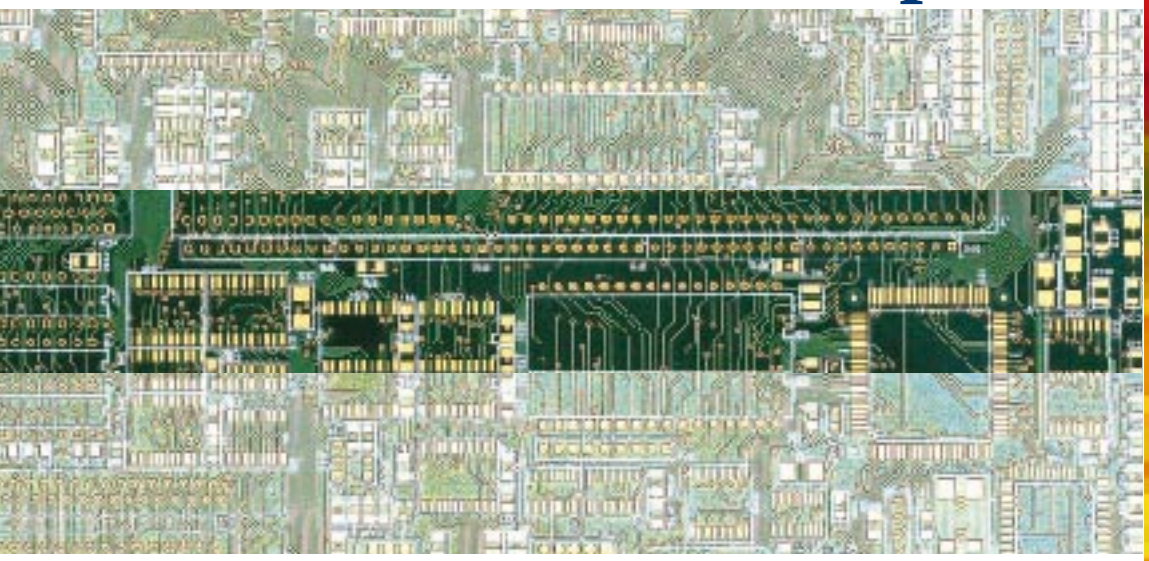
Flying Probe impedance test - at fixture speed



Automated impedance measurement for volume coupon and panel testing

RITS520a

Repeatable, accurate, traceable

Precision airline verification datalogging for SPC

Fast production throughput

Excellent R&R

polarinstruments.com

Measurement traceable to NPL and NIST standards

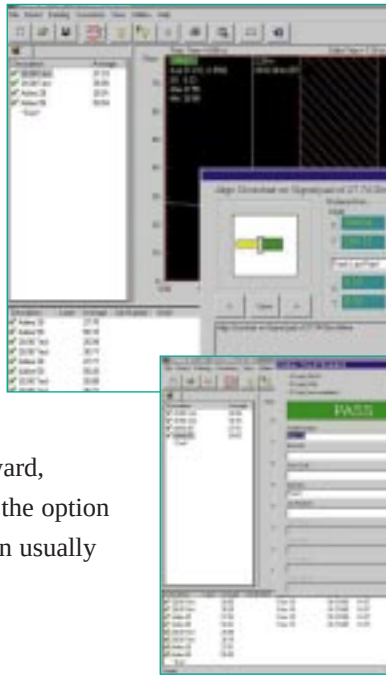
Under 0.8 seconds per test

Excellent R&R

With an average test time of under 0.8 seconds, the RITS520a flying probe technology is faster than fixture-based impedance test systems. Unlike functional bare-board test, there is no time advantage in using a fixture for RF test. What is more, a fixture-based measurement can not be verified at the probe tip.

Automatic testing of controlled impedance PCBs and 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.



RITS520a 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.

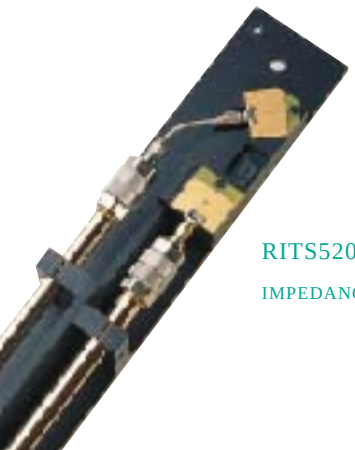
Even if you have not had much experience of electrical or RF testing before, you will find RITS520a easy to use. The system is controlled via intuitive Windows software. Test set-up is straight forward, results data is automatically logged in accessible formats, and there is the option of a built-in report generator. We have found that system operators can usually be fully trained in just half a day.

High speed memory technology

Faster processors, accelerated graphics and faster communications require more system memory bandwidth. The evolving demands of multi-media applications and three-dimensional graphics functions in PC technology, mean that a high bandwidth memory is becoming essential to sustain system performance.

If you are a developer of high speed systems you will be familiar with the increasing need to impedance control traces, from memory modules through to backplanes. Accurate impedance traces are required, to ensure repeatable reliable system operation.

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



RITS520a high precision reference airlines make impedance measurements traceable to the probe tip

- *Automatic logging of test results*
- *SPC datalogging and report generator option*
- *Single ended and differential measurements*
- *Multiple Quick change heads*

Accurate, traceable measurement

RITS520a 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 RITS520a 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.

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.

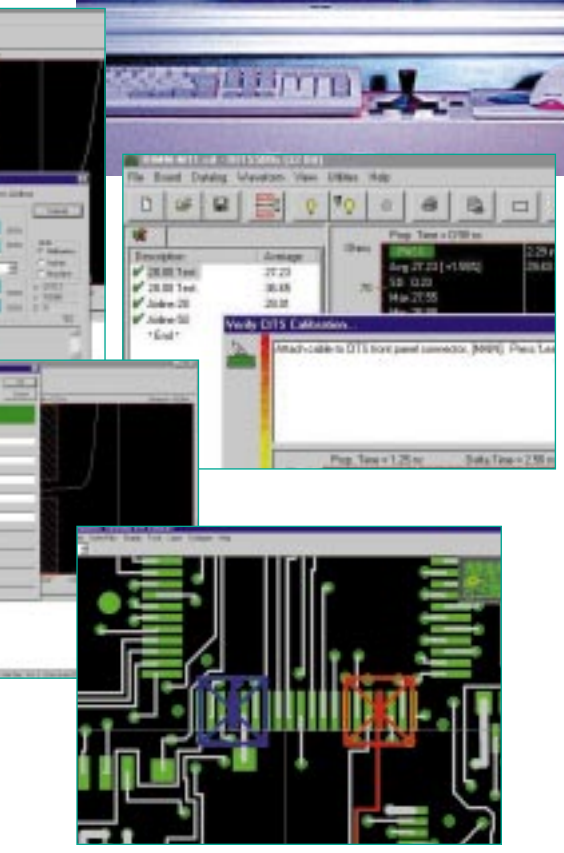
Flying probe multi head technology

Multi head flying probe technology allows you to select one of six quick change probe options, from a range of probe pitches and differential or single ended footprints.

Working with your customers to optimise coupon and test trace footprints on the panels themselves will minimise the need for set up changes and further increase test speed.

The RITS520a has a panel capacity of 20" by 28"and can either accept a large quantity of test coupons for automatic testing or you may be working on high value boards which have built in impedance test structures, either way the RITS520a significantly reduces the amount of manual input required for testing, adding further to the high R&R of the system.

For multiple image panels it is easy to step and repeat the position data and test limits. The industry standard CITS software allows you to compensate for loss, check for differential trace imbalance, and because all the measurements are verified on a regular basis with traceable reference impedances you will be able to correlate your data across multiple systems.

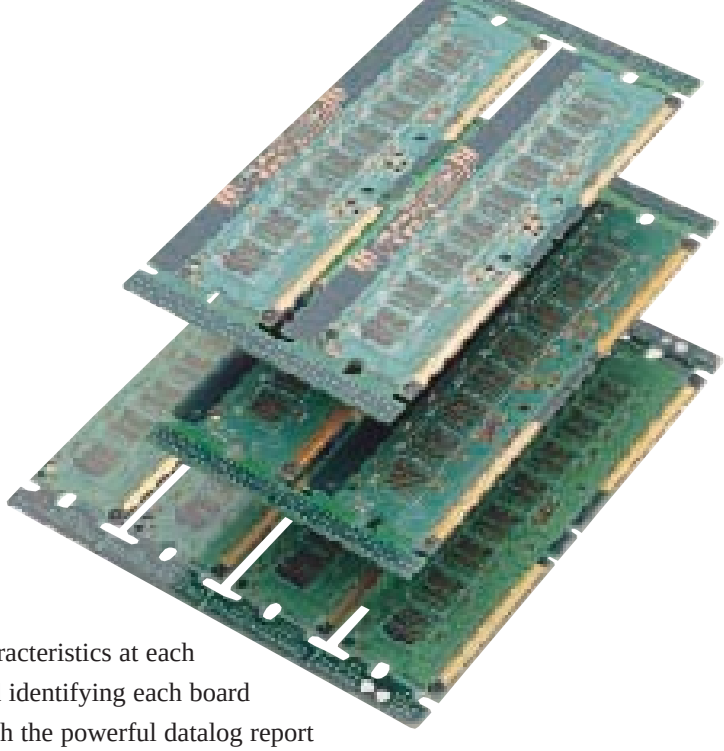


RITS520a software is easy to set up, with typical test programs running in under an hour.

Results are displayed on screen and delimited files are available for live access by SPC software.

RITSCam Pro reads CAD/CAM data including IPC-D-356 for rapid program generation

You can share graphical test results by email and view using the CITSView software which is available for download from ***www.polarinstruments.com***



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

Datalogging and statistical process control

RITS520a 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 Cp and Cpk. 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.

Manufacturers already using Polar’s TDR technology for impedance testing of PCBs include:

CMK
Daeduck
DDi
Gold Circuits
Sanmina
IBM
Japan Circuits
Nan Ya
Samsung
Siemens
Tyco
Viasystems

RITS520a Probing System Specifications

	Metric	Imperial
Probing area (max)	508 x 609mm	20" x 24"
PCB size (max)	514 x 711mm	20.25" x 28"
Test speed		
RITS520a	0.8s per test	0.8s per test
Z axis travel	10mm	0.4"
X-Y Positioning System Accuracy	+/- 0.04mm over 300mm	+/- 1.6 mil (0.0016") over 12"
Repeatability	+/- 0.01mm (typical)	+/- 0.4 mil (0.0004")
Resolution		
RITS520a	0.032mm	1.2 mil (0.0012")
Minimum pad size		
RITS520a	0.5mm	20 mil (0.020")
Probing force	142g (maximum)	5 oz (maximum)
Dimensions	1520 x 1270 x 1750 mm	60" x 50" x 69"
Weight	300kg (approx)	660lb (approx)

Prober Interface	PC Custom Interface board supplied (full length, 122mm height inc. edge connector)

Measurement System	
Range	0-150Ω
Accuracy	1% at 50Ω, 1.25% at 75Ω, 1.5% at 28Ω and 100Ω
Self Verification	Precision airlines mounted on table for auto-verification at probe tip
Display Resolution	
Horizontal	resolution 0.2mm (0.008”)
Vertical	resolution 0.03Ω

Standard Accessories	External monitor and joystick plus all leads, cables Operator Manual

Optional Accessories	Datalog Report Generator software (ACC230), Signal Integrity & Impedance design tools Laboratory test Fixtures Service Manual
RITSCam Pro	CAD CAM Import software supports multiple format plus IPC-D-356 (ACC303)
RITSCam Lite	Import software for IPC-D-356 (ACC304)

Controller	Windows NT, Windows 2000 Professional 128MG RAM, full length ISA card interface

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

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