

"Precision, high-speed inspection of photo masters supports our yield management initiative and greatly improves customer satisfaction."

Photo Master Inspection

Photo masters are critical components used in the manufacture of increasingly complex electronic and semiconductor devices. The cost of low yields and defects in glass/quartz/film photomasks can be very high -- not only in terms of dollars but also in reputation. To avoid the possibility of shipping defective photo or artwork masters, manufacturers are now relying upon automated optical inspection systems to increase their productivity and improve outgoing quality.



PM-1000

MIDAS' PM-1000

The PM-1000 AOI process module inspects photo masters with resolution down to 3.8 micron. This provides photo tool manufacturers with the immediate feedback necessary to refine their fabrication process and eliminate defect-causing phenomenon.

The PM-1000 performs fast, accurate and repeatable photo master inspection. The system provides highly efficient Pass/Fail decisions while logging valuable information for process and quality control. Yield-limiting defects such as particulate, etching discrepancies, and debris are readily exposed, logged, and optionally presented to an operator for review.

Robust Operation

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

Turn-Key Ready

The PM-1000 comes ready for integration into any manufacturing facility as a stand-alone process inspection module.

Highlights

- **Automatic defect detection ...** detects yield-limiting excesses, voids and debris on photo masters
- **High throughput ...** less than 2 minutes for a 234 sq. cm photo tool @ 3.8 micron
- **Flexible ...** inspection of photo tools up to 305 mm x 406 mm
- **Versatile fixturing ...** universal adaptor with micro-alignment tools
- **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 dual thresholding for low false rejects

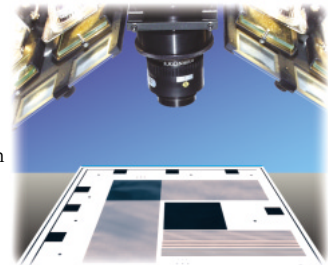
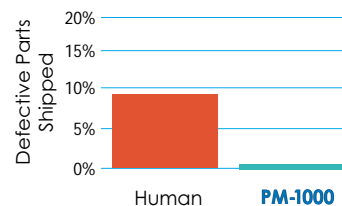
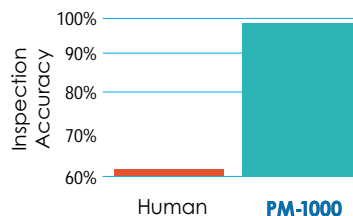


Photo Master Calibration Standard

(see detailed product specifications on backside)

Yield Management in Photo Tool Manufacturing

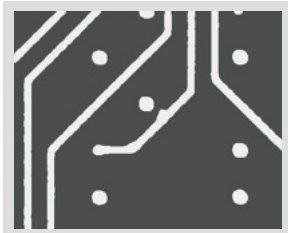


PM-1000

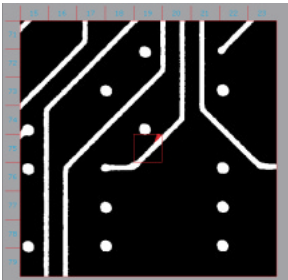
System Specifications

Inspection

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



Defect viewed by Stop and Stare camera



Missing conductor shown in red

Operation

Measurement	Feature size and location, and emulsion/chrome density
Defect Data Storage	ASCII delimited files for off-line use (SPC, Reporting, etc.)
Template Storage	Networked server (NET2HOST™), hard disk and/or vision processor RAM
Part Setup Time	3 minutes for 232 cm ² (36 in. ²), norm (depends on size and source of inspection template)
Operator Interface	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
Training Time	Operator: 3 hours, norm Setup technician: 3 days, norm

Options

Software	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.
Panel Fixturing	Universal tooling plate included. Available options include custom tooling designs, automatic theta alignment, defect mapping.
Power Fault Protection	External UPS available.

Electro-Mechanical

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



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