



A range of Power Manufacturing Defects Analyzers offering the highest throughput capability to the electronics manufacturing industry

- 1200 components/sec test speed
- Maximum of 2112 pins
- Windows NT operating system
- Power-up testing with programmable supply option
- Automatic program generation software
- Graphical program debug capability
- Autodebug facility
- Optional functional test capability
- Inductive and capacitive vectorless test
- 19 in rack mountable

Introduction

The 5200 series is the fastest analog test system available, combining high speed and the ability to accurately test a wide range of component types, effectively blurring the line between MDA, or analog In-Circuit, and full digital In-Circuit. This capability minimizes the investment in test systems by reducing the number of platforms required to achieve throughput, and providing the highest level of test coverage within a single manufacturing stage.

The system is controlled by an industry standard PC, with a Windows NT™ operating system. The 5200 series has a small footprint allowing simple integration into automated in-line manufacturing facilities. The worldwide support and service capability offered by IFR Limited places the 5200 series as the preferred solution for analogue In-Circuit testing.

Within the range, there are two

5200 series Power Manufacturing Defects Analyzers



systems, the 5210 with fixed unit under test (UUT) power supplies and the 5220 offering programmable versions.

Architecture

The testframe of the 5200 series is 19 in rack mountable containing eleven slots for testpoint cards, and a further three to take a range of functional resources. Each testpoint card offers 192 pins, interfaced to the test fixture through interconnection cabling. This approach provides the user with the ability to integrate the system into an in-line handler or use a range of fixturing with a human operator.

Advanced Test Techniques

Test techniques such as analog In-Circuit, boundary scan and functional ensure the highest level of fault coverage. Although by definition, a Manufacturing Defects Analyzer does not provide digital device testing through testpoint memory, the 5200 series features a digital capability through the use of boundary scan and vectorless tools.

Vectorless Test Capability

IFR Limited is unique in offering both inductive and capacitive vectorless techniques, ensuring wide test coverage across a range of components from complex ASICs to connectors. Inductive probing is performed using the IFR patented Q-Test II technique, whilst capacitive tests use the industry standard HP TestJet™ probe. These two techniques contribute to the systems ability to generate tests for complex devices quickly, and to accurately diagnose faults to enhance productivity and quality.

Power-Up Testing

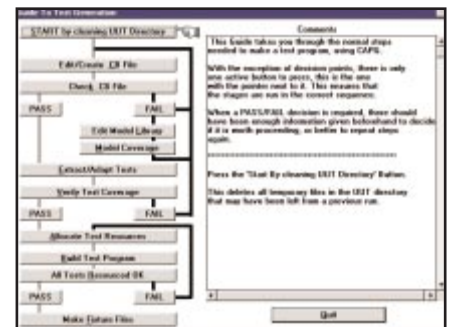
Boards are powered-up using either the programmable or fixed supplies. This enables the system to test a wide range of components, such as relays and op-amps, which would otherwise remain untested. This approach gives a vast advantage over conventional MDA systems, detecting a higher level of faults before further costs are incurred by allowing faulty product to progress along the production process.

Links to Computer Aided Design

Test programs are generated from CAD data or through a manual input tool for PCBs without electronic design data. The IFR FABmaster package acts as the link to CAD formats, providing a quick and effective conversion process to improve time-to-market issues.

Automatic Program Generation

The 5200 series' program generation software enables fixtures to be manufactured using an automated drilling and wiring process, and minimizes the test commissioning time through the use of a guarding simulator.



Test Program Guide

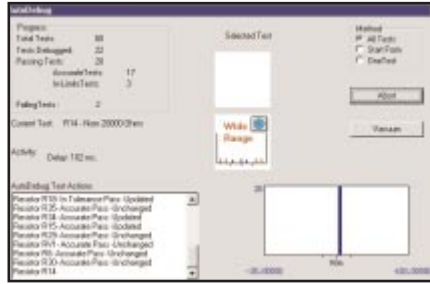
5200 series

Autodebug

This facility is designed to improve time-to-market by using automatic debug algorithms, independent of the programmer. By altering the range of measurement parameters and analyzing the subsequent results across a number of reiteration modes, the autodebug facility is able to quickly commission a high proportion of analog In-Circuit tests.

Graphical Program Debug

A simple 'point & click' GUI is used during the commissioning of the program and fixture. Tests can be run for individual devices, blocks of components, or as a complete program. The interface enables simple selection of component values, limits, test and sense points, delays and frequencies. Results are shown graphically allowing the user to determine the stability and accuracy of each measurement. Measure stability analysis is further enhanced by the integrated CGM facility demanded by quality standards.



Autodebug Screen

Upgrade Options

As is common across the range of IFR test systems, the 5200 series offers a wide range of upgrades for both new and existing customers. Users of the earlier 5200 system can upgrade to 5220 through the fitting of a new backplane. Customers who select a 5210, but later require programmable supplies, can easily fit the necessary modules to achieve 5220 status.

Specification

Measurements

Test Points

Base system, 384 pins core, expandable to 2112

Component Test Speed

Up to 1200 components / second

Capacitor discharge

Shorts & opens continuity test

DC Voltage measurement

10 mV - 50 V

DC Current measurement

10 nA - 100 mA

AC Voltage measurement

10 mV - 50 V

Resistance

20 mΩ - 200 mΩ

Capacitance

2 pF - 20 mF

Reversed Capacitor Detection

Inductance

2 μH - 200 H
200 mΩ - 20 mΩ

Diode Tests

up to 20 V

Zener Diodes

up to 60 V

Transistors

on, off, leakage

FETs

on, off

Other components

Relays, Op-amps, Opto-isolators, Fuses, Links, LEDs
Potentiometers, Thermistors, Switches, Thyristors
Transformers, Voltage Regulators, Voltage
References

Opens Detection

Capacitive, Inductive

Stimulus

Two independent stimulus channels, AC or DC

DC

-10 V to +20 V, four quadrant, programmable
0 to 200 mA, programmable

AC

0 to 3.8 V pk-pk, programmable
Programmable DC offset -10 V to +10 V,
0 to 200 mA source or sink

Frequency range

0 to 100 kHz

UUT Power Supplies

5210

One fixed 5 V, 5 A
One fixed +15 V, 2 A
One fixed -15 V, 0.5 A

5220

One fixed 5 V, 6 A
Two Programmable 0.25 V to 30 V, 0.5 A to 2 A

General

POWER REQUIREMENTS

The 5200 mains power requirements are as follows:-
Single phase AC supply

Mains input

Auto range select

Nominal 220 V/240 V

198 V to 264 V

Nominal 100 V/120 V

99 V to 132 V

Supply frequency

47 Hz to 63 Hz

Power

0.5 kVA, maximum

Electromagnetic Compatibility

The 5200 complies with the limits specified in the following standards.
EN50081-1, Class A
EN50082-1
EN61000-3-2

Safety

The 5200 complies with IEC 1010, BSEN 61010-1 for class 1 equipment and is for use in a pollution degree 2 environment. The tester is designed to operate from an installation category 2 supply.

ENVIRONMENTAL CONDITIONS

The following temperature and humidity, operating and non-operating, conditions apply to the 5200.

Operating Temperature

10 to 35°C

Humidity

25% to 90% rh, non-condensing

Non-operating (Storage & Transport)

Temperature

-40 to +70°C

Humidity

Up to 93% rh, non-condensing

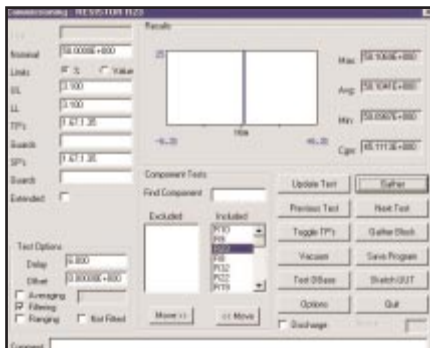
DIMENSIONS AND WEIGHT

Dimensions

445 mm wide x 317 mm high x 494 mm deep

Weight

Typically 32 kg, pin configuration dependent



Commissioning Window

Component Failure Identification

A graphical representation of the unit under test provides visual positioning for each component during the debug phase. User selectable options provide, amongst others, the facility to rotate and flip the board representation.

Functional Capability

A range of functional test cards can be fitted to the 5200 series, further enhancing the high level of fault coverage provided. In many cases, this functional capability will negate the use of further test equipment within the production line by trapping faults at an early stage. The 5200 series throughput capability often allows this approach to be used as the pure MDA test is well within the beat rate of the production facility.



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