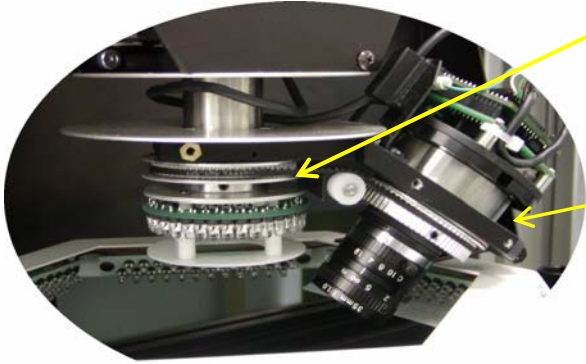


Automatic Optical Inspection Machine

ESV-2240



TOP Camera for
Automatic Inspection

SIDE Camera for
Defects Verification

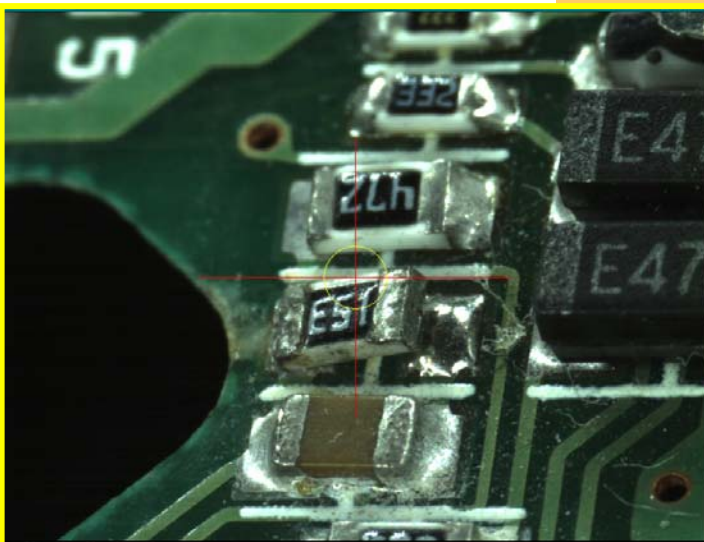
One AOI machine can achieve 2 types of inspection

Automatic Inspection



Defects Verification System

By adding Defects Verification System on the AOI machine, it solves problems of false rejects and defects which are difficult to confirm at Automatic Inspection stage.



Qualelectron Systems Corp.



The AOI machine ESV-2240 was developed due to excessive misjudgment by AOI machine. The TOP camera performs high speed inspection while SIDE camera automatically moves to the defect position for verification.

One AOI machine that can achieve dual purposes of automatic inspection and defects verification.

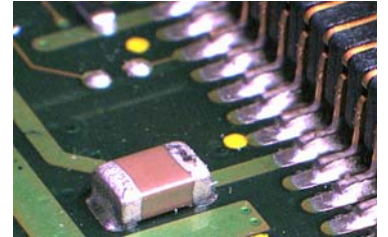
Features

1

1.3M pixels color camera with high speed inspection

TOP camera adopts 1.3M pixels color camera focus on components, solder condition and undesirable condition inspection.

SIDE Camera View



2

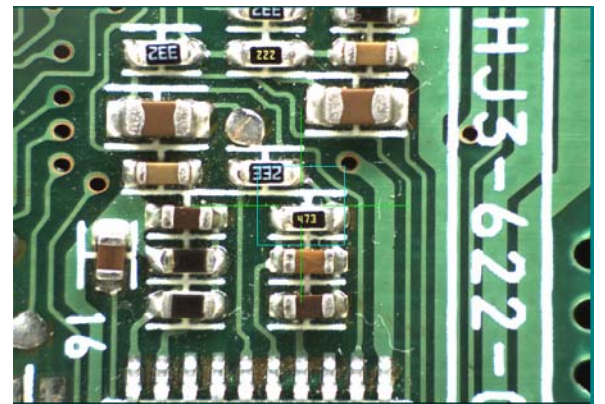
40° Angle Side Rotation Camera

To verify difficult inspected components and conditions by high magnified rotation camera to generate 3D effect.

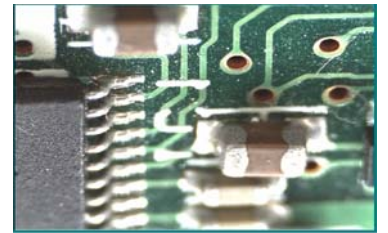
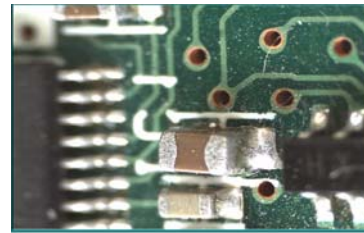
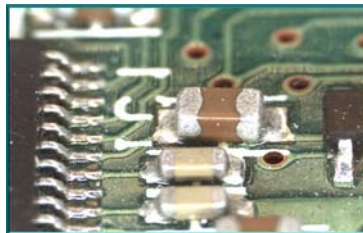
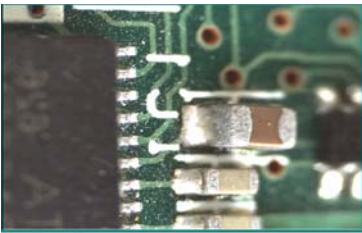
3

Part verification always from same direction

By adopting individual rotary system, it rotates from the same reference point of view to generate 3D effect. Below 4 images are from different direction of views but the component remains in the same position.



TOP Camera View



4

Quick and Easy Program Generation

Using CAD / ASCII data and part library, programming time can be shortened.

5

Link with ESV series AOI machines

ESV-2240 also can be used to verify defect components from ESV-304 and ESV-505 AOI machines.

Defects Verification System



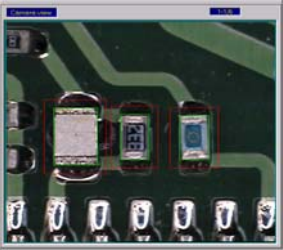
Defects Data




Verify defects by using SIDE camera

Target Defects

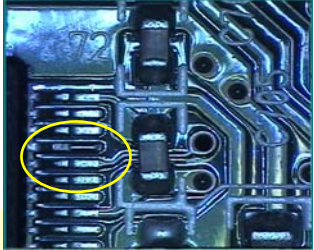
Missing	Wrong Part	Part Shift	Tombstone & Billboard	Skew	Wrong Color
Marking	Polarity	Solder Bridge	Missing Solder	Insufficient Solder	IC Lead Floating



Missing Component



Solder Inspection



IC Lead Floating

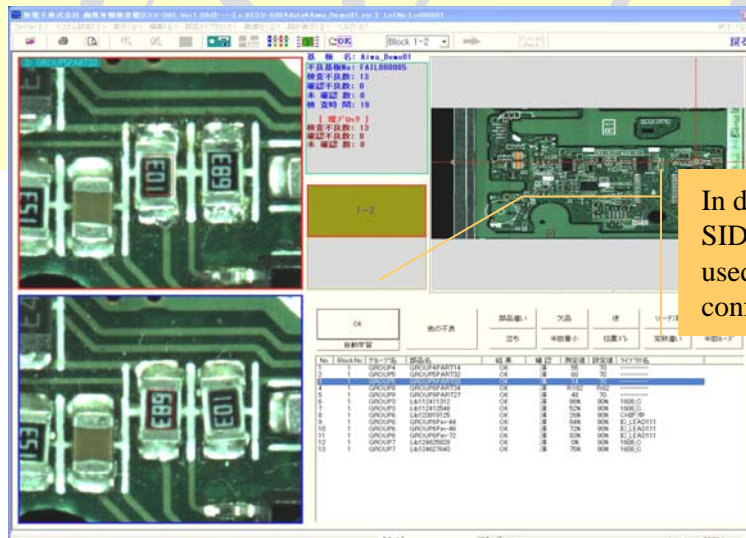
Usage Example

Usage #1
Use for AOI inspection

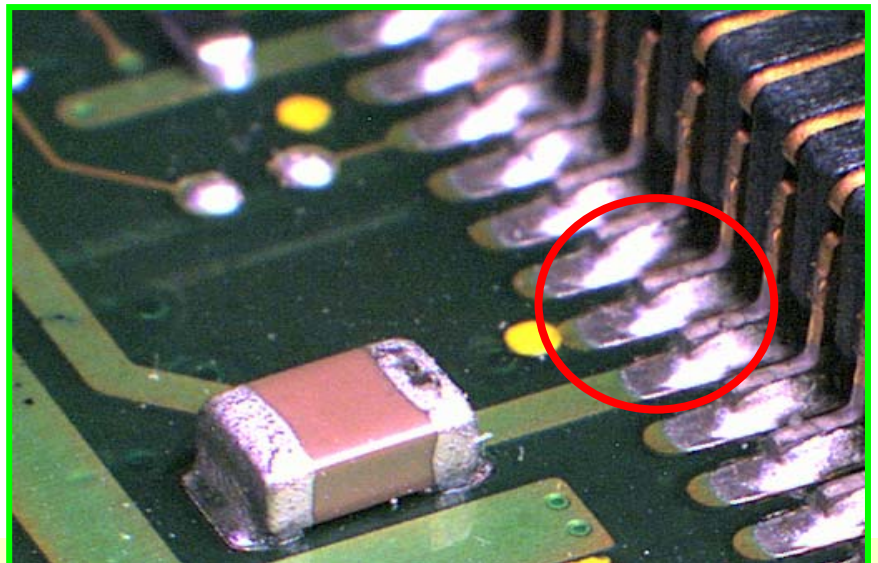
Usage #2
Use for AOI inspection and then visual check some critical points by side angle camera

Usage #3
Use side angle camera to verify fails after AOI inspection

Usage #4
Link with other AOI machines to confirm fail condition by side angle camera



In defective window, SIDE camera can be used for defects confirmation.



Specification

General	ESV-2240	ESV-2240L	ESV-2240XL
Max. Board Size	13.8"(W) x 9.8"(D) (350mm x 250mm)	20.1"(W) x 18.1"(D) (510mm x 460mm)	24"(W) x 20.1"(D) (610mm x 510mm)
Min. Board Size	1.97"(W) x 1.97"(D) (50mm x 50mm)		
Board Thickness	0.02" – 0.31" (0.5mm – 8mm)		
Board Clearance	1.57" (40mm) Top and Bottom (Higher board clearance available up on requested)		
Part Focus	0.31" (8mm) Max. for Top camera; 0.16" (4mm) Max. for Side camera		
Algorithms	Pattern Matching, Area Calculation, Gray Scale, RGB Color Check		
Inspection Items	Position, Missing, Wrong Part, Polarity, Skew, Tombstone, Billboard, Wrong Color, Marking, Solder Bridge, Missing Solder, Insufficient Solder		
Inspection Parts	SMD and Through-Hole		
Min. Part Size	01005 (0402 Metric), 12 mil (0.3mm) QFP		
Programming	CAD / ASCII Data Translation, Part Library, Manual		
Camera System			
Top Camera Unit	19 micron / pixel or 12 micron / pixel (1.3 Mega pixels Color Camera)		
Side Camera Unit	6 micron / pixel; 40° Angle Gradient (1.3 Mega pixels Color Camera)		
Field of View	0.98" x 0.79" (25mm x 20mm) for 19 micron / pixel Top Camera 0.63" x 0.51" (16mm x 13mm) for 12 micron / pixel Top Camera 0.31" x 0.24" (8mm x 6mm) for 6 micron / pixel Side Camera		
Zoom Lens	Corresponding Digital Zoom Lens		
Light Source	Multi-Level High Luminance White LED Light (Top and Side) 12 Groups of Side LED light controlled ON/OFF independently by software		
Processing Speed	16ms / part (128 x 128 pixel)		
Movement System			
Drive Unit	5 Phase Stepping Pulse Motor		
X&Y Axis Traveling	Camera moves X-axis; PCB Table moves Y-axis		
Z Axis Traveling	-0.04" to 0.31" (-1mm to 8mm)		
Repeatability	± 25 micron or less (with Image Correction)		
Driving Speed	19.7" / sec (500mm / sec) Max.		
Board Locking	Spring Roller Type		
PC Platform			
Computer	Pentium Computer (Min. 1GB RAM, At least 1 PCI slot and 3 USB ports, 19" Monitor)		
Operating System	MS Windows XP		
Others			
Options	Operation Box (with Joy Stick), Repair Station S/W, Laser Pointer, Ticket Printer, Ticket Printer (print bar code ID), Bar Code Scanner, 1D Bar Code S/W, 2D Bar Code S/W, OCR S/W, Supporting Pins, Spare Parts Kit		
Power	AC 100V ~ 240V, 300W	AC 100V ~ 240V, 800W	AC 100V ~ 240V, 1000W
Footprint	28"(W) x 33"(D) x 16"(H) (710 x 850 x 400 mm)	35"(W) x 47"(D) x 19"(H) (900 x 1200 x 470 mm)	
Weight	~110 lbs (~50 kg)	~220 lbs (~100 kg)	



780 Montague Expwy, #507
 San Jose CA 95131 USA
 Tel: (408)432-1686
 Fax: (408)432-1687
 Email: sales@qualelectron.com
 Web Site: www.qualelectron.com

