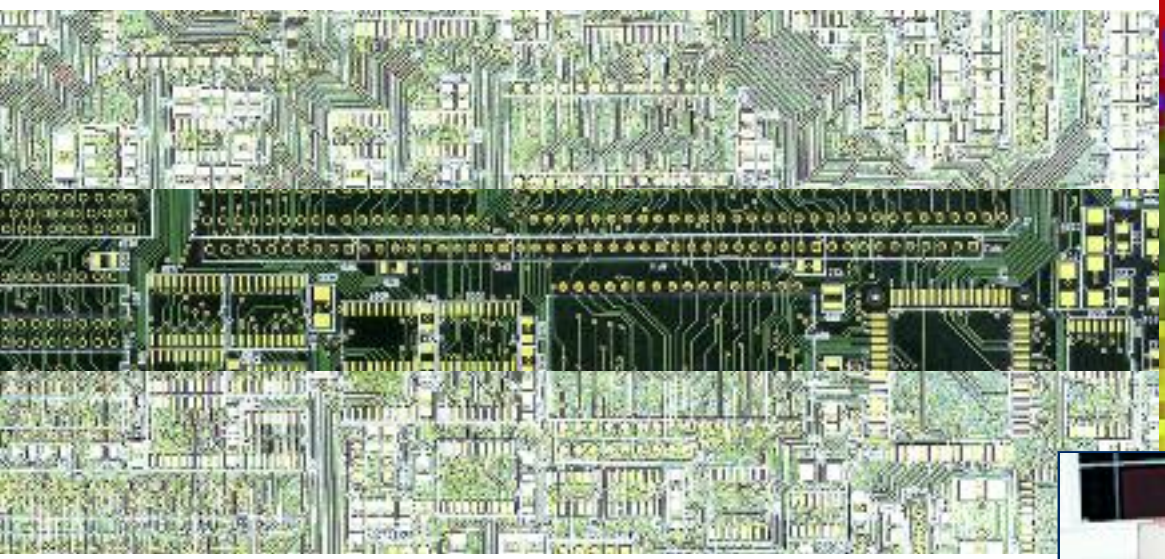
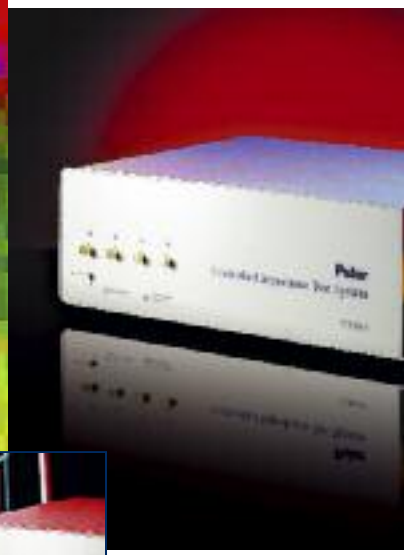
Controlled Impedance Test System





Accurate Impedance Measurement ensures Signal Integrity

CITS880

Faster Test Speed to maximise throughput

Enhanced accuracy

Excellent R&R

Single ended & differential measurement

CITS880 - 4 Channels

Now available with optional Polarcare

polarinstruments.com

CITS880 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 PCB 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 than 1ns, or analog signals climb above 300MHz.

New in CITS880

Faster test speed
4 Channel flexibility
Improved differential calibration
Accurate measurement of close coupled traces
Crosstalk measurement
Professional SPC option
Enhanced Datalog Report Generator

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 CITS880 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.

CITS880 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.

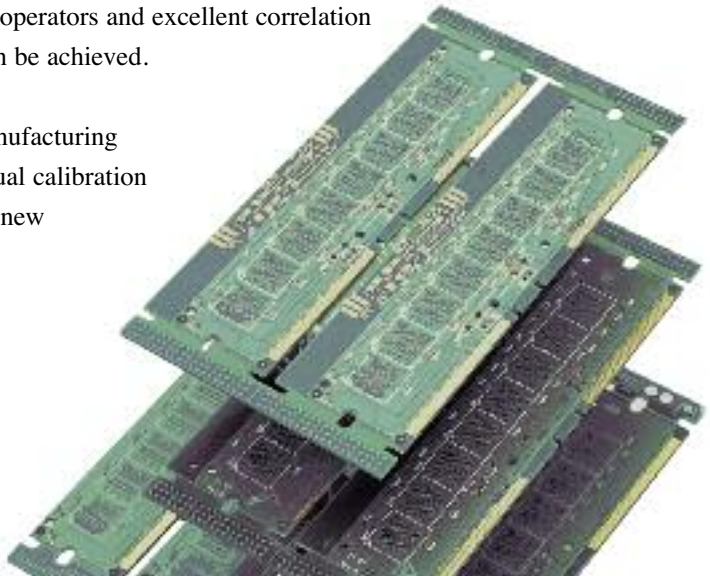
The integrated CITSView software allows graphical test results to be shared electronically. The new optional DRG pro provides customised SPC results and is compatible with legacy CITS systems for use in mixed fleet environments.

The CITS880 software automatically prompts the user to select the correct probe. It also 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

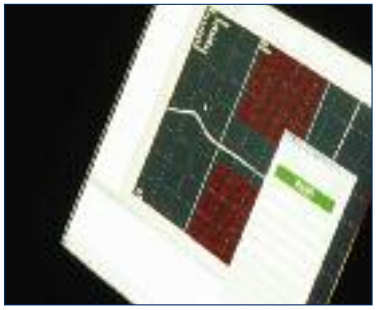
High accuracy is assured over a wide range of impedance measurement as each CITS880 is factory calibrated at 28, 50, 75 and 100 ohms against precision reference airlines, traceable to National Standards. You obtain accurate and repeatable results. In addition the calibration is further extended to measure 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 and excellent correlation with field solver predictions can be achieved.

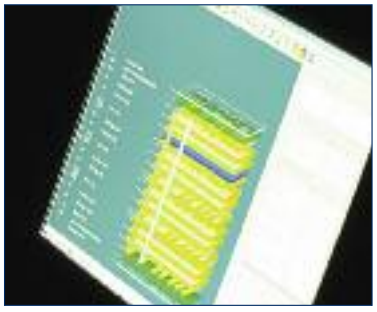
To comply with the highest manufacturing conformance standards, an annual calibration service is offered as part of the new optional Polarcare.



Exceptional ease of use

CITS880 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 CITS880 can execute a series of impedance tests automatically, prompting you to reposition the probes as appropriate.





Results

Test results are clear, the CITS880 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 pro Datalog Report Generator. DRG pro allows you to process your results and share them 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

CITS880 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 application note AP146 at: **www.polarinstruments.com**

Calibration service and airlines

Polar offers a calibration service and a range of airlines (28, 50, 75 and 100 ohms) traceable to National Standards (NIST and NPL). These allow you to verify the accuracy of your measurements.

Datalog Report Generator

DRG pro 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 CITS880. More information on QC-Calc is available from: **www.prolinksoftware.com**

Signal integrity toolkit

Simplify modeling of lossy controlled impedance traces with the Si9000 field solver. Ensure accurate documentation of HDI build structures with Speedstack & Speedflex. Generate test coupons quickly with CGen.

Controlled insertion loss testing

Quickly perform SET2DIL differential insertion loss measurements on controlled insertion loss PCBs using Polar's new Atlas test system.

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LIT:240

CITS880

Measurement Capability

Range	20 – 150 ohm (single-ended) 40 – 200 ohm (differential)
Accuracy	1% at 50 ohm (Calibrated against traceable standards at 28, 50, 75 and 100 ohm)
Testable length	2m maximum
Horizontal display resolution	0.2mm (0.008")
Vertical display resolution	0.03 ohm

System Inputs & Outputs

Test probe channels	4 (single-ended) or 2 (differential pairs)
Pass/Fail outputs	Opto-isolated, open collector
Socket for anti-static wrist strap	4mm x 2
Computer communication port	USB 2.0
Power input	IEC, 90V - 250V @ 50/60Hz, 0.16A - 0.1A

Standard Accessories

Description	Part Number
Probe cable	WMA360
100 ohm differential probe	IPD100
50 ohm probe	IP50
Sample coupon	MPCD1325
Footswitch	ACC383
Anti-static wrist strap & cable	ACC185 + ACC175
Operator Manual (pdf download only)	
Power cord (region specific)	
50 ohm reference impedance	WMA328
Torque wrench	ACC313
SMA adaptors	MQX428
USB cable	ACC371

Optional Accessories

Custom IP probe options	see application note AP146 or contact your local Polar sales representative
Datalog Report Generator software	DRG pro
Airline Calibration kit	ACC341
28 ohm, 50 ohm, 75 ohm and 100 ohm reference airlines	ACC232 - ACC235
Calibration Service	contact your local Polar sales representative for Polarcare options

PC Requirements

PC running Windows XP Professional or higher, 1.6GHz or higher, 1Gb RAM, SVGA monitor, USB 2.0

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