AUTOMATED FAULT LOCATION ON COMPLEX PCB´S

The test solution for Prototypes, short production runs, repair applications

Polar GmbH ®
Instruments

PCB repair test system GRS550
Increase prototype yields · Designed for short
series production · Fast programming from CAD data
Low cost of ownership · Paperless Repair

Prototypes, short production runs, repair applications

GRS550 helps deliver your new product to market on time and on budget.

Prototypes, short production runs, new product launches all present a challenge in the manufacturing environment. In short series production and prototype build situations, traditional test solutions are often not economic to implement. This leaves your technical team facing the prospect of performing manual troubleshooting. It goes without saying this is labour intensive and not an easy task on densely populated high technology PCBs. **GRS** is designed as a repair test system, helping you repair and reclaim expensive boards with hard to find faults which otherwise would only be scrapped, saving a costly and wasteful exercise. Designed especially to operate in the following situations – prototyping, with newly launched products, and with production runs that are too small to justify traditional ATE –although you can also use the **GRS 550** as an excellent complement to traditional fixture based ATE. If you specialise in prototype or short series production, the **GRS** is just what you need to keep yields at a maximum. Make best use of your technical staff. You know that troubleshooting complex

PCBs is a skilled task and that skilled technicians who can rapidly diagnose PCB faults are a scarce resource. The **GRS** is designed to help your technical staff put their skills to best use, by helping them rapidly target PCB problem areas and giving them the tools to track down faults in the minimum possible time. Prototypes, short production runs, new product launches, **GRS 550** helps deliver your new product to market on time and on budget. The **GRS** is efficiently programmed from CAD data, troubleshooting programs can be developed in a fraction of the time and cost of a fixture based solution. Over 20 popular CAD formats are supported by **GRS**.

Contrasting traditional fixture based ATE and the GRS.
The strength of a traditional test solution using fixtures is in a high and medium volume environment, but as board complexity increases, the fixture cost associated also ramps up, and the number of boards you need to build to justify a fixture will also increase. Also, it may not be physically possible to access the whole board with a fixture,

leaving some areas untested. **GRS** is a flying probe based system and by using CAD data the GRS ensures you can probe a high percentage of the board. You may ask, „Is fault coverage as high as on a fixture based system?" This is an area where you need to decide what is best for your application. A fixture based system will typically (though not always) tend to have a higher fault coverage than a flying probe based system. Your benefit from using a flying probe based **GRS** is that your technical staff can have programs up and running from day one of production, and when engineering changes are made you do not have to write off costly fixtures - sometimes worth upwards of 20 000 Dollars.

System also available with optional trolley

The Test Principle

The **GRS 550** relies on the principle of nodal impedance analysis, also known as VI-trace. The board under test ist unpowered, while the test probe applies a current limited AC voltage on all circuit nodes. The specific nodal impedance of each net is displayed and compared with a previously stored reference.

Increase Fault Coverage by adding ActiveTest, ActiveVision, Boundary Scan.

By adding optional modules, the fault coverage of the **GRS 550** can be further increased. ActiveTest tests a PCB assembly in powered mode and acquires voltages and signal waveforms on specific nodes. At the same time, the device under test may be controlled using a variety of interfaces. ActiveVision enables automatic image comparison using the built-in camera system. Use ActiveVision to check displays, switch settings, missing components. Circuit Boards designed for Boundary Scan Test may be analyzed using the Boundary Scan Option.

Designed from the outset for long life, flexibility and low cost of ownership, the **GRS 550** 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
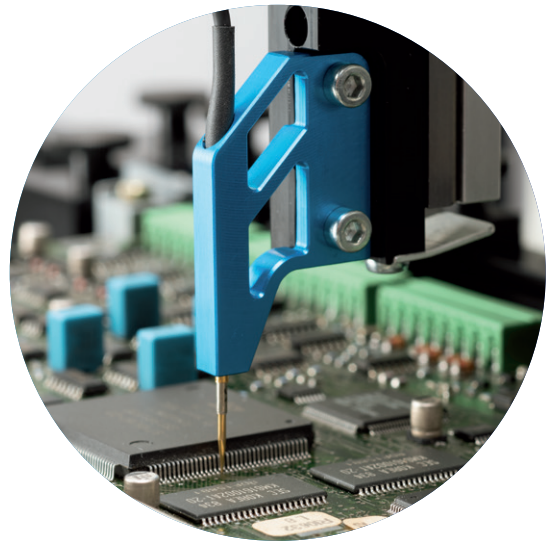
High positioning accuracy and an adjustable placement force of the test needle allow the contacting of smallest IC grid dimensions


The GRS550 has a modern stepper motor controller with monitoring of all axes via encoder
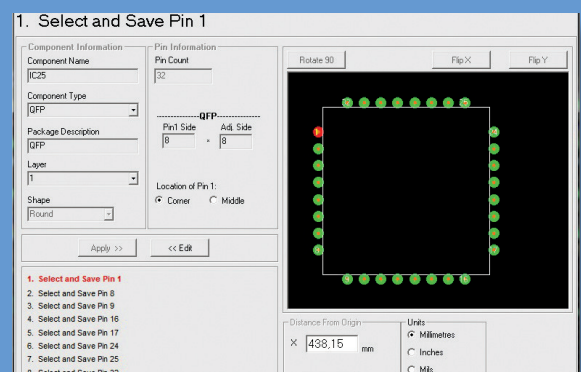
GRS
550

Graphical Repair **GRS** displays the CAD nets on screen and saves your technicians the time consuming process of wading through pages and pages of paper documentation. Built into the **GRS** design are features designed to speed the troubleshooting process (features Polar has developed using our 35 years of fault finding experience). New in the GRS is a Virtual Xray which allows your technicians to „see" traces as they run inside the board.
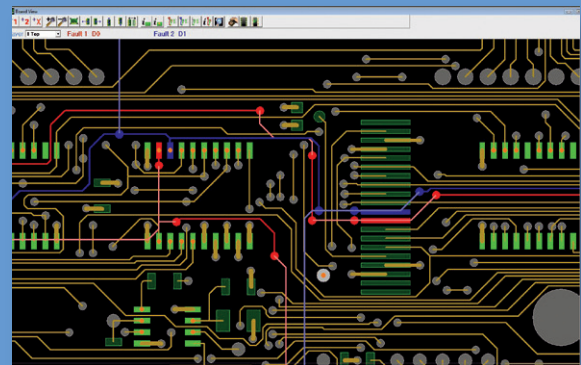
Versatile technology Designed to faultfind on all technologies, the **GRS** is flexible enough to work on a variety of technologies including surface mount, through hole, right through to BGA and mixed technology boards. And in the event that CAD data is not available, the **GRS** includes a simple to learn manual programming interface.
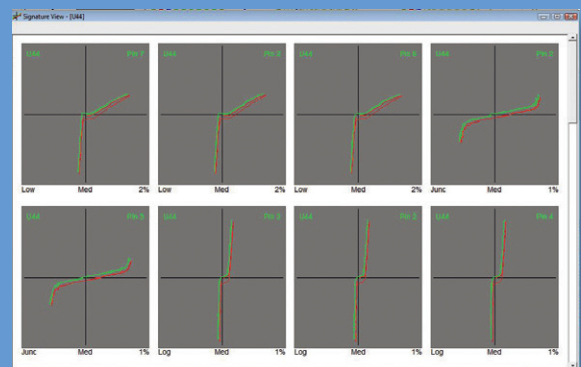
Application in service and repair centers, **GRS550** is also an invaluable tool in service or repair departments, now faced with more complex and hard to probe technologies. Though designed for use with CAD data, in the event that this is not available for your board, the manual programming interface allows you to „Pick and Place" components onto a test program. As your knowledge of the board under test grows, you can add known nets to the test program, and start to approach the level of coverage that is obtainable with CAD Data.

Specification

Probing System Specification

Probing area (max.)	300 x 450 mm 12″ x 18″
PCB size (max.)	330 x 630 mm 13″ x 24.8″
Test speed (typical)	5 tests per second
Component height (max.)	100 mm 4″
Max. Z travel	100 mm 4″
Accuracy	+/- 0.04 mm +/-1.6 mil, 0.0016″ over 300 mm over 12″
Repeatability (typical)	+/- 0.004 mm +/- 0.16 mil, 0.00016″
Resolution	0.008 mm 0.3 mil, 0.0003″
Probe pressure	Less than 120gm Less than 6oz
Dimensions	900 x 650 x 524 mm 35.5″ x 25.6″ x 20.6″
Weight	100 kg, 220 lbs
Cameras	Two internal USB 3.0 cameras
GRS Controller	includes PC with preinstalled GRS550 Software, 24″ Monitor, Maus
Acquisition System	GRS500BXd nodal impedance test system - included in package
GRS550	Accepts data from over 20 popular CAD systems, for a comprehensi-velist please see www.polarinstruments.eu, 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.
GRS550 Options	Active Test for functional Tests on powered PCB´s using NI Lab-VIEW™ Active Vision for automatic optical Inspection Boundary Scan Test using Göpel CASCON ™
Standard Accessories	Interface cables, joystick, spring common pins, spare test pins Operator Manual
Motion controller	Precision Stepper Motors, Encoders on X, Y, Z Axis, Stall Detect.
Approvals	Conforms to applicable European Directives and is CE marked.
Nato Stock Number	6625 25 147 5816