



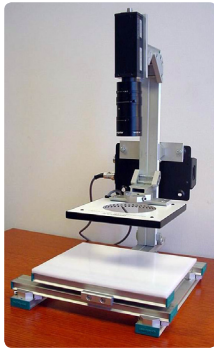
SCORPION 5 DESKTOP AOI

COST EFFECTIVE AUTOMATIC OPTICAL INSPECTION

Tordivel AS offers a cost effective and flexible Scorpion Desktop AOI concept. The concept is built around Scorpion Vision Software, standard PCs, high quality digital firewire cameras, flexible mechanics, illumination and desktop robots.

PolygonMatch™ Technology ensures sub-pixel resolution and optimal and robust fiducial object location.

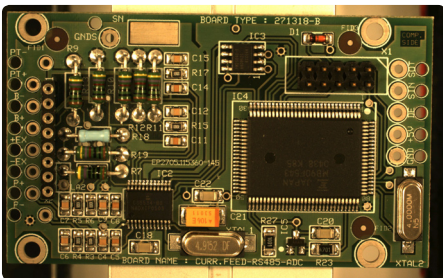
Scorpion 1 MPixel Desktop AOI without robot including mechanics, illumination and Sony digital Firewire camera.



Scorpion Vision Software with point & click, easy to use imaging tools and configurable user interface, requires no programming skills, and makes users able to configure an application within minutes.

Using Scorpion profiles, an unlimited number of product variants can be inspected with individual setup.

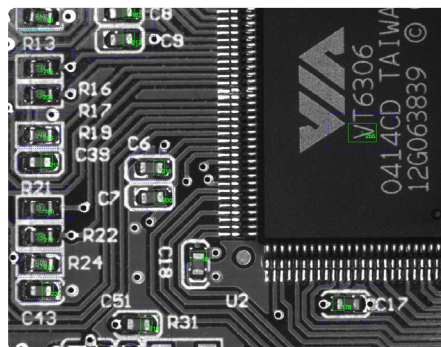
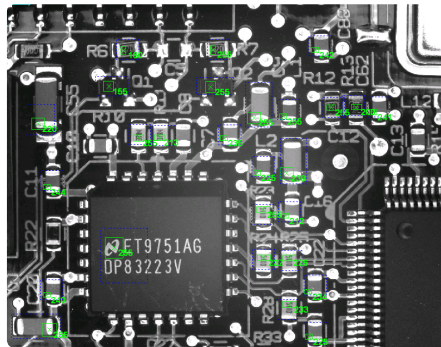
A Scorpion Desktop AOI system can be upgraded to an automatic in-line system.



Color circuit board inspected with Scorpion 2.5 MPixel desktop AOI system. Location, orientation and presence is verified for each component.

Products with sizes up to 350 mm x 350 mm can be inspected using the Sony Desktop Robot Cast-II. The resolution can be increased, down to 1 micron, when capturing multiple images.

The Desktop AOI without a robot is ideal for products with sizes up to 100 x 100 mm. Connect a digital camera through a standard Firewire interface to a PC, adjust the macro lens and illumination, and use Scorpion Vision Software to measure dimensions and distances, check print, labels and patterns within tolerances down to 0,1 mm.

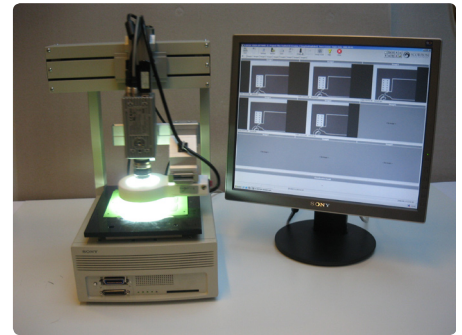


Multiple images to inspect with higher resolution

Scorpion Robokid Desktop AOI captures multiple images to increase resolution and sensitivity.

Typical inspection time per image is 1 second for robot movement and image processing.

Teaching can be performed offline on a separate PC with Scorpion Maintenance.

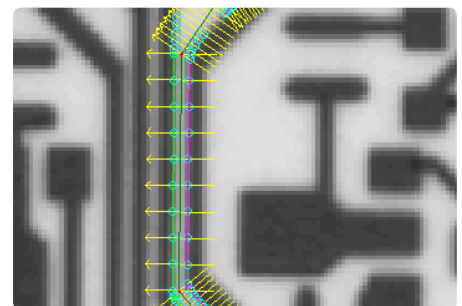


Scorpion Desktop AOI with Sony SmartCam and Robokid Desktop Robot

Fast teaching is imperative for the success of a Desktop AOI system. The powerful toolbox concept with user defined templates, copy and paste of multiple tools is very efficient - more than two components per minute is to be expected.

Teaching is fast by point & click, shortcuts and Polygon Model and Line Tracing Wizards. The Line Tracing Wizard positions the inspection path in the optimal center position of the path to be inspected. PolyLineGapFinder is designed to detect small short circuits and broken circuits with a unique two step approach:

1. Locate candidates looking for contrast changes along the inspection path.
2. The candidates are examined using a dynamic blob analysis.



The Line Tracing Wizard puts the polygon on a light or dark band while the user is clicking in the image.



PRODUCTS

The Scorpion Desktop AOI system comes in several versions:

- Scorpion 1 MByte Desktop AOI
- Scorpion 2.5 MByte Color Desktop AOI
- Scorpion 1 Mbyte Robokid Desktop AOI
- Scorpion 1 MByte Cast-II Desktop AOI

Custom versions on requests. Detailed information is found in the Scorpion Vision Software pricelist.



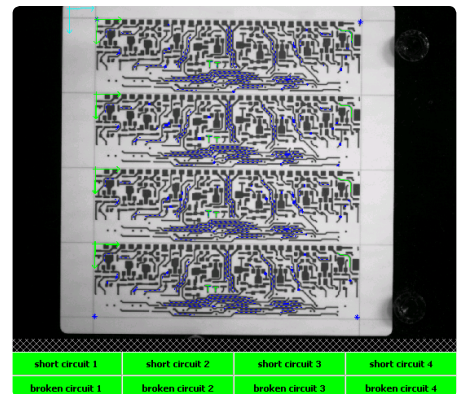
A cabinet can house the AOI system. This one contains a complete inspection system with desktop robot, cameras, illumination, product fixture and computer running Scorpion Vision Software.

INSPECTION SPEED CALCULATIONS

Typical Inspection Speed without Robot is 1 second.

Typical inspection speed with robot depends on resolution and number of images captured.

Scorpion 1 MByte RoboKid Desktop AOI with 100 x 100 mm and 0.025 mm resolution gives 16 images x 1 second / images = 16 seconds inspection time.



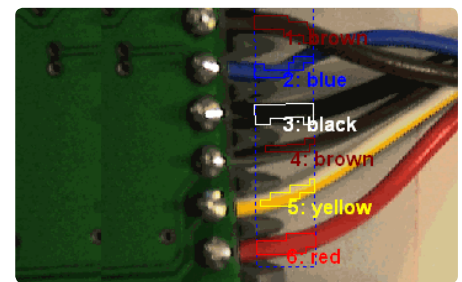
100 x 100 mm circuit board inspected for short and broken circuits with Scorpion 2.5 MPixel Desktop AOI.

EXAMPLES OF USE

Optional 1D and 2D Barcode decoding modules are available for Scorpion Desktop AOI. OCR and OCV is supported by the Template-Finder3 tool in Scorpion.



The 1D Barcode is used to identify the circuit board.



Color verification and identification is supported by Scorpion Desktop AOI.

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TECHNICAL DATA

Typical Computer System

- 19" Sony TFT 1280 x 1024
- Standard PC P4 3.0 GHz
- 512 Mbyte to 2 Gbyte memory

Software

- Windows XP SP2
- Scorpion Vision Software®
- Scorpion Sony Robot Control Module
- Desktop AOI Robot Profile
- Desktop AOI Profile

Robot system

- Sony Robokid
- Sony Cast II

Language Support

- English and Norwegian

Camera system

- Works with any digital Firewire camera
- Cameras in standard configuration:
 - Sony XCD-910 BW 1280 x 1024
 - Sony XCD-910 CR 1280 x 1024
 - Baumer ARC-50 2540x1920 Color
- Optional camera calibration grid

Working Area / Resolution

- Resolution: 1.0 mm to 0.001 mm
- Inspection area: up to 350x350 mm

Illumination

- Fluorence ring light
- Custom illumination

Specifications might change without any notification.