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condor
MTS 500

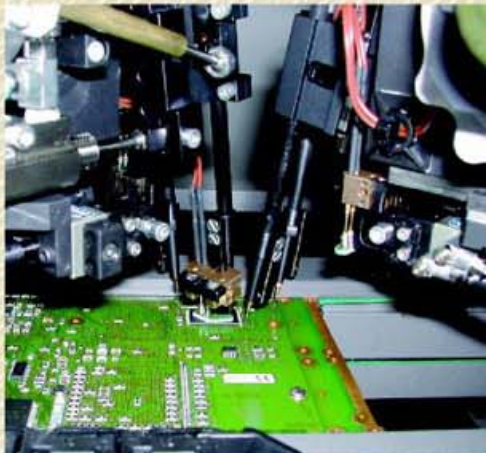
Moving Flying Prober to Production

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Short time to market and high fixture costs are driving electronic manufacturers towards fixtureless Flying Probers.

Most Flying Probers on the market today are slow and their fault coverage is often limited to testing for shorts, opens and passive components. The limited possibilities of electrical isolation often negatively influence the fault coverage and fault isolation.

Digitaltest's Condor MTS500 Flying Prober delivers the best of Flying Probe technology and in addition offers complete In-Circuit and Functional Test capabilities. Condor is designed to overcome traditional Flying Prober disadvantages such as poor fault coverage, low throughput and the limitations of simple MDA functionality.



"We are determined to move the Flying Prober from prototype test to production test"

*Dr. Grant Bactor,
President of Digitaltest*

The Condor offers all of the advantages of a Flying Prober without limiting the user to "just fixtureless test". The user can define the tester throughput by using fixed pins and by utilizing intelligent short test algorithms.

The Condor can extend the depth of test from simple Analog In-Circuit to a full Functional Test including Boundary Scan, Flash Memory Programming and numerous communications protocols for the Unit Under Test (UUT). To achieve this, comprehensive tools were developed to speed up the test programming and test program debugging.

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Fast Test Program Development

Links to CAD

By utilizing **C-LINK**, one of Digitaltest's products, Condor uses the CAD data and the bill of material to generate a complete test program.

C-LINK FrontEnd offers interfaces to over 60 CAD formats including the Gerber format.

C-LINK Component Database allows the user to define the necessary component data once per part no., so that work done for a certain job can be utilized for the next job.

C-LINK TestPro will automatically generate the circuit description and all the geometry data of the board.

CITE (Computer Integrated Test Environment)

CITE is the software platform for all testers of the MTS Tester Family and is also used for the Condor Flying Prober.

The CITE **Board Description** dialog allows the user to define different board versions to be handled simultaneously. Multiple panels can also be defined.

The **Library Manager** for the complex and analog components allows the user to simply manage the test routines for any complex analog components and describe any complex components.

The superior **Automatic Program Generator** will automatically generate a complete test program for the complete board including the different board versions. An incremental mode of the APG can be used to handle ECO's easily and minimize the effort required to deal with a design change.

The **Offline Simulation** modules were specifically developed in CITE for the Condor Tester to handle the head movements, show the exact contact locations of the test heads, detect and avoid collisions.

This was just a brief overview of a few of the existing tools used in the Condor and with other MTS Testers. Utilizing the mentioned tools, generating a test program for a 1000 net board will not exceed an hour's time.

Fast Test Program Debugging

CITE provides numerous tools for test program debugging:

- Auto Learn for Nets Test and OpensCheck
- Auto Debug Function
- Visual Basic programming language allows the user to run the test program in interpreter mode, run the test, modify it, then run it again
- Graphical tools supporting manual debugging:
 - Board Layout
 - Schematics
 - Part information and data sheet
 - Cross-reference list
 - All test parameters can be adjusted through menus
- Test program compilation at the end of the debug process



High Throughput

- Intelligent Short Test
- Optimized test head movements
- Usage of fixed pins and adapter up to 1.000 pins
- Intelligent tools to determine test time
- Active head for fast and precise measurements

High Fault Coverage

In-Circuit Test

- Sophisticated Analog Measurement Unit utilizing a DSP for fast and accurate measurements
- Two, Three and Six Wire Measurements
- Opens detection on digital IC's and connectors
- Vision Test for presence and orientation of components

Functional Test

Numerous modules can be added for Functional Test:

- Programmable Power Supplies
- DC Source and Measurement
- Frequency and Time Measurement Unit
- Wave Form Analyzer
- Resistor Decade
- Open Collector and Relays Module
- Flash Memory Programming
- Memory Test Module
- User Test Module

Boundary Scan Test

- Automatic generation of the BS net list through C-LINK
- Automatic Test Program Generation for interconnection
- Cluster Test
- Boundary Scan Diagnostics

Innovation in Test

Technical Specifications

Mechanical

Dimensions in cm (height x width x depth)	Standard 165 x 150 x 120 cm XL 165 x 176 x 147 cm	65 x 60 x 48" with light unit + 30 cm (12") in height 65 x 69.3 x 57.9" with light unit + 30 cm (12") in height
Typical no. of measurements per second	20	
Weight	Standard 1800kg (3,960lb) XL 2200kg (4,850lb)	Slope of all test probes 0 and 8 degrees
Probes		Board Transport Conveyor with automatic adjustable board width Hardware Options OpensCheck on 4 test heads
Number of test heads	4 on linear motors	
Max. number of fixed pins	1000	
Positioning Accuracy X-Y		Board Specifications
• Minimal distance between two pins	100µm (4mil)	• Max. height of components on top side 50mm (1.97") 115mm (4.53")
• Resolution	0.625µm (0.04mil)	• Max. height of components on bottom side 115mm (4.53")
• Repetitive accuracy	25µm (1mil)	• Maximum board size: Standard 500 x 400 mm (19.69 x 15.75") XL 711 x 610 mm (28 x 24")
• Minimal pad size	250µm (10mil)	• Maximum board thickness 4mm (157mil) 3mm (79mil)
Positioning Accuracy Z		Operating Environment
• Resolution	4µm (0.16mil)	Temperature 20-30° / 59-95F
• Max. height	50mm (1.97")	Humidity Max. 80%
• Pressure through the Z dimension resol.	4µm (0.16mil)	

Measurement

In-Circuit Test

- Discharge, Pin Check, Shorts, Opens
- Opens on IC and connector pins
- Resistance 0.1Ohm to 100Mohm
- Capacitance 1pF to 100mF
- Inductance 10µH to 1000H
- Diodes
- Zener Diodes up to 100V
- Transistors (junctions and Beta Test)
- OpAmp Test, Voltage regulators, Transformers
- Extensive Test Library for Analog, Complex and Digital Components

System Software

Basic Software:

- Windows NT & 2000
- Microsoft Visual Basic
- C-LINK FrontEnd (One CAD Interface is included)
- C-LINK DMS
- C-LINK Component Database
- CITE including:
 - Test Program Generator
 - Library Manager and Test Component Library
 - Vision Test
 - Test for presence and orientation of components

Functional Test

- Powered Functional Test for Analog Components and Clusters
- Voltage Stimulation and Measurements
- Current Stimulation and Measurements
- Frequency and Time Measurement
- Event Counting, Pulse Period and Duration
- Arbitrary Waveform Generation
- Signal Sampling and Envelope Comparison
- Boundary Scan Test
- Flash Memory Programming and Test
- Different Bus Protocols
- IEEE and VXI Bus Control

- Auto Learn and Auto Debug
- Tool for Program Debugging
- Test Program Compiler
- Layout and Schematic Display

Software Options:

- Boundary Scan Test Program Generation
- QMAN Quality Management Software
- Neis Test
- MDL Database
- QCAM Test Program Stability Report
- Test Coverage Report

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