

PCB FUNCTIONAL TEST BENCH

PCB FUNCTIONAL TESTER

About :

Printed circuit board (PCB) functional tester performs critical validation process performed on manufactured PCBs to verify the board's functionality meets the original design requirements and specifications. Thorough functional testing helps ensure the reliability and performance of PCBs before deployment.

Testing coverage

- Validate continuity and isolation: Verify electrical connectivity and isolation between traces using in-circuit testing (ICT) and flying probe testing to check for opens and shorts.
- Confirm impedance: Match measured impedance of traces and interconnects to design values to prevent signal degradation.
- Verify power integrity: Check PCB operation under different power conditions to avoid errors from insufficient power delivery.
- Assess signal integrity: Examine signal quality under high-speed conditions to prevent distortion and interference.
- Test functionality: Stimulate the PCB with input signals and power to check outputs match expected responses based on design.
- Confirm robustness: Subject PCB to temperature cycling, vibration, shock to validate resilience and durability.
- Execute regression testing: Retest functionality after modifications to ensure no side effects.

Specifications:

PCB FUNCTIONAL TESTER is an equipment which we perform automatic measurements on the device, known as unit under test (UUT), device under test (DUT), and evaluate the test results. PCB Functional has a computer controlled system that contains many complex test instruments that are capable of automatically testing and diagnosing faults in intricate electronic components, PCBs, Integrated circuits. It can test a large range of electronic devices and systems from ingenious components like resistors, inductors, capacitors to complex compiled electronic systems. To accomplish this intention, we are harnessing JIG/Fixture/ITAs.

Functional tester has designed to decrease the amount of test time needed to verify a particular PCB, Component, LRU.

PCB functional Tester contains Five major subsystem

(a) JTAG

- (c) Boundary scan
- (d) Data acquisition system
- (e) Controller

- (f) COTS instruments

JTAG helps users with PCB debugging, prototyping, testing and repairing.

By using the Bed of Nails (ICT-In circuit testing) we can check for short, open, resistance, capacitance, inductance, tracks, and many more

Components, with the help of boundary scan Test device pin signals or internal signals can be monitored in real-time without interfering with normal operation.

Data Acquisition System measures electrical, physical phenomena such as voltage, current, temperature, pressure and electromagnetic signal. It also provides interconnection between the outer world and the PC controller. It contains three parts: (a) sensor (b) Signal conditioning circuit (c) ADC. Signal converter / protocol converter (bridge) interfaces the various logic families (VME/PCIE/ LVDS/ PTL) Controllers include multiple computer-controlled instruments to source or measure a wide range of parameters.

Controller synchronized with UUT to source and measure waveform at the proper time, it uses a VME bus. The VME signaling scheme is asynchronous, Meaning that the transfer is not tied to timing of a bus clock pin, for development and troubleshooting the VME bus, we use logic analyzers and bus analyzers tools.

Functional Tester is used for functional testing of PCB modules or LRU's. It contains high end standard COTS equipment programmed together with ITA and test fixture to test as per UUT requirement. The software is user friendly LabVIEW based platform which makes system customizable and editable in future. We are not providing any Black Box which can not be troubleshot or editable in future.

Application

PCB Functional tester is capable of testing and validation of PCB design and working characteristics of RF, Digital, Analog and Optical PCBs. Functional tester has the capability and flexibility to provide the following minimum testing and diagnostic capabilities

1. Functional working characteristics testing of PCB
2. Fault detection and report generation for quick resolution
3. Boundary Scan(J-tag) testing of IC on board
4. Functional Testing to simulate the actual working scenario of MODULE and LRU's
5. Optical simulation and testing for optical boards and cables

Key features

Printed circuit board (PCB) functional tester performs critical validation process performed on manufactured PCBs to verify the board's functionality meets the original design requirements and specifications. Thorough functional testing helps ensure the reliability and performance of PCBs before deployment.