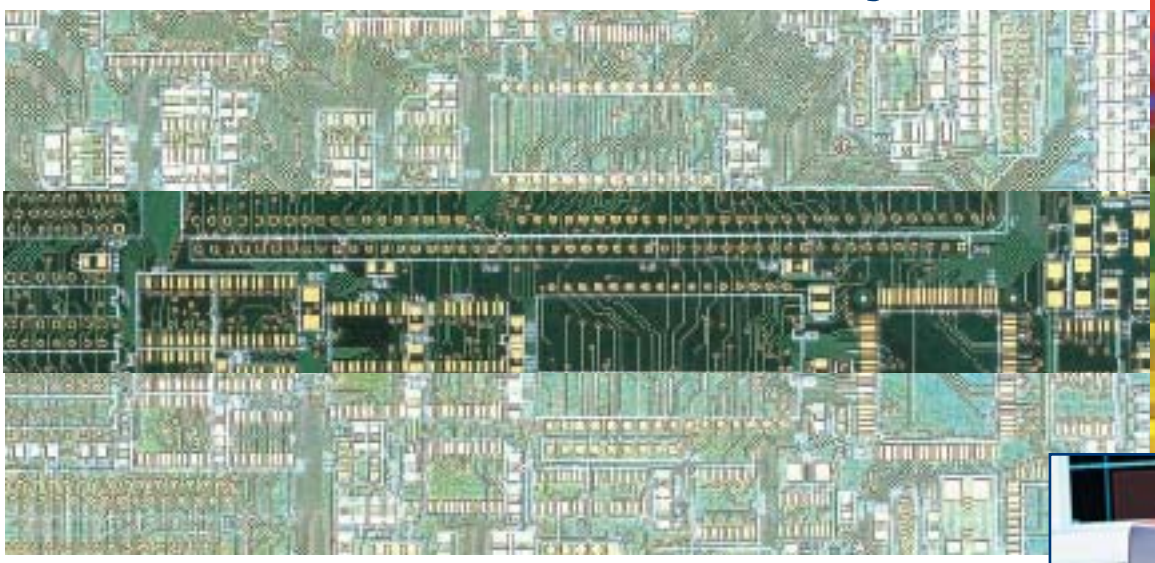
Controlled Impedance Test System



Accurate Impedance Measurement ensures Signal Integrity

CITS800s

Enhanced accuracy

Excellent R&R

Single ended & differential measurement

CITS800s2 - 2 Channels
CITS800s4 - 4 Channels
CITS800s8 - 8 Channels

Polar

polarinstruments.com

CITS800s4 has 4 channels to test single ended and differential traces on the same coupon

As a PCB manufacturer, you are almost certainly now producing controlled impedance PCBs for your customers – it is estimated that within a few years these types of boards will account for some 70% of the market.

But how do you verify the PCBs' characteristics, control your production process and demonstrate quality conformance to your customers?

Controlled impedance PCBs are used across a broad range of applications to help ensure high frequency signal integrity. Designers invariably specify these types of PCBs whenever the edge speeds of digital signals are faster then 1ns, or analog signals climb above 300MHz.

New in CITS800s

2, 4, and 8 Channel versions
Enhanced differential calibration
Accurate measurement of close coupled traces
Crosstalk measurement
Professional SPC option

The dimensions of the trace and the properties of the PCB material – which can vary from batch to batch – determine the characteristic impedance of a PCB trace. To control trace impedance, PCB manufacturers usually vary trace width to compensate for different batches of PCB material. Historically, they were then forced to use specialist laboratory equipment, such as an oscilloscope-based time domain reflectometer (TDR) or a network analyser, to measure the characteristics of a PCB, or a representative trace etched on the board or a test coupon. This approach was complex, expensive, and far from ideal in a production environment.

Many electronics designers – especially those pushing performance boundaries in the defence/aerospace, communications and IT industries – are now taking controlled impedance PCBs a stage further, by using close coupled signals and mixed dielectric pcb stackups to improve noise immunity and reduce timing errors on very high speed interconnects. For PCB manufacturers serving these rapidly growing electronics sectors, verifying the differential impedance of these balanced traces has proved difficult until now.

The total test solution

The CITS800s uses TDR techniques to measure the reflection of fast rise-time pulses, and provides a graphical view of a conductor's characteristic impedance along its length. It automatically reports when a measurement is outside the tolerance you specify.

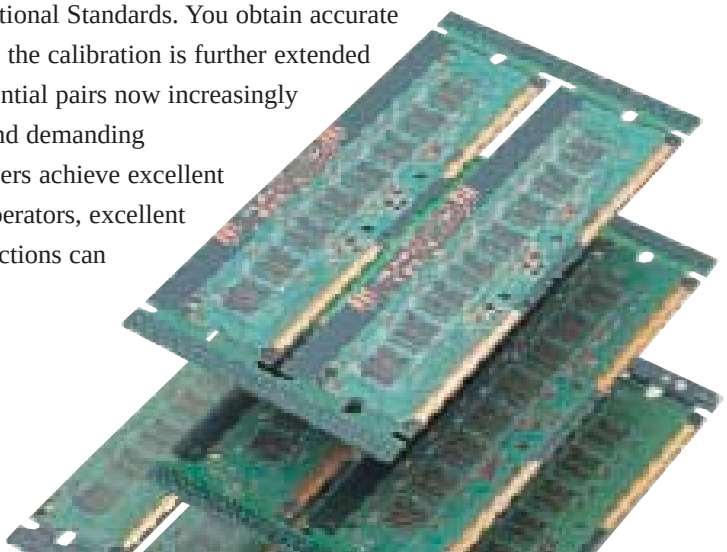
CITS800s4 has 4 channels that allow you to permanently connect two or more test probes making it ideal when your coupons have both single ended and differential traces. The CITS500s4 software automatically prompts the user to select the correct probe. For ultimate flexibility the CITS800s8 has an 8 channel capability allowing a range of probes to be connected at any one time.

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

CITS800s provides you with the ideal solution for easily and accurately verifying the impedance of PCBs both single-ended trace impedance and the differential impedance of balanced traces.

Enhanced Accuracy

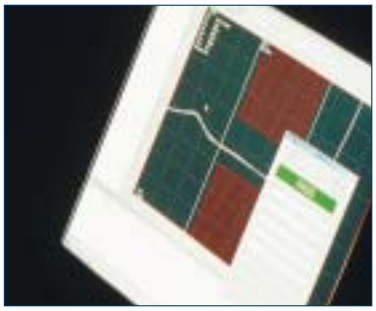
High accuracy is assured over a wide range of impedance measurement as each CITS800s is factory calibrated at 28, 50, 75 and 100 ohms against precision reference airlines, traceable to National Standards. You obtain accurate and repeatable results. In addition the calibration is further extended to measure tightly coupled differential pairs now increasingly used on mixed dielectric builds and demanding communications applications. Users achieve excellent gage R&R using non-technical operators, excellent correlation with field solver predictions can be achieved.



Exceptional ease of use

CITS800s is exceptionally easy to use. Powerful software automates every aspect of testing, enabling the entire process to be controlled by a mouse or footswitch. You simply select a test file containing the PCB test impedances and tolerances, position the probe and press the footswitch. Typical PCBs and coupons have a number of different impedances and the CITS800s can execute a series of impedance tests automatically, prompting you to reposition the probes as appropriate.

The instrument is equipped with Polar's proven internal static isolation unit to provide maximum protection against accidental damage.



Results

Test results are clear, the CITS800s automatically processes the data to produce a simple display of impedance versus distance, and reports a PASS or FAIL for each test. Automatic datalogging enables test results, together with system set-up data and measurement criteria to be easily exported to a wide variety of third-party database or spreadsheet packages for real-time statistical process control.

Statistical Process control

Basic SPC data is provided from the optional DRG datalog report generator. The DRG allows you to process your results and share electronically with your clients.

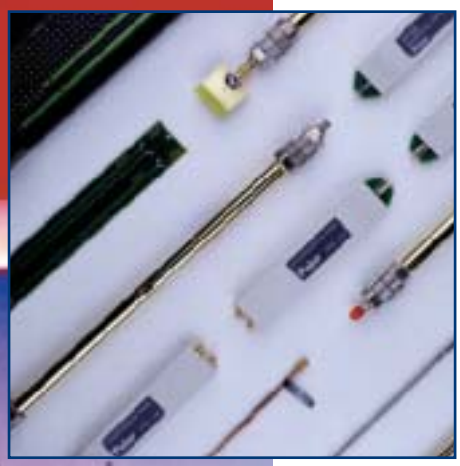
Professional SPC is provided by QC-Calc real time SPC software. QC-Calc interfaces directly with the CITS to provide you with SPC data on impedance control in real time. For more information please look at:
www.prolinksoftware.com

Applications

CITS800s is a robust instrument suitable for use in production environments by non-technical operators. It is also widely used by contract manufacturers and OEMs to verify conformance from PCB suppliers.

Accessories

There are a wide number of accessories to support your specific application including:



Probes

There is a wide range of probes with footprints to suit your coupon layout. These have been designed to ensure maximum repeatability and accuracy of measurement. For more information on probes consult the knowledge base on **www.polarinstruments.com**

Verification kit and airlines

Offer a range of airlines (28, 50, 75 and 100 ohms) and semi-rigid references (25, 50, 75 and 100 ohms) with Certificates of Accuracy traceable to National Standards (NIST and NPL). These allow you to verify the accuracy of your CITS.

Data Report Generator

This is an optional software module that imports data from the CITS datalog and produces customer reports including calculation of Cp and Cpk

Professional Statistical process control

Professional real time SPC software (QC-Calc) optionally allows you to output real time SPC data from the CITS800s. More information on QC-Calc is available from **www.prolinksoftware.com**

Coupon Holder

This will adjust to hold most sizes of coupon and ensures maximum accuracy of measurement.

Bar code Reader

This reader allows you to scan PCB barcodes prior to testing and avoids manual entry of a PCB serial number.

CITS800s2 - CITS800s4 - CITS800s8

Measurement Capability	
Range	0 – 150 ohm
Accuracy	1% at 50 ohm (Calibrated against traceable standards at 28, 50, 75 and 100 ohm)
Testable length	15m maximum
Horizontal display resolution	0.2mm (0.008")
Vertical display resolution	0.03 ohm

System Inputs & Outputs	
Test probe channels	CITS800s2 - 2channel, CITS800s4 - 4 channel CITS800s - 8 channel
Bar code reader interface	Industry standard PC keyboard wedge
Pass/Fail outputs	Opto-isolated, open collector
Socket for anti-static wrist strap	4mm
Computer communication port	RS232C
Power input	IEC, 100V±10%, 115V±10% or 230V±10%@50/60Hz, 20VA

Standard Accessories	Description	Part Number
	Probe cable	WMA326
	100 ohm differential probe	IPD100
	50 ohm probe	IP50
	Sample coupon	MPCD1325
	Footswitch	ACC124
	RS232 cable	ACC142
	Anti-static wrist strap & cable	ACC185 + ACC175
	Operators Manual	MAN174
	Power cord	
	50 ohm reference impedance	ACC254
	Torque wrench	ACC313
	SMA adaptors	MQX428

Optional Accessories		
	50 ohm probe,variable pitch	IP50V
	Short trace matching probes,	consult factory for advice
	Barcode reader	ACC186
	Datalog Report Generator software	ACC230
	Service Manual	MAN143
	Verification kit	ACC229
	28 ohm, 50 ohm, 75ohm and 100 ohm reference airlines	ACC232 - ACC235

PC Requirements	
	Pentium running Windows 98, NT, 2000 or XP, 128Mb RAM, SVGA monitor, RS232 port. (Windows 2000 or XP preferred)

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