

X-ray Inspection Software



Create Powerful PC-Windows Workstations for X-ray Inspection

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LKH Product Comparison Chart

X = Feature Included

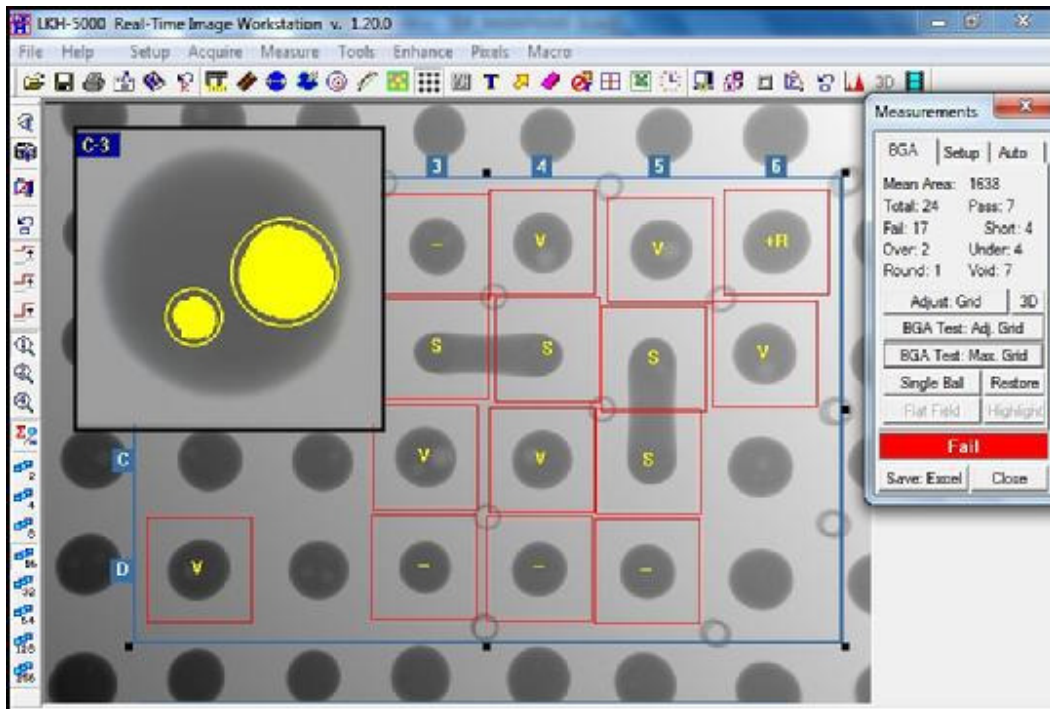
| Image Processing | LKH-5000 | LKH-4000 | LKH-3000 | LKH-2000 |
|-----------------------------------|-----------------|-----------------|-----------------|-----------------|
| Live Frame Averaging | X | X | X | X |
| Live Image Sharpening | X | X | X | X |
| Ultra-high Image Contrast | X | X | X | X |
| Image Reversal (negative) | X | X | X | X |
| Pseudocoloring | X | X | X | X |
| 3-D Rendering | X | X | X | X |
| 2X and 4X Zoom and Scroll | X | X | | |
| Live Contour Relief | X | X | | |
| Fixed-Image Filters | X | X | | |
| User-Designed Filters | X | X | | |
| Image Subtraction | X | X | | |
| Measurement & Analysis | LKH-5000 | LKH-4000 | LKH-3000 | LKH-2000 |
| Distance | X | X | X | X |
| Diameter | X | X | X | |
| Traced Area | X | X | X | |
| Percent Void (porosity) | X | X | | |
| Drill Offset | X | | X | |
| Wire Sweep | X | | | |
| Ball-Grid Analysis | X | | | |
| Pixel Histogram | X | X | | |
| Single Pixel Value | X | X | | |
| Line Pixel Profiles | X | X | | |
| Split-Screen Comparison | X | X | X | X |
| Quad-View Display | X | X | X | |
| Save Data to Excel | X | X | | |
| Annotation | LKH-5000 | LKH-4000 | LKH-3000 | LKH-2000 |
| Text Labels | X | X | X | X |
| Arrow Markers | X | X | X | X |
| Text Header | X | X | X | X |
| Archiving | LKH-5000 | LKH-4000 | LKH-3000 | LKH-2000 |
| Save Image to Disk | X | X | X | X |
| One-Click Save to Disk | X | X | | |
| Video Recording | X | X | X | X |
| E-Mail Image | X | X | X | X |
| Print Image | X | X | X | X |
| Other Features | LKH-5000 | LKH-4000 | LKH-3000 | LKH-2000 |
| Chinese Language (optional) | X | X | X | X |

LKH-5000



A high-performance software package for creating powerful X-ray workstations for analysis of electronic assemblies.

- Inspect BGA, Flip Chip and other surface mounted components.
- Analyze BGAs for voids, bridging, size, shape, and missing balls.
- Check dies for defects, such as voids, cracks and faulty wire bonds.



System Requirements

Windows 7, Vista, XP
RS-170 video input
USB frame grabber

Live Image Processing

Frame Averaging
Image Sharpening
Zoom and Scroll
Contour Relief
Pseudo color
Automatic Contrast

Special LKH-5000 Features

Automatic BGA analysis
Wire sweep measurements
Drill-Hole X-Y offset

Calibrated Measurements

Linear Distance
Circle Diameter
Percent Void
Traced Area
Pass/Fail reporting
Save Data in Excel

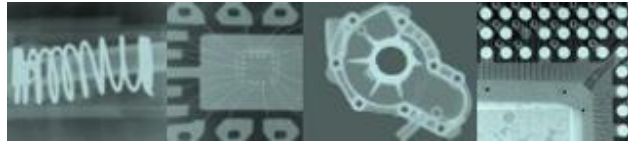
Analysis Features

Pixel Histogram
Pixel Line Profiles
Read Single Pixels
Split-Screen Display
Quad-View Display
3-D Rendering

Image Archiving

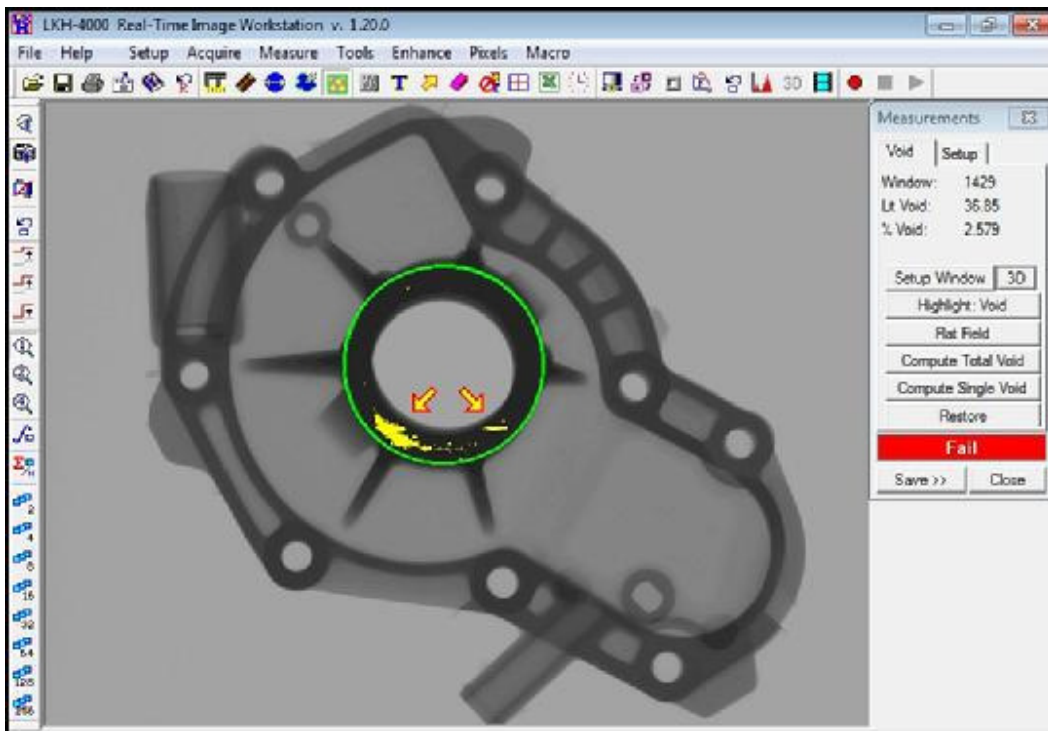
Save Image to Disk
Video Recording
Text Labeling

LKH-4000



A full-feature software package for creating PC-Windows workstations for NDT applications.

- Inspect castings, machined parts, welds, gems and other materials.
- Reveal and document defects, such as voids, cracks, and missing parts.
- Measure internal dimensions -- linear distances, diameters, and areas.



Detect and quantify voids (porosities)

System Requirements

Windows 7, Vista, XP
RS-170 video input
USB frame grabber

Live Image Processing

Frame Averaging
Image Sharpening
Zoom and Scroll
Contour Relief
Pseudo color
Automatic Contrast

Calibrated Measurements

Linear Distance
Circle Diameter
Percent Void
Traced Area
Pass/Fail reporting
Save Data in Excel

Analysis Features

Pixel Histogram
Pixel Line Profiles
Read Single Pixels
Split-Screen Display
Quad-View Display
3-D Rendering

Image Archiving

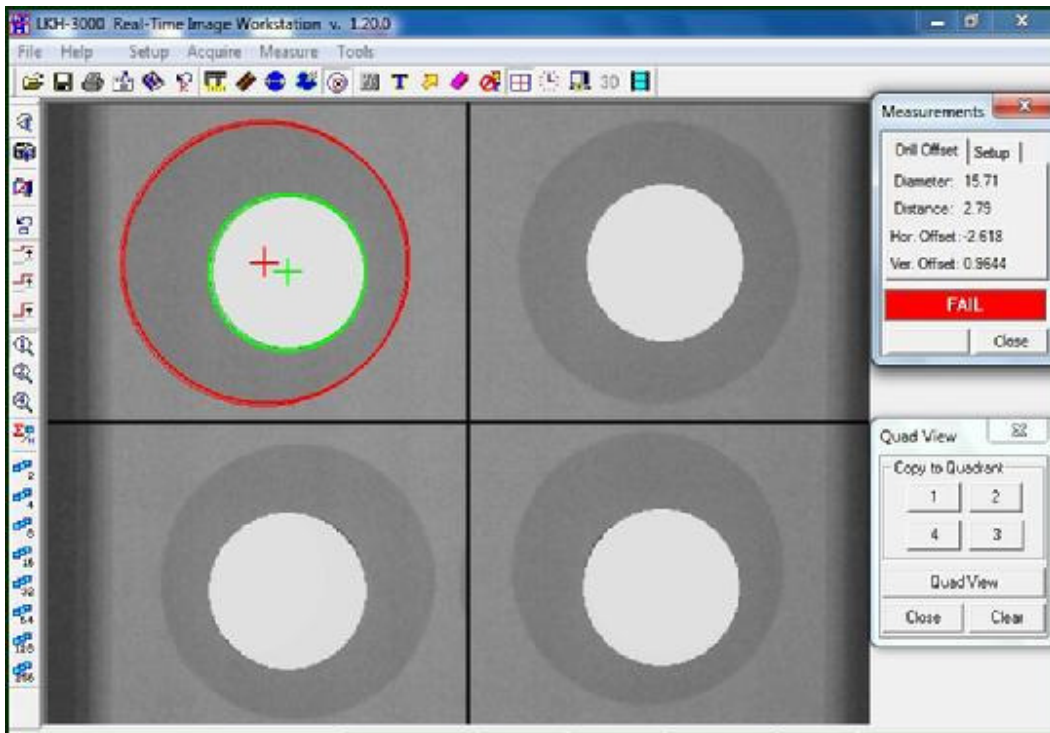
Save Image to Disk
Video Recording
Text Labeling

LKH-3000



A software package for creating PC-Windows workstations for quality control in printed circuit board fabrication.

- Inspect bare PC boards for defects early in the fabrication process.
- Measure X-Y drill offset for correcting errors in hole-pad alignment.
- Reveal and quantify inner layer registration errors in multi-layer PCBs.



Measure hole-pad alignment errors.

System Requirements

- Windows 7, Vista, XP
- RS-170 video input
- USB frame grabber

Live Image Processing

- Frame Averaging
- Image Sharpening
- Pseudo color
- Automatic Contrast

Calibrated Measurements

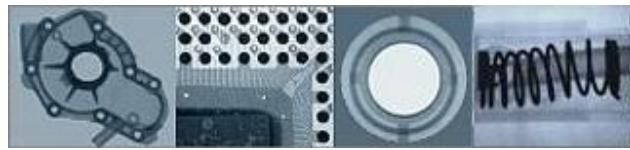
- Drill hole X-Y Offset
- Linear Distance
- Circle Diameter
- Traced Area
- Pass/Fail reporting

Analysis Features

- Split-Screen Display
- Quad-View Display
- 3-D Rendering

Image Archiving

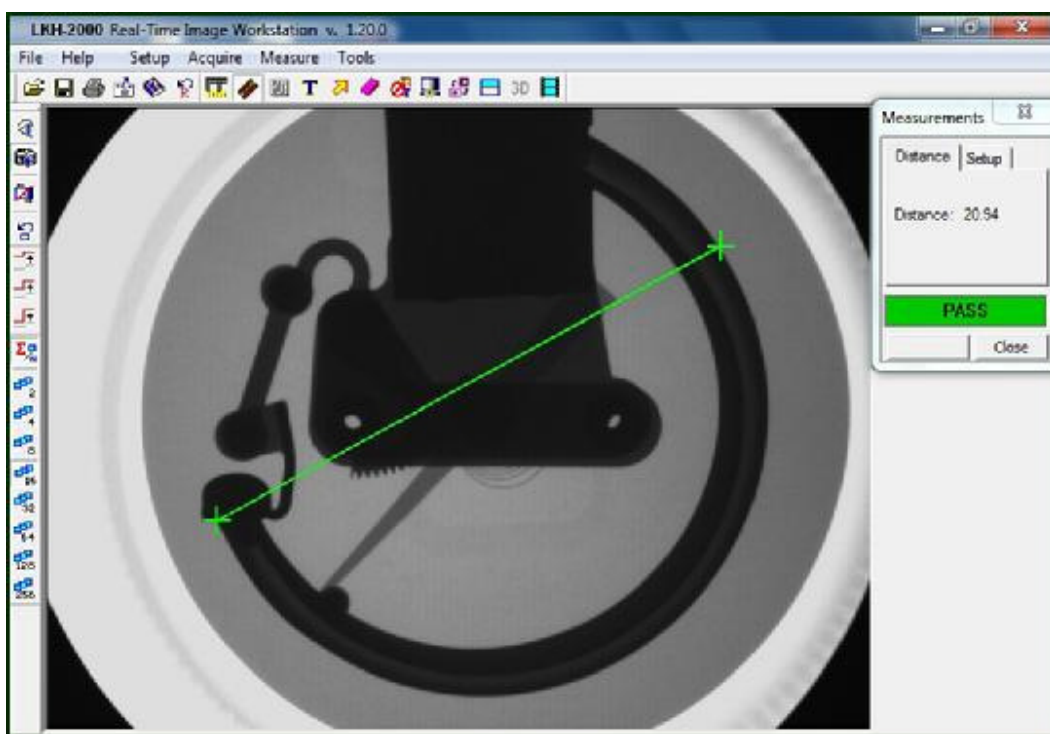
- Save Image to Disk
- Video Recording
- Text Labeling



LKH-2000

A new software package for creating basic workstations for a wide range of X-ray inspection applications

- Applications in manufacturing, forensics, gemology, medical devices, etc.
- Produce sharp, noise-free X-ray images with text labeling.
- Make calibrated measurements of linear distances with pass/fail reporting.
- Archive inspection results in disk image files and video recordings.



Measure linear distances with pass/fail reporting.

System Requirements

Windows 7, Vista, XP
RS-170 video input
USB frame grabber

Live Image Processing

Frame Averaging
Image Sharpening
Pseudo color
Automatic Contrast

Analysis Features

Linear Distance
Pass/Fail reporting
Split-Screen Display
3-D Rendering

Image Archiving

Save Image to Disk
Video Recording
Text Labeling

System and Hardware Requirements for LKH Software Packages

Operating Systems: Windows 10*, 7, Vista, and XP (32 or 64-bits).

Video Input: RS-170 monochrome composite, 1.0 Vpp, 75 ohm.

Image Acquisition Devices:

- Sensoray 2255: www.sensoray.com/products/2255.htm.
- DFG/USB2Pro: www.theimagingsource.com/en_US/products/converters/dfgusb2pro/

Image Display

Screen Modes: 800 x 600 or 1024 x 768 with 32-bit color.

Application Frame: 800 x 600 pixels.

Video Image Window: 640 x 480 pixels, 8-bit grayscale (256 gray levels).

Other Requirements.

- LKH security key must be installed in a USB port to run the software.

Caution: Replacement cost for a lost security key is the full purchase price of the software package.

* Use version 1.21.5 or later for Windows 10