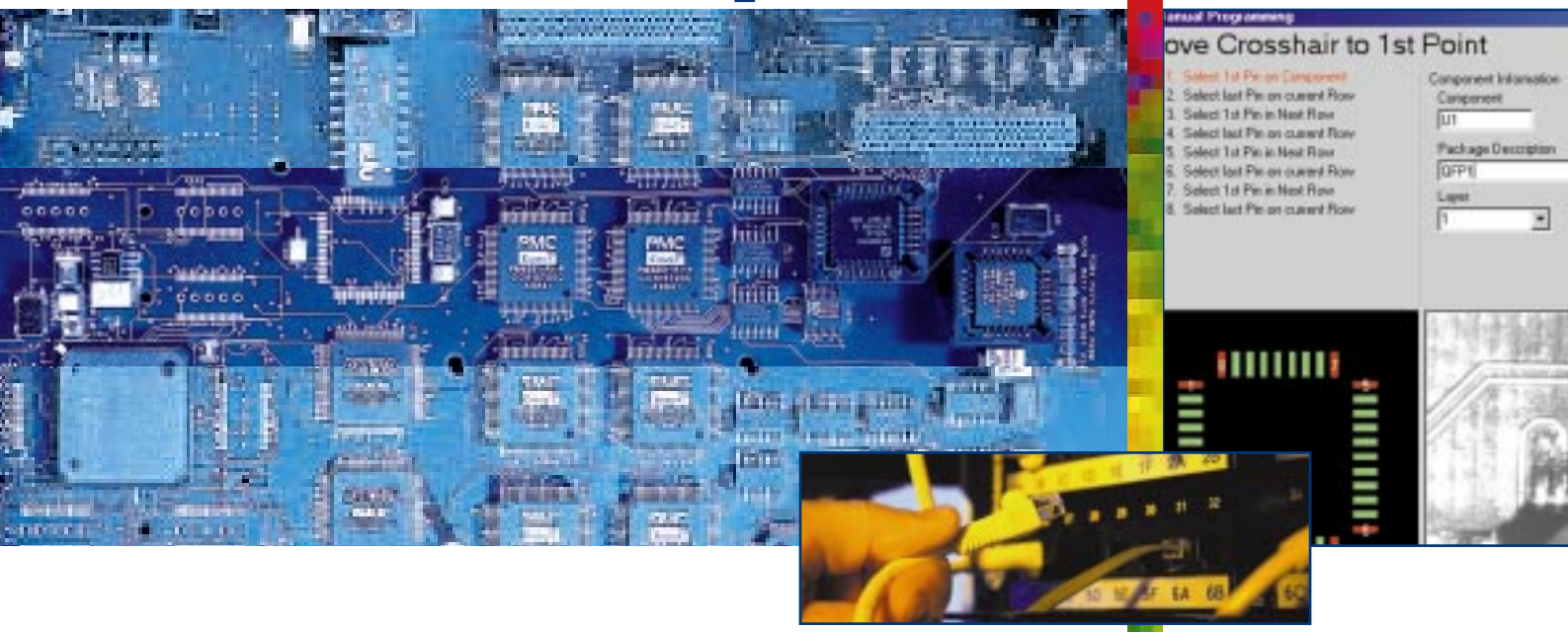
How to reduce service and repair costs



PCB Troubleshooting system for service and repair centers

GRS500

Troubleshoot high density PCBs

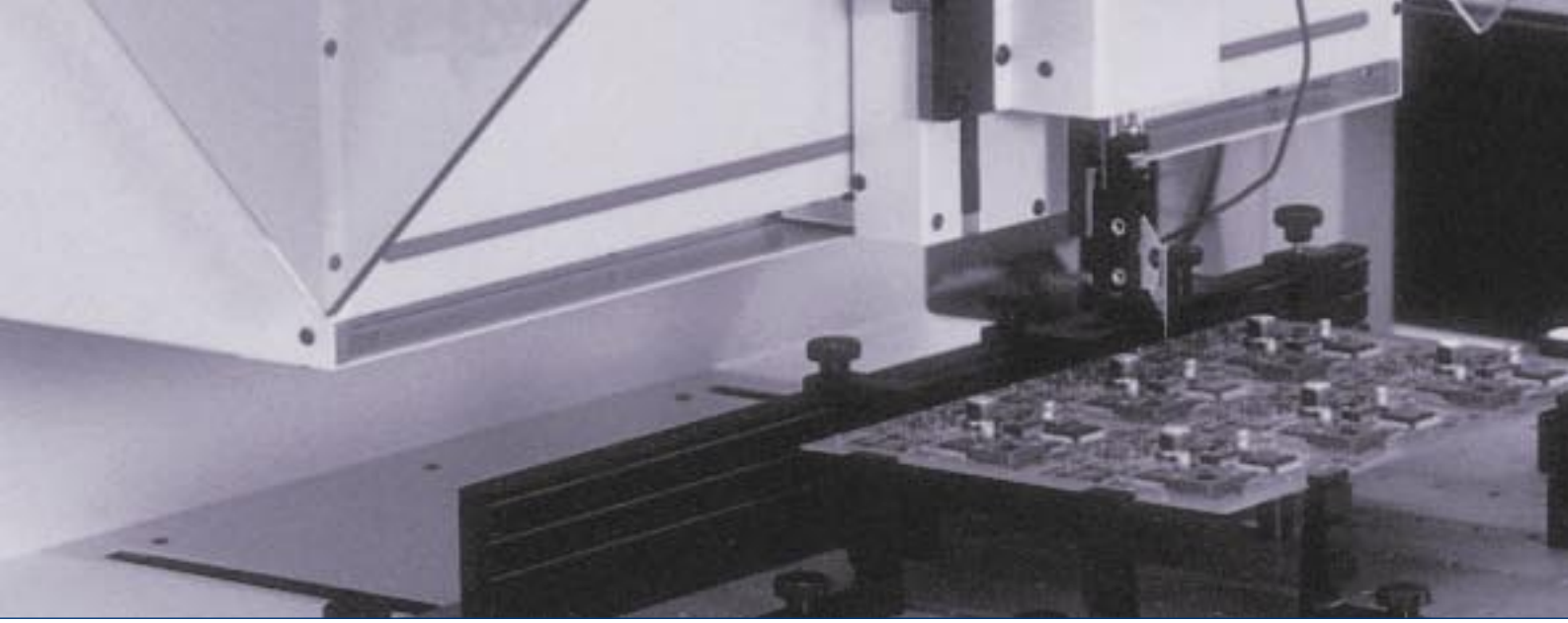
Repair legacy systems

Reduce board exchange budgets

"Pick and Place" manual graphical programming

Polar

polarinstruments.com



High value boards, legacy systems, new fine pitch SMD based assemblies

Troubleshoot PCB assemblies with the GRS500

You know that troubleshooting complex PCBs is a skilled task. The GRS is designed to help rapidly home-in on faults giving the maximum time to put technical troubleshooting skills to ‘best use’ in getting your boards up and running, thereby saving time, cost and assisting you in maximising your repair yields.

How can the GRS500 help?

Designed to help technicians locate faults on a wide variety of PCBs, right through from legacy systems, up to double sided high density surface mount assemblies with BGA. The GRS employs a precision probing and video system to enable fault location using a combination of nodal impedance test and visual comparison with live video against a high resolution "videosection" of a known good board. Especially powerful if you need to repair a large variety of PCBs, the GRS is supplied complete with controller and built in CD Read/Write drive for test program archiving.

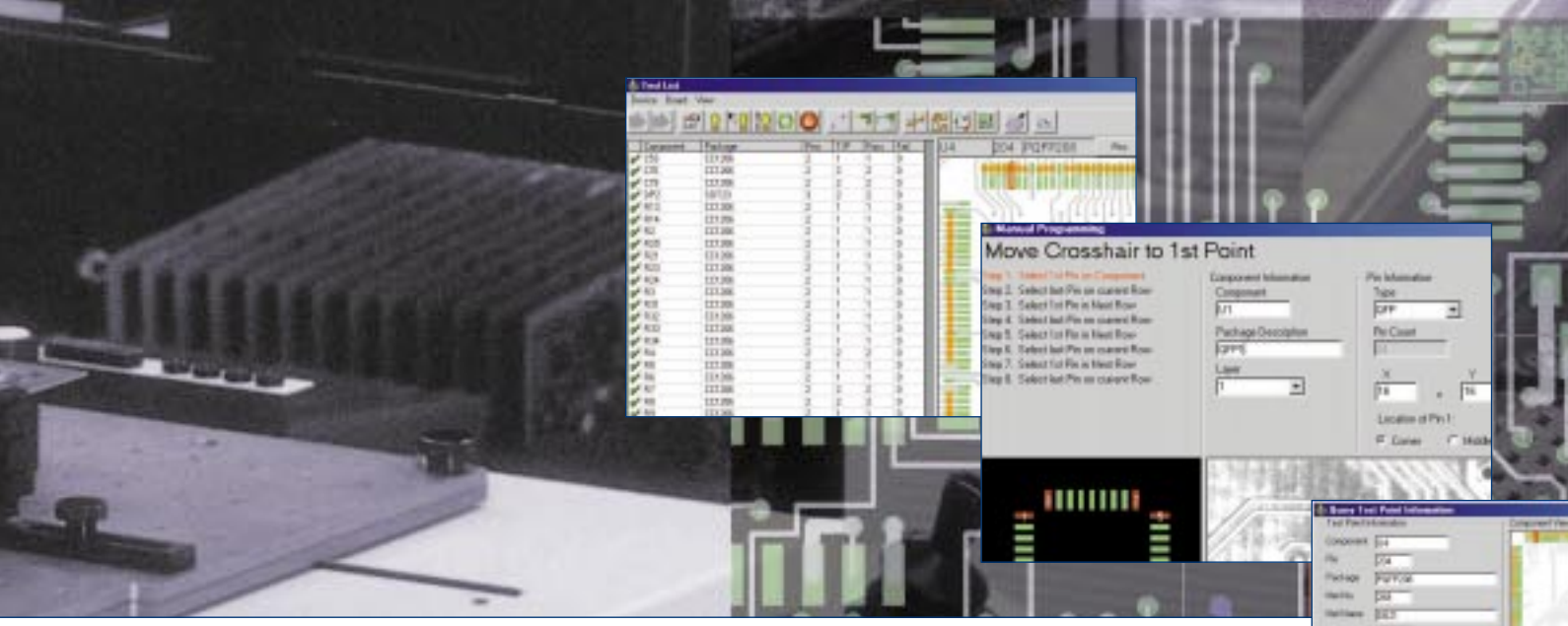
Versatile probing system

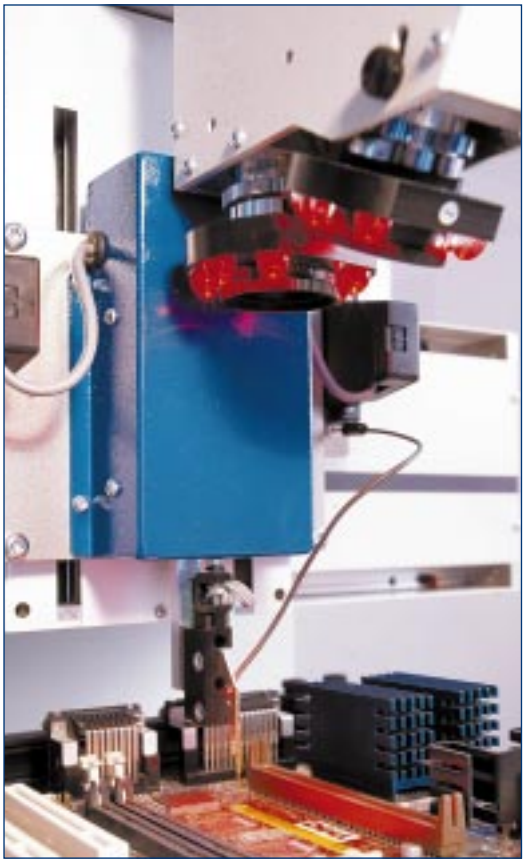
Designed to troubleshoot on all technologies, the GRS Probing system has:

- a 100mm flying height allowing clear flight over the tallest components.
- equipped with two cameras
- camera one for programming and inspection
- camera two for live view of probing position

Setting up

You can set up the GRS by manually teaching component positions on the board, this is accomplished by a simple graphical "drag and drop" technique. The GRS500 positioning system has a resolution of 14 microns enabling you to probe devices with pitches as small as 0.4mm. If you are fortunate enough to have CAD data, the GRS will accept CAD data from over 20 popular CAD systems.





Targeting faults

The comparison of net characteristics provides most of the information you need to locate the root cause of faults on assembled PCBs. Once you have prepared the probing program, 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 comparison tests effectively and efficiently. The GRS also videosections the good pcb into an array of high resolution images for live comparison with the board under test-helpful in situations where the fault cannot be detected electrically.

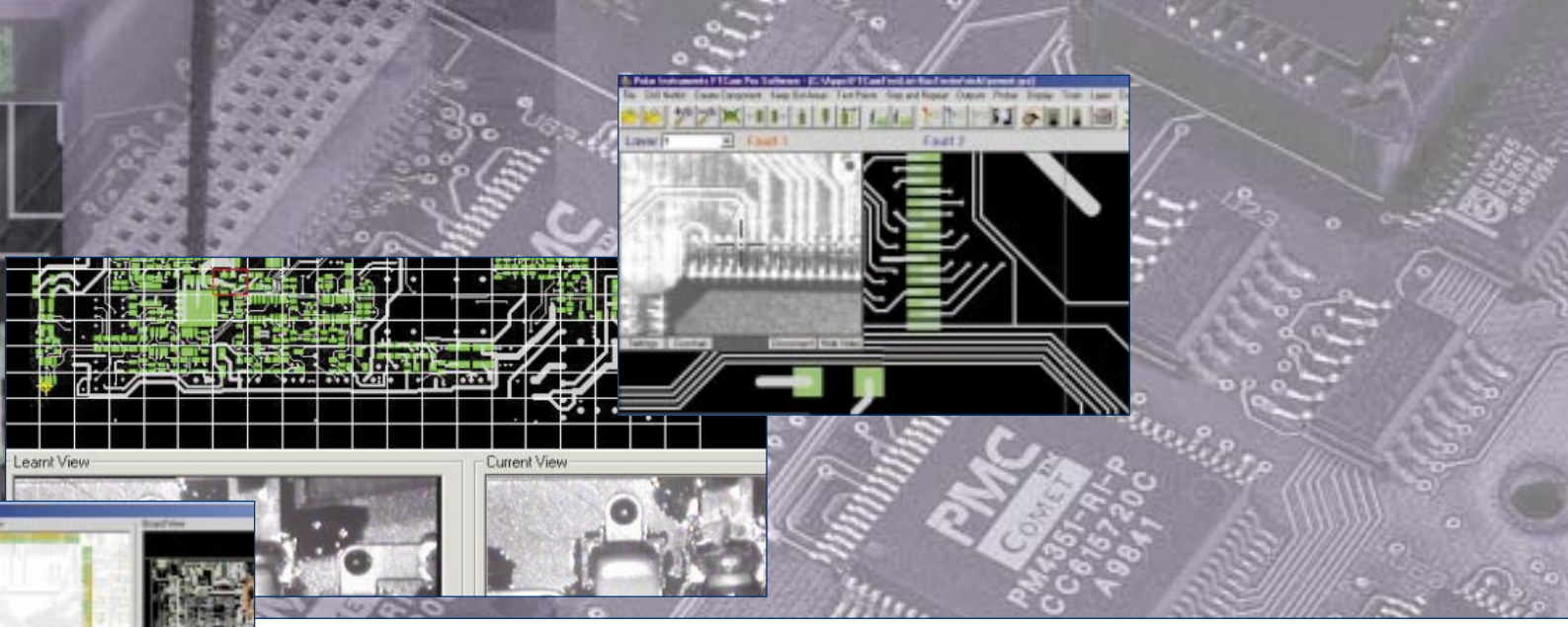
Reliable probing

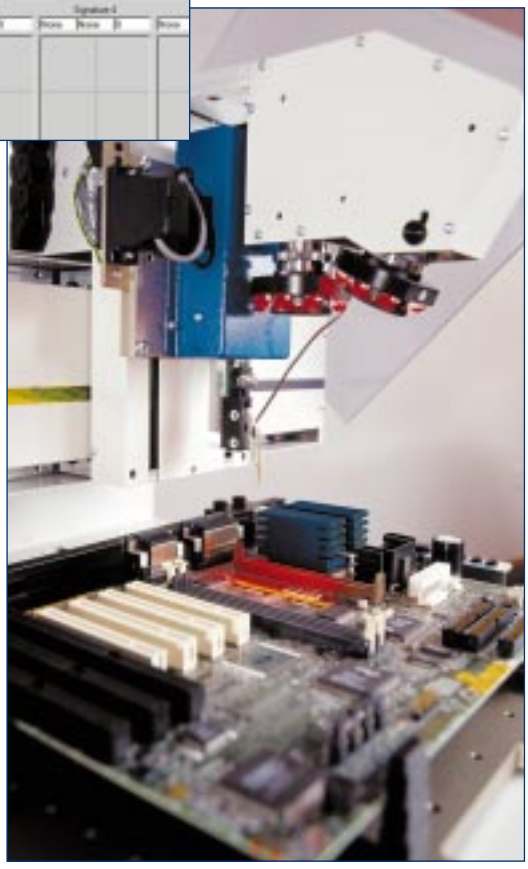
In the event that GRS detects an open, the point is repeatedly probed, this is performed to reduce the instance of "phantom" opens. However the re-probing does not probe in exactly the same position (this may simply further compress the contaminant causing the open.) Instead the GRS probes 5 points in a circle with a 25 micron diameter, this proven technique can dislodge contamination and also cover for any minor board misalignment.

The GRS capability includes troubleshooting on technology from SMT, through hole and BGA. The 100mm flying height is especially useful on mixed technology or older boards where you need to fly over the taller components. You can also describe keep out areas as no fly zones.

Board Modifications

Revision levels of boards seem to constantly change and because the GRS is a fixtureless system, you can save as many revisions as you like. This helps you especially when you only repair a certain type of board occasionally .





Using GRS alongside a functional test system

Functional test is an excellent tool for final system verification, however it usually lacks the diagnostic capability to work at component level. The GRS systematically examines a board in detail to find the faulty interconnect or components. In an ideal situation, functional test should be performed in conjunction with the GRS to confirm you have successfully repaired the board.

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.

Using a Polar Toneohm with the GRS

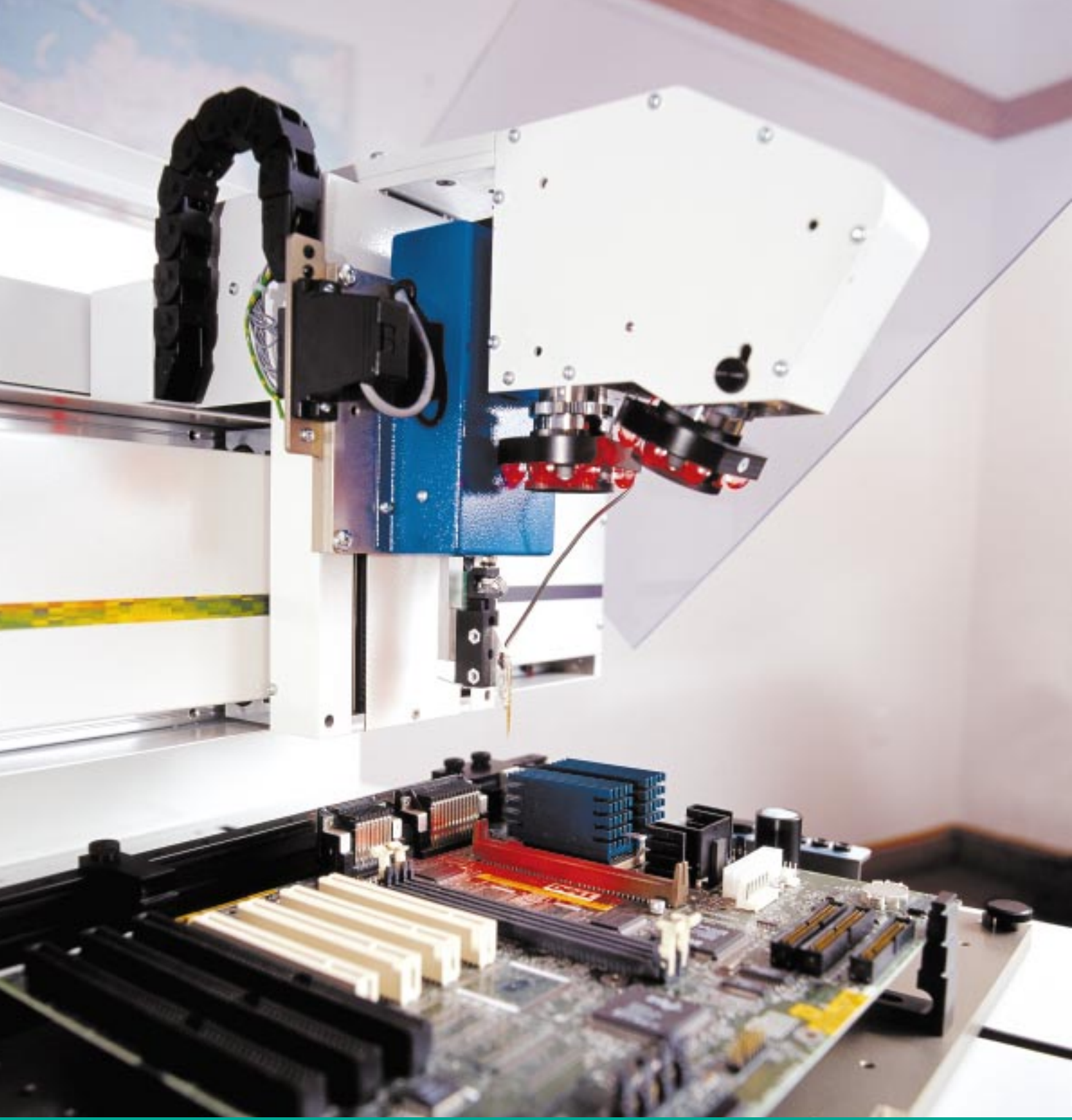
Once you have identified the failing net with the GRS, the fault may be quite obvious to you. However this is not always the case and to look more closely at a leaky or short circuited net, a Toneohm 950 (optional) is an excellent complement. The Toneohm is equipped with a variety of techniques for determining the physical location of shorts or components causing excess load. These techniques are covered in more detail in the Toneohm 950 literature.

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.

An Investment

Above all the GRS500 is designed to help enable you to more economically repair a wide variety of PCBs with a minimum of set up costs.



High value boards, legacy systems, new fine pitch SMD based assemblies present you with a seemingly endless series of repair challenges. The new GRS500 from Polar is designed especially to meet the challenges of service and repair departments faced with troubleshooting a wide variety of board technologies.

Designed especially for troubleshooting boards using proven comparison techniques, the GRS500 is the latest in a long line of PCB troubleshooting systems from Polar. Recognising that the process of faultfinding is skilled and time consuming, the GRS500 is designed to help diagnostic technicians and engineers to work as efficiently as possible over a wide variety of board types.

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GRS500 Specification

Probing System Specification	*Metric*	*Imperial*
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
GRS Controller	Included hi performance PC with pre installed software, video inputs, motion control card, and high resolution 17" TFT Flatscreen display.
Acquisition System	GRS500BXd nodal impedance test system - included in package
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.
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.
Standard Accessories	Interface cables, joystick, spring common pins, spare test pins Operator Manual
Optional Accessories	GRS25 off line graphical repair software.
Approvals	Conforms to applicable European Directives and is CE marked. Polar Instruments is ISO9001 certified
Nato Stock Number	Contact factory

LIT: 191

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