

APPLICATION NOTES

IMPACT Solutions for Connector Assemblies Single Camera Inspecting Both Sides

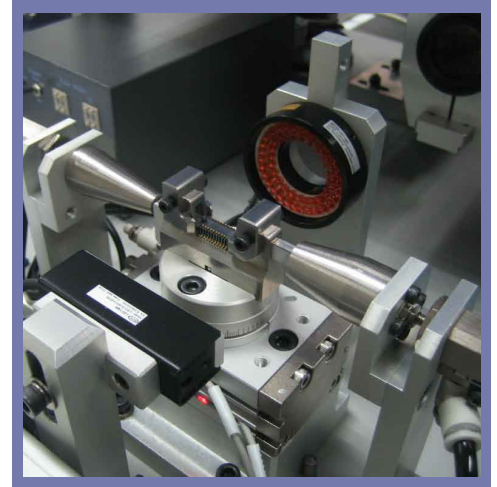
Application Description

When a new model of connector is manufactured, the initial production units are typically made in small quantity. Manufacturers typically look for a vision solution that can provide 100% quality inspection for these new production units that doesn't require a high budget and extensive deployment effort.

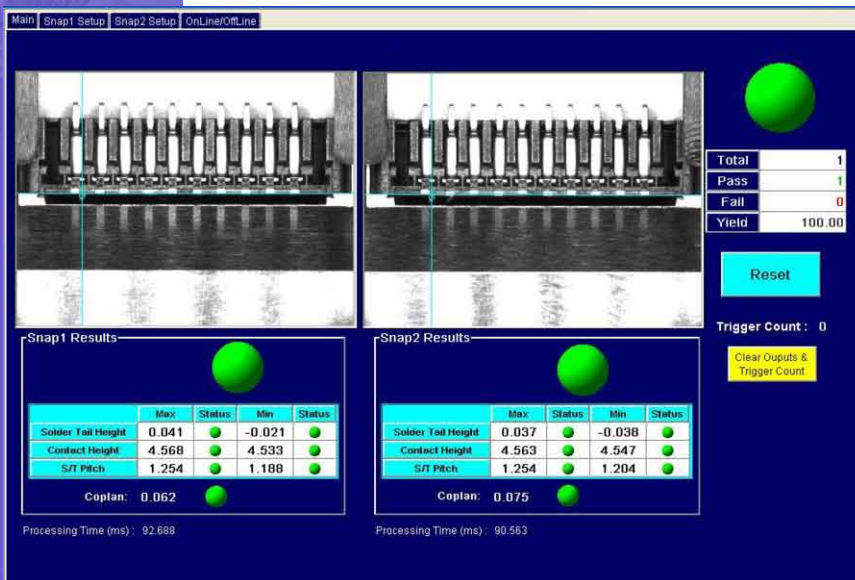
This application solution provides a low cost manual machine to inspect the solder tail height and pitch, as well as coplanarity of an electronic connector assembly using a PPT 7200 high resolution IMPACT Intelligent Camera. The machine is equipped with a flipping mechanism so that both sides of the connector can be inspected using a single camera. Once the connector assembly is positioned in the fixture, the camera takes an image and performs the inspection. The fixture then turns 180 degrees so the camera can take a picture of the other side of the connector.

With a resolution of 16 microns per pixel, this machine can inspect a 20-pin connector within 8 seconds, including part loading and un-loading. The application is designed to accommodate a range of product types. The single-camera design allows for fast calibration and setup since the lighting and optics configurations for both sides are identical. It also has a smaller footprint, and is half the price of a typical vision solutions inspecting both sides of a connector.

Connector Fixture with Flipping Mechanism



A Single Camera Inspecting Both Sides



The screenshot displays the software interface with two main inspection panels, Snap1 Results and Snap2 Results, each showing a camera view of a connector and a table of inspection data. A summary table on the right shows overall statistics: Total 1, Pass 1, Fail 0, Yield 100.00. A green sphere icon is visible in the top right corner of the interface.

| Parameter | Max | Status | Min | Status |
|--------------------|---------|--------|--------|--------|
| Solder Tail Height | 0.041 | ● | -0.021 | ● |
| Contact Height | 4.568 | ● | 4.533 | ● |
| S/T Pitch | 1.254 | ● | 1.188 | ● |
| Coplan | 0.062 ● | | | |

| Parameter | Max | Status | Min | Status |
|--------------------|---------|--------|--------|--------|
| Solder Tail Height | 0.037 | ● | -0.038 | ● |
| Contact Height | 4.563 | ● | 4.547 | ● |
| S/T Pitch | 1.254 | ● | 1.204 | ● |
| Coplan | 0.075 ● | | | |

Processing Time (ms): 92.688 (Snap1), 90.563 (Snap2)

Application Highlights

- Inspects for solder tail coplanarity, terminal height and pitch and contact height for an assembled connector
- A single camera inspects both sides of the connector
- High Resolution - 16 microns per pixel
- Designed to accommodate a range of product types
- Low cost and small foot print
- Easy setup and fast part change over