Stay Ahead of the Competition with the Keysight Panel Test and Throughput Multiplier

Keysight Technologies, Inc. holds the exclusive rights to patented technology that keeps our customers ahead of the competition. The Keysight Panel Test and Throughput Multiplier in the i3070 In-circuit Test System (ICT) speeds you through digital and in-circuit measurements, increases throughput, and accelerates your success.

Keysight i3070 In-circuit tester supports up to four test modules within a single system

Each self-contained module provides test capabilities with dedicated measurement and control circuitry for digital and analog in-circuit measurements. Each module in the i3070 ICT system tests boards in parallel, independently and simultaneously, as illustrated in Figure 1. Any i3070 family test system with at least two self-contained modules can run the Keysight Panel Test and Throughput Multiplier, however, the highest throughput can be achieved by a four-module system.

Figure 1. Save time by testing up to four boards simultaneously

Figure 2. Combine several modules to test larger boards
Advantage 1: Increased Throughput

When you begin the automated test sequence, the test program for each board moves sequentially into the Process Manager and, ultimately, to the correct module. In Figure 3, line 4587, an analog test program intended for board R7, “analog/r7”, is sent to test module 0. The Module Control Card recognizes the analog test program and the system operates in Throughput Multiplier mode as indicated in the configuration file. The test system immediately starts to execute the analog test for board R7, which is indicated in Figure 3 as “4%r7”.

By this time, the Process Manager would likely have completed the test download for the second board, “3%r7”, into Module 1. The Module Control Card recognizes the analog test program and immediately starts testing the second board. The same download and execution algorithm tests the third board “2%r7” and the fourth board “1%r7”.

How fast can the Process Manager download and execute test programs? Very fast. Typically, before testing is complete for the first board, “4%r7”, the other three modules would have downloaded and started analog testing on their boards. By the time the test for the fourth board “1%r7” is complete, the Process Manager would have moved to line 4588, “test analog/r19” and downloaded the next test, “4%r19”, into Module 0. There is virtually no delay within the module from one board test to another and the process will continue automatically until it reaches the end of the list.

How much time is actually spent (or saved!) during the testing process with the patented Keysight Panel Test and Throughput Multiplier? Figure 4 compares the test time necessary to complete four individual serial board tests versus four simultaneous parallel board tests.
In Figure 4, Scenario (A), four boards were tested in series, one board at a time. The test time for each board was 28.5 seconds. The total test time for all four boards in series was:

114 seconds (i.e., 28.5 seconds × 4 boards) + 4x handling time + 4x overhead time

Handling time is the time it takes to load and unload each of the four boards. In addition, there is 4x the overhead time (e.g., faon and faoff) for each of the four individual boards.

In Scenario (B), four boards were mounted on a Four-Up Panel and tested with the Keysight Panel Test and Throughput Multiplier. As described in the previous section, the tests on all four boards happen simultaneously. The total time for this test configuration was a mere:

32 seconds + 1x handling time + 1x overhead time.

In comparison, Scenario B was 3.56 times faster, nearly 1/4 the test time required for Scenario (A).

**Advantage 2:**

**Lower Total Cost of Ownership**

Keysight Panel Test and Throughput Multiplier has a convenient modular architecture that allows simultaneous testing of up to four boards at virtually the same time. This 2x, 3x and 4x productivity only requires one personal computer (PC) and license. In fact, the same PC and license gives you the flexibility to combine test modules so you can test a larger board on the fly, as illustrated in Figure 2. This makes the Keysight i3070 ICT tester a truly scalable, cost-effective investment for PCBA manufacturing test environments. The Keysight i3070 ICT tester a truly scalable, cost-effective investment for PCBA manufacturing test environments.
Advantage 3: Faster Parallel Test Development

For many PCBA manufacturers, faster test development time is just as vital as testing time. The patented Keysight Panel Test and Throughput Multiplier technology is designed to minimize development effort and time.

With the Keysight Panel Test and Throughput Multiplier, you can develop faster parallel tests automatically and quickly. The test features of the i3070 ICT test system eliminate redundant test generation and debug steps by allowing the test programmer to concentrate on one board. When changes are made during debug, the changes are automatically populated to the other boards on the panel. This process eliminates manual errors and saves more time especially when you have multiple boards to test.

Another benefit for test developers is the ability of each module to run with a different pin card. For example, Module 3 can test a board with an 8-pin card while Module 2 simultaneously tests a board with a 7-pin card, and Module 1 and 0 test boards with 6-pin cards.

i3070 ICT test system: The solution for high-volume PCBA manufacturing

If you are looking for a PCBA manufacturing solution with a high-volume handling capacity, look no further than the i3070 ICT tester that comes built with the patented Keysight Panel Test and Throughput Multiplier technology. With the i3070 ICT, your production lines will benefit from higher throughput and reduced test time. In addition, your test developers will benefit from faster parallel test development. Finally, and this is one of the most important yet often overlooked factor by companies looking for short-term returns, the lower total cost of ownership that comes with the i3070 ICT test system makes it a worthy, scalable investment for your business.

To find out more about Keysight ICT solutions, please visit www.keysight.com/find/ICT
Evolving Since 1939

Our unique combination of hardware, software, services, and people can help you reach your next breakthrough. We are unlocking the future of technology.
From Hewlett-Packard to Agilent to Keysight.

myKeysight
www.keysight.com/find/mykeysight
A personalized view into the information most relevant to you.

Keysight Services
www.keysight.com/find/service
Keysight Services can help from acquisition to renewal across your instrument’s lifecycle. Our comprehensive service offerings—one-stop calibration, repair, asset management, technology refresh, consulting, training and more—helps you improve product quality and lower costs.

Keysight Channel Partners
www.keysight.com/find/channelpartners
Get the best of both worlds: Keysight’s measurement expertise and product breadth, combined with channel partner convenience.

www.keysight.com/find/ICT