

# Testronics

a tester company with vision

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## Model 504 Automated Optical Inspection System

*Low cost, quick to program, easy to use*

### Applications:

- High Mix, Low Volume
- Medium Mix, Medium Volume
- New Product Introduction
- Line Change Verification
- First Article Inspection
- Large Boards & Backplanes
- Components with no electrical test coverage (Transparent to Test)



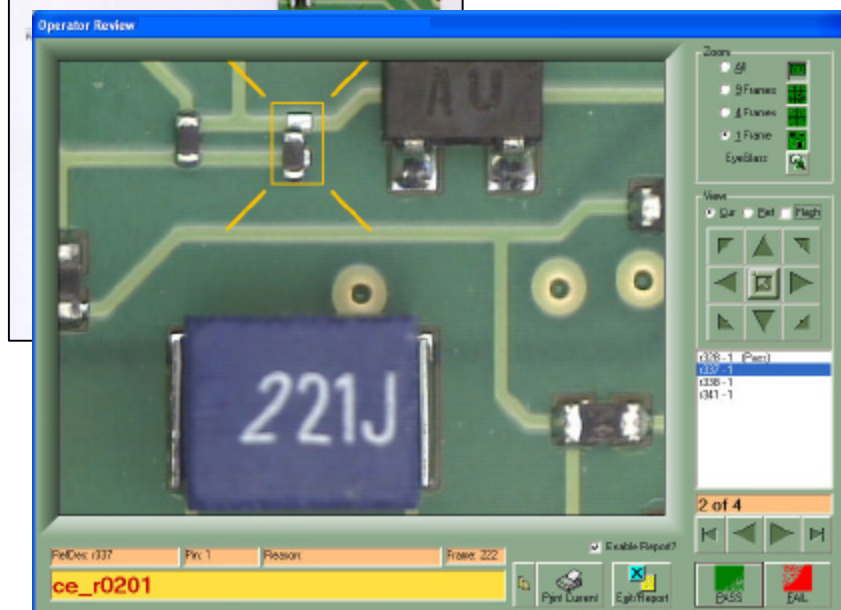
Failure Report	
RefDes: r337	
Pin: 1	
Failure: Position	
Frame: 222	
LocationXY: 357.847.3903.378	

RefDes: r308	
Pin: 5	
Failure: Missing Part	
Frame: 223	
LocationXY: 637.163.3812.675	

### 0201 Inspection

Operator review screen & failure print out



### Typical Fault Detection:

- Missing components
- Reversed components
- Polarity Mark detection
- Solder defects (excessive, insufficient, bridging, etc)
- Color markings & text verification
- Placement / position defects
- Tombstoning & Billboarding
- Part present when it should be absent (no load)
- Bent & missing connector pins / missing pin in hole

**Advanced AOI Capabilities** - Our low cost Automated Optical Inspection systems have more capability, more algorithms, and more user tools than virtually any AOI system available at any cost. Inspecting 100,000 pieces of the same part number is easy. Inspecting 25 pieces and having only couple of hours to develop the program is a far more challenging task. This is when you need the capabilities and tools of an advanced AOI system from Testronics.

**High Mix / Low Volume, NPI & First Article** applications are where Testronics AOI systems excel above all other systems, regardless of price.

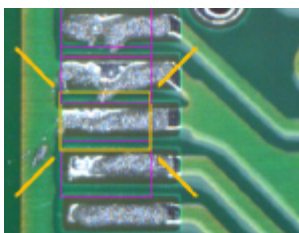
**Low price, high performance**

**FOR MORE INFORMATION, PLEASE VISIT US AT OUR WEB SITE:**

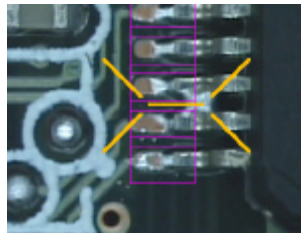
[www.testronics.com](http://www.testronics.com)

## Model 504 System Specifications & Details

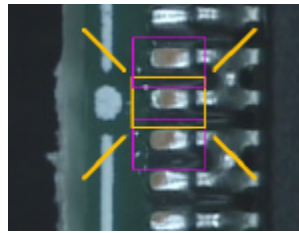
<b>Maximum Inspection Area:</b>	504: 265mm x 400mm (10.5" x 16")
<b>Image acquisition System</b>	High Resolution Digital Fire Wire Camera: Color CCD, Fstop is user adjustable Adjustable Resolution from 9 microns per pixel to 25 microns per pixel Light Source: White High Frequency Fluorescent Linear Light (White light is optimum for color imaging)
<b>Throughput / Inspection Time</b>	Approximately 0.2 – 0.3 seconds per each inspection area, Board load / unload: 1 second typical 15cm x 20cm board total inspection throughput: approximately 20 – 30 seconds depending on density
<b>Programming</b>	Programming can be done either with or without CAD data. The CAD data is matched to the component library to automatically define the Region of Inspection, (ROI) around each component. A graphical user interface is used to fine tune ROI placement and to allow the user to drag and drop additional ROI's onto items that were not part of the CAD data, (polarity marks, component text, through hole, etc). First article programming time, approximately 10 minutes Production ready AOI programming time for average sized assembly, approximately 1 – 2 hours (with libraries)
<b>Off Line Programming</b>	Optional Off-Line programming station is available. The programmer uses the 504 to scan several different assemblies of the same part number. The images are then accessible via Ethernet to the Off-Line Programming Station. The programmer then creates the inspection program and can even execute it against the other assemblies' stored images. This keeps the on-line 504 system interruption to an absolute minimum. Included is the off line programming software, PC, 19" display, color printer, DVD R/W for image archiving & bar code scanner.
<b>System Software</b>	Windows XP operating system Microsoft Access Database for data collection Flash / toggle between failed image and reference image Fiducial recognition using pattern matching algorithm Individual images are stored as .bmp files Graphical panelization tool with Skip Mark and X-out capability during inspection Parts library viewer / browser User definable error messages & error codes First article inspection mode Quick program utility to create an inspection program without using CAD data
<b>Algorithms</b>	Roicorr – Pattern matching with correlation. Prominate features are matched against features of the reference image. Roicorr 180 – Same as Roicorr, but rotates image 180 degrees on fail. (Used for text on resistors.) Histogram – One dimensional profile of the image is created and matched against the reference image's profile. Histcorr – Same as Histogram, but with correlation. Scoring is based on area rather than amplitude as with Histogram. Diff – Detects the differences between the reference image and the image under inspection. Review – Forces an operator review.
<b>Failure Reporting</b>	Color printout of defect, serial number, operator, date, time, X-Y location and reason of failure
<b>Datalogging</b>	All inspection information is stored in a Microsoft Access Database. A complete inspection report as well as a failures only report are provided. Additional reports are easily created using Microsoft Access or a 3 <sup>rd</sup> part package. The user has the option of saving failed images for archival.
<b>Offline Repair</b>	An optional offline repair / review station is available. Included is the repair / review software, PC, 19" display, color printer, DVD R/W for image archiving & bar code scanner.
<b>CAD Data Structure</b>	ASCII text file containing: -package type or part number.....reference designator.....part centroid x.....part centroid y.....rotation.....comments(optional)- The 504 edit & align module provides the ability to graphically align the cad data to the assembly. Supported is the ability to graphically manipulate the CAD data using, in any combination: rotate, flip, move, mirror X, mirror Y
<b>X-Y Stage</b>	UUT moves in Y direction, Camera moves in X direction
<b>PC &amp; Peripherals</b>	PC computer, 19" monitor, keyboard, & mouse
<b>Support &amp; Warranty</b>	One year parts and labor Free world wide telephone / e-mail support Free factory training during the first year Free software upgrades for the life of the system
<b>Dimensions &amp; Facilities</b>	504: 84cm wide x 92cm deep x 59cm high, 42 kg., Power: 90-240 VAC @ 2A, 50/60 Hz
<b>Options</b>	High Speed, 6 Mpixel camera Scripting language [Visual Basic] for advanced applications Alternate lighting source for reading text and markings on laser etched devices Off-Line programming station Off-Line repair / review station



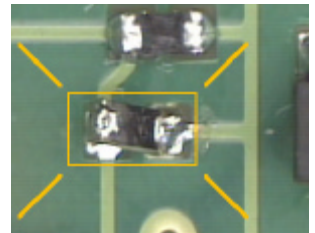
Paste



Bridging



Insufficient Solder



0201 TombStoned