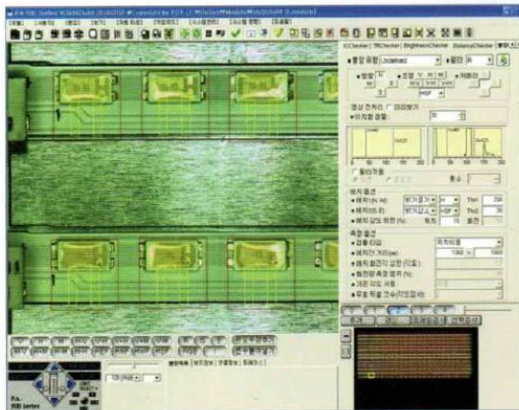


## Specifications

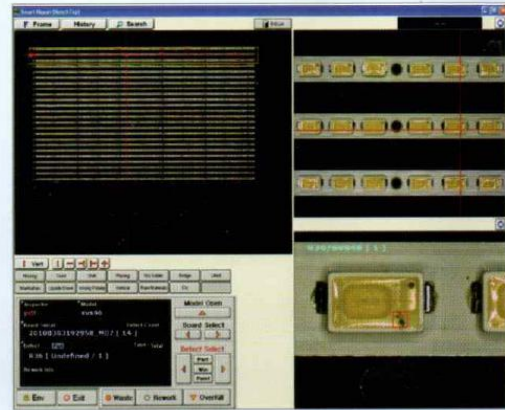
	PA-500SB	PA-500LB	PA-500XB	PA-500UB	PA-500TL	PA-500TX
<b>Machine Type</b>						
<b>Application</b>	In-line Mounting & Soldering Inspection Machine				Bench-top Soldering Inspection Machine	
<b>Vision</b>						
<b>Optical System</b>	<b>Center Camera</b>	Center Camera 5.0M Color Camera				
	<b>Side Camera Type (Option)</b>	5.0M Center Color Camera + 5.0M 4 Side Camera			None	
<b>Resolution</b>	2,448 x 2,050 pixels					
<b>Inspection Speed</b>	<b>Option 1</b>	2,013mm <sup>2</sup> /sec (FOV: 24mm x 20mm, Resolution: 10 $\mu$ m, Minimum Inspection Parts: 0402Chip/0.3pitch IC)				
	<b>Option 2</b>	3,298mm <sup>2</sup> /sec (FOV: 32mm x 27mm, Resolution: 13 $\mu$ m, Minimum Inspection Parts: 0402Chip/0.3pitch IC)				
	<b>Option 3</b>	7,733mm <sup>2</sup> /sec (FOV: 49mm x 41mm, Resolution: 20 $\mu$ m, Minimum Inspection Parts: 0603Chip/0.4pitch IC)				
<b>Lighting</b>	3-Layer Lighting (Horizontal, Vertical, Coaxial), 4-split Lighting					
<b>Lens</b>	Telecentric Lens or Normal Lens					
<b>Laser</b>						
<b>Laser Height Inspection (Option)</b>	Resolution: 1 $\mu$ m, Repeatability: 10 $\mu$ m					
<b>Motion</b>						
<b>Alignment Control</b>	Ball Screw & AC Servo Motor (Repeatability $\pm$ 10 $\mu$ m)					
<b>PCB Handling</b>						
<b>PCB Size (W x D)</b>	50mm x 50mm ~ 330mm x 250mm	50mm x 50mm ~ 460mm x 400mm	50mm x 55mm ~ 650mm x 450mm	50mm x 55mm ~ 810mm x 500mm	50mm x 50mm ~ 450mm x 400mm	50mm x 50mm ~ 650mm x 400mm
<b>PCB Thickness</b>	0.5 ~ 4.0mm			0.3 ~ 5.0mm	0.5 ~ 4.5mm	
<b>PCB Clearance</b>	<b>Top</b>	20mm	20mm	20mm	20mm	20mm
	<b>Bottom</b>	30mm	30mm	30mm	40mm	40mm
	<b>Edge</b>	2.5mm	2.5mm	4mm	4mm	3mm
<b>Except the Work Table in Case of the Bench-top</b>						
<b>Width</b>	1,340mm	1,670mm	2,260mm	1,770mm	1,170mm	1,200mm
<b>Depth</b>	1,190mm	1,340mm	1,390mm	1,430mm	960mm	1,379mm
<b>Height</b>	1,492mm	1,412mm	1,412mm	1,412mm	480mm	654mm
<b>Weight</b>	900kg	1,090kg	1,140kg	1,140kg	120kg	130kg
<b>Power Requirements</b>	Single-Phase, AC220V $\pm$ 10%, 50/60Hz					
<b>Air Supply Requirements</b>	5kg/cm <sup>2</sup> $\pm$ 10%				None	
<b>Options</b>						
Offline Program, Repair System (Network Function), Remote Monitoring Control System, Statistical Production Management Program, Barcode System (1D & 2D), Machine Copy Jig, Laser Height Inspection, 4 Side Camera						

## LED BLU Inspection Solution

- Fast inspection speed with wide optical-sight, FOV 49mm (77.33cm<sup>2</sup>/sec)
- LED rotation test, LED location error test, distance test between the LEDs, LED foreign material test, LED external test, existing SMT AOI test
- 810 x 550 Size board, and a nonstop 2D barcode system



<LED Inspection Screen>



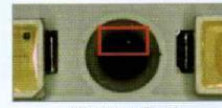
<Repair Screen>



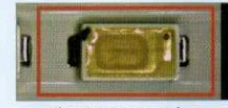
<Foreign Material>



<Location Error>



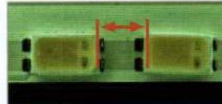
<Solder Ball>



<LED Exterior>



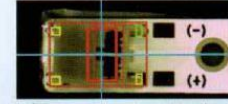
<Rotation Angle>



<Distance between the LEDs>



<Bar Contamination>



<Connector Twisting>

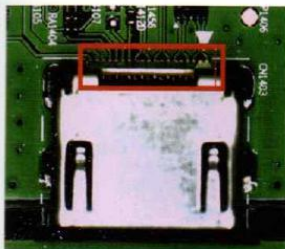




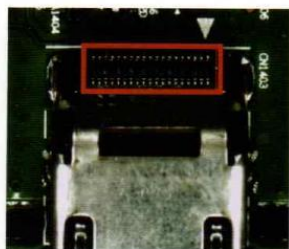
# Option

## Detecting the Lifted Parts by using the 5Mega Side Camera

- Test conducting, not just a visual view
- Detecting the lifted of the QFP, BGA, connector, odd-form insert parts
- Invisible area (covered by connector cap) inspection



<Top Camera Screen>



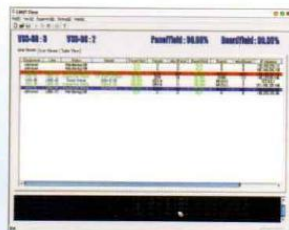
<Side Camera Screen>

## Process Support Tools

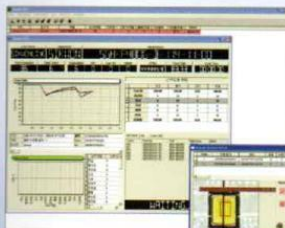
- Easy Smart Repair System for faulty check and taking action/renovation
- SPC System is based on the SQL server worked with MES
- The remote control system enables several devices to be debugged in one area



<Smart Repair>



<Line Monitor>



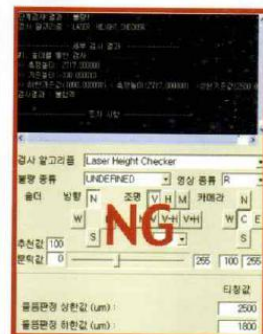
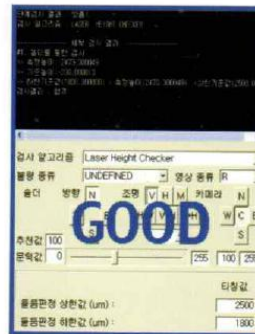
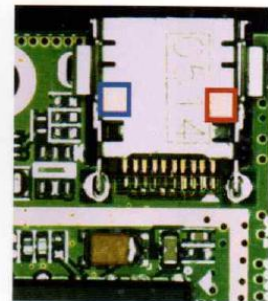
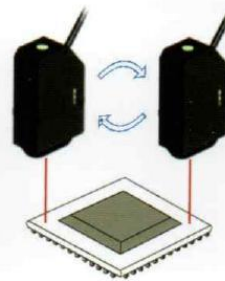
<SPC>



<Remote Control>

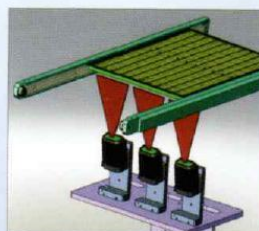
## Laser-Unit for Lifted BGA & Odd-form Parts

- Detection of the fine lifted for SMD parts, which was difficult to be detected by the 2D camera
- Detection the lifted of the BGA and odd-form insert parts



## Barcode System for MES

- External 1D, 2D multi barcode system
- Internal 1D, 2D multi barcode system
- Vision program internal 1D, 2D barcode system (no required hardware)
- Barcode system for MES (optimized in LED production line)



<External Barcode>



<Internal Vision Program>



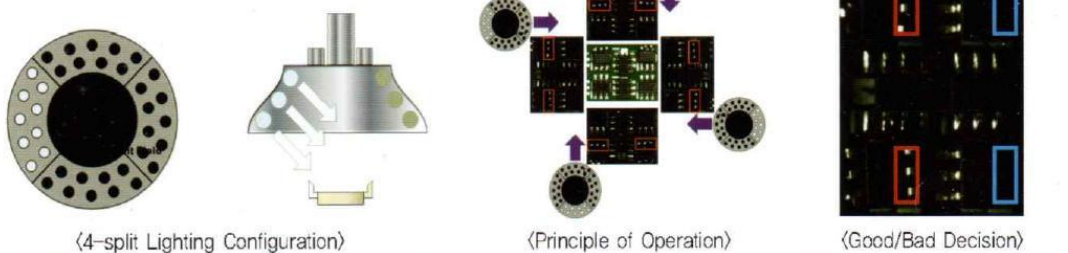
# Adopting 4-split Lighting System

Maximizing the faulty parts inspection by using the 4-split lighting system.

- Complete detection of the upset TR & IC parts
- In case of the existing 2D recognition inspection, same shape parts which the upset shape is, could not be recognized as faulty parts. (Recognizing the faulty parts by reading the characters or the markings on the parts, i.e increasing the false bad.)

## 4-split Lighting System Principle

- Individual operation through 4-split circular lighting
- Discriminating the upset parts by using the shadow

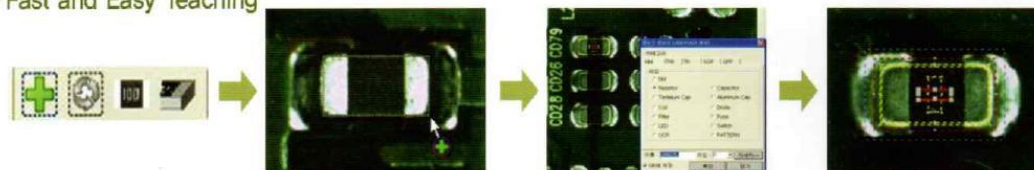


# Easy Teaching Software

## Easy Icon Menu



## Fast and Easy Teaching



① Button click

② Specify the size by using mouse

③ Specify the parts type

④ The completion of extra chip parts

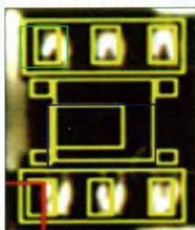


# In-Line PCB Vision Inspection System PA-500

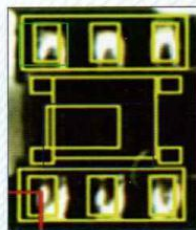
## Using the 5 Mega-pixel Camera

5 Mega-pixel camera, high speed inspection with wide and precise vision is conducted.

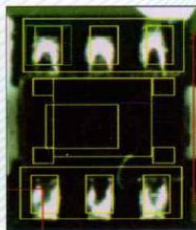
- Excellent detection-rate
- Used in 0402 & micro parts
- Minimizing error of detection



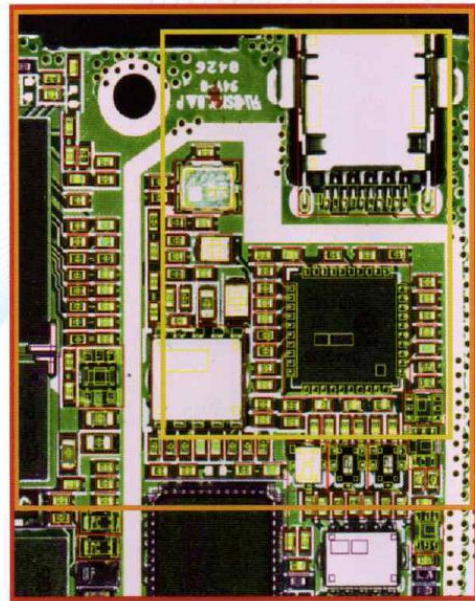
1.3M Pixel Camera  
17 $\mu$ m



2M Pixel Camera  
13 $\mu$ m



5M Pixel Camera  
13 $\mu$ m



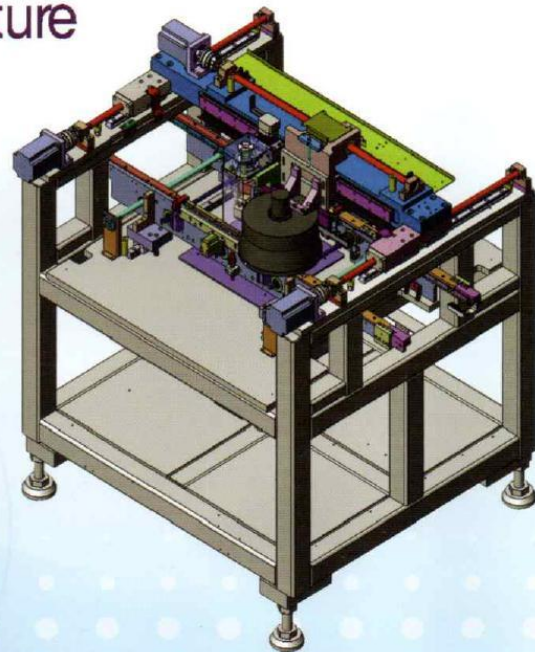
(Compare the Real Image Size)

- 2M-pixel Camera Area
- 4M-pixel Camera Area
- 5M-pixel Camera Area

## Dual Servo Motor Structure

By using the dual servo motor, stability and inspection speed is improved.

- Excellent stability and inspection speed (Repeatability:  $\pm 10\mu$ m)
- Movable structure of the camera X, Y axis for the fixed PCB
- Eliminating false bad and factors that are caused by vibration through the stable and fixed flow of PCB
- Low-center, low-vibration design through structure understanding
- Algorithm inspection method through high accuracy and high speed positioning system







Mounting & Soldering Inspection Machine

# PA-500 Series



## In-Line PCB Vision Inspection System

Using the 5 Mega-pixel Camera (World-first)

Adopting Dual Servo Motor

Adopting 4-split Lighting System

'Easy Teaching Software' for User-friendly Design