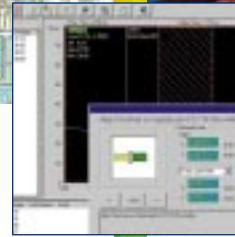


# Automatic Controlled Impedance Coupon Test System



*Automated impedance measurement for  
volume coupon testing with excellent R&R*

RITS510a

*Repeatable, accurate,  
traceable measurements*

*Precision airline  
verification*

*Datalogging and reporting  
option*

*Fast production throughput*

*Optional real-time SPC*

**Polar**

[polarinstruments.com](http://polarinstruments.com)



### Automatic testing of controlled impedance PCB coupons

In response to the increasing volume of PCBs with controlled impedance, Polar Instruments has developed a turnkey system for automated impedance testing of PCBs and coupons in a production environment.

RITS510a automates the industry standard CITS500s (Controlled Impedance Test System) to give fast, repeatable volume testing of coupons and PCBs. CITS500s employs proven technology and is currently used worldwide for manual testing of controlled impedances.

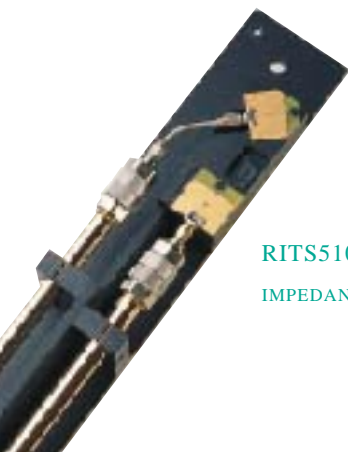
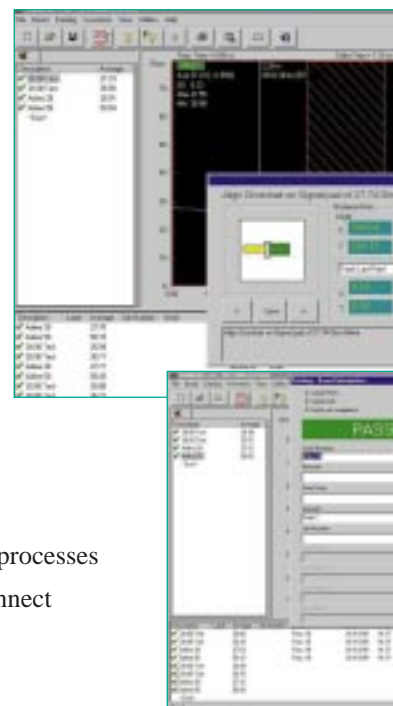
With test times as fast as fixture based systems, RITS510a flying probe technology provides unparalleled levels of measurement repeatability, with a lifetime cost of ownership just a fraction of a fixture based system. Tooling costs for new jobs are reduced to a few moments of program setup.

Even if you have not had much experience of electrical or RF testing before, you will find RITS510a easy to use. The system is controlled via easy to use Windows software. Test set-up is straightforward, results data is automatically logged in accessible formats, and there is the option of a built-in report generator. We have found that system operators can usually be fully trained in just half a day.

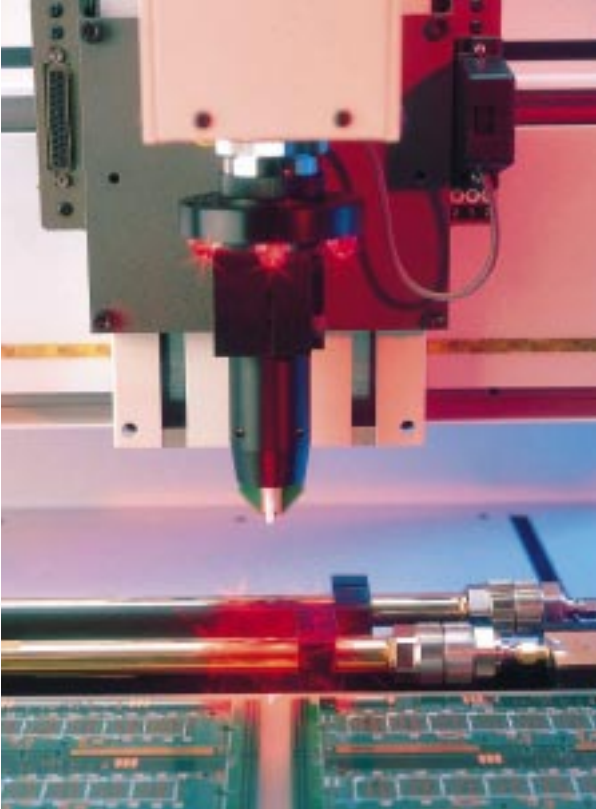
### High speed technologies

Faster processors, accelerated graphics and faster communications require more system bandwidth. The evolving demands of multi-media applications and three-dimensional graphics, mean that high bandwidth printed circuit interconnect is now essential to sustain system performance.

The challenge for the PCB industry is to develop reliable, repeatable processes for cost-effective volume manufacture of this next-generation interconnect technology.



RITS510a HIGH PRECISION MEASUREMENT TABLE REFERENCE AIRLINE MAKES IMPEDANCE MEASUREMENTS TRACEABLE AT THE PROBE TIP



- Automatic logging of test results
- Datalogging and SPC reporting option
- Optional realtime SPC with QC-Calc
- Single ended and differential measurements

### Accurate, traceable measurement

RITS510a uses proven time domain reflectometry (TDR) techniques to measure the reflection of fast rise-time pulses. High precision reference airlines - traceable to NPL and NIST standards - ensure repeatable measurement accuracy to allow the trace impedances to be controlled.

You can be sure of the repeatability of the test measurement because RITS510a verifies its own calibration regularly. Unlike other impedance test systems, verification contact is between airline and probe tip, confirming the accuracy of the entire system, including the test probe. The system is able to make both single ended and differential measurements, in addition the RITS510a can check for differential imbalance and also report odd and even mode impedance.

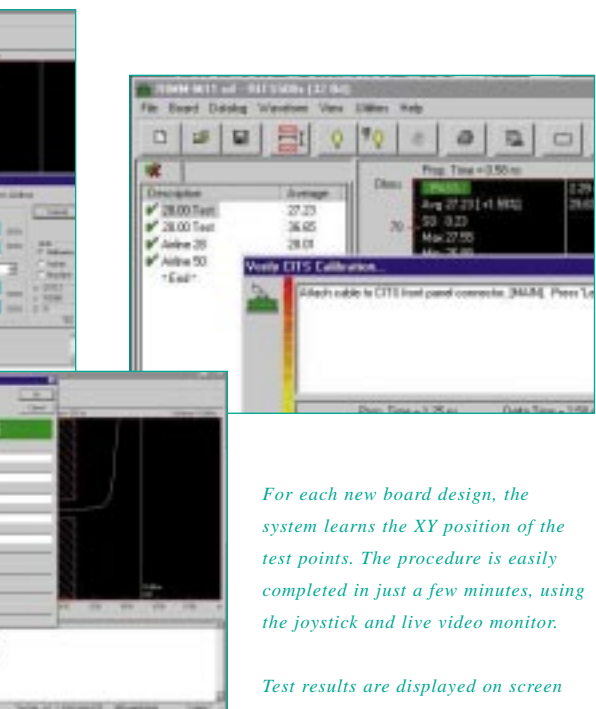
The calibration data is automatically logged for reference in the system log file and can be easily imported into Microsoft Excel® for inclusion in customer conformance reports.

### Flying probe technology

For each new coupon or memory module design, RITS510a learns the location of the impedance test points, in contrast to fixture systems setup is very fast and tooling charges for new jobs are minimal.

Precision motion systems in the RITS give a step resolution of just half a mil (13 microns), so you can be sure of accurate probing even with very fine pitches.

Up to 30 test coupons can be loaded on the RITS510a for testing and logging, and spare coupon trays may be preloaded to achieve maximum throughput. Lifetime cost of ownership of a RITS510a can be a fraction of the cost of a fixture based solution.

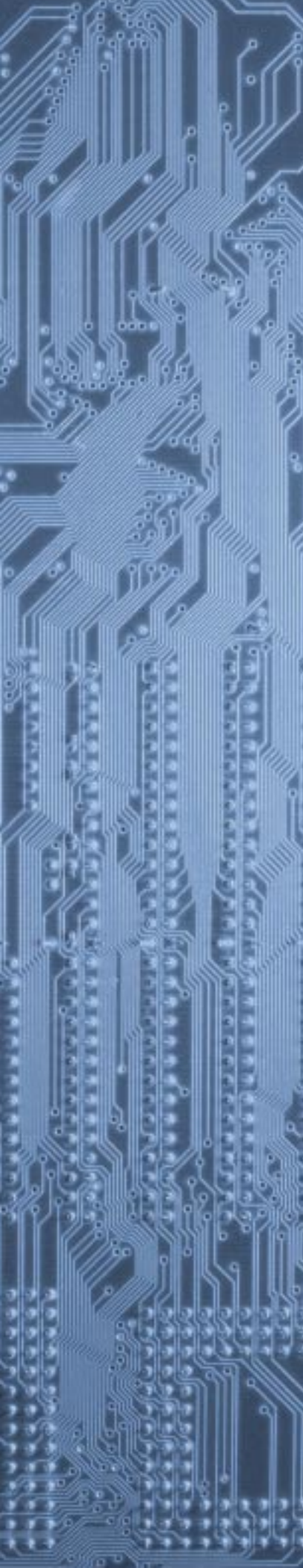


*For each new board design, the system learns the XY position of the test points. The procedure is easily completed in just a few minutes, using the joystick and live video monitor.*

*Test results are displayed on screen and automatically saved.*

*You can share graphical test results by email and view using the CITSView software which is available for download from [www.polarinstruments.com](http://www.polarinstruments.com)*

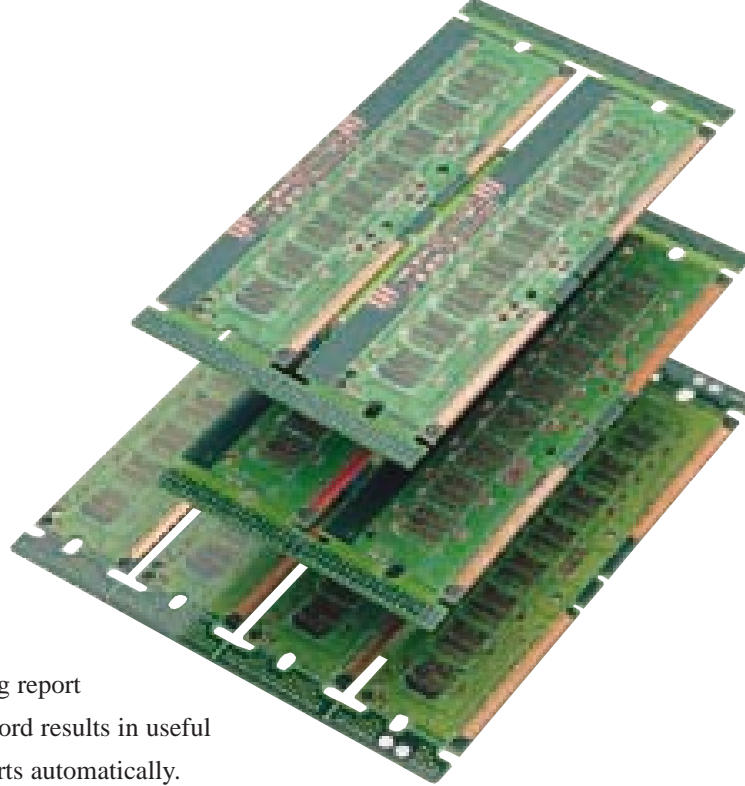




### Datalogging and statistical process control

RITS510a verifies impedance characteristics at each test point, logging results data and identifying each board as pass or fail.

In addition, with the powerful datalog report generator (DRG) option, you can record results in useful statistical formats, and generate reports automatically.



Minimum, maximum and average impedance measurements are logged, along with standard deviations for each batch and statistical process control values  $C_p$  and  $C_{pk}$ . All data is saved in pipe-delimited ASCII format, for world-wide compatibility with popular analysis and reporting packages.

You can produce customer conformance reports, including pass only data, as well as reports showing all test results for internal records or analysis. Further statistical options are available by directly linking the RITS510a to QC-Calc real time SPC software, QC-Calc provides full statistical data, with the additional ability to process Gage R&R reports for the complete system.

The majority of the worlds top 100 PCB fabricators choose Polar for impedance test. For a sample updated list of Polar Impedance test customers please visit the Polar website [www.polarinstruments.com](http://www.polarinstruments.com)



All airlines used and supplied by Polar are traceable to national standards NIST or NPL.



## Upgrading your capability

If you have already invested in Polar CITS the RITS510a can be purchased as an upgrade to your existing Polar system, please check with your local Polar representative for compatibility and upgrade options for your system. This is a very economic way for you to extend your impedance test capability and increase the value of your existing investment. RITS510a can be supplied in three configurations,

- Stand alone to add to your existing CITS500s
- Complete with CITS500s2 - entry level
- Complete with CITS500s4 - for applications with a mix of single ended and differential test.



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## RITS510a

### Measurement System

Range	0-150 $\Omega$
Accuracy	1% at 50 $\Omega$ , 1.25% at 75 $\Omega$ , 1.5% at 28 $\Omega$ and 100 $\Omega$
Self calibration	Precision airline mounted on table for auto-verification at probe tip
Horizontal resolution	0.2mm (0.008")
Vertical resolution	0.03 $\Omega$

### Standard Accessories

External monitor and joystick plus  
all leads, cables, PC controller with LCD monitor and  
Operator Manual

### Optional Accessories

Datalog Report Generator software (ACC230),  
Real time SPC (QC - Calc)  
Signal Integrity & Impedance design tools (Si6000)  
Service Manual

### Approvals

Conforms to applicable European Directives and is CE marked  
Polar Instruments Ltd is certified to ISO9001

### Probing System Specifications

	<i>Metric</i>	<i>Imperial</i>
Probing area (max.)	300 x 310mm	11.8"x 12.2"
PCB size (max.)	350 x 550mm	13.8"x 21.7"
Z axis travel	10mm	0.4"
Position accuracy	$\pm 0.04$ mm over 300mm	$\pm 1.6$ mil, 0.0016" over 12"
Minimum pad size	0.3mm	0.012
Repeatability	$\pm 0.008$ mm (typical)	$\pm 0.3$ mil, 0.0003" (typical)
Resolution	0.016mm	0.6 mil, 0.0006"
Probe pressure	Less than 142gm	Less than 5oz
Dimensions	940x650x524mm	37"x25.6"x20.6"
Weight	95kg (approx.)	210lbs (approx.)