering

▲ The shape of poor soldering

Detection Parameters Directly Interface With IPC Standards

Our algorithm can calculate offsets based on IPC standards resulting in more reliable inspection.
Maximum Component Side Overhang (IPC-A-610-G Class 3) :
Less than 25% of the component termination width or 25% of the pad width whichever is less.



▲ Solder pad positioning

▲ Component body positioning

▲ Compute the shift rate

Features & Functions

Three Point Check

Software that connects SPI, pre-reflow AOI and post-reflow AOI for data collection helps to quickly locate the root cause of the defects.

Automatic Program Switch Through Barcode Scanning

Auto width adjustment is a standard feature and is achieved by simply reading the PCB's barcode. At the same time, it supports MES command.

SPC Alarm Function

Real-time production quality monitoring can be achieved thru' timely feedback of abnormal situation, thus, preventing defects from flowing thru'.

Major Defects Foolproof

This feature can be set up by an authorized personnel to specifically inspect key locations. This will prevent unauthorized individuals from allowing a bypass of such a location to be inspected. Such a feature helps ensure good control over critical locations to be inspected.

Output Entire Board Photo

The entire board photo of component or non-component area can be saved for the quality traceability purpose after the inspection is completed.

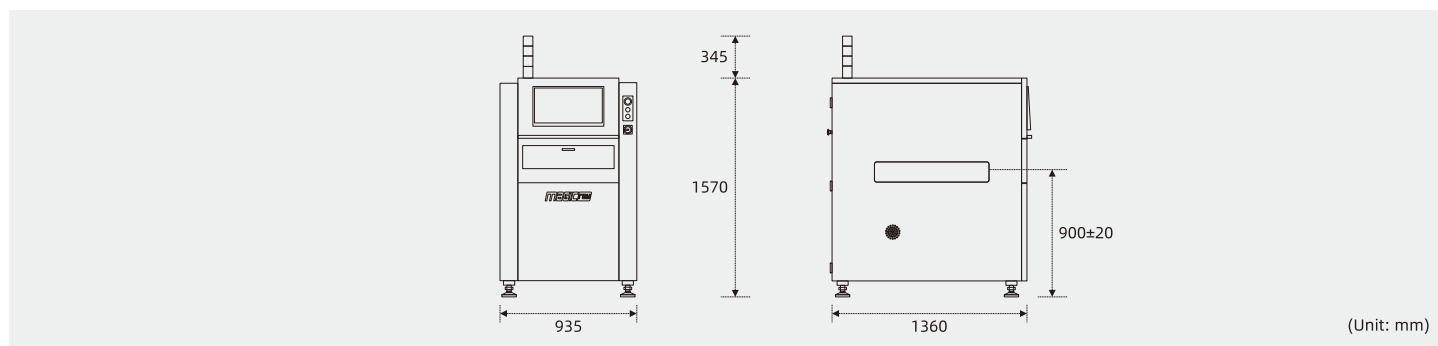
Multiple Repair Stations can be linked to a Single Repair Station

One operator can handle multiple machines repair stations, thus, improving the repair process and saving manpower.

Product Specification

Equipment Model	V5000	V5000D	V5000XL	V5000DL	
Image System	Camera	5MP/12MP industrial camera			
	Resolution	5MP camera: 15μm, 10μm; 12MP camera: 15μm, 12μm, 10μm, 6.3μm			
	FOV	37*30mm(5MP, 15μm); 60*45mm(12MP, 15μm)			
	Lens	Telecentric lens			
	Lighting	4 color ring shape LED (RGBW)			
Movement Structure	X/Y Movement	AC Servo	AC Servo (Dual Drive)		
	Platform	Granite			
	Width Adjustment	Automatic			
	Transport Type	Belt			
	Board Loading Direction	Left to right or right to left (Select at point of order)			
Hardware Configuration	Operating System	Win 10			
	Communication	Ethernet, SMEMA			
	Power Requirement	Single phase 220V, 50/60Hz, 5A			
	Air Requirement	0.4-0.6Mpa			
	Conveyor Height	900±20mm			
	Equipment Dimensions	L935*D1360*H1570mm(Without tower light)		L1125*D1360*H1570mm(Without tower light)	
	Equipment Weight	900kg	950kg	1100kg	1150kg
PCB Size	Size	50*60-510*610mm	Dual lane: 50*60-510*320mm Single lane: 50*60-510*580mm	50*80-675*610mm	Dual lane: 50*80-675*320mm Single lane: 50*80-675*560mm
	Thickness	0.6-6.0mm			
	PCB Weight	≤3kg			
	Component Clearance	Top clearance 25-60mm adjustable, Bottom clearance 45mm			
	Clamping Edge	3.0mm			
Inspection Functions	Component	Wrong Component, Missing, Polarity, Shift, Reverse, Damage, Ic Lead Bend, Foreign Material, Tombstone, etc.			
	Solder Joint	No Solder, Insufficient Solder, Open Solder, Excess Solder, Solder Bridge, Solder Ball, etc.			
	Component Size	Chip: 03015 and above; LSI: 0.3mm pitch and above; Others: Odd shape component			
	Inspection Speed	180-200ms/FOV			

Equipment Dimensions



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