

*"With the reality of ever-shrinking feature sizes in HDI flex, we've turned to AOI to advance our yield management initiative."*

## Flex Circuit Inspection

**High density flex circuits** are critical interconnect components used in the manufacture of today's miniaturized electronic devices, such as cell phones, laptops, PDA's, and FPD's. The cost of low yields, defects, and "premature field failures" in these circuits can be very high – not only in terms of financial impact but also in a manufacturer's reputation.



FLX-1000

To prevent the possibility of shipping defective flex circuits, manufacturers are now relying upon automated optical inspection (AOI) systems to increase their productivity and improve outgoing quality.

### MIDAS' FLX-1000

The FLX-1000 process module inspects high-density flex circuits at high speeds with precision down to a 3.8 micron resolution. This level of performance provides flex circuit manufacturers with the immediate feedback necessary to refine their fabrication process and improve quality while maintaining high production rates.

The FLX-1000 system allows for highly effective Pass/Fail decisions while providing valuable information for process and quality control. Yield-limiting defects such as opens, shorts, etching discrepancies, and debris are readily exposed, logged, and optionally presented to an operator for review.

### Robust Operation

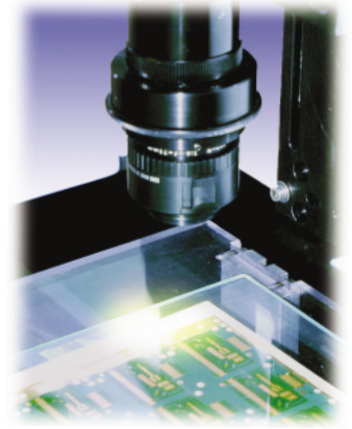
Sophisticated defect detection algorithms in the software system automatically detect and adapt to non-critical circuit irregularities, thereby greatly reducing false rejects.

### Turnkey-Ready

The FLX-1000 is ready for integration into any manufacturing facility as a stand-alone process inspection module or an island-of-automation with a loader and unloader.

### Product Highlights

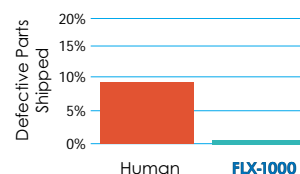
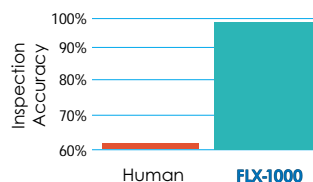
- **Automatic defect detection ...** detects yield-limiting shorts, opens and debris
- **High throughput ...** less than 2 minutes for a 234 sq. cm flex panel @ 3.8 micron
- **Flexible ...** inspection of flex panels up to 305 mm x 406 mm
- **Versatile handling ...** vacuum nest fixture for universal adaptation, Pass/Fail sorting optional
- **High precision ...** defect detection down to 7.6 micron, line and space widths down to 30 micron
- **Robust ...** feature-based variable tolerancing, adaptive defect analysis, and automatic panel stretch compensation for low false rejects



Flex Panel Inspection

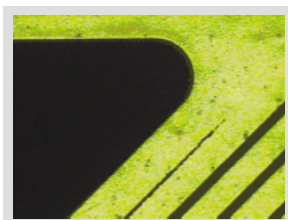
*(see detailed product specifications on backside)*

### Yield Management in HDI Flex Circuit Manufacturing

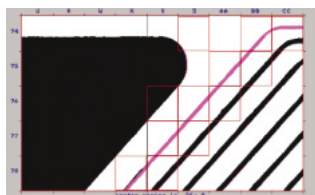


# FLX-1000

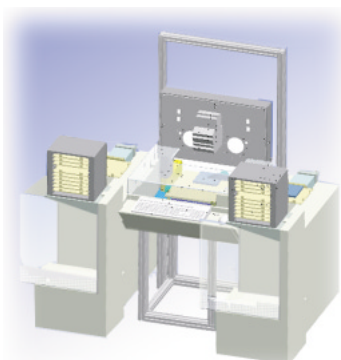
## System Specifications



Defect viewed by Stop and Stare camera



Missing conductor shown in red



Automated handler option

### Inspection

<b>Application</b>	Fine line, high density flex circuit panel inspection
<b>Panel Size</b>	381mm x 483mm (contact factory for other sizes)
<b>Active Inspection Area</b>	305mm x 406mm (contact factory for other sizes)
<b>Minimum Defect Size</b>	12.5, 7.6 microns (0.25 mil., 0.15 mil.) (contact factory for other sizes)
<b>Inspection Rate</b>	610 sq. mm/sec (contact factory for part-specific inspection rates)
<b>Defects Detected</b>	Pattern shorts or spacing violations Contamination/debris Opens, neck-downs, and pinholes Pattern misregistration Excess flex panel stretch
<b>Inspection References</b>	Template creation from a "Golden Sample" or Gerber 274X CAD-based template using optional CAD2MIDAS software
<b>Defect Review</b>	Defect verification/repair video microscope for on-line verification or repair

### Operation

<b>Measurement</b>	Feature size and location, and print density
<b>Defect Data Storage</b>	ASCII delimited files for off-line use (SPC, Reporting, etc.)
<b>Template Storage</b>	Networked server (NET2HOST™), hard disk and/or vision processor RAM
<b>Part Setup Time</b>	3 minutes for 232 cm <sup>2</sup> (36 in. <sup>2</sup> ), norm (depends on size and source of inspection template)
<b>Operator Interface</b>	Windows 2000 Professional™ - based on NT Two dedicated displays: 1. Graphical process feedback, operator input and machine status feedback 2. Live video microscope for defect review/repair
<b>Training Time</b>	Operator: 3 hours, norm Setup technician: 3 days, norm

### Options

<b>Software</b>	CAD2MIDAS™ - for creating inspection templates based on Gerber 274X with optional SmartTemplates™ ATG - automatic template generation package for creating highly robust inspection templates with variable sensitivity for ultra-low false calls.
<b>Panel Fixturing</b>	Universal tooling plate included. Available options include custom tooling designs, vacuum tooling fixture, cassette-to-cassette handling automation, automatic theta alignment, part marking.
<b>Power Fault Protection</b>	External UPS available.

### Electro-Mechanical

<b>Dimensions</b>	97cm W x 117cm D x 183cm H (38"W x 46"D x 72"H)
<b>Weight</b>	231 kg (510 lbs)
<b>Electrical</b>	110/220 VAC 7 amp (10 amp max)
<b>Safety</b>	Semi-S2 compliant
<b>Certifications</b>	CE, UL Approved



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