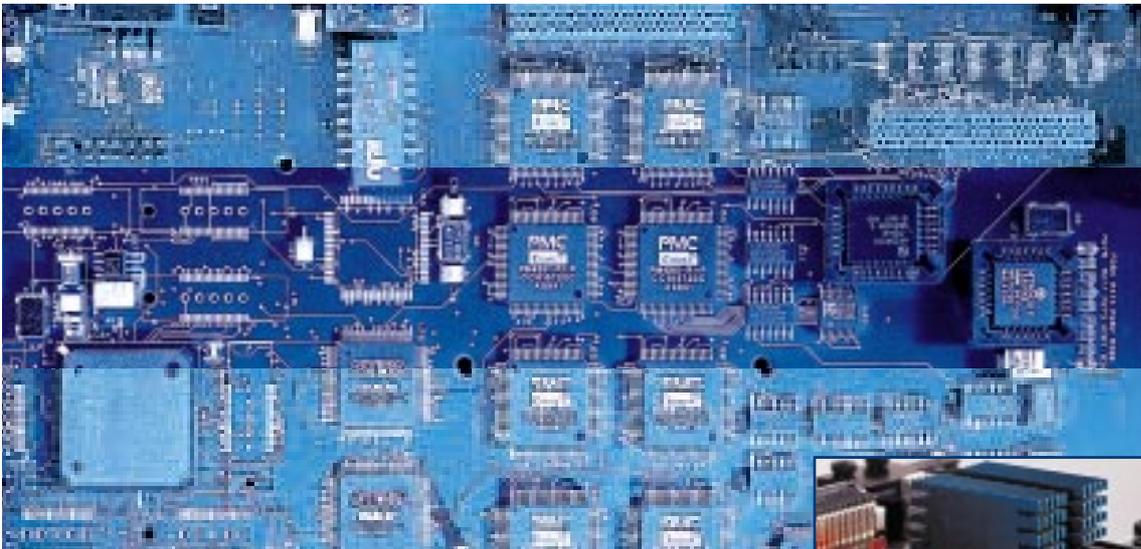


How to troubleshoot complex PCB assemblies



PCB repair test system

GRS500

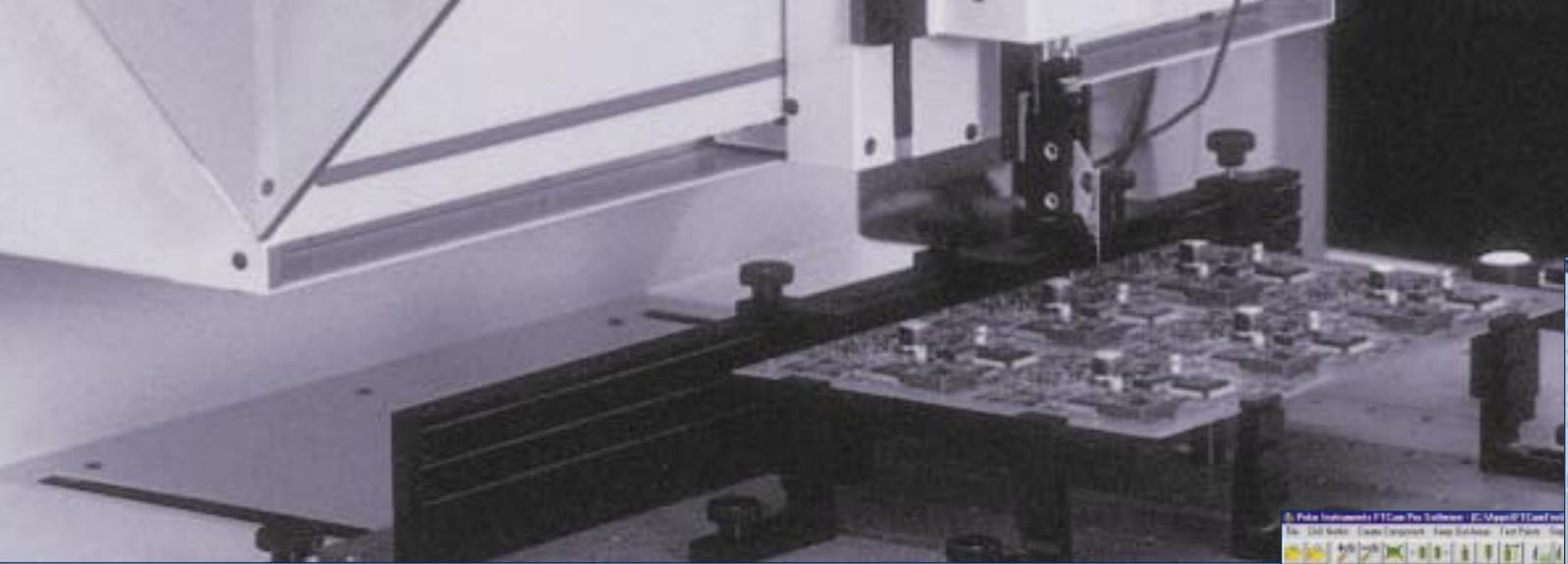
Increase prototype yields

Troubleshoot complex boards

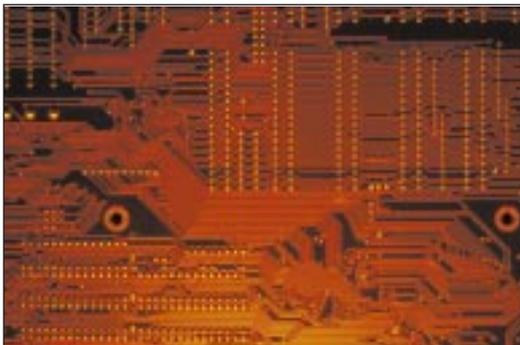
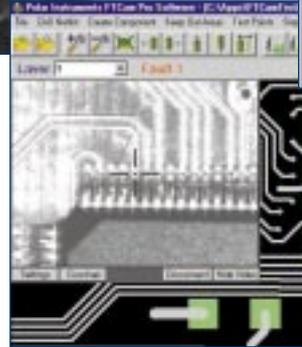
Reads over 20 CAD formats

Polar

polarinstruments.com



Prototypes, short production runs, new product launches, GRS500 helps deliver your new product to market on time and on budget



Troubleshoot PCB assemblies - fast

You know that troubleshooting complex PCBs is a skilled task. The GRS is designed to help you rapidly home-in on a fault giving you maximum time to put your skills to 'best use' in getting your boards up and running, thereby saving time, cost and allowing you to maximize your production yields.

Troubleshooting your boards with the GRS500

Designed to help troubleshoot complex boards when fixture based tools are not a viable solution, the GRS500 is designed to help you compare the characteristics of good and faulty PCBs, using nodal impedance test, and a "Videsection" technique which presents you with high resolution images of a good board for use in live video comparison with the board under test. Finally, powerful CAD based repair software helps you track down the position of the fault on the suspect net.

If you do not have access to CAD data, you may also build a troubleshooting program based on a Gerber derived netlist such as the industry standard IPC-D-356 - obtainable from your PCB fabricator.

The advantages of CAD generated

test programs are:-

One test per net

Reduced test times

Fast set-up times

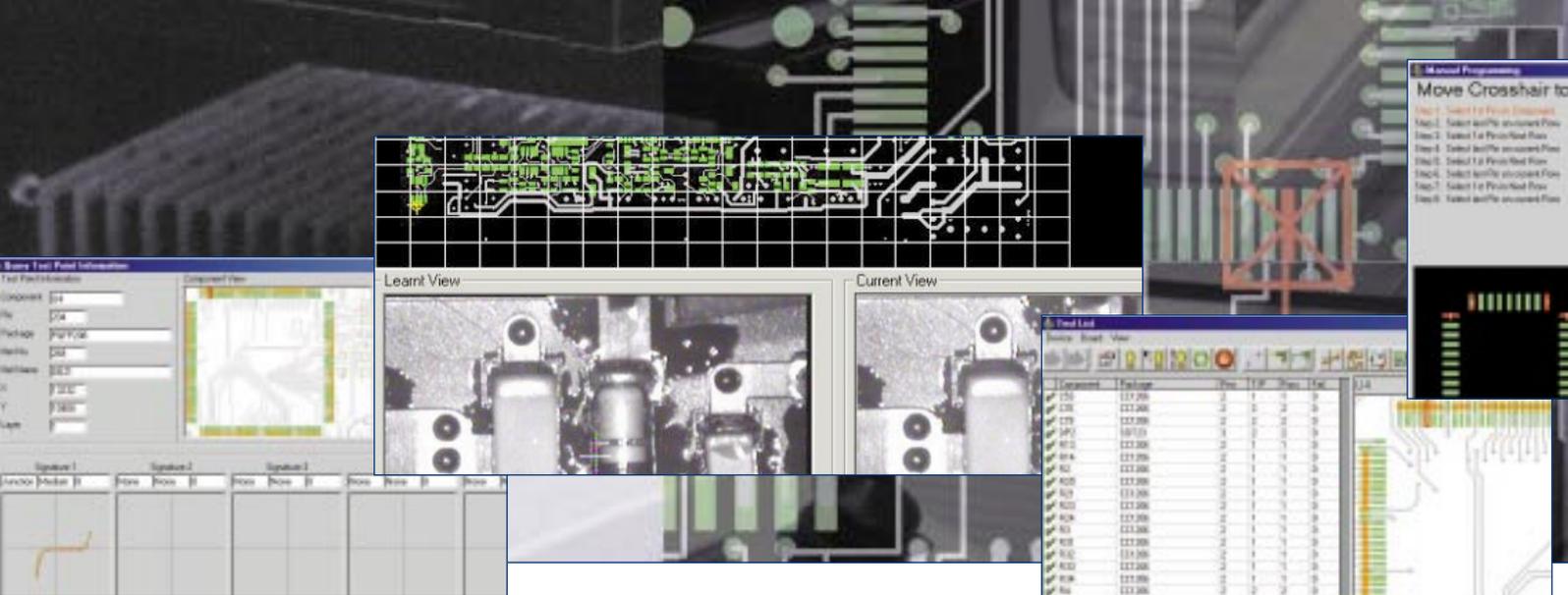
Data accuracy and repeatability

Flexibility

CAD Data is the key to the successful implementation of a GRS500 troubleshooting system. Reading in the CAD data from most CAD systems, the GRS quickly turns the CAD data into a troubleshooting program for your boards.

Targeting faults

The comparison of net characteristics provides most of the information you need to locate the root cause of many faults on assembled PCBs. Once you have the probing program from



your CAD data, it is a simple step for the GRS to acquire net impedance and bus characteristic data on a known good board. This 'good data' is now used to perform the tests effectively and efficiently. The GRS can also "Videsection" the board, saving a matrix of high resolution images of the board for later comparison against live video.

Advanced Programming

Features and Benefits include:

Keep out areas	Optimising test efficiency to maximise test coverage
One test per net	Minimising test times
Step and repeat	Enabling testing in panellised form
Global test point locator	Fast programming
Specific test point selector	Enabling full test customisation
Exact test point definition	Optimising test effectiveness
Net View	Component connectivity to be specified quickly

Graphical Repair

- The GRS displays the CAD nets on screen and immediately highlights nets with potential faults.
- "Virtual Xray" generates a graphical pathway of a net on inner layers.
 - essential when a fault is on a long and complex net.
- The repair data can be used off line with the GRS25 repair software option.
- No need for paper schematics.

Videsectioning

In addition to viewing CAD net data, the onboard cameras on the GRS "videsection" the board and keep a matrix of images of the known good board. The videsection data can be called up at any time to compare the original with the live image from the board under test.





Versatile probing system

Designed to troubleshoot on all technologies, the GRS Probing system has:

- a 100mm flying height allowing clear flight over the tallest components.
- Equipped with two cameras.
- Camera one for programming and inspection.
- Camera two visually verifies probe positioning.

The GRS capability includes troubleshooting on technology from SMT, through hole and BGA (the GRS automatically assigns test points to all accessible nets connected to BGA).

Using GRS alongside Functional Test

Although functional test is an excellent tool for final system verification it is often inadequate at component level. The GRS systematically examines a board in detail to reveal specific issues that enable root cause analysis to complement your functional test.

Using GRS to complement Boundary Scan

Some boards now incorporate boundary scan as a built in diagnostic system. This can be a useful tool in locating faulty areas on powered up boards. But you do need to apply power to run the boundary scan tests. If you need to work on a board with a power distribution fault, the GRS will help you safely identify these types of fault before you apply power.

Fixture based ATE and the GRS

Fixture based ATE systems are high cost pieces of capital equipment which need to be extensively used to pay for themselves. It is not cost effective to perform board level debug on a fixture based ATE. The GRS used alongside your ATE system will create an effective and efficient debug facility and further increase the yield of passing boards.

An Investment

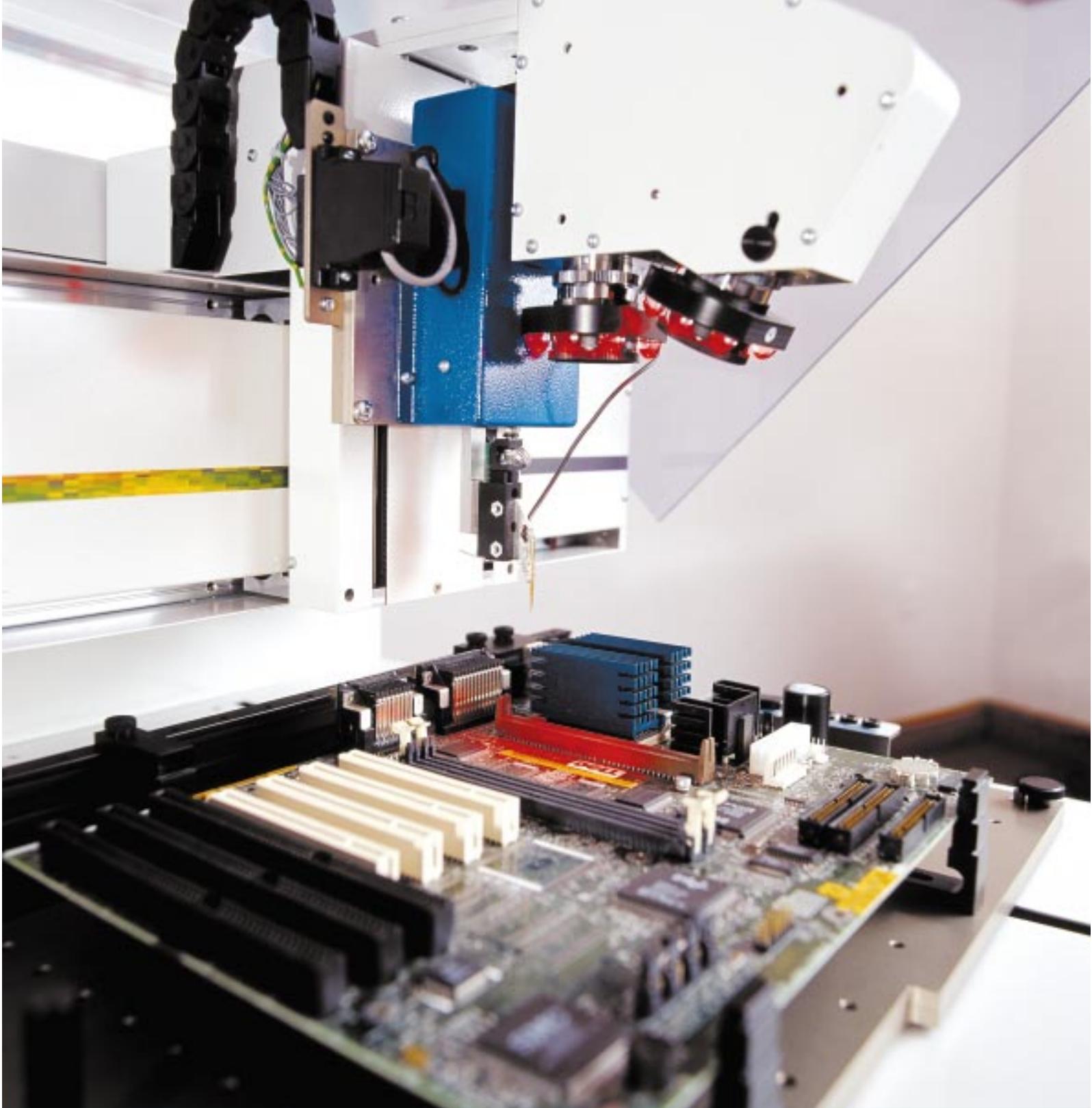
Above all the GRS500 is designed to enable you to increase yields and ultimately improve your profitability by lowering your costs.

Financial performance

Designed from the outset for long life, flexibility and low cost of ownership, the GRS500 will help reduce your costs for many years and is suitable for use on a wide variety of PCBs.

You stand to benefit most if you can answer yes to more than 2 of the following criteria:

- *Make high value added boards*
- *Often introduce new products*
 - *Specialise in short series production*
- *Utilise Functional test or ATE*
 - *Use Boundary Scan*
- *Need to debug prototypes*



Prototypes, short production runs, new product launches all present a challenge in the manufacturing environment. How do you ensure that test programs and fixtures are up and running simultaneously with a product production launch? The new GRS500 from Polar is designed to help you.

Designed especially to troubleshoot in the following situations - prototype boards, newly launched products and production runs that are too small to justify traditional ATE. This facilitates comprehensive test with the advantage of low set-up times and cost. The key is the extensive use of CAD data combined with simple and proven troubleshooting technology. When production ramps up, the GRS500 is an invaluable asset supporting your functional test to optimise yield.



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GRS500 Specification

Probing System Specification		
	<i>Metric</i>	<i>Imperial</i>
Probing area (max.)	300x450mm	12"x18"
PCB size (max.)	330x630mm	13"x24.8"
Test speed (typical)	5 tests per second	5 tests per second
Component height (max.)	100mm	4"
Max. Z travel	100mm	4"
Accuracy	+/- 0.04mm over 300mm	+/-1.6 mil, 0.0016" over 12"
Repeatability (typical)	+/- 0.008mm	+/- 0.3 mil, 0.0003"
Resolution	0.016mm	0.6 mil, 0.0006"
Probe pressure	Less than 120gm	Less than 6oz
Dimensions	900x650x524mm	35.5"x25.6"x20.6"
Weight	90kg	200lbs

Cameras	Two internal cameras
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GRS Controller	Included hi performance PC with pre installed software, video inputs, motion control card, and high resolution 17" TFT Flatscreen display.
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Acquisition System	GRS500BXd nodal impedance test system - included in package
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GRS500 Professional	Accepts data from over 20 popular CAD systems, for a comprehensive list please see www.polarinstruments.com , the GRS also supports manual programming. Troubleshooting uses nodal impedance for comparison, in addition the board is videosectioned and the operator can look at sections of a known working board for comparison with the board under test.
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GRS500 Standard	Includes 1 CAD input and is a cost effective solution for applications where you only use one CAD system or have no access to data.
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Standard Accessories	Interface cables, joystick, spring common pins, spare test pins Operator Manual
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Optional Accessories	GRS25 off line graphical repair software.
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Approvals	Conforms to applicable European Directives and is CE marked. Polar Instruments is ISO9001 certified
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Nato Stock Number	Contact factory
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