

Easy Printed Circuit Board Traceability with Basler racer GigE Cameras

Customer

- Microscan
- Location: Nashua, NH, USA
- Industry: Electronics
- Implementation: 2013

Application

Printed circuit boards (PCB) are used in many electronic devices such as cell phones and tablets, and they are getting smaller and smaller every day. To increase the throughput of small PCBs, manufacturers use a process known as panelization, where a number of circuit boards are printed onto a large panel. These panels move through various steps of the manufacturing process and then the boards are separated for final testing.

Each panel and each circuit board has a unique barcode. All of these small marks must be decoded. In the past, the barcode reading task had to be carried out by an individual operator; inaccuracy or failure were common. Based on its extensive experience in the Electronics Assembly market, Microscan saw the opportunity to develop and offer a turn-key solution to automate the process of decoding symbols on PCB panels. The solution is PanelScan, a user-friendly and easily-integrated traceability solution for capturing barcode data. This integrated system replaces error-prone manual scanning with a solution that enables in-motion symbol decoding, and keeps production lines moving.

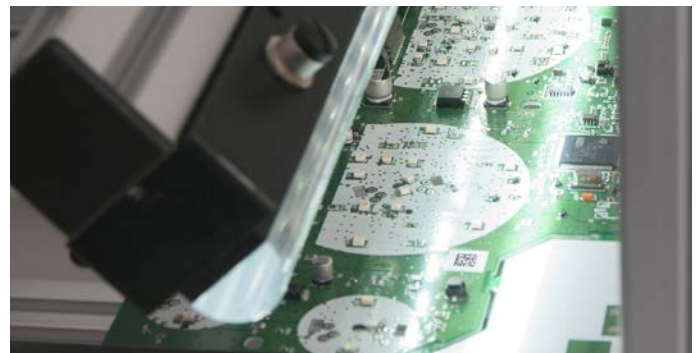


PanelScan, a line-scan-based vision system, designed to read barcodes on circuits on PCB panels.

Solution and Benefits

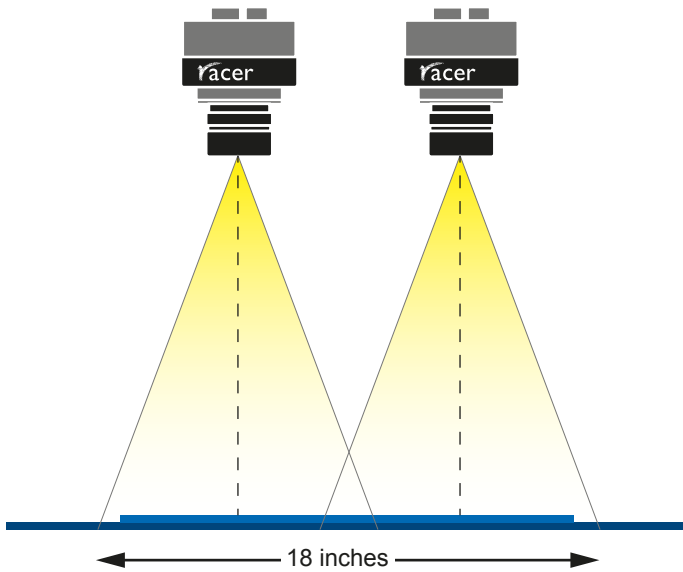
The crucial component of the PanelScan system is a digital camera. The PanelScan Standard system contains one linescan camera to cover a board width of 10 inches maximum. The PanelScan Wide system uses two linescan cameras for an object width of 18 inches maximum. The cameras' fields of view overlap so that the barcodes can be decoded reliably.

The camera or cameras are typically mounted over a conveyor on which the panels are moving; they take pictures of the boards moving through the field of view. The system also includes two focused line lights, plus a retro-reflective sensor that allows the system to be triggered by the leading edge of the board as it moves through the system. The processing of image data is handled by a PC external to the camera.



Detail of PanelScan with PCB panel.

With PanelScan, an operator simply needs to take note of how many rows and columns are present on the boards, and then place the panelized, marked boards onto the conveyor. The operator takes each panel and places it at the beginning of the conveyor. The number of rows and columns on the panel are entered by the operator via the PanelScan user interface. The system automatically creates an inspection routine for reading the symbols at all of the user-defined positions. The operator then sets the system to take a picture and runs a board underneath the linescan camera or cameras. When the operator clicks the Teach Layout button, the system automatically scans the layout and reads all the symbols on the board. If a symbol is not decoded successfully, the operator can request a high-resolution image of the label. All the decoded data from the symbols on the boards is stored in a log file for easy reference and retrieval.



Two Basler racer GigE cameras are used to scan the PCB as it moves.

Steven King, Senior Solutions Engineer for Electronics at Microscan states: "Microscan chose Basler racer cameras because of their high levels of performance, wide range of resolutions and simple integration into our Visionscape Machine Vision software platform. These three points made the decision to select the racer line of cameras very easy."

Technologies Used

- 2 Basler racer raL6144-16gm (for the PanelScan Wide System)
- White line lights (NERLITE HI-BRITE LL-300)
- Retro-reflective sensor (Tri-Tronics)
- Software: Visionscape

More Information

www.microscan.com



Basler racer raL6144-16gm

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