Electronics

New products

Instruments

Functional tester checks 8080, 8085

Low-cost benchtop tester handles peripheral chips, too, reads out failure code

Considering the cost of sophisticated equipment for testing complex microprocessors and peripheral devices, it is understandable why many low-volume users of these devices do not do their own incoming inspection. Instead, they have had to pay for a costly outside testing service or forget testing altogether in the hope that these complex devices function well in their equipment.

Thanks to engineers at Data I/O Corp., small-quantity users of Intel's 8080 and 8085 families now have another choice. Data I/O has developed a low-cost benchtop unit that tests these 8-bit microprocessors before they are assembled onto boards, where faults are more difficult and costly to locate and repair.

Real environment. Most microprocessor problems are related to a functional failure, notes Ed Dobbyn, product manager. The 1510A benchtop tester detects functional problems by operating the device in a real circuit environment at full rated speed and with the device's outputs resistively loaded. The tester operates the supply voltage at high, low, and normal levels, which may trigger a failure that is inherent in the device.

The 1510A determines the functioning of a device under certain worst-case conditions and tells the operator whether or not it will operate as specified, says Dobbyn. It can be operated in a continuous test mode that repeats the test until a failure occurs. This mode can be used to check out the device for intermittent or temperature-related failures, if such are suspected.

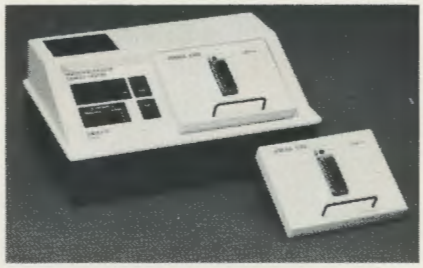
Since most device vendors require some failure analysis or proof that the device failed in use before they will accept returned parts for refund or replacement, the benchtop tester indicates which function failed by displaying a three-digit error code. For example, a displayed number may indicate that the chip's clock is inactive, that an address line is not functioning, or that the internal random-access memory is defective.

Unlike many more expensive and complex testers, the 1510A can be operated by production line personnel, Dobbyn says. The operator need only plug in the correct test adapter for the device to be tested, insert the part, and push a single button.

Traffic light. Testing takes less than a second (typically 200 ms). The front panel will display a green pass light if the device is good or a red fail light, along with a diagnostic message, if it is faulty.

Also unlike many of the more expensive testers, "the model 1510A requires no user programming," Dobbyn maintains. All device-specific instructions for performing a full series of functional tests are contained in the corresponding adapters. Initially, Data I/O will offer with the model 1510A test adapters for Intel's 8080A and 8085A microprocessors, as well as for that firm's 8251A programmable communications interface and 8255A programmable peripheral interface. Plans call for adding test adapters for other 8080 family members, as well as for Zilog Inc.'s Z80.

The 1510A is actually Data I/O's second entry into the low-cost tester marketplace for microprocessors. An earlier model, the 1500A tester, is for Motorola Semiconductor's 6800 family of microprocessors and peripheral devices.



Although the 1510A is intended primarily for incoming inspection, Dobbyn says, "another application of the easy-to-operate unit is in testing devices that have been removed as suspects in troubleshooting." The model 1510A is expected to be available for customer demonstrations in the third quarter of this year, with first shipments slated to occur in the fourth quarter of this year.

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