

# *A*Leader

*LEADING THE WAY*



**i3D  
INSIDE!**

**Optical Inspection Solutions**

## Shadow-Free Technology

The shadow projected by taller components on smaller adjacent components presents a challenge for many AOI systems. In many cases inspections are limited, and sometimes even cancelled. ALeader's optical and lighting systems provide the perfect response to this challenge. The shadows do not reduce the inspection quality even in the most problematic areas on the PCB.



The shadow does not affect the inspection of the adjacent components

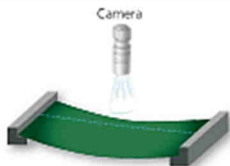


Lifted pins between very high connectors successfully detected

## Warpage-Free Technology

In production the PCB is often warped due to its design or to the influence of high temperatures applied during the reflow process.

ALeader's AOI i3D technology automatically overcomes any board warpage, without requiring user intervention.



## Tall Components

The large depth of field of ALeader optical system allows to inspect the tall components without compromising on the inspection quality.

The top surface image and the image of the solder joint on the board level are equally sharp and clear.



## Insensitivity to the Component's and PCB Color

ALeader's AOI is capable of inspecting PCBs of any color. No user adjustments are required during program creation and tuning.

The color of the component does not reduce the system's accuracy; however it serves wrong component and polarity detection, as well as other inspections.



## Polarity Inspection

In actual production conditions many AOI systems encounter difficulty in detecting all polarity marks.

ALeader AOI is capable of detecting the most challenging polarity types, on all component surfaces. The detection is stable and consistent, with no escapes and a very low false alarm rate.



## OCV/OCR

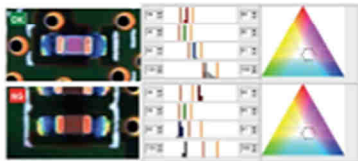
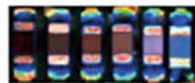
ALeader AOI is capable of inspecting writing and marks on all components, where such inspection is required.

- ✦ Easy setup
- ✦ Stable inspection of all component types
- ✦ Does not affect the system cycle time
- ✦ Link to the component part number
- ✦ Multiple templates for the same component location (components from different vendors)
- ✦ Can be used as a polarity inspection



## Wrong Part Inspection Using Color

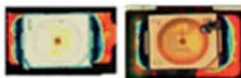
ALeader's AOI system is capable of detecting the wrong component by its color. This feature is required mainly for inspecting the capacitor chip (a standard inspection in ALeader's system). Feature setup is completed within seconds.



## Inspection of LED and other transparent components

LED components have become increasingly common in today's production. ALeader AOI system has a unique ability to clearly see the wire bounding inside the LED and perform a complete set of inspections.

- ✦ Polarity verification
- ✦ Wrong component
- ✦ Damaged component
- ✦ Disconnected wiring inside the component



## Programming and Debugging

ALeader's programming approach is very straightforward and fast. A high-quality program with no escapes and a low false alarm rate can be created quickly and easily, without the assistance of highly skilled programmers.

- ✘ Central library structure
- ✘ Part number and package links – in the new program most of the components are automatically defined
- ✘ Simple and fast definition of non-standard components
- ✘ Automatic setup of IC pins inspection
- ✘ Easy and transparent component definitions, no "black box"
- ✘ No need for defect samples to create a program without escapes
- ✘ Over 90% of the programming can be done offline
- ✘ Easy and very quick definition of OCV/OCR, body color – one click solution
- ✘ Effective debugging procedures
- ✘ Offline debugging



## Inspection Result Verification

- ✘ Ensures the operator will not miss the defect detected by AOI
- ✘ The operator can easily locate the component on the board
- ✘ Clear component image for reliable verification; in most cases the operator does not need a real board to make a decision
- ✘ Standard component image
- ✘ Inspection history review
- ✘ Operator feedback
- ✘ Option of using one repair station for multiple AOI machines



## Offline AOI

In addition to the standard in-line model, ALeader also offers an offline version of AOI – ALD625 Pro.

The system is designed to support prototyping and high-mix production. Easily installed and operated in any production environment, ALD625 Pro also implements i3D technology, and provides the same high level of performance as the inline model.

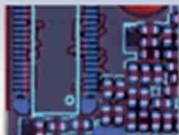
A high-speed digital camera, a multidirectional lighting module and a grid laser measurement system are available. ALD625 Pro uses the same software and is fully compatible with the inline ALD770 Pro – both systems can share the same library and programs.



## Pre-Reflow Application

Full inspection coverage for pre-reflow application.

- ✖ Inspection for missing and misaligned components, polarity
- ✖ OCV/OCR, wrong component
- ✖ Shorts



## Through-Hole Components Inspection

ALeader AOI advanced proprietary algorithms perform a full inspection of through-hole components in reflow and wave applications.

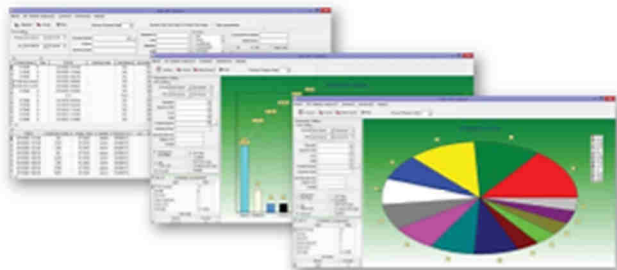
- ✖ Presence-absence inspection
- ✖ Polarity
- ✖ Lifted component
- ✖ Solder Shorts
- ✖ Solder inspection
  - Pin/Blow Hole, Cracked Joint, Incomplete Joint
  - Poor Hole Fill, Poor penetration, Sunken joint



## Process Control

Advanced Software Process Control for production monitoring, defect prevention and continuous process improvement.

- ✖ A variety of defect analysis reports
- ✖ Yield reports
- ✖ Cp, Cpk, Gauge R&R calculations
- ✖ Machine status reports
- ✖ Reports per line
- ✖ Verification summary
- ✖ DPMO analysis
- ✖ Alerts



## First Article Inspection

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Many customers use the First Article Inspection to independently verify the new product's quality before starting mass production, and to confirm that the specifications and design requirements have been properly implemented into the production process.

ALeader AOI supports this verification process with its proprietary application, which takes the board image produced by the system and checks it against the BOM and board schematics, part-by-part.



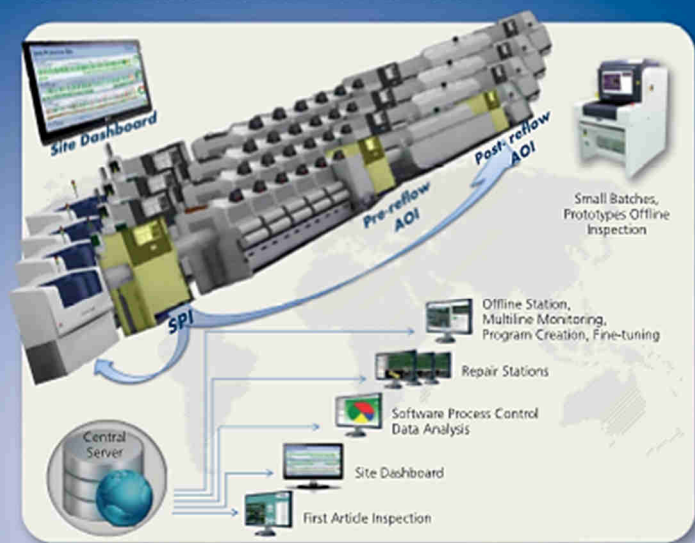
## Real-Time Production Control

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Site Dashboard is an application designed to deliver and present real-time SMT information to production managers. It uses the AOI inspection results as input, analyzes the data and presents it in a user-friendly, transparent manner. Additionally, the system generates several valuable reports and alerts the user to quality issues in the production line.



## COMPREHENSIVE SOLUTION FOR YOUR PRODUCTION



- ✦ i3D technology enhanced by a grid laser measurement system
- ✦ Camera on-the-fly technology
- ✦ Extremely low FA rate, high FPY and no escapes
- ✦ 100% inspection coverage
- ✦ Ideal for inspection of 0201 and 01005 components, 0.3 mm pitch
- ✦ Fast and accurate inspection
- ✦ Fast programming, intuitive user interface, shadow-free, warpage-free solution, insensitive to board color
- ✦ Effective quality verification
- ✦ Process control for defect prevention
- ✦ High MTBF, low maintenance cost

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