



LADYBIRD

AOI System for Through Hole Assembly Processes



Prevent defects from your through hole component placement processes

LADYBIRD · **LADYBIRD SERVER**

SANKO
Universal Neo Zeal
SUNZ

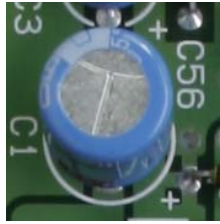
* This image shows a stand alone batch loading system.

Inspection items

Various types of inspection are possible including the typical inspection of parts shown below:



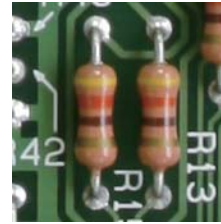
Polarity and existence of clear parts



Polarity and existence of electrolytic capacitor



Polarity and existence of diodes



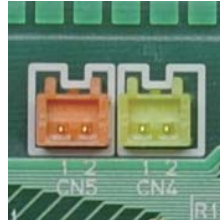
Existence of resistors



Existence of parts



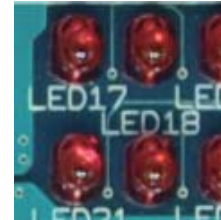
Polarity and existence, wrong pin number for IC



Wrong connector color



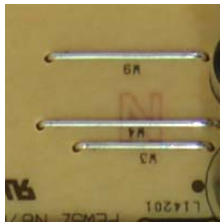
Polarity and existence, wrong pin number for connectors



LED color and brightness



Existence of parts with the same color on white boards



Existence of jumper leads



Excessive inclination of parts



Brightness and lighting failure in each segment



Screw existence



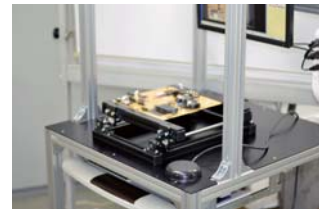
Polarity and existence of white photo couplers

Features

Fast Cycle time - typically < 12 seconds ~ Fixed Camera with no moving parts ~ 80mm depth of field
Fiducial recognition for repeatable inspections ~ Image are stored for statistical review



Adopts the **FuzzicalZ** Engine which utilizes inspections made by judgements of color signatures. A proven technology which succeeds the genealogy of the DIPSTAR platform.



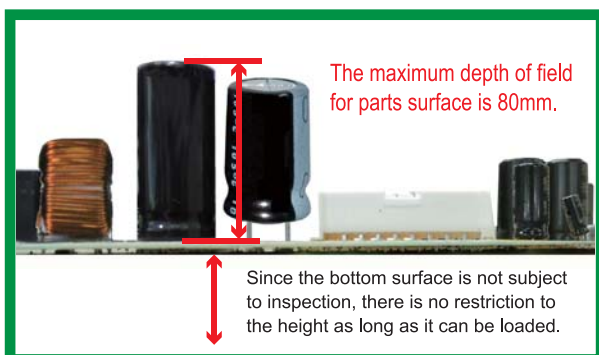
*Stand alone batch system



High-resolution Camera unit



*Inline system



- * The Ladybird does not use image comparison
- * There are no stored images in the library to compare the inspections
- * Adopting the proprietary **FuzzicalZ** Engine to make inspections by judgements of color signatures
- * The Ladybird has a very fast cycle time (since no library has to be analyzed from saved images) - typically < 12 seconds
- * Image capture is taken in one snap (full pcb) - not by a moving camera (there are no moving parts)
- * Large depth of field at 80mm - meaning you can view the tops of an 80mm capacitor and the board surface
- * Programming and debug is done offline
- * All inspected images can be stored
- * Statistical data of inspections can be used for process improvement

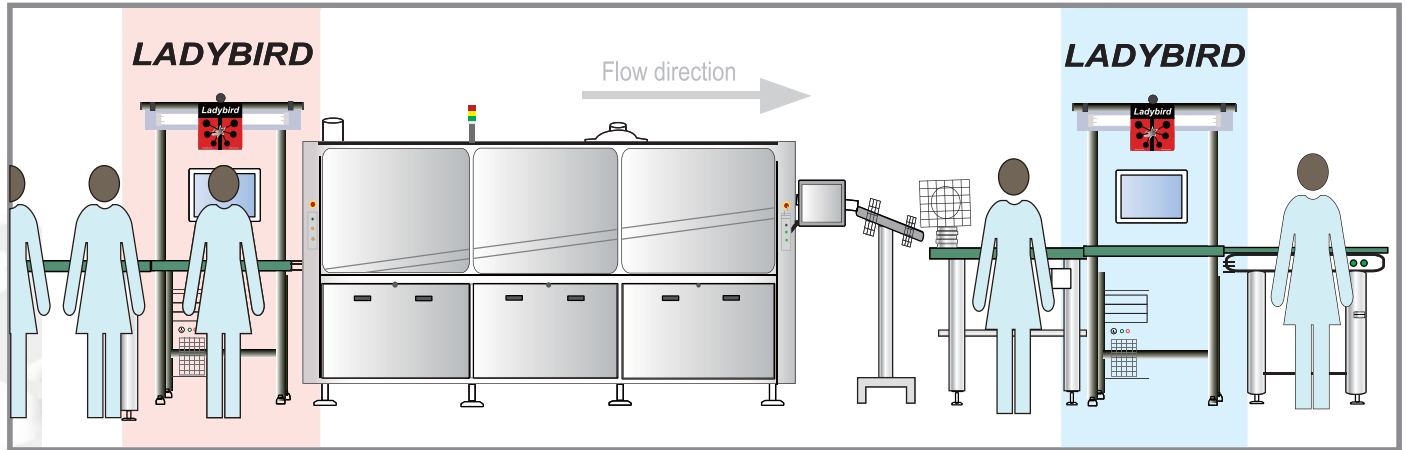
Automation of Through Hole Assembly Process

In the past, it has been considered difficult to automate the hand insertion (slide line) or automated (axial and radial) insertion processes of through hole components. It has been accepted that manual visual inspections are the only solution. Many have attempted to utilize current SMT AOI for this task only to have experienced enormous false calls and height restrictions with PCB's. By installing the LADYBIRD before the wave (or selective) soldering machine, you will be providing test coverage before the PCB is soldered. This allows for a full inspection test, defects to be identified all while providing the operator time to repair / fix the defects before soldering the PCB correctly.

Virtually eliminating all placement related defects (wrong polarity, wrong part, lifted leads, missing and so on) in your through hole soldering process.

If you chose to install the LADYBIRD after the wave, you can utilize the inspection process to validate the same features are pre solder and eliminate defects from continuing to your ICT or Functional test process.

The data that is collected provides analysis on defect tendencies allowing you to have quick feedback to the line for process adjustments.



System configuration outline

【Programming Station Server】



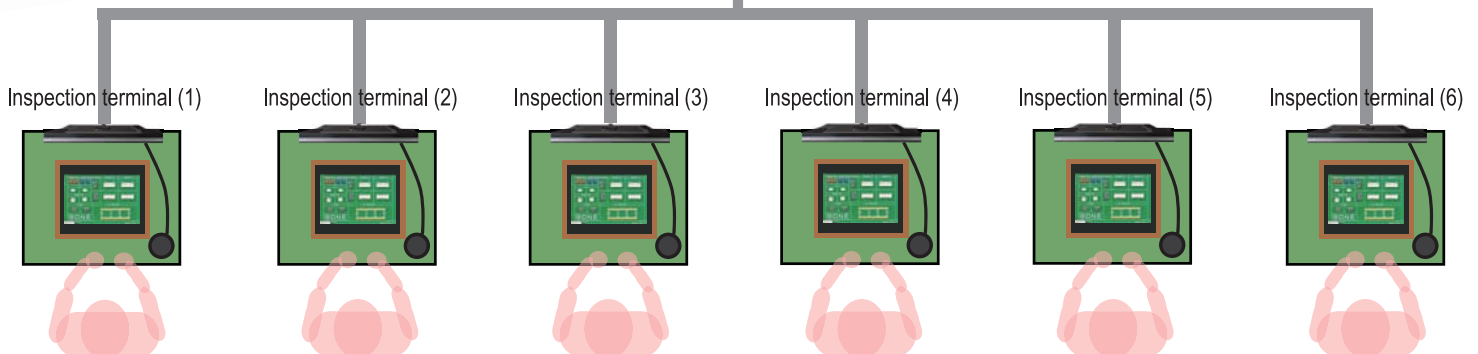
Roles of a server

- (1) Preparation of test programs
- (2) Debugging of test programs
- (3) Storage of test programs
- (4) Management of test terminals
- (5) Data collection and storage

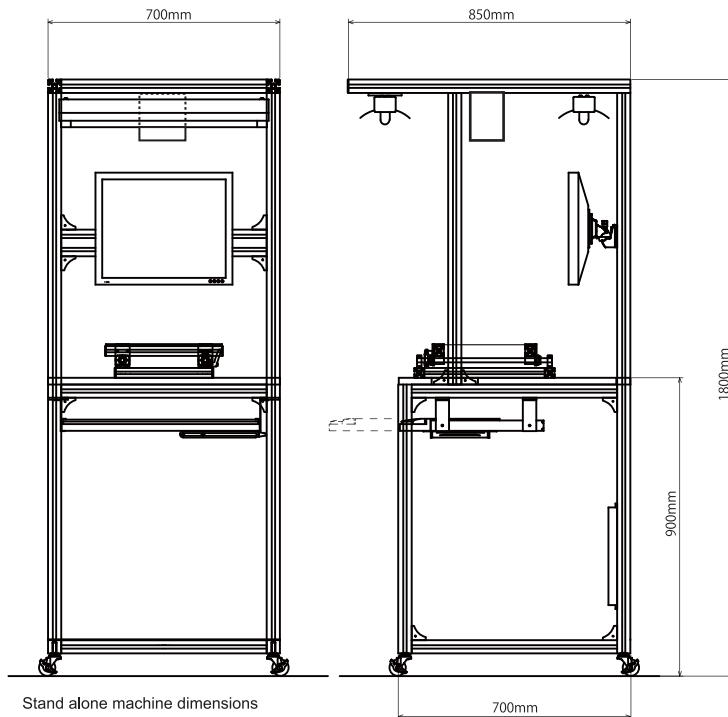
* Program preparation, editing, and storage work cannot be implemented at all on the inspection terminals.

【Inspection Terminal】 LADYBIRD

* Connection possible up to 6 inspection terminals per programming station server.



Specifications



Inspected board specifications

| | |
|--------------------------|---|
| Board size (HD) | 50mm × 50mm to 460mm × 610mm |
| Board thickness | 0.5 to 2.0mm |
| Board warpage | 3mm or less |
| Height of parts (bottom) | Stand Alone - 20mm, Inline - Customizable |
| Height of parts (top) | 80mm or less |

Inspection specifications

| | |
|----------------------|--|
| Image capture | One Image Capture per view - no moving parts Up to 250mm × 330mm single image capture 460mm × 610mm are two image captures |
| Inspection speed | Typically < 12 seconds |
| Inspection subject | Through hole parts, LED's, Colors, Conformal Coating and Final Assembly |
| Inspection method | FuzzicalZ (color judgement) |
| Inspection precision | Adjustable by board size and subject parts |

System specifications

| | |
|--------------------|---|
| Power supply | AC 100V to 240V 1.5KVA |
| Environment of use | Temperature: 15 to 35 °C, humidity: 30 to 80% |
| Weight | 20kg (work table not included) |
| Camera unit | CMOS camera |
| Camera pixel count | 36,3 million pixel (HD) |
| Controller | PC OS: Windows 7 |
| LCD monitor | 19-inch |
| Supported codes | Barcode, 2D code |

* Code reader is optional.

Defect Image Examples



Inspection of wires in an final assembly process - picture on right is the correct wire arrangement



Inspection of a capacitor for wrong polarity - picture on right is the correct orientation



Inspection of a diode for wrong polarity - picture on the right is the correct polarity



Inspection of an IC that was misplaced backwards and failed for polarity - picture on the right is the correct polarity

Please note that the information on specifications described on this catalog is subject to partial change without prior notice for purposes of product improvement.

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