CYBEROPTICS®
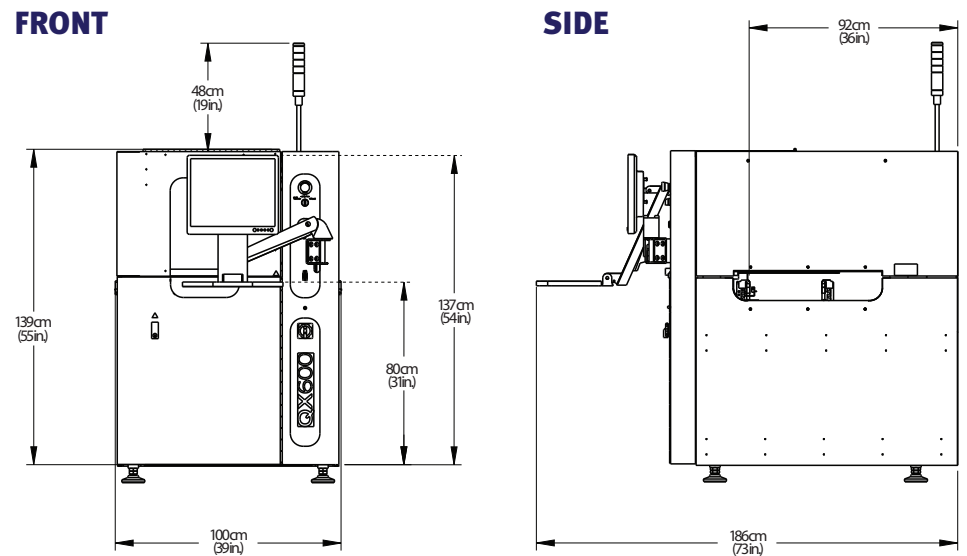
QX600™ 2D AOI

INSPECTION CAPABILITIES

Typical Scanning Speed	200 cm²/sec (31 in.²/sec)
Minimum Component Size	0402 mm (01005 in.)
Board Width	50 mm to 308 mm (2.0 in. to 12.0 in.); L size: 50 mm to 590 mm (2.0 in. to 23.2 in.)
Board Length (without re-inspection)	50 mm to 457mm† (2.0 in. to 18.0 in.); L size: 50 mm to 510 mm (2.0 in. to 20.0 in.)
Component Height Clearance (Max.)	35 mm (1.378 in.)
Board Edge Clearance (Min.)	3.0 mm (0.125 in.), bottom side only
Component Types Inspected	Standard SMT (chips, J-lead, gull-wing, BGA, etc.), through-hole, odd-form, clips, connectors, header pins, and others
Component Defect Categories	Missing, polarity, tombstone, billboard, flipped, wrong part, gross body and lead damage, and others
Solder Joint Defect Categories	Solder bridge, opens, lifted leads, wettability, excess and insufficient solder, debris, and others
Other Items Detected	Gold-finger contamination, pin-in-hole, bent pins, debris, and many others
Component Measurement Categories	Component X, Y position, and rotation
Measurement Gage R&R	<10% (down to 0402 mm components)

† With re-inspection support, the board length can be extended to 510 mm using conveyor extension kit

VISION SYSTEM

Imagers	80 Megapixel sensor
Image Transfer Protocol	PCIe
Lighting	Strobe white light (with dark/bright field)
Resolution	12 µm pixel size
Image Processing	Statistical Appearance Modeling (SAM™) technology
	*Option: Autonomous Image Interpretation (AI²) technology
Programming	Simple on-line or off-line, ePM software
CAD Import	Any column separated text file (standard information required – ref. designator, XY, angle, part no.,)

SYSTEM SPECIFICATIONS

Conveyor Height	Adjustable to 832 – 990 mm (33 – 39 in.)
Machine Interface	SMEMA, RS232 and Ethernet
Alarms	Light pole and audible alarm
Power Requirements	100-120VAC or 220-240VAC, 50/60Hz, 10 amp max.
System Dimensions	100 x 127 x 139 cm
Weight	~410 kg (904 lbs.)
Machine Installation	<1 hour

OPTIONS

SPC Software, Offline Defect Rework Station, Sensor Alignment Target, Barcode Readers (1D/2D), High Speed PC Kit, Dual Side Inspection Kit, Right-to-left Configuration Kit

QX600

Ultra Fast, Ultra Versatile

2014 Global Technology Award for QX600

Best in Class 01005 and Solder Joint Inspection

3 YEAR WARRANTY*

*On standard parts only (excludes conveyor belts and other consumables); 1 year warranty on service

FRONT

48cm (19in)
139cm (55in)
100cm (39in)

SIDE

92cm (36in)
137cm (54in)
80cm (31in)
186cm (73in)

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For information about other CyberOptics' offices and global support network, please visit www.cyberoptics.com

BEST ACCURACY AT ASTONISHING SPEED

- **All-new SIM (Strobed Inspection Module)** with Enhanced Illumination
- **Higher Resolution (12 µm)** for perfect, crisp quality images
- **Production Ready in <13 minutes*** with AI²
- **01005 Inspection** Capability
- **Improved Solder Joint** and **Gold Finger Inspection**
- **Lowest False Call Rate** and **Zero Escapes**

*For pre-defined parts

QX600™ 2D AOI

Ultra Fast, Ultra Versatile
Revolutionary AOI Technology, Unbelievable Speed

www.cyberoptics.com

ALL-NEW SIM WITH ENHANCED ILLUMINATION

The QX600™ is powered by an all-new, SIM (Strobed Inspection Module) with enhanced illumination – designed to give you the best 01005 and solder joint inspection performance ever.

With a higher sensor resolution (12µm), you get to see crisp, perfect quality images for more accurate defect review. And, as always, the SIM is absolutely calibration-free.

SIM (Strobe Inspection Module)
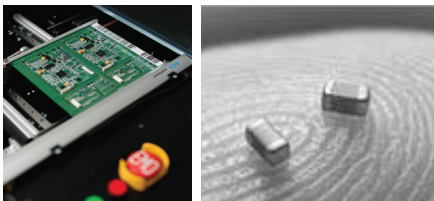
01005 component size inspection capability

INSPECT 'ANYTHING'

CyberOptics' AI² (Autonomous Image Interpretation) technology is a complete refactor of our proven Statistical Appearance Modeling techniques. AI² is all about keeping it simple – no parameters to adjust or algorithms to tune. And, you don't need to anticipate defects or pre-define variance either – AI² does it all for you.

Just draw a box, show a few good examples and you are ready to inspect just about anything. Add more images to the model and watch false call rates get even lower.

You can share components in the central model library and reuse them when you create new programs – so much lesser programming and so much more consistency.

With AI², you have the power to inspect the most comprehensive list of features and identify the widest variety of defect types – including those that you least expect.
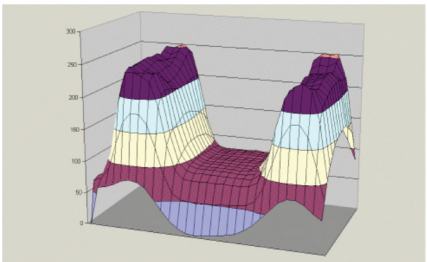
AI² Software:
Unique Image Processing Technique
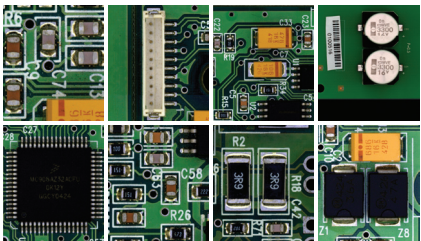
Components Inspected/ Detected

Measurement Technique	Inspection Performance	Programming Simplicity
CyberOptics' AI² Software	Lowest False Call Rate | Reliable and Repeatable Discrimination | Robust ✔	No complicated algorithms | Faster Programming | Lesser Examples ✔
Algorithm Based	✔	
Pattern Matching		✔

QX600™ 2D AOI
Ultra Fast, Ultra Versatile

AI² – FASTER, SIMPLER AND SMARTER

With AI² technology, programming gets *even* faster – with a 90% reduction in examples required – so you get superior defect detection and low false call rates even with just **one example**. This means significantly lower tuning time and quality results with one panel inspection. Perfect for those high-mix or low volume applications!

With its unique ability to 'ignore' bad examples in a model, AI² offers precise discrimination even with excessive variance and minimizes effects of outlier examples.

Plus, it is a lot simpler with full support for unsupervised and semi-automatic model training. And, examples are pre-sorted so you can select and clear the ones you don't need – very quickly.

The pixel marking feature highlights defective spots, so you can identify genuine defects instantly.

3-EASY-STEPS PROGRAMMING

Our latest software improvements take programming to a whole, new level – zero to production ready in less than **13 minutes!** All this is made possible, with an all-new data-rich, pre-loaded library and automated scripts that collect examples and update models – all on their own.

FAST, SCALABLE SPC SOLUTION

CyberReport™ offers full-fledged machine-level to factory-level SPC capability with powerful historical analysis and reporting tools delivering complete traceability for process verification and yield improvement. CyberReport™ is easy to setup and simple to use while providing fast charting with a compact database size.
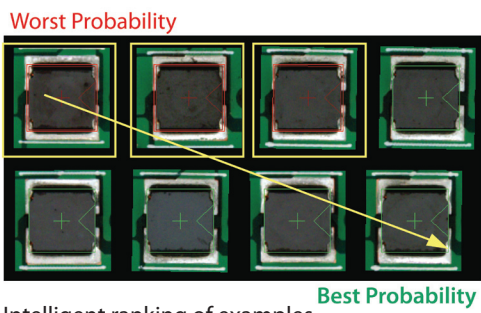
Worst Probability
Best Probability
Intelligent ranking of examples
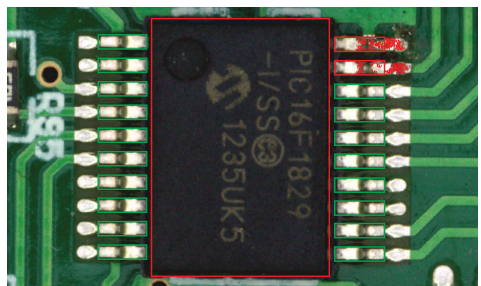
Active Pixel Marking

Scan to know about achieving Near-to-zero Setup Times using Modeling Techniques

1 Import Component from Library
2 Auto-collect First Example
3 Auto-update Model

< 13 min programming*
*For pre-defined parts

Simplified Programming Process

Factory-level SPC
Line-level SPC
Yield
Machine-level SPC

C YBER report™

CYBEROPTICS®