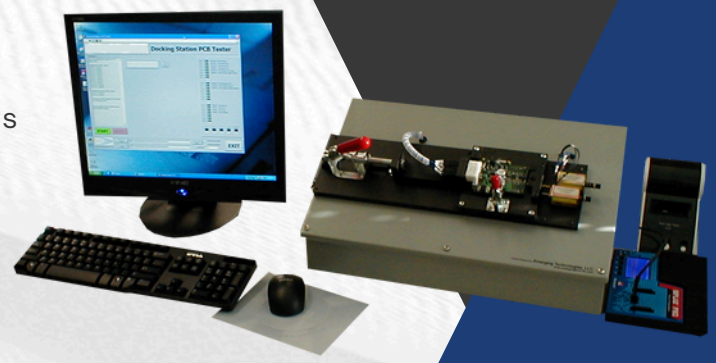
Emerging Technologies

DOCKING STATION PCB FUNCTIONAL TEST SYSTEM

Application Brief

Emerging Technologies, LLC was called upon to develop a test system for a printed circuit board that would be installed in a docking station assembly. The product required automated testing.

The test system was designed to prove the operation of all device I/O including mechanical switches (limit and proximity), discrete I/O, and LEDs. Custom test firmware is loaded into the device and all I/O are verified through the automated test sequence. Mechanical limit switches are actuated by solenoids via custom machined hardware. The discrete I/O is interfaced through optically isolated hardware. The LEDs are verified using an LED analyzer that detects color and intensity of the LEDs.



When the device passes all tests, the system generates a unique serial number and prints a label with serial number and the date tested. Additionally, a full-page printer is utilized to provide a printed failure report for DUT re-work if needed. All test results are stored in a text file for post test analysis if desired. Emerging Technologies, LLC prepared a design package for customer review prior to fabrication of the test system. The design package included: System Layout Diagram, Schematic Diagrams, Screen Layout, Fixture Drawings, and Sample Reports. Once approved by the customer, the system was fabricated, tested, and commissioned.

Customer Benefit:
The customer is able to test their devices using the Emerging Technologies, LLC custom designed test system to verify correct operation of their product. The LED analyzer removes operator subjectivity from the test. The solenoids mechanically test the part like it was in the final assembly.

ET RESPONSIBILITIES:

- Functional Specification Generation
- ✓ Design/Engineering
- ✓ Fabrication
- ✓ Programming - Software
- ✓ Programming - Firmware
- ✓ Field Installation
- ✓ On-Site Commissioning
- ✓ Post Commissioning Support

TECHNOLOGIES:

- Embedded Computers
- ✓ Microcontrollers
- ✓ Visual Software
- ✓ Control Software
- ✓ Data Acquisition
- ✓ Computer Based Control
- ✓ Communications - RS232, USB
- ✓ System Integration

SPECIAL FEATURES:

- ✓ Solenoid arrangements mimic how the final assembly actuates the mechanical switches of the device.
- ✓ LED analyzer detects intensity and color (RGB or Hue) of LEDs.
- ✓ Microcontroller programming control using separate test firmware for more complete testing as well as production code final tests.